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Message from the Editors

TOJNED welcomes you.

I am happy to inform you that The Online Journal of New Horizons in Education (TOJNED) has been published 14th issue in 2014. This issue has international research paper from different part of the world.

The Online Journal of New Horizons in Education (TONED) is an international journal in the field of educational science. It is an online and peer-reviewed journal that accepts papers on all aspects of education science. Research papers could be about teacher education, classroom education, instructional design, distance education, teaching methods, learning theories, and other aspects of education science.

The aim of TOJNED is to diffuse new developments in educational science. The mission of TOJNED is to provide educators, teachers, administrators, parents and faculties with knowledge about the very best research in education. The acceptance rate of TOJNED is 0, 35%. It is now a major resource for knowledge about education.
TOJNED publishes research and scholarly papers in the fields of education. All papers are reviewed at least by two international members of the Editorial Board with expertise in the areas(s) represented by a paper, and/or invited reviewers with special competence in the area(s) covered. The Editors reserve the right to make minor alterations to all papers that are accepted for publication.

TOJNED is interested in various researches in educational science. These researches can help teachers to find out new horizons in educational science Therefore, I am pleased to publish this issue which different papers from various fields are shared with professionals.

TOJNED thanks and appreciate the editorial board who has acted as reviewers for one or more submissions of this issue for their valuable contributions.

As always, issue v.4 i.2 features contributions from many countries. It is confident that readers will learn and get different aspects on educational science. Any views expressed in this publication are the views of the authors and are not the views of the Editor and TOJNED.

TOJNED will organize INTE-2014 (www.int-e.net) in Paris, France. INTE series is an international educational activity for academics, teachers and educators. This conference is now a well-known educational science event. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities. Its focus is to create and disseminate knowledge about new horizons in education.

Call for Papers
TOJNED invites article contributions. Submitted articles should be about all aspects of education. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJNED. Manuscripts must be submitted in English.

TOJNED is guided by it's editors, guest editors and advisory boards. If you are interested in contributing to TOJNED as an author, guest editor or reviewer, please send your cv to tojned@gmail.com.

April 01, 2014

Editors,
Prof. Dr. Aytekin İŞMAN
Prof. Dr. Cem BİROL

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An Online Breakdown

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ABSTRACT

Focus of the study is how digital tools can make a change in flexible education. This is based on a case study of an educational situation in teacher training where a major tool of online teaching broke down. The students' reactions in and after the breakdown situation are basis for the case study. The study shows some characteristics of flexible education, which can be of importance in the development of flexible learning. A sociocultural framework is used to explain processes of students' knowledge building in different communities.

Keywords: teacher training, flexible education, online learning, knowledge building, socio-cultural theory

Introduction

Information and communication technology are changing higher education both on and off campus. E-learning is established as a full part of the education system (Bélisle, 2007). The term distant education is usually defined as teaching where the teachers and students are separated in space and/or time (Norwegian government, 1997). The growth of distant education is an international trend where the new technologies for learning play a fundamental part of flexible learning (Tate and Mills, 1999). The use of Learning Management Sytems (LMS) and podcasts make it possible for students to be separated from teachers both in place and time, but still have access to pictures and sound. Synchronous use of video transmission makes it possible for teachers and students to be separated in place, but together online in time. Improvement in technology and increasing bandwidth capabilities has strengthened both asynchronous and synchronous education. According to Hrastinski (2008): "asynchronous and synchronous e-learning complement each other." The term flexible education usually includes the concept of distant education, e-learning, synchronous and asynchronous education and other forms of distributed education (Sengupta et al., 2012). The concept of flexible learning can be formulated this way:

"Flexible education emphasizes diversity in teaching how digital tools make it possible to tailor programs for various student groups. Flexible learning is a set of educational philosophies and systems, concerned with providing learners with increased choice, convenience, and personalization to suit the learner. In particular, flexible learning provides learners with choices about where, when, and how learning occurs" (Shurville et al., 2008).

In Norway, flexible education has been growing both in quantity and quality. Two trends illustrate this change. ICT is an integral part of every day life and "Parallel to this development, Norwegian higher education has made the use of ICT a high priority, both on and off campus" (Rønning and Grepperud, 2006). Nesna University College is located in a rural area near the Arctic Circle in Norway. The main subject of education is teacher training. Historically, it has been organized both as on campus study, and as flexible education geared toward students working as teachers (Grepperud, 2005). Nesna University College's priorities are now directed to flexible forms of education (Hegerholm, 2011). A pilot project is currently being implemented, where the teacher training students are mainly off campus and linked to a local school for hands-on training. They are supported by Internet, which includes asynchronous and synchronous communication.

This case study focuses on a flexible learning situation in the pilot project where the synchronous online video education broke down and was replaced by asynchronous podcast lecture. Relevant questions in this case are: What do these students express as important characteristics of their flexible learning situation? – And: How do they learn? The study uses a socio-cultural framework to explain the process of learning.

Socio-cultural View on Learning

Socio-cultural theories of learning emphasize people as members of communities, where social interaction and the use of tools serve as a foundation for learning. People use tools to develop and change objects (L. Vygotsky, 1978). Leontév (1978) developed a viewpoint that saw such activity as a collective undertaking. This view on activity was expanded by Engeström (1987) into a model where acting with tools was based on community interaction. Rules and division of labour direct the use of tools, which develops knowledge of both the individual and the community (Engeström, 2001). The process of learning is a central part of sociocultural theories. According to Wenger (1998),

learning consists of processes of participation in communities of practice. Communities of practice exist where people interact. The important question is not if participants learn, but what they learn (Lave & Wenger, 1991). Wells (1999) formulates the knowledge building process as "appropriation through participation in activity". In this context, learning can be seen as the participation in a community where the division of labour, rules and tools are a fundamental part of knowledge building processes.

Building Knowledge

To understand the process of flexible learning, it is important to see how processes of knowledge building and distribution of information contradict and complement each other. According to Wells (1999) information is second hand and can be distributed and shared. Information is an important part of the learning process. Wenger (1998, p. 220) points out the difference between information and knowledge: "Of course, availability of information is important in supporting learning. But information by itself, removed from forms of participation, is not knowledge". Knowledge is personal, yet built in a social setting.

Wells (1999, p. 91) formulates the process of knowledge building thus: "Knowing starts with personal experience which amplified by information, is transformed through knowledge building into understanding, …". Wells continues by describing the relationship between information and knowledge (ibid.): "...the level of information has little or no impact on students' understanding until they actively engage in collaborative knowledge building..." Nardi puts it like this: "Cognitive science has concentrated on *information,* its representation and propagation; activity theory is concerned with *practice,* that is, *doing* and *activity*, …" (1996, p. 14). This view of knowledge building and distribution of information is central to the development of this study's approach to flexible learning.

According to a socio-cultural view on learning, knowledge is built with tools. Language is the basic tool. Säljö (2000) formulated it this way: "The core of knowledge is speech and action in social context". According to Bakhtin (1981) dialogue is basic in the use of language. The term "dialogical" is connected to Bahktin's (1981; 1984) explanation of how people use language. Bakhtin's definition of dialogue has different levels. He has a general understanding, which is connected to human existence. Human life is based on communication and interacting. Bakhtin (1984) sees dialogue as a fundamental way to act in a society where learning is a dialogical process. At this level, Bahktin does not recognise monologue. Despite this, the contradiction between dialogue and monologue is important to Bahktin and formulated in terms of authoritative and passive understanding (1986). Olga Dysthe (2000, p. 62) puts these theories of Bakthin's into the classroom:

"On one hand, therefore, dialogue is a fundamental quality of all human interaction. On the other hand, it is a goal we must seek in the many different situations of interaction between people, such as in the classroom".

Dysthe (2000) uses the term "polyphonic" for the dialogical aspect of education. She refers to the monologue as a situation where "the dialogic potential is not exploited" (ibid., p. 67). The interaction, however, between the teacher and student in this dialogical situation is not an equal and symmetrical process, but a process where the teacher supports the learner. The teacher and more experienced students play a leading part in the dialogical process. The terms of "dialogue" and "monologue" will be used according to Dysthe in this study.

A Case Study

This is a qualitative study in accordance with guidelines from case studies (Creswell, 2007; Yin, 2009; Stake, 2010), with emphasis on the guiding principles of Yin (2009, p. 2):

"In general, case studies are the preferred method when (a) "how" and "why" questions are being posed, (b) the investigations have little control over events, and (c) the focus is on a contemporary phenomenon within a real-life context".

A research design of a case study will usually include five components (Ibid, p. 27) - a study question, its proposition, its unit(s) of analysis, the logic linking of the data to the propositions and the criteria for interpreting the findings. One of the basic differences in case studies is whether you have one or more cases, and whether you have one or more sources to investigate. The design for this case study is "embedded - single case design" (p. 39); i.e. one case - many sources. It emphasizes a theoretical foundation (Ibid): "... the better case studies are the ones in which the explanations have reflected some theoretical significant propositions".

The question of this research is: How do teacher-training students, studying in a flexible education environment, build knowledge? The case is an online breakdown in a flexible learning situation, where the lecture was repeated asynchronously as a podcast. This raises another question: What do the students express as important in such a flexible learning situation?

The data sources in this study are the students' chat messages in the breakdown situation, the students written reports and the notes from the final class discussion with the students. I assume that this study will show some

significant characteristics of flexible studies, which students express as important in the learning process.

The utterances of the students in their chat log, portfolio reports and notes from class discussion are summed up in categories. The analysis of these categorized utterances are the foundation for the understanding of what students express as characteristic of flexible studies. This study is also anchored in the theoretical framework suitable for these questions. The socio-cultural view on learning is a part of the construction of criteria for interpreting the findings.

The Online Breakdown Situation

This is a case study of a flexible learning situation in teacher training when a major digital tool broke down. A breakdown situation can be an excellent arena for learning something new and unexpected. Bødker (1996) finds breakdown situations to be excellent opportunities for studying learning processes and relates them to a "shift of focus" (Bødker and Grønbæk, 1996).

The flexible learning situation was organized in two classes of two half-day sessions at the students' plenary sessions in 2011. The first session offered a lecture, instructions in the use of digital tools and discussions. Later, different educational resources were provided in the Learning Management System (LMS). This was followed by an online lecture with the possibility of organized student interaction. A working task was provided and the students were to develop a portfolio assignment. The teaching program concluded in a half-day session with evaluation, discussions and analyses. In this particular case, the topic was digital competence. The training program was rated as 3 credits. The training program was conducted in one class with 25 students and repeated in another class with 12 students. The online tool was an open source desktop videoconference system called Big Blue Button (BBB). This system has now been replaced with Adobe Connect.

At the first gathering in the classroom, the students were shown how to handle the BBB desktop videoconference system and the screen capture program Camtasia Relay. There is, however, a difference in a training situation that takes place in a classroom and one where the students are located far away, either alone or in small student groups. The sound broke down as soon as the online lecture started, making the audio content inaudible due to disturbing reverberations. Students' efforts mostly failed when they tried to give comments to the teacher or speak to each other. However, the video picture of the teacher and students operated correctly along with the PowerPoint presentation and the chat function. The students used the chat system to comment on the online lecture and course material. After its failure as an online lecture, the lecture was produced as a podcast. It was recorded with the screen capture program Camtasia Relay. LMS Moodle was used to distribute the link to the podcast two hours later.

Collection of Data

According to Yin (2009), a case study should be founded on different sources of data, and recommends the use of three such sources. In this case, the sources were the students' chat, portfolio reports and observation notes from the evaluation and discussion during the final session.

The chat system functioned well in the two classes in the breakdown situation. In the chat room, all of the students could discuss and comment on what was happening, and it gave the students better access to the teacher's assistance. The chat developed as short responses and answers. Short forum-posts were in some situations toggled as threads to other posts like a debate. Thirty-five and twenty-two relevant entries were submitted in each of the two classes – all of them delivered in the breakdown situation.

The students were asked to deliver a portfolio assessment – twenty-one in one class, eleven in the other class. Relevant evaluations of the teaching and learning processes should be a part of the portfolio assessment. The students were asked to evaluate and reflect on both the use of synchronous and asynchronous tools and the cooperation among the students.

The third source was the notes of observations of the final discussion with the students from the second plenary session. These notes were written during the discussion process and completed afterwards. The notes reproduced the statements of the students and my own questions and understanding of what happened in the breakdown situation and the flexible learning process.

Analysing the Case

The analysis of data included a categorization of the students' statements. These statements were located in chat logs, reports and classroom discussions. There was a need to sort and group these statements. The process of collecting data showed some central themes, which were of importance for students. The foundation for developing categories was the sorting process of the students' statements connected to the sociocultural view of learning. The socio-cultural view of learning emphasizes the importance of tools where language and dialogue is a foundation in the development of knowledge. It also points out the differences of knowledge and information in the learning process.

Connecting the framework of socio-cultural theories of learning to the collection process of data, developed these favourable categories:

- *Quality of tools*
- *Availability of teaching*
- *Various processes of learning*
- *Various forms of communication*
- *Practical relevance*

These categories were used to sort the students' statements in order to emphasize that what students say matters in their flexible learning situation. The categories connected the statements of the students to characteristics of the development of flexible learning.

The students' statements in the portfolio, chat logs and observation notes, showed different patterns and focuses, which were grouped in several distinct categories. These categories were sources for finding essential characteristics of the flexible learning environment. The portfolio reports included reflections of the students' critical judgments of the online sessions. In the classroom discussions, different opinions and ratings confronted each other. In chat room dialogues, there are expressions that contradicted or corresponded with other chat expressions or statements in the other sources – like Lars (C1) [1]: "This is rubbish. Is it possible to learn teaching by looking at video?" [2] as well as Marit in the Report (R2): "I think this communication on video is an interesting experience". The breakdown in quality audio content was criticised by all the students. Frustration of the communication process and lack of practical relevance was expressed like this in the chat room. Per (C3): "This is hopeless. Even though we see each other and are chatting, we are losing content. Is this a good way to educate us? Is this relevant for our practical teaching?" Irene answered (C4): "I want to discuss this when we meet at campus". However, there were also students who were excited to participate in such a new and challenging teaching situation. The students reflected on the quality of the tools. In the portfolio documents, the availability and use of tools is a main part of the students' evaluations. Students claimed there were both pros and cons using the Big Blue Button including the presentation and chat system and then Camtasia podcast as a replacement. Anne expressed this in the portfolio report (R5):

"Another great benefit of posting the lecture in Camtasia is that we can repeat it at any time and we are more flexible. We didn't have this opportunity in the BBB, but we cannot ask the lecturer questions in Camtasia, or get the opportunity to participate actively as a regular classroom lecture. Both types of lectures have clear advantages in different situations".

Anne's statement corresponded with notes from the evaluating meeting (N6): "Although Camtasia gave us the opportunity to repeat the lecture when it suited us, the class lost the possibility to discuss the main issues with the teacher present. We should use different systems in different situations." It is important for the students learning process to discuss the lecture material. They give a lot of attention to the possibility of repeating the podcast when and where they desire, as well as being able to discuss topics and participate in online dialogues.

Some students described their personal situation when studying. Distributed teaching makes study possible for many students who would be unable to continue their education if they were required to be continuously present on campus. The study situation was closely connected to practice in local schools. My notes confirm that students appreciate the local angle of the study. Monika (N7): "I could not have been a student without the possibility of living at home with my family and earning some income from teaching locally." This statement epitomizes the importance of this kind of study for these students.

Some Characteristics of Flexible Learning

The analysis of the content in the categories shows some distinguishing characteristics of flexible learning. The student observations and statements were based on their experiences during the gatherings as well as the Internet support and local learning situations. The students' statements (R2; C4; N7) indicate the importance of different learning environments and how the Internet based online lecture was an insufficient learning environment (C3). It also raises the question (C1) of how do we learn to teach? The students' expressions in the breakdown situation (R5) showed some characteristics of the tools and how important alternative distributions of content are. In their portfolio reports, the students formulated (R5) the pros and cons of the Camtasia podcast lecture. Similar reflections can also be found in the summary of the (N6) classroom discussions. Different situations require different tools. Even though

[1] Quotations are numbered continuously and sources identified by: C for Chat, N for Notes and R for Report

[2] The researcher has translated this and other Norwegian citation to English.

the Camtasia lecture was well prepared and the quality of sound was good, the students still missed the possibility of interacting online with the teacher and other students (C1). How, where and when indicates central questions for the students.

It is fruitful to summarize these statements as characteristics of some flexible learning processes and then connect them to the socio-cultural view of learning. These students appreciate different learning arenas and diversity of tools. Internet alone is not sufficient for these teacher-training students. Internet was a tool for information in their study-situation. They participated in hands-on training in local schools to build knowledge of teaching and they had arenas of dialogue to support this process. They discussed the benefit of being online together with other students and teachers. But they also saw the pros of an asynchronous form of communication like flexible access to repetitions. Tools like the LMS and podcasts developed possibilities for flexible studies. The most important tool for learning is the language. The students discussed the importance of dialogue and saw the limitation of the teacher's monologue on podcasts. Mixed with the dialogue during gatherings and participation in the in-service teaching, shared information contributed to the knowledge building in this flexible learning situation. Some characteristics of flexible learning are anchored in both the analysis of data and the theoretic framework. The students expressed these characteristics of their flexible learning processes:

- *Internet based and internet supported*
- *Synchronous and asynchronous distribution*
- *Dialogical and monological communication*
- *Distribution of information and building of knowledge*

These characteristics are suitable to describe essential parts of the flexible learning process. In this pilot project there are different communities linked to the processes of knowledge building. The local student communities are *Internet supported, not Internet based,* meaning that there are more learning arenas available to them than just those located on the Internet. The Internet is a tool for interacting within and between local student communities. The tools for this communication can be both *synchronous* and *asynchronous.* There is an asynchronous distribution of information. There is also a synchronous interaction between the teacher and local student communities to support the processes of *dialogue*. The distributed information can be a part of the dialogical knowledge building within the student communities.

Conclusion

This study discusses how the term flexible education also includes the development of distant asynchronous and synchronous education on the Internet. The study is anchored in a socio-cultural view of learning. The focus of this theoretical framework is community, division of labour, rules and tools. The students' building of knowledge is described within this framework.

This is a case study of a flexible learning situation where a major tool of online teaching broke down. Certain characteristics of the flexible learning processes emerge from the students' statements during the situation and their observations afterwards. These characteristics can describe processes of flexible education. Flexible education can be Internet based or Internet supported. Flexible learning processes can be developed with synchronous and asynchronous tools. Learning processes involve various methods of communication where dialogue is appreciated. Dialogue is central part of the students' knowledge building. These characteristics are connected to distribution of information and students' knowledge building. These characteristics also describe how students build knowledge in flexible learning situations. The characterized processes support different purposes and complement each other.

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Appraising The Role Of Educational Management In Initiating And Sustaining A Viable Health Education For National Security In Nigeria Tertiary Institutions

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ABSTRACT

A healthy person is one who looks and feels well, has no illness or diseases and has enough energy for his daily work and contributes effectively to his immediate community and the nation at large. The government that pays lip-service to the health of its citizens is giving room to national insecurity. Thus health education which provides learners with desirable understanding and attitudes relating to individual and community health should be properly integrated into the curriculum of tertiary educational institutions in Nigeria. Educational management helps in initiating and sustaining a viable health education for national security in Nigerian tertiary institutions, through the formation of realistic and achievable goals of health education for national security; designing the curriculum; determining the number of learners to cater for and consequent number of academic and non-academic staff required including other resource persons in the community; mapping out measures for effective funding of health education for national security and how this programme should be appraised in order to ascertain the extent to which its lofty goals have been accomplished and identify possible challenges facing the programme with a view to ameliorating them.

Keywords: Appraised, Educational Management, Health Education, and National Security.

INTRODUCTION

Tertiary education is widely accepted in Nigeria today as a form of investment in human capital development that yields economic benefits and contributes significantly to the nation's future wealth and development by increasing the productive and consumptive capacity of the citizens. In the last two decades, there had been phenomenal increase in the number of the tertiary institutions in Nigeria. According to Statistical Report on 2011 Admission and 2012 Unified Tertiary Matriculation Examination (UTME), Application, from Joint Admissions and Matriculation Board (JAMB), Nigeria as at January 2012, had 365 tertiary institutions, which include 113 (31.0%) Universities, 74 (20.3%) Polytechnics; 80(21.9%), College of Education, 53 (14.5%) Monotechnics and 45 (12.3%) Innovation Enterprise Institutions, This rapid proliferation of tertiary institutions in Nigeria could be attributed to the desire of the Government and people of Nigeria of using tertiary education as an indispensable tool in getting the nation out of poverty, conservation, ignorance and diseases and take its rightful place among developed countries in the shortest time possible. According to Amaele (2005), "A developed or an educated society is one that has enough manpower and each occupying his or her rightful position to enhance the growth of the society".

Ironically, the huge investment in tertiary education in Nigeria would be a monumental waste if the products of the tertiary institutions could not contribute effectively to the growth of the economy due to their susceptible to certain health problems. It is no superfluous to remark that health is wealth. The economic wealth of any nation depends greatly on the well-being of its people. The people must be physically and mentally fit to carry out their daily work. According to Afolabi (1999), "health is a major factor in man's existence and without good health, productivity in whatever sphere of activity is at it lowest ebb". Thus, the physical, mental and emotional health of a person is of paramount importance, for sound health is the basis of life. A healthy person is one who looks and feels well, has no illness or diseases and has enough energy for his daily work and play.

It is no gainsaying that the government that pays lip-service to the health of its citizen is inevitably giving room to national insecurity as the affluent people will leave such country to foreign ones for proper medical attention. The government at the Federal, State and Local Levels has made substantial contribution to the improvement of

health services in Nigeria. Such immense contributions as summarized by Oladunmoye (1999) include:

(a). Training and retraining of health personnel.

(b). Allocating fund to health services, through budgetary allocation plan.

(c). Building and maintenance of hospitals, clinics, dispensaries, health centres and other health institutions.

(d). Purchase of drugs and other medical Materials.

(e). Waging war against importantion, manufacturing and administration of fake drugs; through agencies such as:

(i). National Agency for Food, Drug, Administration and Control (NAFDAC).

(ii). Pharmaceutical Association of Nigeria (PAN)

(iii). Nigeria Medical Association (NMA)

(iv). Nigeria Standard Organization (NSO)

(v). National Drug Law Enforcement Agency (NDLEA)

(f). Promotion of health education through various government agencies of health services.

(g). Supervision of Private Health Institutions and Patent Medicine Stores.

(h). Regulation of Health Services through legislation.

(i). Promotion of research into health issues and allied areas.

(j). Immunization of the citizens against communicable diseases.

The health of students in Nigerian tertiary institution in recent times has been attracting prominent attention of the Directors of Health Service in the tertiary institutions, and other stakeholders of education, such as the Alumni Association, Parent-Staff Forum, Entrepreneurs, Government and Non-Governmental Organizations. While the Directors of Health Services are pre-occupied with the maintenance of healthful campus environment with special focus on periodic inspection of campus building sanitation procedures, safety, heating, ventilation, lighting and prevention of communicable diseases, the Alumni Association in some tertiary institution have been initiating some projects directed towards realistic solution to the students' health problems. Such projects embarked upon by the Association include provision of portable water, renovation of dilapidated campus buildings, provision of toilet facilities and electric power generators for regular supply of electricity and a host of others. The government too has not relented in its efforts of funding the various Clinics and Health Centres in the Government owned tertiary institutions.

Inspite of the concerted efforts being made by the Directors of Health Services and other stakeholders of education, to protect and promote health services in the tertiary institutions, a review of the physical environment of most of these institutions indicate vividly some health inadequacies, which if untackled through meaningful and viable health education, have far reaching consequences for the students' health and security of the nation.

Such inadequacies include consumption of untreated or the so called sachet "pure water", careless disposal of solid and liquid wastes in the campus, over crowding in students' hostels which is now regarded as unavoidable necessity, negligence of safety practices in the institutions, air pollution and a host of others. Air pollution constitutes a serious health hazard in some tertiary institutions. Incessant bush burning and large volume of smoke and fly ash produced daily from the incinerators and the electric generating plants constitute the main sources of air pollution. Moreover, the tertiary institutions sited near industries are not free from air pollution as a result of effluent from the industries. The polluted air is rich in carbon monoxide, when excessively inhaled has injurious effects on the body. The symptoms of carbon monoxide poisoning include mental dullness, dizziness¸ body weakness, headache, nausea, vomiting, loss of muscular control, abnormal pulse and respiratory rate, erythema, collapse, unconsciousness and sudden death.

It thus becomes highly imperative for the administrators of the tertiary institutions to evolve a sound, viable and well administered health education; to include health instruction, health appraisal, health services and healthful campus environment. Integration of a viable health education into the curriculum of tertiary institutions in Nigeria, will create awareness in the students of the various health issues and problems which have far reaching effects on national security. In Nigeria, no single health issue has dominated public consciousness for some years now than the dreadful Acquired Immune Deficiency Syndrome (AIDS). It is one of the health problem facing many countries of the world today, particularly the developing countries, of which Nigeria is one.

AIDS according to Lomak (2010) has the potential to create a severe economic impact in many African countries. It is different from other diseases, because it strikes people in the most productive age group. Also, commenting on the ruinous effects of Human Immune Deficiency Syndrome (AIDS) on the educational sector, Mishra (2005) remarked that within the educational sector, VIH/AIDS impedes the supply of education by reducing the number of teachers who are able to carry out their work. The epidemic has reduced the demand for education, as children are withdrawn from schools and colleges in response, to rising household expenditure and to provide care for the family members. Nsofor (2010), also affirmed that AIDS affects the qualities of education because of its strain on the materials and human resources.

In a nation, where there is wide spread of HIV/AIDS, the security of such nation will undoubtedly be in jeopardy as the skilled workforce and quality human capital will be drastically reduced. The economic growth of the nation declines and the public budget for health services dries by the wide spread infections diseases. This paper appraises the role of educational management in initiating and sustaining a viable health education for national security. It examines the concepts of health education, educational management and national security. An attempt is made in the paper to set up a model on the unique role of educational management in initiating and sustaining a viable health education for national security.

The Concepts of Health Education, Educational Management and National Security

Before appraising the role of educational management in initiating and sustaining a viable health education for national security it is considered necessary to aptly discuss the concepts of health education, educational management and national security.

The Concepts of Health and Health Education

The term "health" has been given various connotations and interpretations by different authorities on the subject. Adeyemi (1999) defined "health" as "the quality, resulting from the total functioning of the individual, which empowers him to achieve personality satisfying and socially useful life". The World Health Organization (WHO), defined the word 'health' as 'a complete state of physical, mental and social well-being and not merely the absence of diseases or infirmities". From these definitions, it is quite obvious health can be described as the complete fitness of body; soundness of mind, and wholeness of emotions which make possible the highest quality of effective living. It is a general well-being and a condition that enables one to live well and serve best.

Health education according to Oshodin (2000) is a process of acquiring health information to make improvement on health behaviour and practices. Also, Achalu (1998) simply defined health education as "the process of providing information and persuading people to learn to prevent diseases, protect and enhance their health status". In this paper health education is defined as the process of providing learning experiences which provide the students with desirable understanding and attitudes relating to individual and community health.

The Concept of Educational Management

Educational management according to Nwankwo (1982) is the utilization of physical and human resources through cooperative efforts and it is accomplished by performing the functions of planning, organizing, staffing, directing and controlling. Also, Mishra (2008) defined educational management as "the process of utilizing appropriate materials in such a way to promote effectively the development of human qualities. It includes will those techniques and procedures employed in operating the educational organizations in accordance with established policies. Furthermore, Afolabi (1998) defined educational management as the identification, organization and coordination of human, material, physical and Fiscal resources, as well as other available education programmes using them judiciously towards the attainment of objectives of education.

Based on these definitions, it is quite apparent that educational management embraces such management functions as planning, organizing, directing, financing, supervising, monitoring, inspecting and evaluating. The educational manager plays prominent role in planning, policy-making and programme designing. However, his primary role is geared toward, the effective and efficient implementation of such educational plans, policies, and programmes.

The Concept of National Security

The Oxford Advanced Learner's Dictionary defines 'security' as "the state of being safe and protected from danger, harm, attack, loss, theft, spying and other crime related activities. National security can be defined simply as all means and mechanism put forth by a nation to ensure adequate protection of life and property of its citizens and create a peaceful and conducive working environment that is completely free from crime or any form of fear, intimidation or harassment.

Initiating and Sustaining a viable Health Education for National Security through Educational Management.

A model depicting the role of educational management in initiating and sustaining a viable health education for national security is shown in figure 1. As vividly indicated in the model, the roles of educational management in initiating and sustaining a viable health education include resource planning, resource organization, funding, staffing and inspecting or quality control. The educational inputs for a viable health education include human, material, physical and fiscal resources. The human resources include the teaching and non – teaching staff, and other resource persons in the community. Then material resource include the books and periodicals and audio – visual materials, while the physical resources embrace the available buildings in the tertiary institution, such as classrooms, laboratories, technical workshops, libraries, administrative blocks, lecture theatres and other physical facilities in the institutions. The fiscal resources refer to the fund made available in the tertiary institutions to administer the health education .The role of the educational manager is to identify all these resources and unify them towards effective realization of the goals of health education in the institution.

The healthy manpower developed through tertiary education would undoubtedly utilize the acquired knowledge, skills and attitudinal values to attain and sustain economic efficiency, political consciousness, social reconstructions, cultural change and scientific and technological advancement. All these would definitely enhance national security. Thus, if Nigeria aims at achieving a buoyant and efficient economy and national security, there is inevitable need to ensure healthy labour force through a viable health education.

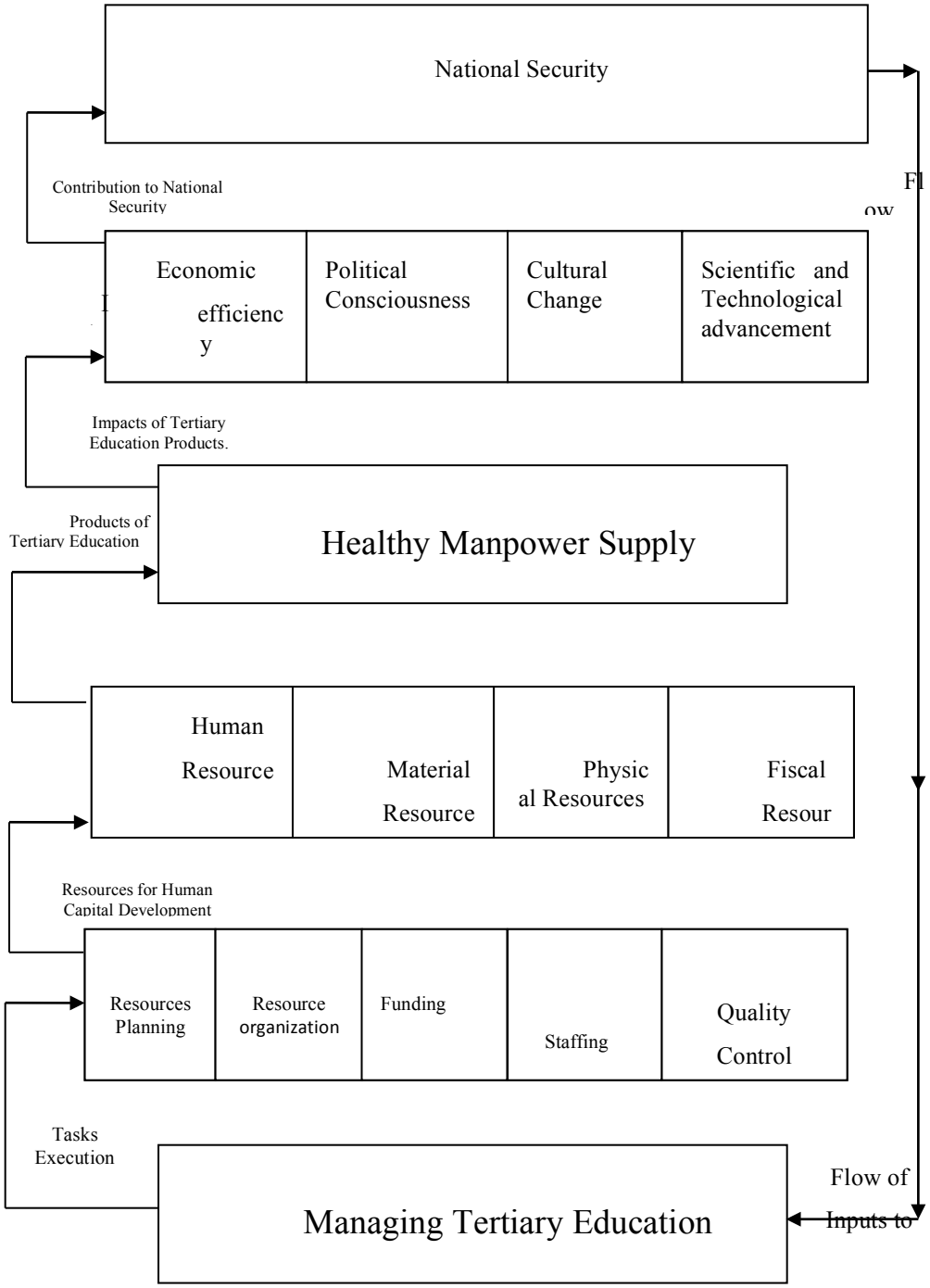

Figure 1: A model of the Role of Educational Management in initiating and sustaining a viable Health Educational for National Security (Designed by the author of the paper)

The specific contributions of Educational Management to the initiation and sustenance of a viable Health Education for National Security.

(1). **Goal setting and resource planning:** The first indispensable step required for initiating and sustaining a viable health education for national security is setting the goals and planning for the required resources for achieving the goals. This entails taking decision on what to be done; how and well to do it; when and who is to do it. Educational management contributes significantly to the initiation and sustenance of a viable health education by following these steps in setting the goals and planning for the resources:

Step I: Formulating achievable objectives of objectives of health education.

The formulated realistic and achievable objectives of a viable health education for national security are:

(a). To provide appropriate experience for the learners that will assist them in improving and protecting their own health and the health of others.

(b). To inculcate in the learners the basic rules of good health and personal health cleanliness.

(c). To make the learner familiar with the scientific application to various health issues and problem

(d). To provide meaningful learning experiences that will make the learners enjoy healthful living in their environment.

(e). To provide the learners with appropriate health information and practice that will lead them to healthy living, high quality of life and longevity.

(f). To enable the learners to control the spread of communicable diseases and be abreast of importance of balanced diet, regular exercise, rest and relaxation and avoidance of fatigue and unnecessary exposure to environmental hazard.

Step II: Designing the curriculum:

In order to accomplish the objectives of a viable health education for national security, educational management assists in designing its curriculum, which must be pragmatic in nature and embedded with built -in -job training programmers. The curriculum which includes health appraisal; campus health services; healthful environment; communicable diseases; physical ailments; basic elements of hygiene and healthy living; first aid treatment ; safety education; health education and national development; management of stress; and others, should be flexible enough so as to be able to meet the varying needs of the learners and their communities.

Step III: Ascertaining the number of learners:

The number of learners to cater for, as well as the number of teaching and non-teaching staff required for the viable health education and other resource persons must be determined.

Step IV: Location and Design of buildings:

Education management helps in site selection and designing of the buildings required for a viable health education. Selection of a suitable site for the health education should be considered along with the following factors; accessibility, topography and nature of the soil, freedom from health hazard, aesthetic values, safety from danger, space for future expansion and availability of public utilities.

Step V: Improvisation and utilization of Instructional resources:

Educational management helps in mapping out strategies for the improvisation and utilization of instructional resources for effective teaching and learning of health education in the tertiary instructions. These include concrete objects, verbal representations audio-visual materials, instructional programme prepared for teaching machines or computers and graphic representations such as posters, globes, charts, graphs, diagrams and drawings of things or events to convey information, idea, skills or attitudes.

Step VI: Evaluation

Educational management helps in identifying the strategies for evaluating health education. This is the quantitative appraisal of attitudes, intelligence, personality traits, manipulative skills and other attributes of the learners. Such assessment is also required to determine the extent to which the objectives of the health education have been achieved.

(2). **Organizing a viable heath education**

Educational management assists in the organization of a viable health education by focusing on students enrolment for the programme; assigning staff to specific job areas; procuring the needed materials; and designing the lecture time-table.

(3). **Provision of funds**

A crucial task of the educational management in initiating and sustaining a viable health education for national security is the provision of sufficient fund for the programme. The programme must be effectively funded by all stakeholders of education and through the Internally Generated Revenue (IGR) of the tertiary institution.

(4). **Staffing**

The sustenance of a viable health education for national security depends greatly on the quality of the teaching and non-teaching staff recruited for the programme and their effectiveness in discharging individual and group responsibilities. Educational management ensures that high quality and well motivated staff are recruited for the health education, for effective job performance.

(5). **Quality control**

The ultimate goals of educational management are the improvement of teaching and learning in the institution and attainment of their lofty goals. Thus sustenance of a viable health education depends greatly on the level of quality control of the programme. This entails regular monitoring of the work being performed by the individuals and groups handling health education programme in the tertiary institution.

Conclusion

Educational administration contributes significantly to the initiation and sustenance of a viable health education for national security. It therefore becomes highly imperative to include health education in the curriculum across disciplines in all tertiary educational institutions in Nigeria. All courses on health education should be made compulsory electives for all students. All the stakeholders of tertiary education must provide all the necessary infrastructural support and adequate funding of health education in the institutions for the students to reap maximum benefits from the programme.

Recommendations

A viable health education for national security could be successfully accomplished, if the Nigerian Tertiary Institutions are effectively funded by the three tiers of Government-Federal, State and Local Government, as well as households, community and private sectors.

A viable health education can only be given in Nigerian tertiary educational institutions if the institutions are well supported with high quality and well motivated professional teachers. It becomes imperative to improve the teaching service conditions to minimize prevalent exodus of teachers to other countries and premature retirement from teaching profession. Also, the professional growth of the teachers deserves prominent attention, so as to boost their morale and enhance their productivity.

Nigeria should place high premium on National Health Development Programme. The country should not become a dumping ground for expired and fake drugs and medicines. The National Agency for Food, Drug Administration and Control (NAFDAC) should be more empowered for effective job performance and delivery.

The government should encourage more research in the use of local herbs for curing ailments. Any major breakthrough in native medicine would not only project the image of Nigeria in the medical field, but it would also tremendously conserve our foreign reserves. A sizeable proportion of our national income is spent on medical appliances and drugs imported from overseas.

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A Study On Environmental Awareness Of College Students In Relation To Sex, Rural-Urban Background And Academic Streams Wise

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ABSTRACT

The pristine environment was so pure, virgin, undisturbed, uncontaminated and quite hospitable for all life forms to exist. Man for the first time in his entire cultural history is facing one of the most horrible problem i.e., of ecological crisis. Though the destruction of environment in the past may be excused from the point of view of ignorance but it can't be now. Therefore the environmental education is socially more relevant today than the past. There is a urgent need for new approach to environment which cuts across barriers of class, color, creed and nationality. Everybody has to contribute its share for protection of environment before it is too late. In the present research paper an attempt has been made to assess the environmental awareness of students of Govt. Degree College Dharamshala Himachal Pradesh (India).

Keywords: Environment, environmental education, college student, sex, area, academic streams etc.

Introduction

Environment has influenced and shaped our lives since the time immemorial. It is from the environment that we get our food to eat, water to drink, air to breath and all the necessities of day today life, thus constituting it as a life support system. Through the process of natural selection and elimination it is environment only which has caused the evolution of biological spectrum, the biosphere as it exists today. Today environment has become the concern of all; the academicians, intellectuals, scientists, policymakers and government across the continents (Kant and Sharma, 2013).

For the first time in his entire cultural history man is facing one of the most horrible ecological crisis i.e., the problem of pollution of his environment which some time in past was so pure, virgin, undisturbed, uncontaminated and quite hospitable for all life forms to exist. Man's ignorance, greed and lack of respect for the 'Mother Earth' has drawn all of us into one of the very serious problems of today i.e., of over population, dwindling natural resources and environmental crisis that are threatening air, water and soil along with the vast number of beautiful life forms which are the very foundation of life existence on this wonderful planet '*The Earth*'.

Though the destruction of environment in the past may be excused from the point of view of ignorance, however now we have access to knowledge and information and therefore it becomes imperative on our part that we re-examine ethically as well as morally what we have inherited, what we are responsible for and what we will pass to our coming generations. Many of earth's habitats, animals, plants, insects and even micro organisms that we know of today as rare or endangered may not be known at all by future generations. We have the capacity and responsibility that is we must act before it is too late.

Since the environmental education is the application of knowledge from different disciplines to study and manage the environment Arunkumar (2012) and it is socially more relevant today than the past as it helps us to know how unchecked and unplanned development pollutes our air, water and soil and therefore threatens our subsistence and existence. On the other hand environmental awareness helps social groups and individuals to acquire an awareness of sensitivity to the total environment and its allied problems. It is not only a question of air and water pollution but also includes elimination of diseases, hunger, malnutrition and poverty, destruction of forests, extermination of wildlife, erosion of soil and accumulation of waste and many more. Hence, there is an urgent need for the proper management of environmental crisis before it threatens our existence. World educators and environmental specialists have repeatedly pointed out that a solution to environmental crises will require an

environmental awareness which should be deeply rooted in the education system at all levels of school education (Khan, 2013)

The most relevant to the subject is Chinese perception about education which says-

"If you are planning for a year, sow rice; if you are planning for a decade, plant trees; if you are planning for a lifetime, educate people"

There is a urgent need for this new approach to education which not only cuts across various subjects at schools and higher educational levels but even the boundaries of class, color, creed, community and nationality. Environmental concerns are to be brought in all subject area rather than to introduce a mare new subject. It is therefore to be clearly understood that environment and development are not contradictory to each other, but there is a need of '*Holistic Development*' i.e., taking the process of development and environment as a unit. People should be persuaded to adopt environment friendly life style. Information should be properly passed on to the grass root level for real action to happen. Environmental education should lead for gathering mass awareness which should bring environmentally wiser policies. Thus, in order to protect and conserve the environment, enabling people to lead quality life due emphasis has to be given to environmental education in both formal and non formal system of education Sundaravalli (2012)**.** It is in this backdrop the present study- "A study of environmental awareness of college students in relation to sex, rural-urban background and academic streams" was undertaken.

Study Area:

The present study was carried out during academic year 2005-06 with students of different sex, area and academic streams of Govt. Degree College Dharamshala, district Kangra, Himachal Pradesh (India) (Fig.1).

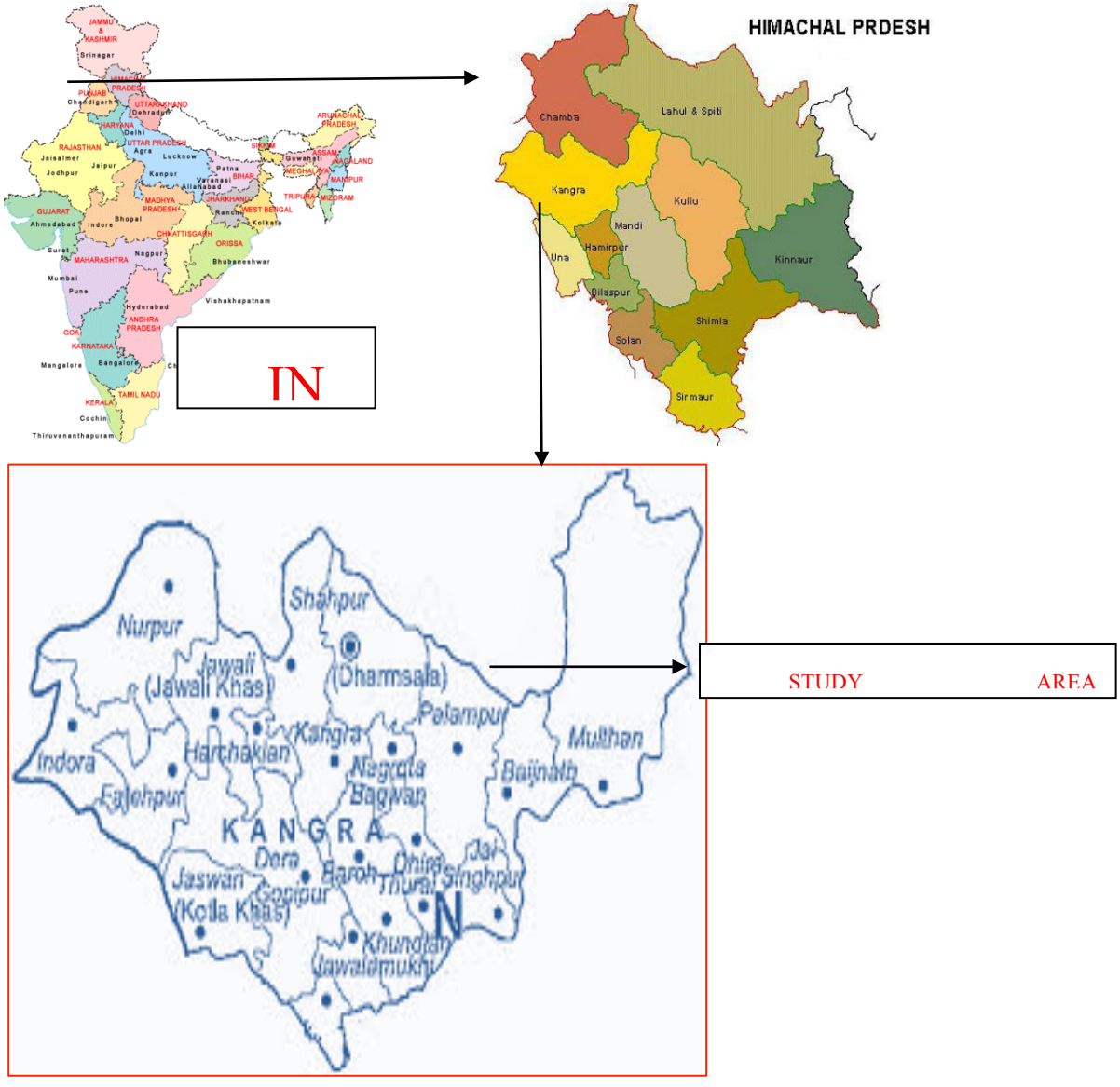

Fig 1 Map of District Kangra of Himachal Pradesh showing the Study Area

Methodology:

In the present investigation convenient random sampling technique was used and 180 students studying in science, commerce and art streams of undergraduate classes of Govt. Degree College Dharamshala of district Kangra of Himachal were surveyed. In the present investigation Environmental Ability Measure developed by Dr. Parveen Kumar Jha was used to collect requisite data from students. The tool comprised of 51 items and with regards to norms the score 37-51 was considered in high, 16-36 in average and 0-15 in low category. Also, reliability of test tool was determined by Split-half reliability which was found to be 0.61, R-K method which was found to be 0.84 and test-retest was 0.74. Thus EAAS bears an adequate degree of reliability. To determine validity of the environmental awareness ability measure coefficient of correlation between the scores of the present scale and Environmental Awareness Scale of Tarniji was computed which was found to be 0.83. To analyze the obtained data on environmental awareness ability scale statistically technique of analysis of variance was applied. The tool was individually administered to the selected sample by the investigator himself.

Results and Discussions:

It is evident from the result that no student was in low category of environmental awareness level (Table 1).

Table No.1 Sex, area and stream wise percentages of environmental awareness ability of sampled students

Area	Sex / Streams	Male			Female		
		High	Average	Low	High	Average	Low
Rural	Science	100.00%	-------	------	100.00%	--------	------
	Commerce	93.33%	6.67%	-------	93.33%	6.67%	------
	Arts	80.00%	20.00%	-------	60.00%	40.00%	------
Urban	Science	93.33%	6.67%	-------	100.00%	-------	------
	Commerce	100.00%	-------	-------	100.00%	--------	------
	Arts	100.00%	--------	-------	86.66%	13.34%	------

Among male 100% rural male science students were in high level of environmental awareness ability scale in comparison to 93.33% commerce and 80.00% arts students. In urban male category in both commerce and arts stream 100% students were in high level of environmental awareness ability scale in comparison to only 93.33% science students. Whereas in case of rural female category 100% science students were in high level of environmental awareness ability scale in comparison to 93.33% commerce and 60.00% arts students. In urban female category both in science and commerce 100% students are in high level of environmental awareness ability scale in comparison to 86.66% arts students.

With regards to effect of sex on environmental awareness the calculated value of 'F' for the main effects of sex on environmental awareness ability for df 1 was 1.710 which is much lower than table value 3.90 at 0.05 level of significance hence there is no significance difference in environmental awareness ability of male and female students and it is interpreted that male and female students posses equal level of environmental awareness ability. However Sharma (1999) found that girls students attitude towards environment was more favorable than their counterpart boy students. Also, with regard to area the calculated value of 'F' for df 1 came out to be 9.876 which is much higher than the table value 3.90 at 0.05 level of significance, hence it is also interpreted that there is significant difference in environmental awareness ability of rural and urban students similar results were also reported by Vashist (2001). Bhardwaj (2004) has found no significant interactional effect of area of residence and sex towards environment education. Likewise, stream wise the calculated value of 'F' for df '2' came out be 6.918 which is higher than table value 3.05 at 0.05 level of significance. Hence it is interpreted that there is significant difference between environmental awareness ability of students belonging to science, commerce and art streams. However, Khalid (2001) found no statistical difference in environmental awareness level of science and non science students.

With regard to interactional effect of type of sex and area the computed value of' 'F' for df 1 came out to be 3.438 which is lower than the table value 3.90 at 0.05 level of significance. Hence it is interpreted that type of sex and area of students do not influence each other significantly in their combined influence on environmental awareness ability. Similarly, the computed value of 'F' for interactional effects of type of sex and stream wise on the environmental awareness of secondary school students for df 2 came out to be 2.700 which is also much lower than the table value 3.05 at 0.05 level of significance, hence it is interpreted that type of sex and academic streams of students do not influence each other significantly. Likewise, computed value for the interactional effect of type of area and academic streams on environmental awareness of secondary school students for df 2 came out to be 2.899, which

is also much lower than the table value 3.05 at 0.05 level of significance. Hence, it is interpreted that area and academic streams do not influence each other significantly in their combined influence on environmental awareness ability of students. Similar results were reported by Bhardwaj (2004) on attitude of senior school students towards environmental education. When combined interactional effect of sex, area and academic streams was calculated the computed value of 'F' for df 2 came out to be 1.534 which is much lower than table value 4.73 at 0.01 level of significance (Table 2).

Table No.2 Summary table of analysis of variance of environmental awareness ability scale score of type of sex, area and stream of students

Source of Variance	Sum of Square	'df'	Mean Square	'F' Ratio
Sex (A)	24.94	1	24.94	1.710
Area (B)	144	1	144	9.876*
Stream (C)	201.74	2	100.87	6.918*
A×B	50.14	1	50.14	3.438
A×C	78.74	2	39.37	2.700
B×C	84.54	2	42.27	2.899
A×B×C	44.76	2	22.38	1.534
Error of Variance	2450.67	168	14.58	--------
Total	3079.53	179	--------	---------

(*Significance at 0.05 level of significance for degree of freedom 1/168 and 2/168)

Hence, it is interpreted that type of sex, area and social category of students also do not influence each other significantly in their combined influence on environmental awareness ability of students. Means of environmental awareness ability scale scores of male and female students of rural and urban areas and stream wise has also been shown in Fig 2 and 3.

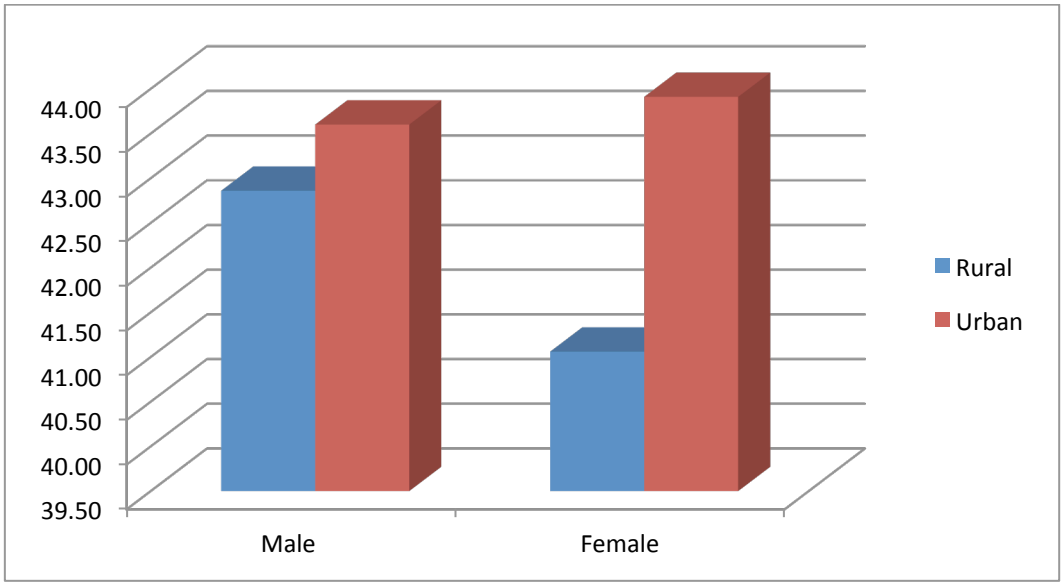

Fig No.2 Means of environmental awareness ability scale scores of male and female students of rural and urban areas.

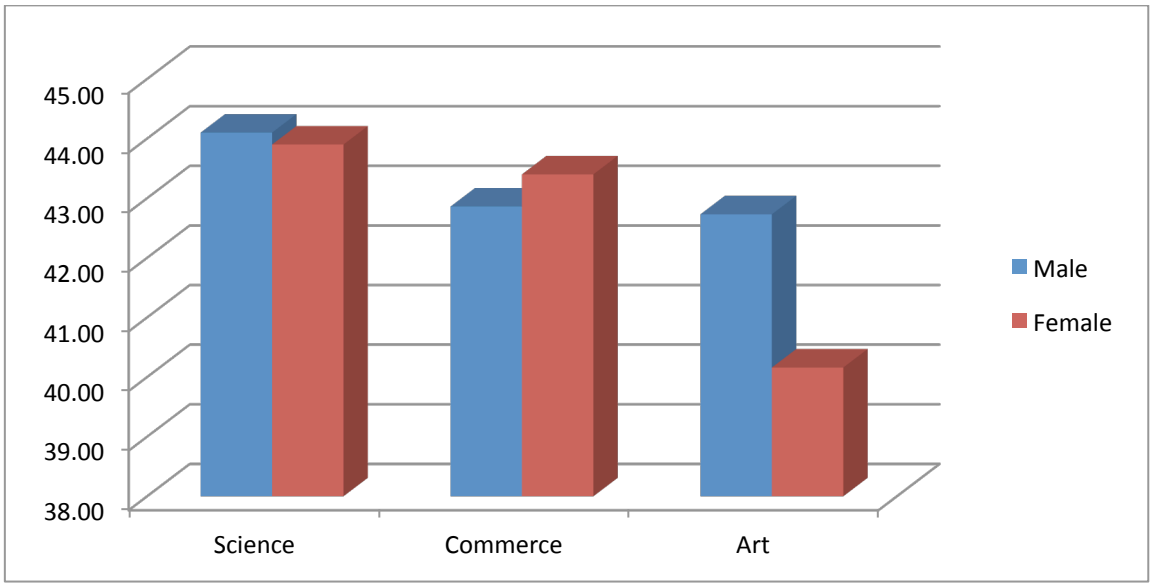

Fig No.3 Means of environmental awareness ability scale scores of male and female students of science, commerce and art streams

Thus, it is very much evident from the present study that college students have fairly good environmental awareness level. Students are a great force and can play a big role in protection of environment if they are timely guided and helped regarding the understanding of environmental issues. The present study thus provided us an insight to the level of environmental awareness among college students. To further increase environmental awareness ability of students integration of environmental education into curriculum, teachers training and training of trainers, campaigns with religious leaders and forums, working through community leaders, development and distribution of resource material, conducting of extra-curricular activities and last but not the least the campaign through mass media has to be started keeping in mind the holistic approach. Mann (1983) also found that these activities bear positive fruits. Let us conserve, recycle, renew, reforest, replenish, litigate, legislate, mitigate, minimize, penalize, pressurize, and prosecute all what is needed to revive and rejuvenate our environment for better future of our coming generations.

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Black Student Performance on Advanced Placement Exams: A Multiyear, Multistate Comparison

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ABSTRACT

In this investigation, we analyzed the overall performance of Black students on Advanced Placement (AP) exams in three states (i.e., Texas, New York, and Florida) for the past 16 years (i.e., 1997 through 2012). For all 16 years, statistically significant differences were present as a function of state residency. Black students in New York outperformed Black students in Texas and in Florida on AP exams for all 16 years. As such, equity was clearly not present in the overall AP exam performance of Black students. Furthermore, the majority of Black students' AP exam scores were failing scores, such that no potential for college credit was present. Implications of our findings are discussed.

Keywords: Advanced Placement, Black students, Texas, New York, Florida, equity

Introduction

Over the past 10 years, Advanced Placement (AP) program involvement and exam achievement have been attributed to college and career readiness as well as college admission decisions (Klopfenstein & Thomas, 2009). Additionally, some states allocate additional weight to AP grades, which affect GPA calculations and simultaneously modify class rank (Klopfenstein & Thomas, 2009). Specifically, on a 4-point scale, one point is added to the grade and given a 25% weight; or 10-points are added to grades on a 100-point scale, thus a 10% weight (Klopfenstein & Thomas, 2009).

Klopfenstein and Thomas (2009) claimed that the national perception on AP involvement increased following President George W. Bush's 2006 State of the Union Address. Moreover, Section 1702 (Access to High Standards Act) of NCLB (2002) acknowledged federal confirmation of AP coursework as college prep curriculum and encouraged states and school districts to incorporate AP programs as a means of elevating academic standards and expanding AP participation (U.S. Department of Education, 2004). In September 2006, U.S. Secretary of Education Margaret Spellings announced that 33 grants in the amount of $17 million were awarded to increase the participation of low-income students in AP courses and exams. In 2006, an additional $5,867,284 was awarded to 26 states to fund AP exam subsidies programs (U.S. Department of Education, 2006).

In a policy brief for the Education Commission of the States (ECS), Dounay (2006) revealed that the ECS recommended an all-inclusive state policy on Advanced Placement. First, each state and school district should require a minimum number of AP courses to be offered. As a result, state policy would provide consistency in AP content and leverage AP curriculum offerings in low-income and high minority schools. Second, a state-wide AP framework would establish standards and opportunities for all students to gain access to college preparatory courses (Dounay, 2006).

In 2012, Arne Duncan, the current Secretary of Education, announced that federal support of AP program incentives and exam subsidies were reinstated (U.S. Department of Education, National Center for Education Statistics, 2012). Through these supportive efforts, over $21.5 million was budgeted to subsidize AP exam fees (U.S. Department of Education, National Center for Education Statistics, 2012). As the result of these financial awards, the federal government continued to acknowledge AP course and exam participation as curriculum of college readiness and success.

Although funding for AP programs and exams was approved, researchers (Davis, Joyner, & Slate, 2011; Davis, Slate, Moore, and Barnes, 2013; Moore & Slate, 2008) recognized the persistent AP achievement and participation gaps among Black students in the United States. Specific to this study, fewer researchers (Davis et al., 2011; Koch; 2012) investigated AP involvement and compared AP performance of ethnically diverse, primarily lower

socioeconomic, student groups across states. Previous to this study, Koch (2012) is the only researcher to date who compared AP exam performance across states over multiple years for any ethnic group.

More important, at the center of the educational and political agendas and threatening the global economic and social competitiveness of the United States is the growing achievement gap prevalent among the country's lowest performing ethnic groups. In this case, Black students, compared to Hispanic and other student groups, are not showing improvement in their access to and performance outcomes in AP programs (College Board, 2012c; Davis et al., 2013). Although participating in AP programs has been connected to elevated academic performance, Black students are not demonstrating progress in these areas (College Board, 2012c).

Purpose of the Study

The purpose of this study was to investigate the extent to which overall differences might be present in AP exam scores among Black students in three researcher-selected states (i.e., Texas, New York, and Florida). With the AP program being touted as a national college preparatory curriculum and education being a state responsibility, we contend it is important to examine the extent to which differences might be present in the education provided by these three states. Due to an inequitable access to advanced courses, the difference in education provided to Black students in these three states affects their college readiness.

Significance of the Study

Federal and state mandates are clear in directing academia toward preparing college and career ready students who will fill 21st century jobs. School districts and higher education leaders are engaged in collaborative efforts to develop strategies that will expedite closing the achievement gap among its underserved population. However, the College Board (2012c) revealed that more states are working toward improving the educational attainment of Hispanic students with less successful outcomes for Black students. Therefore, this research investigation will be meaningful to educators and legislators representing Texas, New York, and Florida in recognizing the level of attainment when compared to states of similar characteristics, aspirations, and opportunities. Additionally, the findings will be beneficial in revealing how far the three states represented in this study are in supporting the long-term economic well-being of the United States, in general, and the states involved in this research, specifically.

Research Questions

The following research question was used to guide this investigation of Black students' overall performance on AP exams in Texas, New York, and Florida over a 16-year period from 1997 through 2012: What is the difference in the overall AP exam performance for Black students as a function of state residency (i.e., Texas, New York, and Florida)?

Method

Sampling and Participant Selection

Participant data were retrieved using archival data from the College Board on overall AP exam performance for Black student residents in Texas, New York, and Florida between the 1997 and 2012 school years. According to the College Board (2012c) Report, the above mentioned states were among those states with the largest number of Black students who took AP exams during 2011 administration year.

Rationale for Variable Selections

Several analyses were completed to determine which of the 50 states to include in this study. First, an analysis of the United States Census (2010) data for Black Americans was completed to ascertain which of the 50 states had the most citizens from this ethnic group. Second, the College Board (2012c) AP exam data for Black students were reviewed. Third, Achieve, Inc. (2011) and Alliance for Excellent Education (n.d.) data were examined to ascertain current information on state accountability measures, initiatives directed towards increasing college readiness, and progress on closing the achievement gap. Using Texas as the benchmark state, five additional states (i.e., California, Florida, Georgia, Illinois, and New York) were selected based on (a) number of Black citizens, (b) number of students participating in AP courses and exams in 2011, (c) noted progress on developing state accountability measures, (d) identifiable progress on closing the achievement gap, and (e) developed initiatives directed towards increasing readiness. Part II of the analysis and rationale resulted from a persistent achievement gap.

The term accountability has been resonating among lawmakers and educators (e.g., Achieve, Inc, 2011; Alliance for Excellent Education, n.d.; NCLB, 2002; Texas Higher Education Coordinating Board, 2010, 2012) and refers to the number of college and career ready accountability measures accomplished (Achieve, Inc., 2011). The College Board (2011) developed the AP Equity and Excellence Report as a challenge to school districts to make AP courses and exams inclusive of all ethnic groups. The goal of the College Board's program is to propel school districts to 100% closure of the AP Equity and Excellence gap (College Board, 2011).

For this reason, the AP Equity and Excellence Report was examined to ascertain which of the five states was the closest to Texas in the percentage of Black students who had earned an AP exam score of 3 or higher in the 2011 administration year. As the result of the above analyses, two states, New York and Florida, were selected based on characteristics that were similar to Texas (i.e., Black population, Black student AP participation in core courses, Black AP exam-takers earning 3+, accountability measures, and percentage to equity and excellence).

Results

In this investigation, the College Board assigned exam scores of 5, 4, 3, 2, or 1 to student performance on each AP exam. For an overall AP performance measure, the College Board aggregates all of the student AP exam scores so that a summary of the 5, 4, 3, 2, and 1 scores is available by ethnic group and by gender for each exam year. Furthermore, the College Board calculates an overall AP exam mean by ethnic group and by gender. For Black students in Texas, the highest AP exam mean score (2.10, out of a possible 5) was attained in 1999. In contrast, the lowest AP exam mean score (1.82) was achieved during the 2008 and 2011 exam years. Thus, the average AP exam score for Black students in Texas from 1997 through 2012 was 1.94. Among the three states included in this study, New York had the highest percentage (15.36%) of Black students to achieve a 4 or 5 on an AP exam, followed by Texas (10.90%), and Florida (10.49%). However, over 60% of Black students in these three states received failing AP scores (i.e., Texas [68.57%; New York, 62.73; and Florida 69.93%).

For the 1997 exam year, a statistically significant difference was revealed, $\chi^2(6) = 75.31$, $p < .001$, with a Cramer's V of .05, for the overall AP exam comparison. Using Cohen's (1988) criteria, the effect size was trivial. Specifically, New York had the highest percentage (15.36%) of Black students to achieve a 4 or 5 on an AP exam; followed by Texas (10.90%) and Florida (10.49%). Exhibited in Table 1 are the percentages and frequencies of overall exam scores for Black students in Texas, New York, and Florida.

Table 1

Percentages and Frequencies of Overall Advanced Placement Exam Scores for Black Students by State Residency for the 1997 Through the 2001 Exam Years

	Texas		New York		Florida	
Year and Exam Score	*n*	(%)	*n*	(%)	*n*	(%)
1997						
5	68	(2.85)	216	(4.99)	110	(2.78)
4	192	(8.05)	449	(10.37)	305	(7.71)
3	490	(20.54)	949	(21.92)	775	(19.58)
2/1	1,636	(68.57)	2,716	(62.73)	2,768	(69.93)
1998						
5	70	(2.50	207	(4.06)	116	(2.78)
4	256	(9.16)	503	(9.86)	325	(7.71)
3	537	(19.21)	1,072	(21.02)	729	(19.58)
2/1	1,933	(69.13)	3,318	(69.06)	2,694	(69.63)
1999						
5	68	(1.92)	214	(3.93)	154	(3.52)
4	279	(7.90)	571	(10.50)	407	(9.32)

3	694	(19.64)	1,151	(21.16)	887	(20.30)
2/1	2,492	(70.53)	3,504	(64.41)	2,921	(66.86)
2000						
5	115	(2.37)	270	(4.38)	194	(3.80)
4	381	(7.84)	579	(9.39)	418	(8.20)
3	920	(18.94)	1,354	(21.96)	1,040	(20.39)
2/1	3,441	(70.85)	3,963	(64.27)	3,448	(67.61)
2001						
5	124	(2.20)	225	(3.46)	170	(2.85)
4	410	(7.27)	615	(9.46)	465	(7.80)
3	950	(16.85)	1,302	(20.02)	1,179	(19.77)
2/1	4,153	(73.67)	4,362	(67.07)	4,150	(69.58)

Concerning the 1998 overall AP exam comparison, the sample included 2,796 Black students in Texas, 5,100 Black students in New York, and 3,864 Black students in Florida. The differences were statistically significant, $\chi^2(6) = 34.49$, $p < .001$, with a Cramer's V of .04. Using Cohen's (1988) criteria, the effect size was trivial. Again, New York had the highest percentage (13.92%) of Black students to earn 4s and 5s on an AP exam followed by Texas (11.66%) and Florida (10.49%). Delineated in Table 1 are the percentages and frequencies of the 1998 overall AP exam scores for Black students in Texas, New York, and Florida.

Again in 1999, the differences were statistically significant, $\chi^2(6) = 57.72$, $p < .001$, Cramer's V of .05, trivial effect size (Cohen, 1988), with 14.43% of Black students in New York (14.43%) achieving AP exam scores of 4 and 5, in comparison to Florida (12.84%) and Texas (9.82%). Once again, the percentage of AP exam failures exceeded 60% for Black students in the three states represented in this study. Texas had the highest percentage (70.53%) of Black students who received failing exam scores.

Relative to the 2000 overall AP exam comparison, the differences were statistically significant, $\chi^2(6) = 69.89$, $p < .001$, Cramer's V of .05, trivial effect size (Cohen, 1988). Black students in New York (13.77%) outperformed Black students in Florida (12.00%) and Texas (10.21%) on achieving AP exam scores of 4 and 5. Texas had the largest percentage (70.85%) of Black students who did not succeed on an AP exam. Florida had the second highest percentage (67.61%) of this student population who failed an AP exam. New York followed in third with 64% of Black students who did not pass an AP exam. Concerning 2001, the differences were statistically significant, $\chi^2(6) = 74.35$, $p < .001$, Cramer's V of .05, a trivial effect size (Cohen, 1988). Black students in New York (12.92%) outperformed Black students in Florida (10.65%) and Texas (9.47%) on achieving AP exam scores of 4 and 5. The percentage of Black students in Texas (73.67%), New York (67.07%), and Florida (69.58%) who did not pass an AP exam was far greater than the percentage of this population succeeding.

For 2002, the differences were statistically significant, $\chi^2(6) = 94.24$, $p < .001$, Cramer's V of .05, trivial effect size (Cohen, 1988). Again, compared to Black students in Florida (12.12%) and Texas (10.27%), New York had the highest percentage (13.78%) of Black students who earned AP exam scores of 4 or 5 on an AP exam. Nevertheless, the percentage of Black students who did not pass an AP exam persisted in this exam year, with 71.93% of Black students in Texas receiving failed AP exam scores; followed by Black students in Florida (67.67%), and Black students in New York (64.50%). Present in Table 2 are the percentages and frequencies for the 2002 overall AP exam scores for Black students in Texas, New York, and Florida.

Table 2

Percentages and Frequencies of Overall Advanced Placement Exam Scores for Black Students by State Residency for the 2002 Through the 2006 Exam Years

	Texas		New York		Florida	
Year and Exam Score	*n*	(%)	*n*	(%)	*n*	(%)
2002						
5	176	(2.70)	300	(4.30)	241	(3.30)
4	493	(7.57)	661	(9.48)	644	(8.82)
3	1,159	(17.80)	1,514	(21.72)	1,477	(20.22)
2/1	4,685	(71.93)	4,496	(64.50)	4,943	(67.67)
2003						
5	174	(2.14)	268	(3.68)	277	(2.95)
4	578	(7.11)	677	(9.29)	669	(7.12)
3	1,429	(17.58)	1,578	(21.66)	1,706	(18.15)
2/1	5,948	(73.17)	4,764	(65.38)	6,750	(71.79)
2004						
5	247	(2.50)	366	(4.78)	337	(3.28)
4	662	(6.70)	818	(10.68)	836	(8.15)
3	1,549	(15.67)	1,622	(21.17)	1,856	(18.09)
2/1	7,424	(75.13)	4,856	(63.38)	7,230	(70.47)
2005						
5	227	(2.01)	356	(4.30)	342	(2.82)
4	720	(6.38)	812	(9.82)	959	(7.91)
3	1,700	(15.07)	1,572	(19.01)	1,984	(16.36)
2/1	8,636	(76.54)	5,530	(66.87)	8,845	(72.92)
2006						
5	245	(2.01)	382	(4.08)	367	(2.53)
4	791	(6.48)	933	(9.96)	1,008	(6.95)
3	1,754	(14.38)	1,741	(18.59)	2,170	(14.95)
2/1	9,410	(77.13)	6,309	(67.37)	10,967	(75.57)

Regarding 2003, the differences were statistically significant, $\chi^2(6) = 139.85$, $p < .001$, with a Cramer's *V* of .05, trivial effect size (Cohen, 1988). Again, compared to Black students in Florida (10.07%) and Texas (9.25%), New York had the highest percentage (12.97%) of Black students who earned an AP exam score of 4 or 5 on an AP exam. In addition, a decline in the percentage of Black students in all three states (i.e., Texas, New York, and Florida) who earned AP exam scores of 4 or 5 was indicated. Texas had the largest percentage (73.17%) of Black students with failing AP exam scores. Florida had the second highest percentage (71.79%) of this student group who were not successful in reaching the goal of AP (i.e., college credit), followed by Black students in New York (65.38%).

Concerning 2004, the comparison revealed statistically significant differences, $\chi^2(6) = 306.09$, $p < .001$, Cramer's *V* of .07, a trivial effect size (Cohen, 1988). Black students in New York achieved the highest percentage (15.46%) of AP exam scores of 4 or 5; followed by Black students in Florida (11.43%) and Texas (9.20%). In contrast, the percentage of failures among Black students in Texas, New York, and Florida remained high. Once again, Texas had the highest percentage (75.13%) of Black students who did not pass an AP exam. Pertaining to 2005, the differences were statistically significant, $\chi^2(6) = 265.39$, $p < .001$, Cramer's *V* of .06, a trivial effect size (Cohen, 1988). Black students in New York achieved the highest percentage (14.12%) of AP exam scores of 4 or 5; followed by Black students in Florida (10.73%) and Texas (8.39%). Compared to the previous year's AP exam scores, the percentage of Black students who accomplished AP exam scores of 4 and 5 declined for all three states represented in this study. Thus, Black students in Texas had the largest percentage (76.54%) of Black students who failed an AP exam, followed by Florida (72.92%) and New York (66.87%).

For 2006, the differences were statistically significant, $\chi^2(6) = 329.53$, $p < .001$, Cramer's *V* of .07, trivial effect size (Cohen, 1988). Compared to the percentage of Black students in Florida (9.48%) and Texas (8.49%), Black students in New York achieved the highest percentage (14.04%) of AP exam scores of 4 and 5. Once again, the percentage of Black students in all three states herein who failed an AP exam was extremely high: New York (67.37%); Florida (75.57%); and Texas (77.13%).

Relative to 2007, the differences were statistically significant, $\chi^2(6) = 514.34$, $p < .001$, Cramer's *V* of .08, a trivial effect size (Cohen, 1988). Compared to the percentage of Black students in Florida (9.27%) and Texas (8.89%), Black students in New York achieved the highest percentage (14.65%) of AP exam scores of 4 and 5. Florida had the greatest percentage (76.43%) of Black students who did not pass an AP exam scores. Texas followed with 76.14% of Black students who failed an AP exam. Delineated in Table 3 are the percentages and frequencies for the 2007 overall AP exam scores for Black students in Texas, New York, and Florida.

Table 3

Percentages and Frequencies of Overall Advanced Placement Exam Scores for Black Students by State Residency for the 2007 Through the 2011 Exam Years

	Texas		New York		Florida	
Year and Exam Score	*n*	(%)	*n*	(%)	*n*	(%)
2007						
5	321	(2.24)	472	(4.38)	444	(2.39)
4	955	(6.65)	1,105	(10.27)	1,281	(6.88)
3	2,150	(14.97)	2,122	(19.71)	2,662	(14.30)
2/1	10,932	(76.14)	7,065	(65.64)	14,226	(76.43)
2008						
5	359	(2.14)	453	(3.94)	481	(2.00)
4	1,005	(5.99)	1,116	(9.71)	1,294	(5.37)
3	2,383	(14.19)	2,103	(18.30)	2,961	(12.29)

2/1	13,044	(77.68)	7,818	(68.04)	19,358	(80.34)
2009						
5	491	(2.63)	562	(4.36)	586	(2.05)
4	1,225	(6.57)	1,359	(10.54)	1,572	(5.50)
3	2,692	(14.45)	2,454	(19.03)	3,579	(12.51)
2/1	14,227	(76.35)	8,518	(66.07)	22,865	(79.94)
2010						
5	603	(2.73)	652	(4.67)	654	(1.90)
4	1,533	(6.95)	1,432	(10.25)	1,835	(5.34)
3	3,148	(14.28)	2,623	(18.77)	4,032	(11.74)
2/1	16,766	(76.04)	9,269	(66.32)	27,820	(81.01)
2011						
5	704	(2.70)	710	(4.72)	818	(2.22)
4	1,723	(6.61)	1,705	(11.33)	2,229	(6.04)
3	3,562	(13.66)	2,889	(19.20)	4,633	(12.56)
2/1	20,096	(77.04)	9,740	(64.74)	29,211	(79.18)

Pertaining to 2008, the differences were statistically significant, $\chi^2(6) = 719.89$, $p < .001$, Cramer's V of .08, trivial effect size (Cohen, 1988). Black students in New York had the highest percentage (13.65%) of AP exam scores of 4 and 5, followed by Black students in Texas (8.13%) and Florida (7.37%). Compared to the previous year, the percentage of Black students who accomplished AP exam scores of 4 or 5 declined in Texas, New York, and Florida. Thus, Florida had the highest percentage (80.34%) of Black students who failed an AP exam during 2008. For the first time, Texas placed second with 77.68% of its Black students failing an AP exam. New York placed third with 68.04% of this group not succeeding on an AP exam.

For 2009, the differences were statistically significant, $\chi^2(6) = 993.37$, $p < .001$, Cramer's V of .09, a trivial effect size (Cohen, 1988). Black students in New York had the highest percentage (14.90%) of AP exam scores of 4 and 5, followed by Black students in Texas (9.20%) and Florida (7.55%). Compared to the previous year, the percentage of Black students in all three (researcher selected) states who accomplished AP exam scores of 4 or 5 increased. Conversely, the percentage of Black students who passed an AP exam was diminutive compared to the percentage of those individuals from the group who failed. For instance, 79.84% of Black students in Florida were unsuccessful on their AP exam; 76.35% of this student population in Texas failed an exam; and 66.07% of this ethnic group in New York experienced the same negative exam outcomes.

Regarding 2010, the differences were statistically significant, $\chi^2(6) = 1265.89$, $p < .001$, Cramer's V of .09 a trivial effect size (Cohen, 1988). Black students in New York attained the highest percentage (14.92%) of AP exam scores at or above a 3, followed by Black students in Texas (9.68%) and Florida (7.24%). Once again, the percentage of Black students in Texas, New York, and Florida who failed an AP exam was extremely high. Florida has the highest percentage (81.01%) of Black students who failed an AP exam; Texas had the second highest exam failure rate (76.04%) among Black students; and Black students in New York (with a 66.32% failure rate) continued to outperform Black students in the other two states.

Relative to 2011, the differences were statistically significant, $\chi^2(6) = 1317.04$, $p < .001$. Cramer's V of .09, trivial

effect size (Cohen, 1988). Black students in New York had the highest percentage (16.04%) of AP exam scores of 4 and 5; followed by Black students in Texas (9.31%) and Florida (8.26%). Compared to the previous year, an increase in the percentage of Black students in New York and Florida who accomplished AP exam scores of 4 and 5 occurred. However, the percentage of Black students in Texas with AP exam scores of 4 and 5 decreased. Once again, Florida experienced the lowest percentage (77.04%) of Black students who failed an AP exam during this test administration. Texas with 77.04% and New York with 64.74% were second and third in the percentage of Black students who did not succeed on an AP exam.

For 2012, the differences were statistically significant, $\chi^2(6) = 1539.93$, $p < .001$, Cramer's V of .10, small effect size (Cohen, 1988). Black students in New York had the highest percentage (18.35%) of AP exam scores of 4 and 5, followed by Black students in Texas (10.56%) and Florida (9.36%). Compared to the previous year, an increase occurred in the percentage of Black students in Texas, New York, and Florida who achieved AP scores of 4 and 5. Negating the increase was the persistently high AP exam failure rates among Black students in Texas (74.49%), New York (60.68%), and Florida (76.69%). Depicted in Table 4 are the percentages and frequencies for the 2012 overall AP scores for Black students in Texas, New York, and Florida.

Table 4

Percentages and Frequencies of Overall Advanced Placement Exam Scores for Black Students by State Residency for the 2012 Exam Year

	Texas		New York		Florida	
Exam Score	*n*	(%)	*n*	(%)	*n*	(%)
5	786	(3.01)	894	(5.80)	894	(2.59)
4	1,973	(7.55)	1,933	(12.55)	2,339	(6.77)
3	3,908	(14.95)	3,231	(20.97)	4,825	(13.96)
2/1	19,467	(74.49)	9,347	(60.68)	26,512	(76.69)

As previously shown in the Tables 1 through 4, a considerable increase occurred in the number of Black students who took an AP exam between 1997 and 2012. In contrast, the number of Black students in Texas and Florida who achieved an AP exam score of 4 or 5 declined during these 16-years. In the overall comparison, the percentage of Black students' in New York who achieved a 4 and 5 on an AP exam was consistently higher than the percentage of Black students in Texas and Florida. Between 1999 and 2007, the overall percentage of Black students in Florida who accomplished AP exam scores above the benchmark of 3 was higher than the percentage of Black students in Texas who had these scores. However, for the1997, 1998, and subsequently 2008 through the 2012 test administrations, the percentage of Black students in Texas who attained AP exam scores of 4 and 5 surpassed the percentage of Black students in Florida reaching these levels. Figure 1 illustrates the overall average AP exam scores for Black students in Texas, New York, and Florida over a 16-year period from 1997 through 2012.

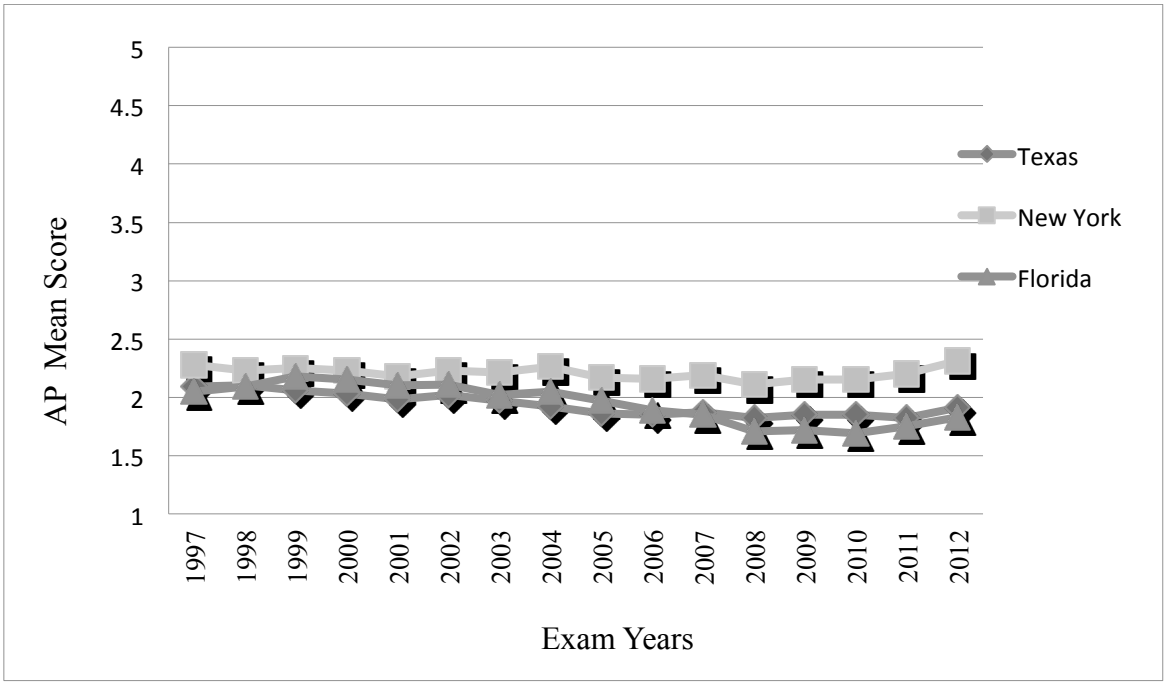

Figure 1. Overall mean AP exam scores for Black students in Texas, New York, and Florida from 1997 through 2012.

To summarize, all of the overall comparisons of AP exam performance were statistically significant. These findings were an indication that the distribution of AP exam scores received by Black students differed by state residency. Using Cohen's (1988) standardized benchmarks, the effect sizes for statistically significant differences ranged from .04 (trivial) to .10 (small). As depicted in Table 5, the effect size showed a steady increase from .05 in 1997 to its current level of .10 in 2012.

Table 5

Effect Sizes for Statistically Significant Comparison of the Overall Advanced Placement Exam Scores for Black Students in 1997-2012

Year	Cramer's *V*	Effect Size
1997	.05	Trivial
1998	.04	Trivial
1999	.05	Trivial
2000	.05	Trivial
2001	.05	Trivial
2002	.05	Trivial
2003	.05	Trivial
2004	.07	Trivial
2005	.06	Trivial
2006	.07	Trivial
2007	.08	Trivial
2008	.08	Trivial

2009	.09	Trivial
2010	.09	Trivial
2011	.09	Trivial
2012	.10	Small

In addition to the effect size, the average AP exam scores for 1997 through 2012 were used to compare Black students' overall performance on these exams. In all of the assessments, Black students in New York outperformed Black students in Texas and Florida. Provided in Table 6 are the mean composite AP exam scores for Black students in 1997 through 2012.

Table 6

Means of Overall Advanced Placement Exam Scores for Black Students in 1997-2012

Year	Texas *M*	New York *M*	Florida *M*
1997	2.09	2.28	2.10
1998	2.10	2.23	2.09
1999	2.06	2.25	2.18
2000	2.03	2.23	2.15
2001	1.98	2.18	2.10
2002	2.02	2.23	2.11
2003	1.97	2.21	2.02
2004	1.92	2.26	2.05
2005	1.86	2.17	1.97
2006	1.85	2.15	1.89
2007	1.87	2.19	1.85
2008	1.82	2.11	1.71
2009	1.85	2.15	1.72
2010	1.85	2.15	1.69
2011	1.82	2.20	1.75
2012	1.91	2.31	1.83

Discussion

In all of the comparisons, statistically significant differences were determined for the overall performance of Black students based on state residency. Using Cohen's (1988) criteria, effect sizes ranged from trivial (.04) to small (.10). During the 16 exam years, large numbers of Black students in Texas, New York, and Florida did not achieve an AP exam score above the benchmark score of 3. For Texas, Black students' AP exam participation increased 995%

between the 1997 and 2012 exam years. As the number of Black student test-takers increased, the number of passing AP exam scores decreased. The highest AP exam mean score (2.10) attained by Black students in Texas occurred during the 1999 AP exam year. In contrast, the lowest AP exam mean score (1.82) was achieved during the 2008 and 2011 exam years. Thus, the average AP exam score for Black students in Texas over the 16-year period was 1.94. These low averages reflect the poor AP exam performance of Black students on the five AP exams examined in this study. Exhibited in Figure 2 are the percentages of failed and passed AP exam scores for the overall performance of Black students in Texas for the 1997 through 2012 exam years.

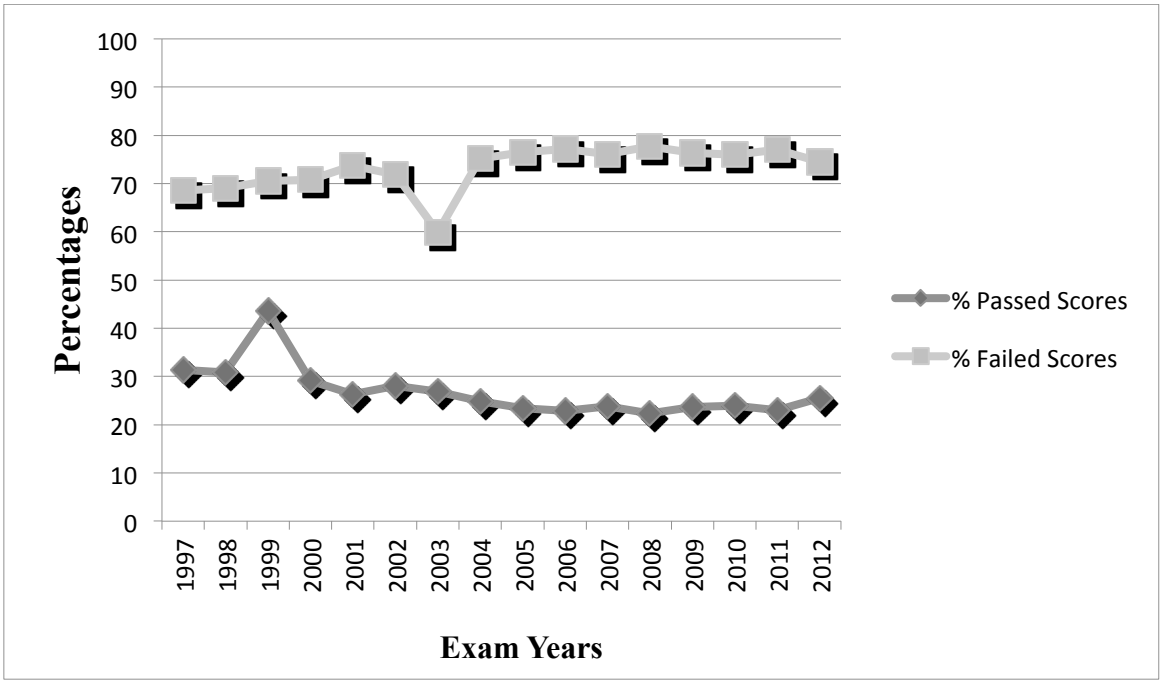

Figure 2. The percentage of passed and failed scores for the overall AP exam performance of Black students in Texas for the1997 through the 2012 exam years.

Black students' participation on an AP exam increased in New York by 256% for the 16-year period. Compared to Black students in Texas and Florida, New York had the lowest the percentage growth in AP exam participation for this student group. However, Black students in New York outperformed Black students in Texas and Florida on all of the overall AP exam comparisons. The highest overall AP exam mean score (2.31) for Black AP test-takers in New York was achieved during the 2012 exam year. The lowest (2.11) mean score for Black students in New York was earned during the 2008 exam year. Hence, the average exam score for the overall AP exam performance for Black students in New York was 2.21. Illustrated in Figure 3 are the percentages for passed and failed scores for the overall AP performance of Black students in New York for the 1997 through the 2012 exam years.

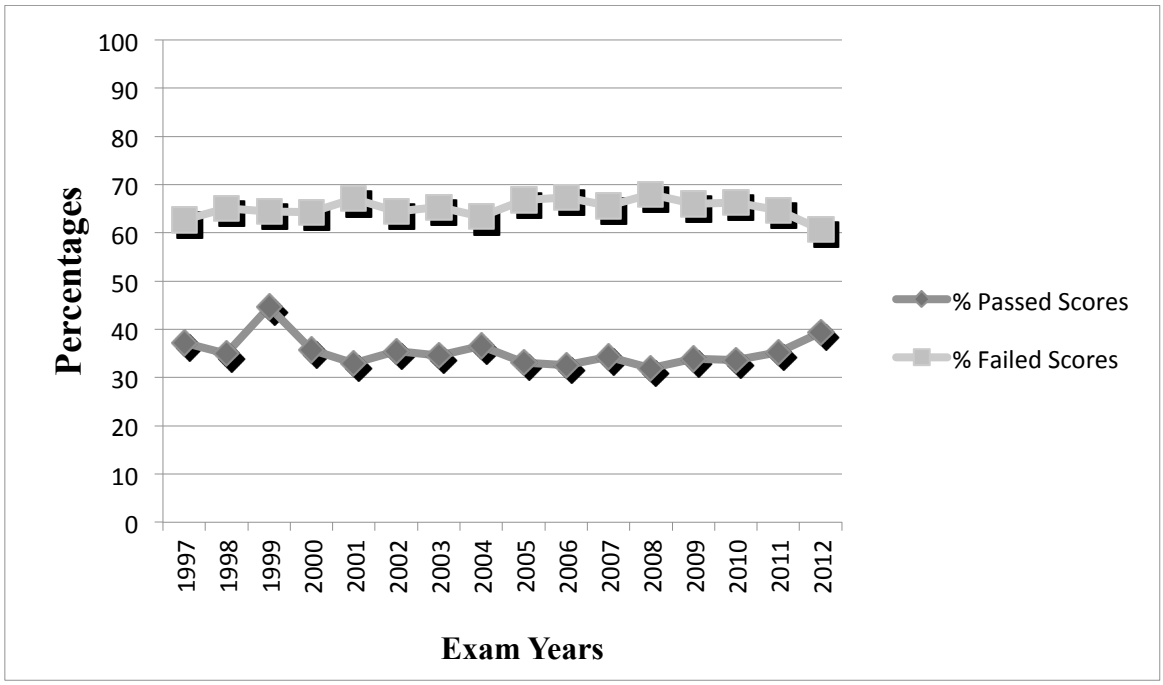

Figure 3. The percentage of passed and failed scores for the overall AP exam performance of Black students in New York from the 1997 through the 2012 exam years.

The overall AP exam performance increased for Black students in Florida by 776% for the 16-year period. Florida had the second best performance for Black students on the overall AP exam. The highest mean score for this student group (2.18) occurred in 1999, and the lowest mean score (1.69) was present in 2010. Hence, the average mean score for the 1997 through 2012 exam years was 1.95. Provided in Figure 4 are the percentage of passed and failed scores received on the overall AP exam for Black students in Florida for the 1997 through 2012 exam years.

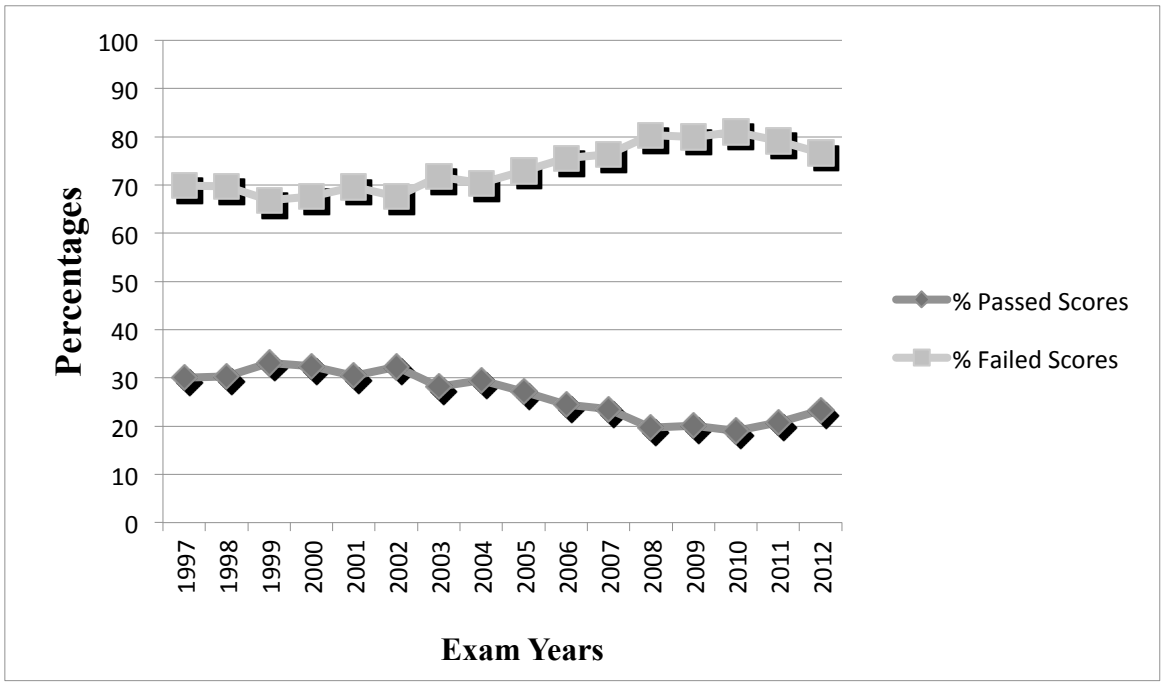

Figure 4. The percentage of passed and failed scores for the overall AP exam performance of Black students in Florida for the 1997 through 2012 exam years.

Advanced Placement Access, Equity, and Achievement

Over the past decade, the AP programs have been popularized as one of the most effective strategies used in

closing the achievement gap, preparing students for college and careers and gaining admissions to postsecondary institutions (Kanter, Ochoa, Nassif, & Chong, 2011; Klopfenstein & Thomas, 2009; Obama, 2011). However, the original intent of the AP program was to provide high achieving students access to rigorous college level curriculum (College Board, 2012a). According to researchers (e.g., ACT, Inc., 2009; College Board, 2008, 2010; Dodd, Fitzpatrick, De Ayala, & Jennings, 2002; Dougherty, Mellor, & Jian, 2006; Geiser & Santelices, 2004; Lavin-Loucks, 2006; Scott et al.; Solórzano & Ornelas, 2004), colleges and universities expanded the focus of AP and increased its credibility as a factor in standardized assessment outcomes (e.g., ACT, SAT exams), college achievement, and college admission decisions. Specifically, Dodd et al. (2002) affirmed that students who took an AP English, mathematics, or science exam and achieved an AP criterion score of 3 or higher, were more successful on advanced college level courses than students who did not earn a criterion score on these exams. Keng and Dodd (2008) revealed that students who participated in AP curriculum consistently outperformed non-AP students in composite first-year GPA and earned higher GPAs in each of the AP subject areas. The College Board (2010) ascertained that students who participated in AP courses experience success on major exams and avoided college remediation. However, as revealed in this study, large numbers of Black students were unsuccessful on the AP exams.

Subsequent to research findings, the College Board (2012b) recommended that educators focus on preparing students for challenging high school coursework before high school. However, according to the College Board, not all high school students are prepared for AP curriculum. Nevertheless, as part of their mission, the College Board reports on the progress states are making towards closing the equity and excellence gap for AP course participation and exam success. For AP exam participants, equity and excellence are determined by taking the percentage of the specific ethnic group from the graduating class and dividing by the percentage of students in that ethnicity represented in the graduating class who scored a 3 or higher on at least one AP exam (College Board, 2012b; 2012c). The ratio signifies the percent of improvement toward reaching equity and excellence for that ethnic group (College Board, 2012b; 2012c).

Table 7 provides an illustration of the progress Texas, New York, and Florida have made in achieving access and equity for Black students. Through the lens of critical race theory, Ladson-Billings and Tate (1995) asserted that critical race theory provided another lens through which educational institutions and the struggles experienced by minority participants can be analyzed. For this reason, the College Board's equity and excellence statement does not address equality in school resources distribution and equity in the experiences among Black students compared to other student groups. Furthermore, the College Board failed to examine the self-efficacy of Black students who took an AP Calculus BC exam in comparison to the self-efficacy of Black students who took the other AP exams.

Table 7

Equity and Excellence Achievement for Texas, New York, and Florida for Black Student Advanced Placement Exam Participants

State	% of 2011 Graduating Class	% 2011 Exam-Takers Scored 3+	Equity and Excellence Level (100%)
Texas	15.8	4.3	27.2
New York	15.3	4.4	28.8
Florida	20.1	7.1	35.3

Note. Data for Table7 were retrieved from the College Board (2012c).

As a result of this study on the performance of Black AP test-takers and the results of Koch's (2012) study on Hispanic AP test-takers, the College Board equity and excellence statement does not mirror the lived experiences of these student groups. Consequently, an exception to the College Board's statement is warranted. Also, it is important to note that having access to AP exams and not achieving success on the exams are not indications of closing the equity gap among Black students and other low-performing students.

The Education Commission of the States suggested that states require schools to become accountable for increasing students AP participation as well as student exam scores (Dounay, 2006). Petrilli and Hess (2011) contended that the emphasis of both Presidents Bush and Obama on closing the achievement gap may have adversely affected the progress of high achieving students. For both Presidents, the goal was to mandate schools to increase participation in rigorous coursework, specifically in AP programs (Obama, 2011; Petrilli & Hess, 2011; U.S. Department of Education, 2004).

Schneider (2009) observed that opening AP access to all created issues of credibility. Schneider (2009) argued that expanding AP program participation has resulted in prominent high schools removing AP courses from its curriculum. Schneider (2009) wrote:

Over the past few decades teachers and professional educators, particularly in high-status secondary-schools in the US, have increasingly criticized AP for its test-driven nature, for its focus on breadth over depth, and for failing to adapt to changing views about curriculum and teaching. As AP lost its uniqueness and moved to a wider range of schools, it less effectively identified the most talented and ambitious students. As more college and university applicants submitted transcripts filled with AP courses, the credential value of AP was weakened and it became less influential in post-secondary admissions, at least among highly selective schools. Consequently, many college guidance counselors at high status independent and public schools, whose faculty and administrators had long expressed desires to move towards more open curricula, cleared their schools to re-evaluate AP. (p. 814)

Congruent to Schneider's (2009) argument, Tilsley (2013) reported that Dartmouth College elected to discontinue accepting AP credit by the year 2018. Currently, Dartmouth gives advanced placement, exemption for courses, or college credit to AP exam-takers who earned 4s and 5s on their AP exam. Tilsley (2013) also pointed out that the College Board conducts independent studies to support their claim that AP course and exam participants perform better than non-AP participants and test-takers.

Recommendations for Policy

All students should experience more rigor in middle school, so they might be better prepared for the rigor of college preparatory high school courses like AP (Moore & Slate, 2008). Placing students into academically rigorous courses without the requisite background based on rigorous coursework, as some researchers (e.g., Moore et al., 2010) have argued, might increase failures and dropouts among Black and Hispanic students. Therefore, school leaders and instructional personnel might use this study and others (e.g., Davis et al., 2013) to begin conversations about the future of Black student access to more rigorous courses at an earlier age.

In regard to this study, Black student test-takers in Texas, New York, and Florida did not experience the high performance levels alluded to in the above statement. Moreover, researchers (e.g., Conley, 2007; Geiser & Santelices, 2004; Von Blum, 2009) argued that AP course completion alone should not be used to determine students' acceptance to college or success in college and beyond. Geiser and Santelices (2004) noted that because of the chronic deficit in access and achievement gap prevalent among Black and other underserved student groups, higher education institutions should reconsider including AP scores as a criteria in their admission decisions. Conley (2007) asserted that AP achievement has been given too much influence in the admissions process. Von Blum (2009) argued that AP participation is overrated and may become a problem in liberal arts education. For these reasons, a recommendation that national policy on AP as a premier college readiness curriculum be reconsidered. Perhaps more emphasis should be placed on increasing dual credit program participation among Black and other ethnic groups.

Recommendations for Future Research

This investigation constitutes only the third study in which AP exam participation was analyzed across state boundaries; and the second study in which AP exam outcomes were examined for multiple years. Therefore, it is recommended that this study be replicated to compare the AP exam performance of Black and Hispanic students from other states and other ethnic groups. Furthermore, a study including gender differences within ethnicities is also suggested.

Black students from New York consistently outperformed Black students from Texas and Florida. For this reason, a study in which college preparatory programs across state boundaries are analyzed is recommended. Davis et al. (2011) and Koch (2012) discovered that Black and Hispanic student groups consistently performed better on the AP Calculus BC exam than the other exams. Hence, a study of the self-efficacy among Black AP Calculus BC exam test-takers is also recommended. Ladson-Billings (1995; 2007) recommended investigating the achievement gap caused by experiences, low school funding, income-levels, and stigmas placed on Black and other ethnic groups. Subsequently, qualitative research in which school climate, culture, and teacher quality in schools in which AP courses are offered is warranted.

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Correlations among interpersonal attachment style, ambivalence over emotional expression, and depressive tendencies in Taiwanese university students

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ABSTRACT

The purpose of this study was to explore correlations among various interpersonal attachment styles, dimensions of ambivalence over emotional expression, and depressive tendencies in first-to-fourth-year Taiwanese university students. The study included a total of 925 research subjects. The research tools used included a scale measuring interpersonal attachment styles, a questionnaire addressing ambivalence over emotional expressiveness, and a scale measuring depressive tendencies.

The results revealed that (1) higher levels of insecure attachment were associated with more ambivalence over emotional expression, (2) higher levels of insecure attachment were associated with higher scores for depressive tendencies, and (3) higher levels of ambivalence over emotional expression were associated with higher scores for depressive tendencies.

Keywords: Interpersonal Attachment Style, Ambivalence over Emotional Expression, Depressive Tendencies

1. RESEARCH MOTIVATION

Depression is a natural emotional state that almost everyone has experienced, and different degrees of depression have different effects on the lives of individuals. According to a 2008 survey conducted by the John Tung Foundation among 5,655 university students, 22.2% of the students suffered from significant depression, and almost one in four was troubled by it and required professional help (John Tung Foundation, 2008).

Additionally, the John Tung Foundation in Taiwan surveyed the reasons for depression and found that 51.3% of depressed people were depressed due to “interpersonal interactions.” However, those with a greater sensitivity and sense of loneliness in interpersonal relationships were more depressed (John Tung Foundation, 1999/2001). This indicates that the quality of interpersonal interactions affects the emotions of individuals. University students are more mature and stable than are those in secondary school, and they are able to engage in more nuanced cognitive processing. One of the important developmental tasks facing university students, who are entering a new social context, involves establishing good interpersonal relationships. Indeed, these students encounter more diverse and complex interpersonal relationships while studying at a university. Thus, emotional expression by Taiwanese university students in the context of interpersonal interactions needs to be explored.

Considerable research has shown that those who suffer from depression have a higher likelihood of insecure attachment. Vivona (2000) found that university students with insecure attachment reported more anxiety, depression, and worry compared with those with secure attachment. Robert, Gotlib, and Kassel (1996) observed a positive correlation between the anxiety dimensions of adult attachment and depression, indicating that insecure attachment affects personal adaptation. These researchers also pointed out that insecure attachment is related to dysfunctional attitudes, resulting in lower self-esteem and higher levels of depression. Insecure attachment seems to cause depressive symptoms through its impact on self-esteem and self-worth.

Ambivalence about emotional expression (AEE), which occurs when an individual experiences a conflict between the desire to express and the desire not to express his or her feelings under emotionally arousing conditions (King, 1993), can be divided into the dimensions of emotional rumination and emotional suppression (Chen et al., 2005). These involve excessive concern about the outcomes of emotional expression and an individual’s conscious control over his or her own emotional experience, respectively. The study conducted by King and Emmons (1990) showed that ambivalence over emotional expression is related to several psychological stress indicators, including depression. King (1993) pointed out that these conflicts involving emotional expression may become important

mediators that influence the types of emotional expression and mental and physical health, and Emmons and Colby (1995) suggested that ambivalence over emotional expression may cause individuals to engage in less effective and precise communication with others, thereby reducing their social support and, in turn, affecting their physical and mental health.

Thus, the present researcher examined the correlations among personal attachment styles, ambivalence over emotionally expressive behaviors, and depressive tendencies in university students to improve our understanding of these relationships.

2. RESEARCH DESIGN AND IMPLEMENTATION

2.1 Research subjects

The sample for this study consisted of first-to-fourth-year university students in Taiwan and included students from 161 public and private Taiwanese universities, with a total of about 1,032,000 students, located throughout country.

The study relied on random sampling, and the Google Docs system was used to design an online questionnaire for testing and data collection. Questionnaires were posted on Facebook pages and on club and department boards. Questionnaires were also delivered via the PTT bulletin board system (BBS) of Taiwan. After board moderators agreed, questionnaires were also posted on university boards and academic questionnaire boards to increase the response rate.

The survey was conducted from March 12, 2013 to April 10, 2013. A total of 930 individuals participated, and 925 valid questionnaires were collected.

To thank respondents for their participation, after all the questionnaires were collected. The researcher held raffles in which the computer randomly selected winners. Additionally, an effort was made to make certain that the research subjects could fill out questionnaires effectively such that interpersonal attachment styles, ambivalence over emotional expression behaviors, and depressive tendencies of university students could be observed clearly. To ensure that raffle winners could be contacted, the researcher asked participants to provide an email address on the online questionnaire.

2.2 Research Tools

2.2.1 Interpersonal Attachment Styles Scale

This scale was developed based on the theoretical framework of the four interpersonal attachment styles proposed by Bartholomew and Horowitz and is used to test adult interpersonal attachment styles. It is divided into four factors and includes 18 questions.

The validity of this scale was tested by factor analysis, and the total variance explained by the four aspects was 59.773%. The eigenvalue of “anxious attachment” was 3.319, and the factor-explained variance was 18.439%; the eigenvalue of “dismissive attachment” was 3.039, and the factor-explained variance was 16.881%; the eigenvalue of “avoidant attachment” was 2.611, and the factor-explained variance was 14.503%; and the eigenvalue of “secure attachment” was 1.791, and its factor-explained variance was 9.949%.

2.2.2 Ambivalence over Emotional Expressiveness Scale

This scale was designed in accordance with King and Emmons’s (1990) Ambivalence over Emotional Expressiveness Questionnaire. The original scale measures the broad experience of ambivalence about emotional expression experienced by individuals in their daily lives. Cheung et al. (2005) analyzed such expression in a Chinese cultural context and proposed the two major factors of emotional rumination and emotional suppression.

After item analysis and factor analysis were performed, 14 questions remained. Based on the construct underpinning the original scales, factor 1 was named “emotional rumination” and included seven questions; factor 2 was named “emotional suppression” and also included seven questions. The eigenvalues of these two factors were 4.103 and 3.544, respectively; the explained variances were 29.309% and 25.313%, respectively; and the accumulated explained variance was 54.622%.

2.2.3 Depressive Tendencies Scale

This scale uses Radloff’s (1977) Center for Epidemiologic Studies Depression Scale (CES-D) as its reference. The original scale contains 20 questions covering four factors: “depressed affect,” “positive affect,” “somatic symptoms,” “and “interpersonal problems.”

In terms of the questions in and construction of this original scale, after completing item and factor analysis, the researcher named factor 1 “lack of vitality” (six questions); factor 2 “negative feelings” (six questions); factor 3

"loss of pleasure" (three questions); and factor 4 "physical symptoms" (two questions). The eigenvalues of the four factors were 3.374, 3.241, 2.352, and 2.028, respectively; the explained variances were 19.847%, 19.064%, 13.833%, and 11.928%, respectively; and the accumulated explained variance was 64.672%.

The three aforementioned scales use a Likert five-point scale for responses. Questions that were scored positively awarded 1, 2, 3, 4, and 5 points for "does not conform at all," "somewhat conforms," "conforms half the time," "mostly conforms," and "highly conforms," respectively. Questions that were negatively scored awarded 5, 4, 3, 2, and 1 points for "does not conform at all," "somewhat conforms," "conforms half the time," "mostly conforms," and "highly conforms," respectively.

3. RESULTS

3.1 Correlations between interpersonal attachment style and ambivalence about emotional expression in university students

Product-moment correlations were used to analyze relationships between interpersonal attachment styles and ambivalence about emotional expressions in university students. The results are shown in Table 2.

Table 2. Product-moment correlations between dimensions of interpersonal attachment style and ambivalence about emotional expression in university students

Dimension	Emotional rumination	Emotional suppression	Overall ambivalence about emotional expression
Secure attachment	-.427**	-.219**	-.364**
Anxious attachment	.609**	.474**	.604**
Avoidant attachment	.464**	.264**	.410**
Dismissive attachment	.227**	.173**	.224**

**$p < .01$

3.2 Correlations between interpersonal attachment style and depressive tendencies in university students

Product-moment correlations were used to analyze relationships between the interpersonal attachment styles and depressive tendencies of university students; the results of these analyses are shown in Table 3.

Table 3. Product-moment correlations between dimensions of interpersonal attachment style and depressive tendencies in university students

Dimension	Lack of vitality	Negative feelings	Loss of pleasure	Physical symptoms	Overall depressive tendencies
Secure attachment	-.470**	-.497**	-.598**	-.309**	-.587**
Anxious attachment	.418**	.478**	.363**	.234**	.489**
Avoidant attachment	.352**	.384**	.340**	.271**	.423**
Dismissive attachment	.061	.060	.042	.085**	.071**

**$p < .01$

3.3 Correlations between ambivalence about emotional expression and depressive tendencies in university students

Product-moment correlations were also used to analyze correlations between ambivalence over emotional expression and depressive tendencies in university students, and the results are shown in Table 4.

Table 4. Correlations between dimensions of ambivalence about emotional expression and depressive tendencies in university students

Dimension	Lack of vitality	Negative feelings	Loss of pleasure	Physical symptoms	Overall depressive tendencies
Emotional rumination	.412**	.412**	.363**	.206**	.457**
Emotional suppression	.290**	.253**	.220**	.110**	.294**

**$p < .01$

4. DISCUSSION

The data revealed a significant correlation between interpersonal attachment style and ambivalence over emotional expression in university students (Table 2). Moreover, secure attachment had a negative correlation with each of the dimensions of ambivalence over emotional expression, which means that university students with a greater tendency toward secure attachment are less ambivalent about emotional expression. Furthermore, anxious attachment, avoidant attachment, and dismissive attachment had positive correlations with the dimensions of ambivalence over emotional expression, which indicates that university students with higher levels of anxious attachment, avoidant attachment, and dismissive attachment are more ambivalent about emotional expression.

In terms of relationships between interpersonal attachment style and depressive tendencies (Table 3), the results show that university students with secure attachment have lower levels of depressive tendencies, whereas those more inclined toward anxious attachment and avoidant attachment have higher levels of depressive tendencies. Additionally, those students who are more inclined toward dismissive attachment have more physical symptoms.

As shown in Table 4, ambivalence over emotional expression and depressive tendencies were significantly correlated, and university students who are more ambivalent about emotional expression tend to be more depressed.

CONCLUSIONS

This research reached the following conclusions.

(1) University students tending toward insecure attachment also tend toward ambivalence about emotional expression.

Students with anxious attachment, avoidant attachment, and dismissive attachment styles scored higher in emotional rumination and emotional suppression, and those inclined toward secure attachment scored lower in emotional rumination and emotional suppression. That is, university students with a more secure attachment are less ambivalent about emotional expression, and those with a more insecure attachment are more ambivalent about emotional expression.

(2) University students who are inclined toward an insecure attachment style have higher levels of depressive tendencies.

Students who scored higher in the anxious attachment and avoidant attachment styles also scored higher in lack of vitality, negative feelings, loss of pleasure, and physical symptoms. Higher scores for secure attachment were correlated with low scores for lack of vitality, negative feelings, loss of pleasure, and physical symptoms. Those students with higher scores for dismissive attachment also got higher scores for physical symptoms. Thus, university students with either anxious attachment or avoidant attachment have higher levels of depressive tendencies, but those with secure attachment have lower levels of depressive tendencies. Those inclined toward dismissive attachment, may report more physical symptoms. However, no significant correlations between dismissive attachment and the other dimensions were observed.

(3) More ambivalence about emotional expression is correlated with higher levels of depressive tendencies in university students.

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Diversity and Gender Trends in Texas Community Colleges

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ABSTRACT

Diversity and gender trends of community college students in Texas from the 2000 to 2011 academic years were explored. Archived data retrieved from the Texas Higher Education Coordinating Board (THECB) were evaluated to determine the extent to which differences were present between ethnic groupings and/or gender across these academic years. The largest ethnic changes were present for Hispanic and White student groups. Hispanic enrollment increased by 13% whereas White matriculation decreased by 19%. In addition, gender differences remained static with more females than males attending community colleges. Policy implications for community college leaders are discussed.

Keywords: community colleges, higher education, diversity, gender, and trends Introduction

Introduction

A college education in the 21st century has become as important as a high school education in the 20th century. People who hold college degrees tend to obtain better paying jobs, and people from higher income families tend to enroll in college (Reid & Moore, 2008). President Barack Obama said that the rise in unemployment of those not obtaining a college degree was in part the cause of our current economic problems (Obama, 2010). Aside from the economic limitations that prevent matriculation to college are the academic limitations. Research studies to understand the gap between students who are likely to enroll in college and those students who are not likely to enroll in college proliferate. The federal government, under President George W. Bush, initiated actions to eliminate academic disparity among students in the No Child Left Behind Act (NCLB, 2002). In this act, states were required to develop academic standards and students were required to meet those standards before advancing to the next grade. Regardless of cultural or socioeconomic background, students were expected to obtain the standards in order to be more college ready. Since the inception of the NCLB (2002) the burden of preparing students for college admission, and subsequently a better career path, has fallen on educators.

Accountability data to measure the effectiveness of Texas state standards has burgeoned since the inception of NCLB. One way to gauge the effectiveness of a state's standards might be to determine if enrollment at postsecondary institutions has indeed increased. Accountability data are archived and easily available (THECB, 2012). An underlying assumption of the NCLB legislation was that standardized requirements at the high school level would increase student eligibility to college. Therefore, differences in student enrollment trends following the NCLB initiation might reveal NCLB's effectiveness in diminishing the achievement gap.

Providing social justice (Aragon & Brantmeier, 2009), and improving our nation's economy (Green, 2007) are compelling reasons to strive for collegiate ethnic diversity. In addition, some institutions have increased their number of international students to promote diversity as well as to increase financial resources (Ziadie, 2011). Economic globalization is an added benefit of campus diversity acknowledged by Green (2007).

Researchers (Gurin, Dey, Hurtado, & Gurin, 2002; Loes, Pascarella, & Umbach, 2012) have investigated the effects of diversity on critical thinking skills, and they have made compelling arguments for its positive effects. Sternberg (2008) argued that diversity and academic achievement were compatible goals. Others point to an increased need for multi-dimensional campus diversity to suppress religious discrimination because religion was a major defining element of ethnicity (Cole & Ahmadi, 2010).

In sum, ethnic diversity on college campuses has many benefits. Of particular interest to this study was whether admission enrollment demographics changed in the years since the NCLB took effect, and more importantly, whether those standards might have contributed to an increase of ethnic diversity. Community colleges were selected for the study because of their open door policy, affordability, and history of serving nontraditional, minority students (Aragon & Brantmeir, 2009).

Statement of the Problem

Ethnic diversity on college campuses was explained as a worthwhile goal for a number of reasons. Yet some researchers maintain a gap exists between the numbers of White students attending college versus Hispanic students, (Zarate & Burciago, 2010) and that Whites far outnumber Hispanics despite federal mandates encouraging more diversity. Indeed, Zarate and Burciago (2010) stated, "The result is a persistent and widening gap in college enrollment and attainment between Latinos and Whites. The college enrollment rate is exacerbated when comparing community college enrollment between Whites and Latinos" (p. 25). Research to discern whether such a gap existed in Texas community colleges was explored in this study.

In addition, gender differences in SAT scores have been identified (Combs et al., 2010; Nankervis, 2011). How well a student does on the SAT might be influenced by gender and thus could influence the number of males versus females attending colleges. Therefore, college admission trends related to gender would be of interest to study. If state standards of the NCLB Act were being met and students were achieving college readiness standards then disparities between female and male enrollments should not be apparent in community college admissions.

A secondary issue related to gender is of interest. At the onset of the 21st century, more females than males were attending college. Consequently, some colleges started to admit more males than females to make up for the inequity (Townsend, 2008). Community colleges have an open admission policy and cannot participate in selective admissions. Therefore, enrollment trends over the 12 years from community colleges might reveal any gender differences.

Research Questions

The following two research questions were explored in this quantitative study: (a) What were the differences among the number of first year, full time, community college students of various ethnic groups over the past 12 years in the state of Texas? and (b) What were the differences among the number of first year, full time, female and male, community college students over the past 12 years in the state of Texas?

Significance of the Study

The purpose of this study was to explore diversity and gender trends over the past 12 years for community colleges in Texas. A major assumption was that if mandates instituted by the federal government were successful in making students college ready, then community college enrollments could be expected to increase and students matriculating more ethnically diverse. Community colleges would be an especially good place to evaluate these trends because of open admission policies, low costs, and traditionally higher attendance by minority students.

Limitations of the Proposed Research

A limitation of this study was using only community college student data. Patterns across both 2-year and 4-year institutions would strengthen a view of trends across the state of Texas. In addition, only data pertinent to the state of Texas were analyzed so generalizations to a larger population outside of community colleges in Texas could not be made. Therefore, this analysis could not be used to infer about other states', national, or international trends.

Method

Participants

The participants in this study were first time, credential seeking, full time, first year, community college, students in Texas. First-time students were students who never attended or took college credit courses prior to enrollment. Credential seeking were students who sought to complete an Associate Degree or transfer to a 4-year institution for a Bachelor Degree. Full-time students were students taking a minimum of 12 credit hours of coursework a semester. First-year students were students regarded as freshmen. Community college students were those students attending 2-year rather than 4-year institutions. This student sample was retrieved from the Texas Higher Education Coordinating Board database (THECB, 2012) and were aggregated by seven ethnic categories: (a) African American (Black/AA), (b) Asian (AS), (c) Hispanic (HS), (d) Caucasian (White/WH), (e) International (IN), (f) Multiracial (MR), and (g) Other (OT). The Multiracial grouping was a recent development since 2010. Consequently, only two years of data were available for that category.

Selection Criteria

Archival data taken from the Texas Higher Education Coordinating Board (THECB, 2012) were retrieved for this study. The sequence of order prompts used to access the database were: database resources, Texas higher education data, accountability, interactive access to data, community colleges (i.e., Texas public - all), participation, key measures, contextual, first time in college full-time students. The years investigated spanned from 2000 to 2011. The 72 colleges in the database included the main and branch campuses from all districts in Texas. Several districts

aggregated their individual campuses into a central one and were included in the database. For example, Lone Star College System had its own column of figures while each individual campus (e.g., North Harris, Montgomery, and Cy-Fair) also had their own column of figures. The summated districts were eliminated to avoid redundancy of numbers (i.e., Alamo Community College, Dallas County Community College, Howard County Junior College, Lone Star College, San Jacinto College, and Tarrant County College).

Design Description

Descriptive analyses, using SPSS version 20 were conducted on all students by ethnic grouping, for 72 community college campus locations, across 12 years. The statistics included obtaining the mean, standard deviation, range, sum, maximum, minimum, skewness, and kurtosis coefficients for each ethnic grouping and gender. Difference calculations between the seven ethnic groups and genders were calculated for each year, and graphs depicting the changes were created using an Excel spreadsheet.

Analytical Procedure and Rationale

The THECB database of 72 community colleges across 12 years was transferred from Excel to SPSS for analysis. Graphs identifying each ethnic category from all 72 community colleges for 12 academic years (2000 - 2011) were developed. Difference values and percentages for each ethnic category were computed using Excel beginning with the academic year 2000 and ending with the academic year 2011 (see Figure 1). In addition, difference scores and percentages for changes between male and female students across the twelve years were computed using Excel (see Figure 2). The total number of students who attended community colleges in Texas, grouped by ethnicity was tabulated using SPSS and the results cataloged in Table 1. Difference rates between the academic years 2000 and 2011 for the various ethnic groupings are listed in Table 2. The number of students for each ethnic group divided by total students per year was calculated in percentages and cataloged in Table 3. Lastly, the number of female versus male students enrolled in Texas community colleges for each year, and their respective percentages, were calculated and displayed in Table 4.

Results

The overall numbers of first time, full-time students in Texas community colleges have increased from 50,224 in the year 2000 to 66,724 in the year 2011; a net increase of 16,500. Ethnic diversity increased for Hispanic (13%), Other (4%), Black (3%), and Multiracial (.29%) groups. No changes in the Asian student population were apparent. Decreases in two ethnic categories were revealed. The largest decrease of students was in the White ethnic category. Enrollment diminished for Whites by 19%. A modest decrease was discerned in International students who were down in numbers by 2% (-2%) since 2000. Difference rates of each ethnic category between each academic year from 2000 to 2011 indicated that the largest change in ethnic diversity since 2000 and 2001 occurred in the 2008 to 2009 academic years (See Table 2). Black, Asian, Hispanic, White, and Other students all increased enrollments. International students dropped substantially in 2008 to 2009 academic years and in 2009 to 2010 academic years. Despite mild fluctuations of increases and decreases between the genders across the years, the percentage of females and males attending community colleges in Texas was the same in 2000 as in 2011 as indicated by Table 3.

In summary, the greatest change of ethnic diversity was the increased number of Hispanic (13%) students attending community colleges and the decreased number of White (-19%) students attending community colleges. Modest increases were revealed in the remaining ethnic groups, with the exception of the International category, which had a mild decrease in numbers. More female students than male students have attended Texas community colleges throughout the 12 years studied and differences in the percentages between genders have remained the same.

Discussion

The numbers for different ethnic groups of first year, full-time students in community colleges in the state of Texas across 12 years were calculated in order to answer the first research question. The underlying assumption was that an increase would be present in diversity across all ethnic groups since NCLB was mandated. To this first question, an increase of Hispanic student (13%) enrollment and a decrease of White student matriculation (-19%) at community colleges was discovered. By studying these ethnic trends since the NCLB Act, it would appear that increased diversity particular to the Hispanic population was apparent. However, whether the increase was related to NCLB standards remains unknown. Nonetheless, the present study has evidence that the Hispanic population increased extensively during the years since NCLB was instituted in Texas. The diminishing number of White students from Texas community colleges might be the result of general population trends. Nonetheless, the number of White students enrolled statewide seems to be decreasing contrary to what some researchers (e.g., Zarate & Burciaga, 2010) have described. However, it would be interesting to compare the -19% difference rate (i.e., 27,035 White students in the 2000 academic year to 23,214 White students in the 2011 academic year) to census figures in Texas.

A relatively mild increase of Black, Other, and Multiracial ethnic categories paled in comparison to the Hispanic group. A higher increase of enrollment for all groups had been expected. The International population decrease of -2% was surprising. Current literature highlights opinions from researchers who value increasing the collegiate International population for social, cognitive, and financial gain (Green, 2007). Whereby this push may be more apparent at 4-year institutions, it was somewhat alarming that a decrease in the International population occurred rather than an increase.

To answer the second research question, differences between the number of males and females were compared. The data showed mild fluctuations in gender numbers between the 2000 and 2011 academic years. However, the percentage difference between males and female students was the same for the 2000 academic year as it was for the 2011 academic year. Surprisingly, no differences of gender trends since the implementation NCLB were revealed. If cognitive standards (e.g., ACT or SAT) continue to be the gold standard by which to achieve college admission, and high schools have equalized standards for minorities as well as for the genders through NCLB, some change in gender differences might have been expected.

In conclusion, diversity trends in community colleges for first year, full-time students in Texas have provided evidence that significant increases of enrollment for particularly Hispanic students has transpired. Perhaps, the NCLB law has contributed to the rise of the Hispanic population attending community colleges. However, an intriguing question remains as to what led to the diminishment of the White student population at community colleges. Some might speculate that White students attend community colleges far less often because they are financially able to matriculate at 4-year institutions. If that were the case, could we not have expected that trend to be consistent over a decade? The White student numbers were increasing until 2004, remained somewhat steady but an overall diminishment from 2004 to 2009, and recently decreased substantially in the years of 2010 and 2011 (See Table 1). Today, almost everyone is having financial difficulties because of a faltering economy. An increase of White enrollment would make more sense especially in light of the recent economic decline.

More research is necessary to understand these and other trends at community colleges. Administrators need to be aware of changes in trends and demographics to effect appropriate policies. A recommendation to include 4-year institutions of Texas in a similar analysis would add to the research. In particular, studies to determine reasons for the decreased number of White students attending community college in Texas would be of interest.

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Effect of Metacognitive Strategy On Jigsaw Cooperative Learning Method To Enhance Biology Achievement

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ABSTRACT

The purpose of this study was to determine how the adoption of metacognitive strategy in jigsaw cooperative learning method influences students' achievement in Biology. The study was carried out by following pre-test post-test experimental design with one control group and one experimental group. To guide this study, six hypotheses were stated and tested at 0.05 level of significance. A total of 70 students from Municipal Higher Secondary School, Tamilnadu, India were used as sample for the study. The tools Metacognitive Strategy Model on Achievement in Biology, Biology Achievement Test (BAT), Attitude Scale Towards Learning Biology (ASTLB) and Home Environment Inventory (HEI) were developed, validated and used. The results suggested that instruction in the metacognitive strategy improve the students' biology achievement.

Keywords: Metacognitive strategy; Jigsaw cooperative learning method; Achievement in Biology

INTRODUCTION

Biology is one of the major branches of science. There is an increasing impact of growing knowledge in the subject of biology on our social and economic life. A poor biology foundation at the higher secondary school will jeopardize any future effort to enhance achievement in the subject. The study of biology at the higher secondary school level helps students in developing basic skills, knowledge about their environment.

The poor achievement of learners in biology has been variously explained. The factors that negatively affect biology achievement include students' background problems; students' lack of interest and/or negative attitude towards biology; teacher related factors like poor teacher preparation; inadequate qualified biology teachers, inadequate instructional materials and application of poor teaching methods. Many students don't feel good about Biology, largely as a result of the way they have been taught.

Biology teachers mainly adopt instructional strategies that are mainly teacher directed and do not encourage deeper students involvement. In the conventional classroom, surface approaches to learning are very common. Most students adopted a surface approach to learn in terms of attending classes, reviewing notes and doing exercises. The students are the passive recipient of the information already acquired by the teacher. Most conventional biology classes aim to make mastery of the text-book, to complete text-book assignments and examination orientated. Since the students are taught using chalk and talk method, the students are not able to get aware of better knowledge in learning biology. Instead of viewing teaching as teacher exposition followed by students practice, effective teaching may be achieved by integrating a self-regulating strategy such as metacognitive assessment in the process. The constructivists approach to learning locates understanding within the learners, not with the teachers. It is the learners who must learn and therefore must take the responsibility for learning.

METACOGNITION

Metacognition refers to one's knowledge concerning one's own cognitive processes or anything related to them (Flavell, 1976). Quite simply, metacognition is thinking about thinking. Brown (1987) divides metacognition into two broad categories: Knowledge of cognition and regulation of cognition. Knowledge of cognition refers to activities that involve conscious reflection on one cognitive abilities and activities. Regulation of cognition refers to activities regarding self-regulatory mechanisms during an ongoing attempt to learn. Any process in which students examine the method that they are using to retrieve, develop or expand information is deemed to be metacognitive in nature.(Everson et.al.1998). Met cognitively aware learners "know what to do when they don't know what to do"

(Countinbo, 2007). In other words, they have strategies for discovering or working out what needs to be done. Metacognitive strategies are designed to monitor cognitive process. Metacognitive strategies are ordered processes used to control one's own cognitive activities and to ensure that a cognitive goal has been met. A student with good metacognitive awareness oversees his own learning process, plan and monitor ongoing cognitive activities. The use of metacognitive strategies ignites one's thinking and can lead to better learning and higher performance, especially among learners who strive. Developing metacognitive instructions or questions about the topic at hand would be more challenging for the teacher. The teacher would have to change his/her mind-set and pose questions that truly require the teacher to analyze the existing links to other common experiences and material, determine which processes the student may possibly use, and formulate questions accordingly. Some of the questions that are posed during the discussion can be meaningful and multifaceted. Hartman (2001) states that teaching with metacognitive strategies means that teacher will think about how their instruction will activate and develop students' metacognition.

COOPERATIVE LEARNING

Bilgin, I.et.al.(2006), and Chang, C-Y., & Mao, S-L. (1999) in their contributions noted that cooperative learning activity engages the student in the learning process and seeks to improve the critical thinking, reasoning, and problem-solving skills of the learner. Stevens, R., & Slavin, R. (1995) stated that peer interaction is central to the success of cooperative learning as it relates to cognitive understanding. They further noted that comprehension is facilitated. They emphasized that as learners, some of who might normally "turn out" or refuse to speak out in a traditional setting, become actively involved in the learning process through group interaction. Chang.et.al (1999) noted that every cooperative-learning strategy, when used appropriately, can enable students to move beyond the text, memorization of basic facts, and learning lower level skills. This method which results in cognitive restructuring leads to an increase in understanding of all students in a cooperative group. Apart from academic benefits, cooperative learning has been found to promote self-esteem, interpersonal relationship and improved attitudes toward school and peers (Bilgin, I.et.al.2006). In the cooperative learning, students have the opportunity to discuss their answers with fellow students. The students could jot –down their answers to a question, turn to their neighbour and talk about their answers and sharing the same with the entire class. It forces student to discuss their thinking, analyze their position, and explain their point of view to their classmates. By their sharing information with the entire class, students would be able to evaluate themselves while gathering information from other classmates. The teacher would also have the opportunity to evaluate the students' understanding based on the content of the discussions.

METACOGNITIVE COOPERATIVE LEARNING METHOD

Learning process in learner centered approach is characterized by cooperative and collaborative learning environments. The two methods compared in this experiment are – (i) Metacognitive cooperative learning method and (ii) Traditional method. Piaget calls operation when children are able to engage themselves in activities. Bruner, Gandhi and Pestalozzi have also stressed learning by doing. In activity based learning teachers provide environment for activities which are relevant to the subject matter. Cooperative Learning is an answer to the defects of competitive learning. Today teachers need an instructional technique which is of low cost and which does not demand hard work, so that they could love the subject and be more efficient in their teaching. Metacognitive knowledge of people is an important concept for the classroom. Metacognitive knowledge of tasks operates when the nature of task forces us to think about how we will manage. In the similar manner Cooperative Learning refers to an Instructional Technique in which pupils study in small groups and are rewarded some way for performance as a group. This strategy based on the psychology of cooperation and competition among pupils in the class. Here pupils are to work together for a common goal, motivating themselves by depending on others, encouraging each other‟s during the task of learning and by increasing positive contact among the group members. So metacognitive cooperative learning method will result in better classroom performance. In this context metacognitive cooperative learning method is very useful and can be adapted by any teacher easily. Since learning strategies can be taught, we can help our pupils to concentrate on just what they do, when they learn. With this theoretical background a research study was conducted to study the effectiveness of metacognitive cooperative Learning method on the Achievement in Biology.

Home is considered as a first school for every individual and it is one of the basic elements in the society. Hence the environment of home plays vital role on the development of every individual in sociological perspectives. The performance and the achievement of every child depend on the environment given by the parents at home to their wards. Considering the importance of the environment of home, the present study has included *"Home Environment"* as one of the influencing sociological factor.

Attitude plays a vital role among individuals. To create interest towards learning, attitude has its own role. If the attitude is positive, there will be better learning takes place otherwise there will not be a chance of learning. Hence attitude towards learning any concept or subject plays significant role. Therefore the present study has included another psychological factor .i.e. *Attitude Towards Learning Biology among higher secondary students.*

The study aims to measure the achievement of higher secondary students in biology, using metacognitive-Cooperative learning method with home environment as sociological factor, attitude on learning biology as psychological factor and metacognitive awareness as cognitive factor. Hence, the study not only concentrates on developing the metacognitive strategies in cooperative learning approach and its effectives, but also aims to study the intervening factors of learning biology among higher secondary students.

OBJECTIVES

This study was guided by the following objectives.

i. To develop a metacognitive strategy model in Biology for standard XI students.

ii. To find whether there is any significant difference between control group and experimental group in gain scores of higher secondary students.

iii. To find whether there is any significant difference between control group and experimental group in gain scores on attainment of objectives: knowledge, understanding and application of higher secondary of students.

iv. To find whether there is any significant difference between control group and experimental group in retention test scores of higher secondary students.

v. To find whether there is any significant influence of home environment on gain scores of control group and experimental group.

vi. To find whether there is any significant influence of metacognitive awareness on gain scores of control group and experimental group.

vii. To find whether there is any significant influence of attitude towards learning biology on gain scores of control group and experimental group.

HYPOTHESES

Six hypotheses were stated and tested at 0.05level of significance.

i. There is no significant difference between control group and experimental group in gain scores of higher secondary students.

ii. There is no significant difference between control group and experimental group in gain scores on attainment of objectives: knowledge, understanding and application of higher secondary of students.

iii. There is no significant difference between control group and experimental group in retention test scores of higher secondary students.

iv. There is no significant influence of home environment on gain scores of control group and experimental group.

v. There is no significant influence of metacognitive awareness on gain scores of control group and experimental group.

vi. There is no significant influence of attitude towards learning biology on gain scores of control group and experimental group.

METHODOLOGY

Design of the Study

The design selected for the present study is Pre-test Post-test Equivalent – Groups Design with one experimental group and one control group.

Population and Sample of the Study

The test population consisted of 400 higher secondary class students in Municipal Higher Secondary School, Tirunelveli, India. A total of 70 students studying standard XI constituted the total sample. The sample was randomly selected. *Catell's Culture Fair Intelligence Test* was conducted to split the sample into two equivalent groups. Based on the intelligent test score, they were categorized into Experimental group and Control group. A set of two individuals with identical or nearly identical intelligent test scores were selected and assigning one of them to experimental group and another one to control group. So there were 35 students in each group. To ensure the homogeneity of the group, the 't' test was conducted and there is no significant difference between experimental group and control group . Hence the two groups are equivalent.

TOOLS FOR THE STUDY

Metacognitive strategy model on achievement in biology

Biology syllabus at higher secondary level was analyzed. Textbooks, handbooks, reference books, method of teaching, examination system, pedagogical principles, etc., also were analyzed. Consultations with experts in the field of school education, metacognition and teacher education were made for framing the sequence of learning events. Teaching techniques, Metacognitive strategies and its process were identified to enhance achievement in biology of higher secondary students.

The metacognitive strategy were designed on the basis of the four steps i) Identifying teaching techniques ii) Identifying metacognitive dimensions iii) Process to develop metacognitive behaviours and iv) Validation.

i) Identifying Teaching Techniques

Metacognitive environment can be created in Inquiry, Cooperative learning and Problem solving. In the present study, jigsaw cooperative learning method was used for creating metacognitive environment among higher secondary students.

ii) Identifying Metacognitive dimensions

After having gone through the various dimensions suggested by the researchers in literature, the metacognitive strategies for the following dimensions are framed. They are i) Meta-memory ii) Self-planning iii) Self-monitoring iv) Self-evaluation and v) Self-regulation

iii) Process to Develop Metacognitive Behaviours

The process to develop metacognitive behaviours proposed by *Blakey and Spence (1990)* was adopted in the present study. The steps in process stage are "Define what you know and what you do not know", "Talk about what you are thinking", "Keeping a diary of thinking", "Planning and self-control", "Thinking process briefing", "Self-assessment".

Step1. Define what you know and what you do not know:

Students determine their levels by asking themselves 'What is my relevant information about the subject?' What do I know? What do I want to learn? What do I not know?

Step2. Talk about what you are thinking: This includes the loud thinking in the process of making plan or problem solving. This study can be performed in peer groups or in small groups, that one student assumes the role of a teacher. These students talk and ask questions by telling and making explanations and abstraction.

Step3. Keeping a diary of thinking: Another way of developing awareness of cognitive thinking is to keep a diary. Students can write difficulties and their interpretations about problems in that notebook. They also note the process and methods used to solve the problem. Thus, students have the idea about experience and methods of thinking.

Step4. Planning and self-control: It is students' plan to control the process that is relevant to the subject that is going to be learnt. However, students must have earned some characteristics in advance such as adjusting time, identifying and using materials.

Step5. Thinking process briefing: This strategy covers, develops and uses the metacognitive and thinking skills that the students acquired. It involves a three-step method. Primarily, the teacher needs to guide the students about how they gained information by thinking in class and how they took part in activities. In the next stage, students need to group ideas and define which thinking strategies they used, and in the final stage, students should evaluate their own achievements and make assessments about their election in relation to future strategies.

Step6. Self-assessment: It is the determination of the metacognitive skills of the students by the pre-prepared individual checklist in the form of assessment. Metacognitive strategies are the sequential processes used to provide control in learning and in reaching one's goal. They help individuals significantly to make regulations and take control of their learning. For example, after reading a text, a student can query himself about the concepts discussed in the paragraph. This self-evaluation is a monitoring metacognitive strategy and at this stage, the cognitive purpose of students is to understand texts. If a student fails to answer his own question, he must determine what he needs to perform his cognitive purpose which is to understand the text. In order for him to answer his own question satisfactorily, for example, he may decide to read the paragraph again. After reading the text again, if he can answer the question, he may be able to understand the subject. Thus, the metacognitive strategy of self-evaluation would be fulfilled by the comprehension which is the aim of cognitive skills.

During the execution of steps from step1 to step 6, a work sheet containing metacognitive statements is given

to all the students for reference. Students were asked to refer the statements in worksheet in the classroom.

iv)Validation

It was given to the experts in the field of metacognition for opinion. The metacognitive strategies were thus modified according to the suggestions given by them. After completing the expert validation, pilot testing was done in small group try-out and large group try-out.

In a small group try-out three teachers were selected to teach a higher secondary class using the metacognitive strategies. Five high achieving students in biology were selected to learn the concepts using the metacognitive strategies developed. Necessary corrections were incorporated as per the feedback given by the teachers and students.

The metacognitive strategies were implemented to a large group try-out having 30 students and 10 teachers. The developed metacognitive strategies were given to science teachers and asked to teach the concept using metacognitive strategies. The same was given to the students to learn the biological concepts with the help of the teachers. The metacognitive strategies were then updated and corrections were carried out according to the suggestions given by teachers. The required updation was made based on the learning experience gained by the students. The pictorial representation of implementation of metacognitive strategies is shown in fig.1.

[Insert fig1 here]

Biology Achievement Test (BAT)

This is a teacher made achievement test constructed by a panel of qualified and experienced teachers. The topics Integumentary System, Skeletal System, Respiratory System, Fungai, Algae and Bryophytes in standard XI text book are chosen as topics to be taught in the study. The draft test consists of multiple choice questions from the selected topic to make the test objective to the fullest extent. Due weightage were given to the content, objectives and difficulty level while preparing the test. The test items were generated based on the blue print followed in school and face validated by 'the two specialists in Biology education. This was done to ensure the content validity of the achievement test. The test items generated were given to the Biology teachers in school to ensure their suitability in terms of appropriateness of language and clarity, and the level of the students. The achievement test was pilot tested among the students of standard XI in the three schools in Tirunelveli District, India. The items are evaluated with the help of difficulty index and discrimination value. Items which are having difficulty index between 40 to 60 and discrimination value 0.4 and above are retained and other items are discarded. The split-half reliability of the test was 0.82. This shows that the tool was found to be reliable.

Metacognitive Awareness Scale (MAS)

In designing metacognitive awareness scale, initially studies of metacognition and standardized instruments for assessing metacognition were reviewed (*Schraw.et.al 1994; Lippmann,2005;, Ibe,2009, Santiago,2010).* Items were prepared after referring the literature related to metacognitive awareness. Experts' opinions were considered to find out the weakness and work ability of the items. The items help to identify the presence of metacognitive behaviour among students. Items were reviewed for face validity. Wording and grammatical structures were changed according to the local Indian context and the target groups' level. The test-retest reliability of the test was 0.78. This shows that the tool was found to be reliable.

Attitude Scale Towards Learning Biology(ASTLB)

This instrument was designed to assess the extent students possess the attitude towards learning biology. It is a five point Likert rating scale which ranges from *strongly agree, agree, undecided, disagree and strongly disagree*. The items of the scale were generated based on review of literature *(Schibeci.1984;Osborne.et.al.2003; Sawtelle.et.al.2009; Kogee.et.al.,2006).* The ASTLB was face validated by subjecting it to peers review. Two educational psychologists reviewed the items to ensure appropriateness and clarity. The ASTLB was pilot tested among the students of standard XI in the three schools in Tirunelveli District, India. They were requested to choose any one of the 5 opinions (*strongly agree, agree, undecided, disagree and strongly disagree)* relating to each item. Responses were scored as 5-1 from "strongly agree" to "strongly disagree" for positive items and 1-5 from "strongly disagree" to "strongly agree" for negative items. Item analysis was done and items with a 't' value of 1.75 and above were selected. The test-retest reliability of the test was 0.82. This shows that the tool was found to be reliable.

Home Environment Inventory (HEI)

The Home Environment Inventory (HEI) is an instrument designed to measure the psycho-social climate of home as perceived by children. The instrument requires pupils to tell the frequency with which a particular parent-child interaction behaviour has been observed by them in their homes.. The HEI was pilot tested among the students

of standard XI in the three schools in Tirunelveli District, India. The students were asked to respond to each item by putting a tick (√) against the entries of a five point scales always, often, sometimes, rarely and never. The weightage assigned are 5, 4, 3, 2 and 1 for the responses *always, often, sometimes, rarely and never* respectively for each item. Item analysis was done and items with a 't' value of 1.75 and above were selected. The content validity of the tool has been established based on expert analysis and judgment. The test-retest reliability of the test was 0.72. This shows that the tool was found to be reliable.

TREATMENT PROCEDURE

Phase I

The tools MAS, ASTLB, HEI and pre-test (BAT) were applied. The responses of the sample to all the tests were scored. The scores obtained by the students were used for further analysis.

Phase II

The study consisted of two different treatments: chalk and talk method of teaching in control group and metacognitive strategy in cooperative learning method in experimental group.

Control group

The control group was taught using chalk and talk method of teaching and the students are answering cognitive questions that were related to the material being taught. Students were asked to share the information with the entire class if they are so desired. The teaching of students in this group was centered on the use of the textbook questions and assignments.

Experimental group

The present study has modified the jigsaw cooperative learning method. The three steps in jigsaw was reduced into two steps according to the suitability of the topic and the subject chosen. In jigsaw, the students are assigned different concepts to learn in the home group. The mastery group was formed by the students from the home group who have learnt the same concept after that regrouping was done. To avoid the confusion in forming the groups thrice, the study has reduced the steps into two for formation of groups. i.e Basic groups and Mastery groups. In this method, the role of teacher is very important to facilitate their learning, after the formation of basic groups. Since the learning among basic group members are taking place with the help of teachers, the learning is directed positively. Jigsaw method was validated using individual try-out and small group try-out and large group try-out.

Step1: Formation of Basic Group in jigsaw cooperative learning

A topic in a subject was broken down into meaningful subtopics called frames. The students in the class are divided into 5 groups with equal number of students. In this study, the sample was divided into 5 groups; each one is called as *basic group* with 7members. Since all the members in the group was identified using numbers, the member in the basic group1 is identified as a1, b1, c1, d1,e1,f1 and g1. The numbering of the members in each basic group is done as follows

Group	Members
Basic Group2	a2, b2, c2, d2, e2,f2 and g2.
Basic Group3	a3, b3, c3, d3, e3,f3 and g3.
Basic Group4	a4, b4, c4, d4,e4,f4 and g4
Basic Group5	a5, b5, c5, d5.e5,,f5 and g5

The topic to be learnt by the students was divided into equal number of frame which is equal to the number of basic groups (5 frames). The members in each group was allotted the same frame i.e. the concept to be learnt by all the members in the basic group. Each basic group is allotted different topics. But members in the each group will be learning the same concept. This provides an opportunity to the group members, to discuss about the concept to be learnt. The students will discuss about the topic for around 30 minutes. Likewise all the basic groups will be discussing about their topic. In case of any difficulties faced in learning the concept, the teacher facilitated the learning of the students for better understanding. Once all the group members were learnt the concept, the process of regrouping was done otherwise called *mastery group*. The pictorial representation of formation of basic group is shown in fig.2

[Insert fig2 here]

Step2: Formation of mastery group in jigsaw cooperative learning

The first member (a1) of each frame forms the mastery group1 i.e named as "A". The second member of each

frame forms the mastery group2 i.e. named as "B". Likewise seven mastery groups are formed and it is named as A, B, C, D, E, and G. The pictorial representation of the formation of the mastery group from the basic groups i.e. basic group1 to basic group5 is shown in fig 3.

[Insert fig3 here]

Step3: Learning process

Since the members in the mastery group(A to G) are from the five basic group the member a1 in 'A' explain about the concept learnt in frame1 to the other members in the group and other members were listen to him. Once it was explained, the second member a2 explain about the concept learnt in frame2. To the rest of the members in the mastery group1(A). Likewise the five frames will be learnt at mastery level on discussion with the members in the mastery group. If there is any need of clarification about the topic learnt, the mastery groups are allowed to discuss with the other mastery group members which is shown in fig.4.

[Insert fig4 here]

The teacher collected the metacognitive statements worksheet used by the students after the class on each day to understand the extent of their metacognition. The teacher helped the low achievers to develop their metacognitive ability by means of informal discussions during the class and in free time.

Phase-III Administration of post-test

Soon after the completion of Phase-II, post-test (using BAT) was conducted to two groups on the same day under the supervision of the investigator. The response of the sample to the post test was scored. The scores obtained after evaluation of the answer sheets were subjected to statistical analysis.

Phase-IV Administration of Retention test

After the time interval of 20 days from the conduct of post-test, retention test (using BAT) administered the to experimental group and control group. The responses of the retention test were scored and the scores were subjected to statistical analysis..

ANALYSIS OF DATA

The data was analysed using the descriptive statistics namely Mean, Standard Deviation and for inferential statistics „t" value was calculated to find out the significance difference between the means of control Group and experimental Group. Hypotheses were checked at 0.05 significance level.

MAJOR FINDINGS

The following are the findings were obtained by testing the hypotheses

i. Control group and experimental group students differ significantly in gain scores. When comparing the gain score of experimental group and control group students, experimental group students are better than the control group students.

ii. **a.** Control group, and experimental group students differ significantly in mean gain score of knowledge objective. When comparing the mean gain score of knowledge objective, experimental group are better than the control group students.

b. Control group and experimental group students differ significantly in mean gain score of understanding objective. When comparing the mean gain score of understanding objective, experimental group students are better than the control group students..

c. Control group and experimental group students differ significantly in mean gain score of application objective. When comparing the mean gain score of application objective, experimental group students are better than the control group students.

iii. Control group and experimental group students differ significantly in retention test scores. When comparing the retention test score of experimental group and control group students, experimental group students are better than the control group students.

iv. Home environment and gain score of control group and experimental group are *not correlated* significantly

v. Metacognitive awareness and gain score of control group are *not correlated* significantly. Metacognitive awareness and gain score of experimental group are *correlated* significantly.

vi. Attitude towards learning biology and gain score of control group and experimental group are *not correlated*

significantly.

DISCUSSION

One of the major findings of the present study is that students taught using the metacognitive cooperative learning approach scored higher marks in achievement in biology than those taught using the chalk and talk method. This may have been achieved by the high level of students' participation in learning activities. All the students in the metacognitive cooperative group performed specific roles in learning which are presented in the classroom to the benefit of all members of the group. The results were in agreement with the study result of *Jbeili(2003)* found that metacognitive strategies using cooperative learning was effective in enhancing mathematical performance and mathematical reasoning among fifth grade students in Jorden. *Ibe(2009)* implemented metacognitive instruction through think-pair-share strategy is effective on classroom participation and science achievement. *Santiago(2010)* found that experimental group received metacognition through peer interaction perform better in achievement in chemistry than the control group.

In the present study, the superiority of metacognitive strategies are remarkable in the attainment of achievement objectives namely knowledge, understanding and application. In achievement objective-wise comparisons, experimental group students taught through cooperative learning based metacognitive strategies performed better than control group. In the control group students remained passive listeners in the class while teachers were explaining the concepts of science. Maximum of time was taken by the teacher to talk and no time was given to the students to interact among themselves. Students involvement was found when there were questions raised by the teacher otherwise the students were silently listening to the teacher. Control group students were never given opportunity to interact among themselves.

The results of the study proved that the metacognitive activities helped the students to score better in retention test. The reason is that when conducting the class in metacognitive environment, the concept will be understood better in the student's memory. So they would be able to retain the matter for a much longer period than other students who are taught in the chalk and talk method.

The coefficient of correlation between home environment and gain score was not significant for control group and experimental group. It can be interpreted that gain score had no dependence on home environment. The result of the present study is in agreement with *Gulsum.et.al.(2010),* who found that the parent's educational level, number of reading materials at home, frequency of buying newspapers, presence of a separate study room, and presence of a computer with internet connection at home were not significantly associated with metacognitive strategy use and science achievement. *Laut(2008)* pointed out there is no significant difference in metacognitive abilities between students living in their home environment and also those who have moved away from their home environment and those who have away from their family to persure undergraduate education

Result of the study indicated that metacognitive awareness has significant correlation with gain score of experimental group students. Therefore for every unit change in metacognitive awareness, there is corresponding increase or decrease in gain score. The results of the study are in agreement with the study of *Zakaria et.al(2007)* who found that, there was a significant relationship between metacognitive awareness and students' achievement in mathematical problem solving. *Countinbo(2007)* who found that metacognitive awareness significantly correlated with reading comprehension of text-book.

The coefficient of correlation between attitude towards learning biology and gain score was not significant for control group and experimental group. The result is contradiction with *Santiago.et.al (2010)* revealed that metacognitive environment in cooperative learning can improve science attitude and achievement.

Educational implications

The findings and discussion of the present study have wide implications for the improvement of present system of school education on both theoretical and practical context. It provides guidelines to curriculum development, examination system and teacher education for the possible ways of minimizing the non-utilization of metacognitive strategies.

Curriculum Development

In the light of the present findings, following recommendations are made**.**

i. The cognitive assumptions of the science curriculum materials, particularly at the higher secondary level be re-examined according to students' metacognitive ability.

ii. Model metacognitive strategy packages may be designed and developed by expert teams and made available to the teachers for their classroom.

iii. Textbooks are dominated by declarative knowledge (facts, definitions and descriptions) whereas procedural (knowing how, knowing why) and situational knowledge should be provided for deep study processes. Text book should be designed by raising meaningful and interesting questions and emphasizing applications. Space may be provided adopting metacognitive strategies in having at least for a few topics.

iv. The existing curricula will not be able to cope with the proposed metacognitive strategies. So the curricula must be modified accordingly. To attain achievement objectives more number of research on metacognitive strategies should be conducted and the strategies should be incorporated in the curriculum.

Examination system

The examination or assessment systems and the way these are conducted have a great impact on implementation and the success of a curriculum. Today, the purpose of science education is not give information to students; instead, it is concerned with the development of a wide range of knowledge and understanding, skills and attitudes, process and procedure in science. But, the examination system is so structured that it only judges knowledge of students and their ability to recall memorized facts. No effect is made to assess the metacognitive ability of the students to apply their acquired knowledge in a different situation. In the light of the above proposition it is recommended that

- In order to help students develop metacognitive skills, the examination system should be restructured and the method of assessing students' achievement be reexamined. Questions set in the exam papers should not aim at assessing students' knowledge by recall of facts. Provision must be made to assess higher order thinking skills and intellectual abilities.

Teacher Education

The study has important implications for teacher education. Teacher trainees understand how to structure and monitor meaningful learning experiences for students. The classroom teacher has a critical role in the turning of actual classroom situations into a metacognitive way. Teacher trainees should have an awareness of know-how of metacognitive skills, how it can be instilled and developed among pupils and how the stage can be prepared for teaching-learning process. Therefore practice should be given to develop metacognitive skills for teacher trainees during inter-teaching practice.

Recommendations

Based on the findings of the present study, the following suggestions are made for implementation of the metacognitive strategies.

Teachers

i. Teachers need to bring in paradigm shift from teacher centered methods of teaching to student centered methods, making the students move away from rote memorization to metacognitive way of learning.

ii. Teachers should make effort to reduce teacher dependent learning situations allowing more space to the students to learn by self-planning, self-monitoring, self-evaluation and self-regulation.

iii. Teachers need to create metacognitive environment to the students in the regular class, wherein there is scope of interaction among the students. More emphasis should be laid for processes of science rather than product of science.

iv. While adopting metacognitive strategies in the classrooms, the teachers should give feedback about the practice of metacognitive activities, which will help them to use it appropriately.

v. Teachers should give more opportunities to students practice metacognitive activities. As students practice the activities, provide guidance and support to the students. Give them feedback until they can use the activities independently. As part of your feedback, inform them about where and when the metacognitive activities are most useful.

vi. Group activities proved to be effective and must be encouraged to develop metacognitive skills for all science subjects.

vii. It is found in the study that a positive relationship exists between home environment and attitude towards learning biology. Hence parents must provide special attention to the educational needs of children. The teachers are needed to identify the nature of home environment of each student in their class. The teachers may interact with parents to provide feasible atmosphere for learning at home.

Policy makers

i. From the findings of the study, the higher secondary students learn better by the use of metacognitive strategies. Hence there is a need to change the teaching methods and strategies adopted in higher secondary level.

ii. Special attention is required when a student has significantly greater difficulty in learning than most students of their age. They were not given special care in their studies nor do teachers identify them as low achievers. From the findings of the study, the low achievers would also show considerable improvement if teachers select the metacognitive strategies that would remove their mental deficit.

iii. Chalk and talk method of teaching biology are not compatible with attaining conceptual learning and higher-order cognitive skills. A major purpose of science education should be to develop instructional practices for developing scientific reasoning skills, critical thinking and decision-making capacity. Since metacognition is an inherent component in developing cognitive skills, students and teachers must be taught how to develop metacognition among students. State level academic bodies should develop metacognitive skill enrichment activities.

iv. Appropriate incentives needs to be provided to the creative teachers to motivate them by making their work known to the rest of the teachers to implement it in their schools also.

DELIMITATIONS

This investigation is restricted to Municipal girls higher secondary school, Tirunelveli, India. The investigation is confined to higher secondary students. The topics Integumentary System, Skeletal System, Respiratory System, Fungai, Algae and Bryophytes are alone covered for the experimental purpose. The study conducted for 45 days.

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Integrating Writing Into Mathematics Clasroom As One Communication Factor

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ABSTRACT

Students in mathematics classrooms are expected to communicate not only using algebraic and geometric language, but also using other language modes to be able to share explicitly their mathematical thinking with others. Research has revealed that only high-achieving students are able to communicate by using algebraic and geometric representation. Recently, writing in mathematics classroom has received increased attention. The present study focuses on integrating writing into the mathematics classrooms by constituting a mathematical communication model. Data were obtained from 229,967 7th grade students who took the Texas Assessment of Knowledge and Skills high-stakes test in the areas of mathematics and writing. A second-order Confirmatory Factor Analysis was used to create mathematical communication model. The fit indices showed that the model was a good fit for the data.

Keywords: writing in mathematics, communication in mathematics, mathematical communication.

INTRODUCTION

National Council of Teachers of Mathematics (NCTM) emphasized the importance of communication by placing communication into two NCTM's calls in 1989 and 2000. These two calls conveyed the idea that communication is an integral part of mathematics classrooms, and it is crucial for students to clarify and develop their mathematical thinking and understanding (NCTM, 1989; 2000). Through a language, students in mathematics classrooms transmit their mathematical thoughts to others; thus enabling them to construct a model of their mathematical thinking (Sierpinska, 1998). Neria and Amit (2004) conducted a study to determine students' preferences across different communication modes in mathematics, and found that the only high achieving students' preferred algebraic communication to represent their mathematical solutions. Cai et al. (1996) reported that students' preference in representing their mathematical solutions was verbal rather than algebraic and geometric modes. Later, Nathan and Koedinger (2000) revealed that students had preferences in explaining their reasoning in non-algebraic modes because algebraic modes were too abstract; thus making students' communication difficult (Hembree, 1992). To enable not only high achieving students but all students to communicate effectively, verbal modes of communication need to be integrated into mathematics classrooms.

Using writing in mathematics classrooms has received increased attention. Seto and Meel (2006) highlighted the importance of writing by noting one of the crucial changes over the past couple decades in mathematics teaching and learning was using writing as a communication tool in mathematics classroom. Written communication in mathematics classrooms is important because students write using communication tools that reflect their mathematical understanding, and involves the mathematical community (Fried & Amid, 2003; Morgan, 1994).

Therefore, written communication in mathematical instruction needs specific attention to help students become more familiar and comfortable with mathematical vocabulary, phrases, shapes, and meanings (Thompson & Rubenstein, 2000). The aim of the present study was to determine how written communication along with algebraic and geometric communication modes constitutes a communication model in mathematics classrooms.

THEORETICAL FRAMEWORK

Communication in Mathematics Classrooms

As stated in NCTM (2000), all students in mathematics classrooms are expected to communicate both by using algebraic and geometric language, and by using other communication tools to share explicitly their mathematical thinking with others. The more students develop mathematical communication, the deeper their mathematical thinking and reasoning skills (NCTM, 1989; 2000). Capraro, Capraro, and Rupley (2011) recently noted that while mathematics is itself a language (i.e., algebraic language, and geometric language) for communication, there are some

other useful communication tools that can be employed in mathematics classrooms to increase students' mathematical understanding.

A language, in its most general spectrum includes four main communication components: reading, writing, listening, and speaking. In traditional mathematics classrooms, the most commonly used communication tool is listening because students in classrooms spend most of their time listening to direct lectures without having an opportunity to use the other three communication tools. However, as in the Curriculum and Evaluations Standards (NCTM, 1989) stated,

The development of a student's power to use mathematics involves learning the signs, symbols, and terms of mathematics. This is best accomplished in problem situations in which students have an opportunity to read, write, and discuss ideas in which the use of the language of mathematics becomes natural. As students communicate their ideas, they learn to clarify, refine, and consolidate their thinking (p. 6).

Burley-Allen (1982) noted that students in K-12 do not lack training in written and reading communication, but it is still unclear whether within reading and writing instructional time students learn how to communicate with mathematical text. Such mathematical texts may require students to have mastery language knowledge in at least reading and writing to capture the messages of texts. In order for students to overcome mathematical language challenges, teachers should integrate various modes of communication into mathematics classrooms, and they should avoid using the words, phrases, and concepts that are familiar to teachers but foreign to their students (Thompson & Rubenstein, 2000). The language of mathematics is limited to school, and most K-12 students do not hear, see, and use the mathematical words, phrases, and concepts in their daily-lives. Because students do not see the application of mathematical words, concepts, and terms, they cannot reach a deep and personal understanding of mathematical facts and algorithms, and their learning become more rote memorization rather than meaningful learning. To make students' mathematical learning more meaningful, teachers should allow students to communicate with their existing knowledge and experiences before introducing brand new mathematical words, terms, and concepts. Therefore, "we need to be sensitive to many issues related to the language of mathematics and students' growing fluency with it" (Thomson & Rubenstein, 2000, p. 1)

Thompson and Rubenstein (2000) noted that the language of mathematics play an essential role at least in three following perspectives: 1) teachers use language to teach as their major means of communication. Adam (2010) emphasized the importance of language in mathematics classroom by noting that no mathematics would be if no language were, 2) students construct, and develop mathematical ideas by using language as a communication tool. According to Skemp (1976), there are two levels of mathematical language: a) surface level of mathematical language, and b) deep level of mathematical language. Students in the surface level need to construct enough mathematical vocabulary to be able to pass to deep level of mathematical language that they can discuss mathematical ideas. 3) Teachers assess students' mathematical understanding through language. NCTM (1989) emphasized that asking questions to understand students' prior mathematical experiences is one of the crucial parts of mathematics instruction in K-12. Teachers need language to be able to assess students' mathematical understanding. Unless teachers ask what students' thinking, they cannot understand how their ideas (Ball, 1994) need to be changed or developed. For example, through reading students' writing, teachers can understand their students' mathematical thinking, reasoning, and understanding; thus they can determine students' weakness and strengths (Bell &Purdy, 1985) in mathematics. Crespo (2000) suggested that teachers can use written and oral communication to assess students' mathematical understanding; however, Ashlock (2006) noted that using written communication in mathematics classroom to assess students' mathematical understanding are more reflective than using oral communication. Later, Bicer, Capraro, and Capraro (2013) added that integrating writing into mathematics classroom is helpful communication practice for teachers to understand their students' mathematical ideas, feelings, and beliefs towards mathematics.

Communication in mathematics is directly and strongly related to problem solving and posing. In order to be a good problem solver in mathematics, students should have two skills: 1) problem representation skills which include words, graphs, pictures, and tables, and 2) symbol manipulation skills which include being able to carry out mathematical and geometrical procedures (Brenner et al., 1997). Students' mathematical problem solving skills mostly depend on their representational skills of mathematical thinking (Brenner et al., 1997). This is because representations enable student to externally reflect on their problem solution processes (Cai, Magone, Wang, & Lane, 1996). Wheeler (1996) noted that students in mathematics classroom use many tools including but not limited to tables, graphs, formulas, equations, arrays, identities, and functions. In order for learners to effectively use these tools, they "must first understand the associated representations and how to link them together" (Drisccoll, 1999, p. 141). Using representational techniques to increase students' problem solving skills can take the form of various oral and written actions; however, the main purpose of using various communication tools is to enhance students' mathematical reasoning (Pugalee, 2001). Borasi et al. (1998) and Gardner (1983) noted that students think and process problems in

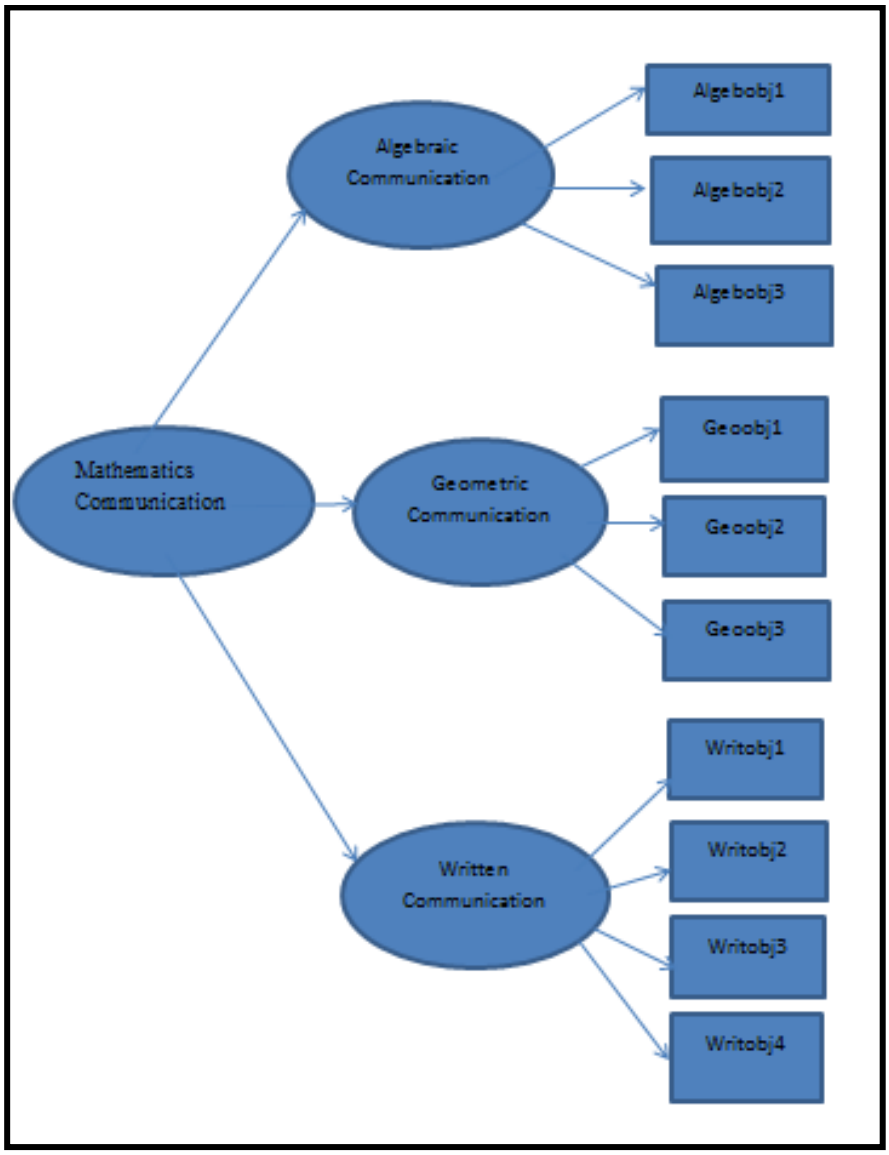
many ways including written, visual, kinesthetic, and oral forms. Students in mathematics classroom should have options for representing their problem solution processes symbolically, verbally, and graphically or diagrammatically (Shield & Galbraith, 1998). In addition, students should be flexible in translating from one representation to another. Driscoll (1999) noted that students who are flexible in using multiple representations have better mathematical perspectives than students who are using only one representation mode and are not flexible in translating from one to another representation mode. Davis (1987) noted that students who are able to translate tables, equations, and graphs for functions have the potential for understanding various vital connections between algebra and geometry. NCTM has called for the use of multiple representational modes in mathematics classroom by suggesting that students should use tables, graphs, pictures, and words before they begin using formal mathematical language like equations, formulas, and functions.

Writing as One Communication Factor in Mathematics Classroom Using writing as one communication tool in mathematics classrooms has received increased attention (Meiner & Rishel, 1998). The reason why writing has received so much attention in mathematics classroom is because writing develops students' mathematical content learning (Meel, 1999), and students' problem solving skills (Bagley & Gallenberger, 1992). Integrating writing into mathematics classroom as one mode of communication and representation develops students' problem solving skills (NCTM, 2000) because it requires students to reflect on their reasoning during the problem solution process (Banger-Drowns, Hurley, & Wilkinson, 2004). Through writing, students gather, analyze, and interpret mathematical questions; thus enabling them to externalize internal representations for directs interpretation (Nahrgang & Petersen, 1986). Duke and Pearson (2002) and Haneda and Wells (2000) found that students in mathematics classrooms with integrated writing had deeper mathematical comprehension than students in mathematics classroom without writing, and Kreeft (1984) found that students' metacognition develops as they become aware of and control their mathematical thinking and understanding. Writing in mathematical classroom is helpful practice because it provides students an opportunity to represent their mathematical reasoning such as; analyze data, compare and contrast mathematical problems, and synthetize relevant mathematical knowledge (Emig, 1977). Bicer, Capraro, and Capraro (2013) noted that mathematical questions sometimes can be complex or difficult for some students because they have difficulty organizing their thoughts by using either algebraic or geometric language. However, writing can help students in organizing their mathematical thinking; thus becoming problem solvers even when they face difficult or complex mathematical questions. "Thus, the writing process may encourage students to solve difficult problems because writing makes difficult problems more concrete rather than an abstract or imaginary thing" (Bicer, Capraro, & Capraro, 2013, p. 366). Because writing requires students to represent their mathematical imagination, their mathematical thinking becomes more concrete, original and insightful (Nagin, 2003). To summarize, writing in mathematics classroom fosters students reasoning skill (Swafford & Bryan, 2000) by converting more complex mathematical questions into concrete ones, and develops their metacognition (Kreeft, 1984; Stanton, 1984) by providing opportunities for them to see what and how they know mathematical terms, axioms, or theorems (Bicer, Capraro, & Capraro, 2013).

Hypothesized Model

Research in mathematics education has emphasized the importance of communication including algebraic, geometric, and written; however, there is no existing model in the literature to represent the component of mathematical communication together. Therefore, in the present study, algebraic, geometric, and written communication modes are considered as mathematical communication modes and these together constitute a hierarchical (higher order) model. The present study seeks to answer the following question: Does the model (integrating written communication along with geometric and algebraic communication into mathematics classroom) yield a fit model to the data?

Figure 1: Hypothesized model with observed variables.



METHODS

In the present study, structural equation modeling (SEM), which is a frequently used statistical approach in education (Thompson, 1998), is employed to determine if the three communication modes in mathematics classroom namely algebraic, geometric, and written together constitute a higher order model. We consider written communication as one factor in addition to algebraic and geometric factors, and these three factors together constitute a hierarchical communication model. Higher-order confirmatory factor analysis is employed because it has the capacity to test complex hierarchical dynamics of the model (Thompson, 2006).

Data Sources

Data were obtained from the Texas Education Agency, the administrators of the Texas Assessment of Knowledge and Skills (TAKS) test every year. For the present study, data were gathered from 229,967 students (48% of male & 52% of female) who were 7th graders, and (high stakes test in) took the TAKS test in 2011. Only scores measuring the mathematics and writing objectives (see in Table 1) of students were taken into consideration.

Table 1: TAKS Mathematics and Writing Objectives

TAKS at Grade 7	Objectives	Expectations from students
TAKS Mathematics	Objective 1	Understanding of numbers. Operations, and quantitative reasoning
	Objective 2	Understanding of patterns, relationships, and algebraic reasoning
	Objective 3	Understanding of geometry and spatial reasoning
	Objective 4	Understanding of the concepts and uses of measurement
	Objective 5	Understanding of probability and statistics
	Objective 6	Understanding of the mathematical process and tools used in problem solving
TAKS Writing	Objective 1	Produce and effective composition for a specific purpose
	Objective 2	Produce a piece of writing that demonstrates of the conventions of spelling, capitalization, punctuation, grammar, usage, and sentence structure
	Objective 3	Recognize appropriate organization of ideas in written text
	Objective 4	Recognize correct and effective sentence construction in written text

The mathematics objectives were divided into two parts: algebraic communication and geometric communication. Observed variables on algebraic communication were chosen as TAKS mathematics objectives 1, 2, and 5. The selection of these objectives for algebraic communication was based on representational technique requiring students to represent their solution with an equation, function, and arithmetic computation. Observed variables for geometric communication were chosen as TAKS mathematics objectives 3, 4, and 6. This selection was based on representational technique requiring students to represent their mathematical solution with either diagrams, graphics, and /or pictorial illustrations. For writing, objectives 1, 2, 3 and 4 selected, as observed variables and the selection was based on representational technique requiring students to represent their justification with words. The hypothesized model with latent and observed variables is illustrated in Figure 2. Mplus was employed to determine how the hypothesized model fit the data set. Missing data is dealt with the default in Mplus.

Evaluation of Fit Model

The values of the model as follow: a) chi-square= 10935 ($p < 0.01$); b) degrees of freedom= 34; c) comparative fit index (CFI) = .993; d) root mean square error of approximation (RMSEA) = .037; e) standardized root mean square residual (SRMR) = .022.

Because chi-square tests are sensitive to sample size, other fit indices need to be considered. Due to large sample size, the chi-square yielded a large quantity, but it was still statistically significant. The other fit indices (RMSEA, CFI, and SRMR) showed that the model was a good fit for the data. To obtain a good model fit, it is suggested that the RMSEA index SHOULD suggested to be lower than .06, CFI index higher than .95 (Hu & Bentler, 1999), and SRMR index lower than .05. According to the model, each path between variables was statistically significant. In Figure 3, the standardized estimates were shown. In Table 2, R-square values for each variable were larger than .5 ($p < .05$) and thus practically important.

Figure 2: Standardized parameter values of the model.

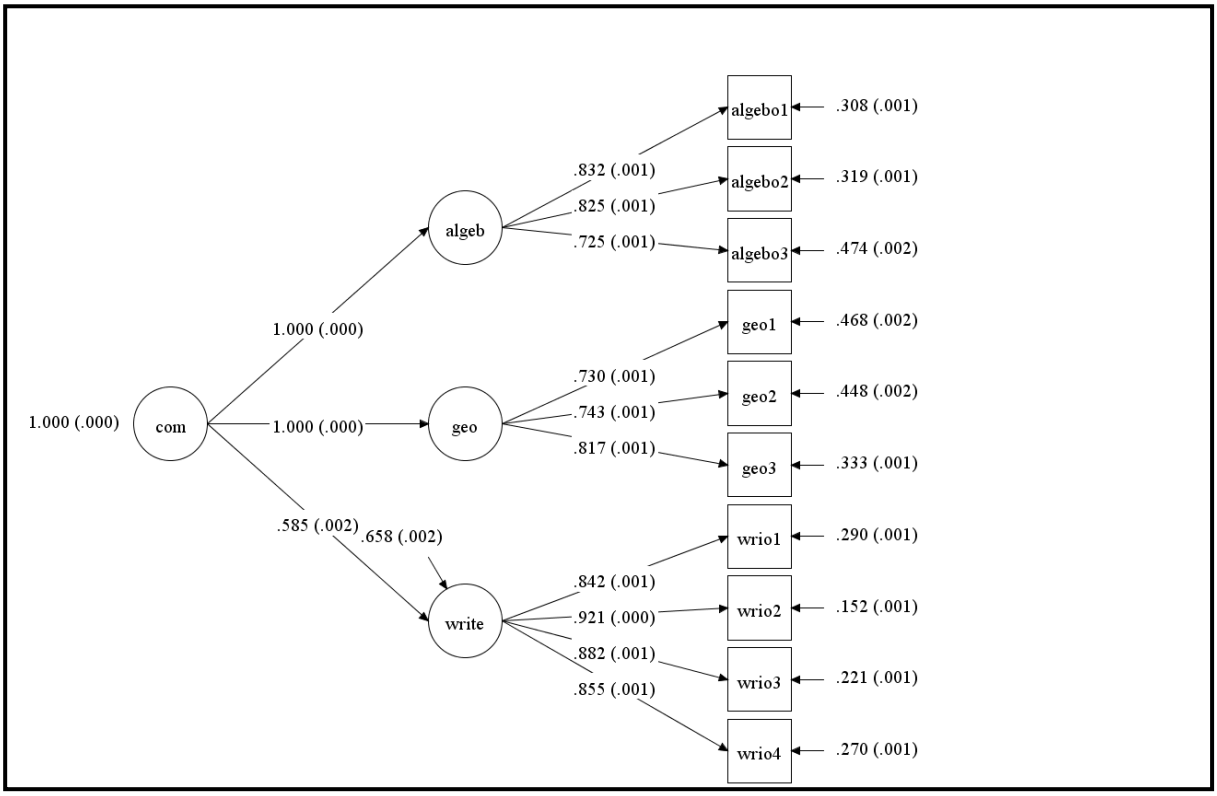


Table 2: R-squared and p Values of Observed Variables

Observed Variable	***R-square***	***p-value***
Algebo1	.692	< .001
Algebo2	.681	< .001
Geo1	.532	< .001
Geo2	.552	< .001
Algebo3	.526	< .001
Geo3	.667	< .001
Wrio1	.710	< .001
Wrio2	.848	< .001

Wrio3	.779	< .001
Wrio4	.730	< .001

DISCUSSION

Writing as one of the communication modes emphasizes the development and deepening of mathematical thinking and reasoning (Neria & Amit, 2004). The present study adds writing as one communication mode into mathematics classrooms along with algebraic and geometric communication to constitute a higher order communication model. The result suggested that these three communication modes together constitute a hierarchical communication in mathematics, and the model yields fit to the data.

Recent research emphasized that integrating writing into mathematics classroom could increase students' problem solving skills (Bicer, Capraro, & Capraro, 2013), but there has been no mathematical communication model which includes various communication modes, and how these communication modes works together in promoting mathematical instruction. The reason why mathematics instruction needs a communication model which includes various communication modes is because research in the mathematics education era has revealed that many students are not flexible in communicating by using algebraic and geometric representation tools to clearly communicate with mathematical problems (Neria & Amit, 2004; Cai et al., 1996, Nathan & Koedinger, 2000). Cai et al. (1996) found that students' preferences were to communicate their mathematical solution in a verbal mode rather than non-verbal (algebraic and geometric modes) (Cai et al., 1996). The reasons why writing needs to be integrated into mathematics classroom along with algebraic and geometric modes of communication are noted in the following paragraphs.

First reason is that writing helps students organize their mathematical thoughts (Bagley & Gallenberger, 1992). Bicer, Capraro, and Capraro (2013) stated, "Some students are not flexible in organizing their thoughts about problems due to either the complexity or difficulty of the problems" (p. 366). However, various writing activities in mathematics classroom can assist students in overcoming the complexity of problems. For example, teachers may use a template outlining general problem solution steps; thus students who have difficulty organizing their mathematical thoughts can follow the template, solve the problem, and more comfortably go back to check their solution. In addition teachers, parents can use writing as one communication tool to assist their children mathematics assignments. Using writing as one communication mode in mathematics may be easier for less-educated parents compared to algebraic and geometric communication modes. Bicer, Capraro, and Capraro (2013a) noted the importance of parental communication on children's mathematics achievement; thus integrating writing in mathematics can be one way to increase parent-child communication. This is important because Bicer, Capraro, and Capraro (2013b) suggested that parents should be able to communicate with their children mathematical understanding and know the mathematical requirements they exposed; thus enabling parents to solve their children mathematical problems by using written communication mode once algebraic and geometric communication modes are too abstract for them.

The second reason why writing as a communication mode needs to be considered in mathematics classroom is because algebraic and geometric communication modes are too difficult and abstract for some students to use when they need to share their mathematical result with others (Neria & Amit, 2004). To illustrate, Hembree (1992) noted that using numbers which were generalized by symbols or letters is an abstraction that makes students' mathematical knowledge construction imaginary. Communicating with previously learnt symbols to learn new mathematical ideas sometimes creates an obstacle for students going forward in mathematics. Herscovich and Linchevski (1994) and Lee and Wheeler (1989) suggested that students should first construct a solid foundation by using numbers and words, but later they can use more abstract modes of mathematical communication (e.g. algebraic communication) to solve mathematical problems. However, the mathematical vocabulary students learn and use during instruction to solve mathematical problems is mostly formal and students do not have an opportunity to see the relationship between the informal (everyday language) and formal mathematical words (Crillo, Bruna, & Herbal-Eisemann, 2010); thus their mathematics learning become less meaningful. Teachers should allow students to use everyday language in their mathematical writing to make their learning more meaningful. When teachers in mathematics classroom encourage students to write down their solutions by using everyday language words, they can later see the connections among the mathematical terms, symbols, definitions, and axioms. Hence, their mathematical learning may be more concrete

rather than an imaginary thing.

The third reason is mostly related to geometry rather than algebra. In geometry classrooms, students should develop their mathematical imagination in order to be able to solve geometrical problems. Bicer, Capraro, and Capraro (2013) noted that one reason why students have difficulty interpreting geometrical problems is due to their lack of spatial thinking or mathematical imagination. Van Hiele (1973) reported a model for geometry teaching and learning that includes five essential levels; 1) visualization, 2) analyzing, 3) generalization, 4) deduction, and 5) rigor. In this model, students who have difficulty visualizing geometrical problems are not expected to pass to the next level because the model developed by Van Hiele (1973) was constructed in hierarchical order. Before students attain the highest level of geometrical thinking (rigor), they need concrete examples and proofs to be able to solve and understand geometrical problems requiring higher level of geometrical thinking. Students at the highest level start thinking mostly in a more geometrical abstract manner. To make students transition to each level easily and enable them to achieve the highest level, teachers can integrate writing into geometry classrooms to make geometrical questions more concrete for students who need to be supported to extend their geometrical imagination. Once students have difficulty with visualization of geometrical shapes (e.g, hexagon, polygon, cubes, and ellipse), they can sketch pictures, figures, or graphs to make the abstract geometrical questions more concrete (Bicer, Capraro, & Capraro, 2013). Writing may be a helpful practice to enable students to achieve the highest level of geometrical thinking; thus students may be able to think in a more abstract manner without having concrete examples.

The last reason why writing needs to be integrated into mathematics classroom is because it not only helps students to develop their mathematical reasoning, metacognition, and higher levels of thinking, but also helps teachers assess students' mathematical understanding. When teachers allow students to write down their mathematical thinking, understanding, or solution, they become owners of their learning (Mayer, Lester, & Pradl, 1983); thus mathematic classrooms become more student center rather than teacher centered one. Writing also helps teachers diagnose students' mathematical misconceptions, strengths, weakness, and feelings towards certain mathematical content. The reason why writing is emphasized is to diagnose allowing teachers to read each student's response carefully. This cannot give in the same time period and with the same effort when a teacher has to listen to each student's oral explanation. To have each students have a voice writing may be the best communication tool enabling teachers to hear and understand what students know and how their mathematical ideas need to be developed or changed.

Overall, writing is one communication mode that provides potential benefits for mathematics teaching and learning; thus needs to be integrated into mathematics classrooms. As stated above, writing enables not only students to increase their mathematical reasoning and representation, but also makes students aware of their mathematical understanding (Kreeft, 1984; Nagin, 2003; Swafford & Bryan, 2000). Writing also helps teachers to assess each student's mathematical understanding in an appropriate way. "Rather than just scoring papers, we need to understand each student's paper diagnostically-looking for patterns, hypothesizing possible causes, and verifying our ideas" (Ashlack, 2006, p. 15). The present study confirmed previous experimental research findings that writing is one factor that can be integrated into mathematics classrooms, and written communication along with algebraic and geometric communication constitute a hierarchical mathematical communication model. As one limitation of the present study, there is no oral communication added into mathematical classroom communication model. Future studies should explore the second order model by adding oral communication observed into mathematic classroom communication.

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Learning in culture and culture of learning: Socio-psychology of Chinese students' learning behaviours.

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ABSTRACT

Chinese education model has two basic components. First, it is Confucian beliefs about society that allow for the formation of such character traits as respect for a teacher, hierarchy of societal structure, importance of keeping face. Second, it is specifics of Chinese education system, which focuses on rote memorization and aims at teaching to the test. These specifics must be taken into consideration when working with students from China. The current paper focuses on the analysis of learning behaviors of Chinese students as well as historical, political, economic and cultural aspects that influence these behaviors. Recommendations for teaching practice when teaching foreign languages to Chinese students are provided.

Keywords: Learning behaviours; student migration; Chinese students

Shift in economic and political paradigm in China that occurred in the last three decades resulted in the increased value of higher education. To prepare high quality specialists for the quickest development of "information society", the Chinese government aims to improve the quality of higher education, as well as supports education abroad and stimulates the return of former immigrants to homeland. This led to the realization that quality study of foreign languages is a necessity: the departments of foreign languages prepare specialists-interpreters; joint programs with partner institutions from abroad allow students to get program completion diplomas from two educational establishments; certificates confirming a certain level of foreign language proficiency provide a serious competitive edge when seeking employment. Invitation of foreign instructors who are native speakers of foreign languages is very popular in higher education institutions in China.

At present, in Russia, students from China make up a majority of all foreign students studying in the country. Educating foreign students from East Asia has economic and political values for the Russian Federation. Working with this category of students it is necessary to take into account specific cultural and psychological features of such students as well as to understand educational models they have experienced during their schooling.

The purpose of this article is to describe learning styles of Chinese students because knowing these styles enables instructors to develop effective models of teaching when working with this student population. The current work is based on a wide array of literature published on this issue. This article is also based on the experiences of the authors, who have all taught either Russian or English to the students in the universities of China (Jiling University and Wuhan University) and Russia (Tomsk Polytechnic University) in 2008-2012. In preparation of this manuscript, data collected and analyzed from surveys, interviews and field observations were used.

Chinese teaching model has two basic components. The first component is the Confucian principles of collectivist society that education in mainland China embraces, even when the teachers and students are absolutely unaware of it (Jin and Cortazzi, 1998). These principles include such components as the high value of education for society; a belief that zeal and hard work can compensate the lack of talent and/or ability; attitude that a teacher is a carrier of undeniable knowledge and is an example to emulate; industriousness in studies which is considered to be the moral obligation of every student not only to oneself, but also to the family.

The second component is the Chinese educational system that is aimed at taking and passing high stakes tests and preparation for the university entrance exams. As such, school is perceived as a place, where structural knowledge is provided and where a student simply has to learn the given information by rote memorization without analysis. School is a place where a teacher decides what is important, and what is not; and students do not have an opportunity to exhibit any initiatives.

The combination of these two factors results in school related behaviors and strategies that Chinese students exhibit, namely preference for passive methods of obtaining knowledge, preference to copy ready-made solutions,

shyness in communications.

Much attention is paid to the learning behaviors that Chinese students exhibit when attending institutions of higher education in the USA, Europe and Australia since these countries are the most popular among Chinese students who choose to study abroad. To illustrate, Gieve and Clark (2005), examine how the attitude towards education change when influenced by the change in educational environment. These researchers note such features of educational behaviors of the Chinese, as:

1. Dependence on external guidance (i.e. expectation of help from an instructor and administration);
2. In-class communication behaviors such as rare participation in discussions, absence of questions, absence of indicators of understanding (or not understanding) of educational material;
3. In writing the essays of Chinese students usually only reproduce the published literature without critical analysis (Gieve and Clark, 2005).

Hu (2002) distinguishes the following characteristics of the Chinese education model:

1. Education requires much effort. Confucian tradition predetermines attitude of teachers and students toward education as a very serious business that requires responsibility and fervor. Success is dependent on effort and not talent or ability. This attitude is in agreement with the Confucian tradition and perception where a persistence and perseverance are considered to be high individual moral values.
2. Education process is centered on a textbook. Chinese education is traditionally assumed to be a process of knowledge accumulation, not its construction or use through direct experiences.
3. Student-teacher relationship is hierarchical but harmonious. Teachers are given respect similar to that given to parents.
4. The goal of teaching is to pass the knowledge from a teacher to students. Since the teacher knows the material and is passing it along, the teacher is a dominant force in the classroom.

In Russian literature problems of adaptation of students from China to the Russian education system are examined by Ivanova (2001), Petrovsky and Guzarova (2010), Kravtsov (2008), Balykhina and Zhao Yu Jiang (2009), Kosheleva and Pak (2011), Kalmykov (2009) and others. Ivanova (2001) distinguishes the following characteristics that are typical for students from East and South-East Asia – high morals and good behavior, high level of self-control and discipline, being reserved and not communicable, quiet attitude towards change, control of emotions, taking care of one's reputation (pp.139-152).

Balykhina and Zhao Yu Jiang (2009) express an opinion that basic descriptions of the Chinese students are emotional restraint; observance of hierarchy (inviolable authority of teacher); "keeping face"; independence. Chinese students usually play passive role in knowledge acquisition. The system of education does not help develop such skills as text predictions based on the title, key words at the beginning of a passage. Majority of Chinese prefer noncommunicative (rational) style of learning , they easily complete the set up exercises, but have a hard time mastering speaking skills and have difficulty in overcoming psychological barrier in the process of communication (p. 21).

Successes of the education system of Peoples Republic of China at the end of the XX and the beginning of the XXI century are believed to be the most impressive since the Second World War. On absolute scale, the system of higher education of PRC is the largest in the world. The acceptance to the institutions of higher learning increased from 7.2 % of number of young people of corresponding age in 1995 to 21% in 2005. According to the forecast for 2020, if the speed of growth of higher education will be 3%, then rates of acceptance will be 38%, if the growth speed will be 4, 5 or 6 percent, then the rate of acceptance to Colleges and Universities will reach 45-52-61% respectively [6, 144]. Despite such success, the percentage of persons with higher education in PRC's labor force remains insignificant. In 2005 there were only approximately 70 million people who received post-secondary education.

The results of school graduation examinations determine the choice of the University as well as the choice of the profession. Entrance exam to the Universities and Colleges of China is Gaokao. It is believed to be the most stressful examination in the world. At present the schools are using the 3+X system which means students take three required subjects (Chinese language, English language and mathematics) plus one choice subject, depending on the University a student is trying to enter.

Paradoxically, only those students who were unable to enter state-sponsored higher education institutions study in private colleges in China. That puts the notion of prestigious quality private education in China to rest. Subsequently, employers do not perceive the graduates of such schools as good candidates for a job in their companies. Such system compels parents to send their children to study abroad.

Prestigious college majors are considered to be those of technical orientation. However, many times students are interested not in the profession they are pursuing but in the status of the University: its rating and percentage of

graduates who land a job.

When questioned about the choice of higher education institution, students of Jilin University (Jilin, Changchun province), who chose the 2+2 program (the joint program of Jilin University and Tomsk Polytechnic University in Russia), responded with such typical answers as “This was a parental choice”, “This University is well known in Northeastern China”, “I was not accepted to a different program”. Out of 34 participating second year students who majored in physics in Jilin University in 2010 only 7 students (20%) dreamed to become physicists while at school; others named professions distant from their current major.

One hundred and thirty students whose major at Jilin University was Russian language studies participated in questionnaire research between 2008 and 2010. Majority of those students responded that they chose their profession based on the results of Gaokao, they had a choice of entering a non-prestigious University for a technical degree or major in non-technical field but in a prestigious University. They preferred the second option.

A majority of 30 polled second-year students of Wuhan University, who attended special summer English program in 2012, entered this university because they earned highest scoring on Gaokao. Results of the survey allowed to distinguish three principal reasons for a choice of a University major:

1. The high scores on the state examination that allowed the entrance to Wuhan University. Students who have high mathematics score could choose among such majors as Engineering, Information Systems and Urban Planning.
2. A prospect of employment in a large city. This is why many students chose such professions as urban planning, civic engineering, and biology, among others.
3. Parents offered their choice of suitable profession and a student had to agree.

Parents indeed determine the future of their children fairly often, and children completely trust them.

Most of the surveyed students in all three cites note that modern young people experiences daily pressures from parents and from society in general. This is due to a huge competition in all spheres of life and heightened parental expectations.

Today’s university students represent generation born in the 1990s. Many researchers believe that they differ greatly from the generation born in the 1980s. The generation of 1990s is believed to be a generation of rational hedonists. The Chinese youth are aligning themselves more and more with the two countries: Unites States and South Korea. The reason for the popularity of the United States is clear – today this country is a leader of the world that successfully propagates its values via mass media. South Korea is an example of a positive synthesis of global pop-culture with Confucian believes/traditions.

In contemporary China the demographic policy of "one family - one child" for the Hans is in place. This interferes with the tradition of families having many children. Therefore, the young generation of Chinese is often labeled the "generation of little emperors", because parents hover over their only child with excessive attention and care from early on. In China, the generation born in 1990s is often criticized for its childishness, and immaturity.

It might be that the explanation to this phenomenon is in the history of this country. For many generations, adults did not develop as an independent individual – through infantilism of adults it was easy to achieve absolute power. Even today, schooling on the whole in China is not aimed at the development of critical and creative thinking, its sole goal is to prepare students to take and pass the high stakes state tests, which test student’s memory, not the ability to analyze information. Accordingly, contemporary Chinese students are not always able and willing to engage in critical or creative thinking and actively show their individuality.

Infantilism demonstrates itself at the University lectures as well. For example, when preparing serious technical presentations that deal with scientific problems, students often adorn such presentations with pictures of different Japanese anime characters, animals and plants.

Our experience working with Chinese students allows us to see the undoubted strengths of Chinese character in that students are really hard-working, responsible, persistent in achieving their goal, remain calm, hold traditional views on social, political, economic and spiritual aspects of life that correspond to the acceptable in China norms of morality.

Students in China do not have strong views on self-expression. They prefer to listen to the teacher rather than expressing their own views or participate in discussion because they are afraid to make a mistake. Such model is prevalent and is developed as a result of schooling in elementary and secondary schools.

Taking all aforementioned specifics into consideration, it is important to cogitate the cultural specifics and

learning strategies that these students prefer to use. Development and socialization of contemporary young people in China happens under severe competition due to high demographic pressures, uneven regional development, cultural and economic differences between urban and agrarian areas of the country, quick stratification of society. As a result, young Chinese are often driven by practical aims, gradually ousting such inherent to Confucian culture moral principles as mutual help, sympathy, and goodwill. Young people in modern China are very pragmatic when considering their future and the choices they face.

When working with students from China, it is recommended that teachers use such pedagogical strategies that aim to stimulate personal achievement, discussions of the discipline matters, individual work and so on. Foreign language teachers should implement communicative methodologies in order to activate learning and to give students a chance to use the language in specific authentic situations, where the learner must use the accumulated language knowledge independently. It is useful in our opinion, to use technology where possible, because this gives students a chance to use the language for communication but without direct connection to the textbook. Such methods imitate the use of language outside of the classroom, in real life and allow students to express personal opinions, teach to use the language knowledge in real-life situations where the language use is often spontaneous. At the same time, such methods allow to lower the affective filter and decrease anxiety while, at the same time, increasing motivation to master the material and the ability to remember the material not by rote memorization but by purposeful use of the material in learning.

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Music and Student Performance: A Conceptual Analysis of the Literature

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ABSTRACT

Related topics to music and student performance that have emerged from scholarly research will be discussed in this article. Specifically, the field of study that involves how the physiology and neurology of the brain is affected by music will be explored. The effect of music and musical training on emotion and cognition will be examined, with Brofenrenner's (1979) ecological systems theory and Bandura's (1986) social cognitive theory utilized as theoretical frameworks to provide a context for music and student achievement. Specific to this article, the history of standardized testing, as well as standardized testing in Texas, will be considered. Studies will be described in which race and gender were identified as mediating factors in academic achievement. Because the focus of this article is related to how musical training in a public high school might affect or improve academic achievement, the music curriculum in Texas public schools will be overviewed. This review also includes a brief discussion of the history of public school music in the United States, as well as a description of Texas public school music courses. Finally, extant studies of the impact of music education on academic achievement are reviewed. This article concludes with a description of gaps in scholarly literature, which may be addressed by future research.

Keywords:

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Related topics to music and student performance that have emerged from scholarly research will be discussed in this article. Specifically, the field of study that involves how the physiology and neurology of the brain is affected by music will be explored. The effect of music and musical training on emotion and cognition will be examined, with Brofenrenner's (1979) ecological systems theory and Bandura's (1986) social cognitive theory utilized as theoretical frameworks to provide a context for music and student achievement. The construct of academic achievement, as defined by standardized test scores, will be discussed. Specific to this article, the history of standardized testing, as well as standardized testing in Texas, will be considered. Studies will be described in which race and gender were identified as mediating factors in academic achievement. Because the focus of this article is related to how musical training in a public high school might affect or improve academic achievement, the music curriculum in Texas public schools will be overviewed. This review also includes a brief discussion of the history of public school music in the United States, as well as a description of Texas public school music courses. Specifically, the Texas Essential Knowledge and Skills (TEKS) for music and the national standards for music are listed, as well as courses offered in Texas public school music that satisfy the TEKS.

Finally, extant studies of the impact of music education on academic achievement are reviewed. Dissertations, quantitative studies, and meta-analyses conducted since 2000 are discussed and critiqued. Also, studies about academic achievement as it relates to race or ethnicity will be discussed. This article concludes with a description of gaps in scholarly literature, which may be addressed by future research.

Music and the Brain

Music and the fine arts have been championed as a means to increase whole-brain engagement and to address increased academic engagement and positive behavioral changes (Respress & Lutfi, 2006; Walker, 1985). Neuroscientists have studied the interaction of music with cognition, emotion and physical phenomena. Zatorre and McGill (2004) commented that "the ability to perceive and process music is not some recent add-on to our cognition,

but that it has been around long enough to be expressed from the earliest stages of our neural development" (p. 314). Zatorre and McGill (2004) also discussed ways in which music may affect brain structure formation. Using medical data and equipment, Gaser and Schlaug (2003) actually demonstrated physical differences in the structure of the brains of musicians and non-musicians.

The idea that brain formation can be positively affected by music was discussed by Wan and Schlaug (2010) as they commented, "research over the past 2 decades has demonstrated that intense musical training can result in plastic changes in the developing brain as well as the adult brain" (p. 567). Similarly, music has been examined as a medical intervention to promote desired behavior and responses in dementia patients (Choi, Lee, Cheong, & Lee, 2009). Further, Wan and Schlaug (2010) have explored the use of musical treatment interventions in children with autism.

Several studies have been conducted to compare the effects of music with musically trained and non-musically trained participants (Baumann, Meyer, & Jancke, 2008; Brattico et al., 2008; Fujioka, Trainor, Ross, Kakigi, & Pantev, 2005; Schon & Besson, 2005; Schon, Magne, & Besson, 2004). The central focus of the comparative studies (i.e., Baumann et al., 2008; Brattico et al., 2008; Fujioka et al., 2005) has been to distinguish differences in brain mapping between musically trained and non-musically trained participants. The three highlighted studies were conducted in Canada (Fujioka et al., 2005), Finland (Brattico et al., 2008), and Switzerland (Baumann et al., 2008).

In each of the studies, researchers confirmed that musical training had a positive measurable effect on brain structure and processing capabilities. Fujioka et al. (2005) revealed implicit musical recognition in both musicians and non-musicians, but higher levels of memory encoding and auditory discrimination in trained musicians. Brattico et al. (2008) confirmed higher levels of auditory discrimination and increased neural activity for trained musicians, as they were able to distinguish non-prototypical chords in harmonic progressions. In respect to higher levels of neural activity, Baumann et al. (2008) discovered that the effects of musical expertise were long-term changes in plasticity of the brain, as well as the processes involved in hearing music.

Another interesting aspect of the effect of music on the brain was highlighted in the research of Wong and Gauthier (2010). Based on neuroimaging data, they described the ways in which music affects multiple areas of the brain. Specifically, they discovered the extensive effects of musical notation on a variety of areas in the brain,

Musical notation automatically engages an extensive multimodal network of areas. Various areas outside the visual cortex, including the primary and associative auditory areas, the somatosensory areas, the audiovisual areas, the parietal areas, the premotor areas, other frontal areas, the precuneus, the cingulate gyrus, and the cerebellum, all showed selectivity for musical notation compared with control visual stimuli. One characteristic of this multimodal network is that most of the areas were found bilaterally. (p. 710)

From neurological studies (e.g., Baumann et al., 2008; Brattico et al., 2008; Fujioka et al., 2005), researchers have indicated that musical training has long-lasting positive effects on brain structure and neural processing. Therefore, these effects have a potential impact on cognitive and affective processes.

In contrast to the positive cognitive effects of music, Tillman and Bigand (2004) presented an alternative view to the philosophy of the perceived benefits of music. They contended that the previous musical experiences of a listener of music work in context with the craft of a composer to create a musical experience. Tillman and Bigand (2004) posited that listener expectancies are a major contributing force to musical perception. Further, they stated, "implicit learning permits listeners to internalize the knowledge required to differentiate subtle changes in musical structures" (p. 218). Accordingly, non-musicians behaved "roughly in the same way as do musicians, the former being as musical as the latter" (Tillman & Bigand, 2004, p. 218). Thus, they argued that the potential for musical training to impact rich musical experiences is minimal. Although Tillman and Bigand's assertion might be feasible, they did not address the cognitive, physiological or emotional benefits of musical training.

Music and Emotion

In addition to cognition, the interaction of music and emotion has been studied extensively. For instance, Reimer (2004) argued that the process of learning can be deeply impacted by music making, with cognitive and affective components working in a complementary fashion. Reimer proposed the following: (a) musical engagement promotes hemispheric laterality in the brain, as both sides are engaged, as well as the use of memory and retrieval systems within the brain; (b) the activities of the brain engaged in music are different for each type of musical event; (c) brain activity that occurs during music making is a learned response; (d) permanent physiological changes in brain structure and neural activity result from musical activity, and each activity produces unique results; and (e) the results of the changes following each activity can be linked to the unique nature of each activity (Reimer, 2004). Reimer summarized his thoughts about the interaction of musical experiences and the brain as he stated,

Every musical experience that we have changes who we are. Although musical experience occurs in the present

during which we are engaged in it, it also endures within us, in our brains and bodies. As brain research suggests, we are changed by each of our experiences. (p. 27)

Music's Capacity to Arouse Emotion

A philosophical divide exists between researchers (e.g., Kivy, 2006) who claim that emotional impact of music is primarily associated with the expectations of the listener and researchers (e.g., Carroll, 2003) who insist that music has its own emotional content, apart from the expectations of the listener. Kivy (2006) has been identified the proponent of the formalist viewpoint (Sizer, 2007). In the formalist view, "music (particularly instrumental or absolute music) cannot arouse emotions in us because music lacks the necessary representational content to do so" (Sizer, 2007, p. 307). To the contrary, Sizer characterized the arousalist viewpoint of music as she wrote that, "arousal theories hold that music is emotion expressive—is sad or happy sounding—in virtue of arousing those emotions in the listener" (p. 307).

Regardless of the merit of each well-constructed argument about the affective or emotional impact of music, numerous researchers (e.g., Kreutz, Bongard, Rohrmann, Hodapp, & Grebe, 2004; Sammler, Grigutsch, Fritz, & Koelsch, 2007; Steinbis, Koelsch, & Sloboda, 2006; Webster & Weir, 2005) have demonstrated physiological effects of music on emotion. Zatorre and McGill (2004) eloquently stated,

One thing we do know is that music can elicit not only psychological mood changes, but also physiological changes in heart rate, respiration and so forth, that mirror the changes in mood. Indeed, music's anxiolytic effect is known not only to the specialist, but to anyone who listens to a favourite piece of music to relax after a trying day. (p. 314)

In the exploration of the complex relationship of music and emotion, several dissertations have been written (e.g., Babani, 2009; Bashwiner, 2010; Haghjoo, 2010; Kazee, 2010). Each author approached this complex relationship in a unique way. Babani (2009) utilized a case study design as he explored the peak emotional experiences of 21 participants. His qualitative approach to research gave voice to the participants as they described the emotional responses they experienced while listening to music of their own selection. Among the 22 categorically different responses noted by participants, physiological responses of listeners in the study were recorded as the most commonly experienced effect of listening to music (Babani, 2009). In his conclusion, Babani justified his use of Maslow's concept of peak experiences, as he stated "in order to grow, people must explore their capabilities for creation and destruction, their frightening intensities, and their exhilarating potentials: music is one way to achieve this" (p. 126).

In a dissertation that combined philosophical theory and the application of that theory to a piece of music, Haghjoo (2010) sought to develop an integrated aesthetic theory. Haghjoo drew heavily upon John Dewey's theory of art as an aesthetic experience, and the idea of dualism, characterized by the Cartesian split point of view. Descartes believed in both the existence of matter and of mind (Smith, 2010). For purposes of his philosophical argument, Haghjoo (2010) defined music as "any organized sound structure whose significance is perceived to lie in the sound structure itself" (p. 80). Haghjoo constructed five levels of meaning within music, embracing such diverse fields as mathematics, semiotics and philosophy. The rich and diverse complexity of his dissertation, as well as the inherent complexity of describing music and emotion, was summarized as Haghjoo stated, "there is always much that is distorted or lost in translation from aural experience into visual and linguistic experience" (p. 223).

Bashwiner (2010) conducted an exhaustive review of the literature, as he sought to develop a biologically grounded theory of musical emotion. Specifically, Bashwiner addressed the questions "(a) Does music arouse emotion?; (b) Which emotions does music arouse?; and (c) How does music arouse emotion?" (2010, p. 67). Drawing upon extensive neurological research, Bashwiner explored brain functioning from the structural, sonic, emotional and musical viewpoints. Bashwiner stated,

musical signalers have a real capacity to arouse and modulate the emotions of perceivers, irrespective of those listeners' past listening experience, i.e., unconditionally. Certainly the perceiver's experience will matter to *some* extent, no doubt to a *large* extent. But music of virtually any sort can be of interest, can be moving, to virtually any (human) listener. (2010, p. 414)

In summary, Bashwiner concluded that music has the power to arouse emotion, and that emotional responses to music by humans appeared to be a biological adaptation.

The fourth dissertation reviewed was Kazee's (2010) phenomenological study of how expressive qualities of music were valued by public school music teachers. She conducted interviews with current public school music teachers in South Carolina. She described her findings as "the importance of learning music through modeling, and that expression is defined through the personal experience of the performer or the receiver, rather than through words" (p. 121). Thus, she confirmed that expression of emotion in music is a vital and interactive part of the

educational process.

Experiences of students in music can range from the satisfaction of grasping a concept such as reading rhythm or pitch, to giving an inspired emotionally, fulfilling performance. At the highest level of performance, Cochrane (2008) described the central role of music in an emotional musical experience by saying:

Hence, overall, it seems that the music just more fully constitutes and dominates the development of the musician's emotion. And although the attention of the subject is not a necessary part of the emotional state, we may say that the musician's experience of the music more fully constitutes his or her experience of the emotion. (p. 339)

Stewart and Williamson (2008) highlighted a need for further music education research that involved interdisciplinary teams of musicians and scientists working in contact to provide ecological validity to claims about the impact of music on the brain. Following the assertion by Reimer (2004) that "every musical experience changes who we are" (p. 27), educators may carefully construct musical experiences that have impact on students' feelings in order to have a lasting, positive effect on their cognitive and aesthetic processes in the brain. In Reimer's concluding thoughts about the interaction of the brain and music, he summarized that these interactive activities "parallel the national standards for music education" (p. 27).

Music and Cognition

Having reviewed literature about the interaction between music and neuroscience, as well as music and emotion, the topic of music and cognition was also explored. Specifically, music and IQ, Gardner's (2006) *Multiple Intelligences: New Horizons*, and the concept of transfer between cognitive activities were discussed. Each of these three areas may inform academic achievement of students who study music.

Music has also been analyzed in regard to its potential effect on IQ. Rather than comparing standardized test scores, Schellenberg (2004) conducted two longitudinal studies in which he explored IQ development of students who had been involved in music lessons for extended periods of time (i.e., 56 months). Although he utilized a small (n = 147) sample size, Schellenberg's measure (i.e., Wechsler IQ test) was highly reliable. Schellenberg asserted that, "these results indicate that formal exposure to music in childhood is associated positively with IQ and with academic performance and that such associations are small but general and long lasting" (p. 457). Wetter, Koerner, and Schwaninger (2009) replicated Schellenberg's results, utilizing participants ages 9 - 12.

Howard Gardner originally introduced his theory of multiple intelligences in 1999, and subsequently revised his theory in 2006. As one of the set on intelligences listed by Gardner (2006), musical intelligence was generally defined as "having a core set of operations, triggered or activated by certain kinds of internal or external information, and susceptible to encoding in a symbol system" (p. 7). Gardner kept his definitions of musical intelligence broad. A problem with this broad definition of musical intelligence is the lack of a means of measurement. Given the subjective nature of music, and Gardner's broad definition, the existence of musical intelligence may be speculated.

Although the scientific rigor supporting Gardner's (2006) theory of musical intelligence seems primarily anecdotal, he postulated that intelligences work in tandem, not in isolation. This general theory has been supported by recent neurological studies. (e.g., Foregard et al., 2008; Schon & Besson, 2005; Schon et al., 2004). Specifically, Foregard et al. (2008) addressed the concept of transfer, defined as "the effect that training (or skill acquisition) in one domain might have on skills and cognitive performances in other domains" (p. 3566). The concept of transfer has formed the basis for the argument that musical training may have positive effects on academic achievement.

Brofenbrenner Ecological Systems Theory

Brofenbrenner (1979) theorized in *The Ecology Of Human Development* that development could be defined as "a lasting change in the way in which a person perceives and deals with his environment" (p. 3). Specifically, he stated that

The ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings and by the larger context in which the settings are embedded. (p. 21)

In references to developmental settings, Brofenbrenner (1979) described various levels of influence each setting may have on development. The most proximal influence on a child came from dyad relationships. These relationships exist in closest proximity to the developing child, within a level Brofenbrenner termed "microsystem" (p. 22). A microsystem has elements that include "face-to face engagement" (p. 22) and "the way in which properties are perceived by persons in that environment" (p. 23). A teacher-student dyad is an example of a relationship that occurs within a microsystem, as are student-student relationships in learning environments.

A larger context of development is the mesosystem, which Brofenbrenner (1979) described as "the interrelations among two or more settings in which the developing person actively participates" (p. 25). Thus, a mesosystem may be formed by the interactions of many microsystems. A classroom or school may function as a mesosystem.

In addition to considering the variety of settings in which human development occurs, Brofenbrenner also posited that molar activities, joint activity dyads, and reciprocity relationships between levels of systems all contribute to development. Each of these concepts (i.e., molar activities, joint activity dyads, and reciprocity) in ecological systems theory inform this proposed study. Molar activities are activities "a behavior possessing a momentum of its own and perceived as having meaning or intent by the participants in the setting" (Brofenbrenner, 1979, p. 45). Daily skill building activities present in academic and music classrooms appear to be examples of molar activities. Joint activity dyads are relationships "in which the two participants perceive themselves as doing something together" (p. 56). The dyadic relationship Brofenbrenner described is one that is often present in musical groups, as each member contributes to the whole. The concept of reciprocity is applicable to the group music setting as well. Reciprocity, as articulated by Brofenbrenner, results when "one member has to coordinate his activities with those of another" (p. 57). An outgrowth of reciprocity is "an acceleration in pace and an increase in complexity of learning processes" (p. 57).

Although individual effort is necessary, a group effort in a musical ensemble is the desired result. Brofenbrenner (1979) also asserted that for developmental growth to occur, "substantive variety" must be present in a child's learning environment (p. 55). Elective courses, specifically music, can be viewed as contributing to the substantive variety described by Brofenbrenner. The nature of music in a public high school setting is one of group instruction. Assessment of learned musical skills, assignment of grades, and personal musical development may be considered on the individual student level, as part of a dyadic relationship or within a microsystem. However, the nature of public high school music performances are usually group oriented; thus, the interaction of musical groups can be considered a mesosystem. Brofenbrenner's Ecological Systems Theory (1979) was viewed as an appropriate fit for this proposed study.

Bandura Social Cognitive Theory

Bandura (1986) stated, "human functioning is explained in terms of a model of triadic reciprocality in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other" (p. 18). Specifically, Bandura sought to bridge the apparent gap between individuals who proposed that nature or inherent qualities were more influential on personal development and individuals who believed that nurture, or environment, was more influential on personal development. Bandura described the interactive nature of behavior, personal factors and environment reciprocal determinism and specifically used the term "triadic reciprocality" to define the interaction of these three areas (1986, pp. 22-23).

Elements within Social Cognitive Theory

Several elements of social cognitive theory (Bandura, 1986) inform this proposed study. Observational learning, motivational factors, personal efficacy, and social support are factors salient to academic achievement and music education. Each of these factors will be discussed as they pertain to academic achievement and music. Observational learning, according to Bandura (1986), is important because, " The capacity to learn by observation enables people to expand their knowledge and skills on the basis of information exhibited and authored by others" (p. 47). Bandura (1986) asserted that, "observational learning is attenuated by four processes; attentional processes, retention processes, production processes, and motivational processes" (p. 51). For purposes of this study, attentional processes, retention processes, and motivational processes will be considered.

Attentional processes "determine what is selectively observed…and what information is extracted from ongoing modeled events" (Bandura, 1986, p. 51). "Skill building and segmenting of complex activities, followed by times of subsequent practice" were activities described by Bandura (1986, p. 55) as means to bolster the efficacy of observational learning. These prescribed activities reflect the components of a music curriculum. "Retention processes" (p. 55) serve to reinforce concepts students have learned. Bandura elaborated, "the facilitative effects of rehearsal on long-term retention derive more from applying memory strategies to modeled information than from sheer repetition" (p. 61).

Motivation and its concomitant effects on observational learning were discussed by Bandura (1986). Specifically, he described outcome expectations and self-perceptions of efficacy. Bandura stated, "success by others raise observers' outcome expectations and judgments of their own performance capabilities" (p. 301). The phenomenon Bandura described is a key element of music curriculum, specifically experienced by students in group settings such as choir, band, or orchestra.

Academic Achievement

For purposes of this article, academic achievement as measured by standardized testing was examined. Standardized testing has been utilized as a means of educational assessment for many years (Ravitch, 2010). Wolf (2007) described educational assessment as "any procedure for gauging the progress of a student in acquiring and mastering educational knowledge and skills" (p. 691). Factors including gender, race, and socioeconomic status, and the observed effects of these factors on academic achievement as measure by standardized testing will be briefly explored. Subsequently, high stakes testing and testing in Texas will be discussed.

Gender and Academic Achievement

Gender is a factor that is included frequently in studies of academic achievement. Marks (2008) investigated the relationship of gender and student achievement, as he analyzed data from 31 counties involved in the Programme for International Student Assessment (PISA). The PISA is an assessment administered by the Organisation for Economic Cooperation and Development (OECD). His examination yielded results that corroborated with previous gender-related achievement research. Specifically, Marks (2008) observed that, according to data from the 2000 PISA administration, girls outperformed boys in reading and boys outperformed girls in mathematics. One salient feature of the PISA is that it has been administered four times (2000, 2003, 2006, 2009) to 15-year olds in each participating country (OECD, 2011).

Chambers and Schreiber (2004) examined data from the National Educational Longitudinal Study of 1988 (NELS:88). They concluded that, on measures of reading achievement, girls outperformed boys. However, according to the National Center For Education Statistics (NCES) on mathematics tests, boys outperformed girls. As of the 2009 administration, boys had continued to outperform girls on mathematics tests and girls outperformed boys on reading tests (NCES, 2011).

Correlated to these results, some researchers (e.g. Anglin, Pirson, & Langer, 2008; Shapka, 2009) have investigated methods to narrow the gender gap for girls in mathematics. Shapka (2009) conducted a longitudinal study involving Canadian students to determine if single sex mathematics education affected mathematics achievement. Her results indicated that, for the participants in her study, girls who received mathematics instruction in an all-girls setting outperformed girls who learned math in a co-educational setting, and outperformed boys who learned mathematics in a co-educational setting. Specifically, she stated "It appears that the all-girl instruction acted as a protective factor by keeping average levels of math achievement relatively high throughout high school" (p. 537).

Anglin et al. (2008) analyzed the application of an instructional practice they termed mindful learning to address gender inequalities in mathematics performance. Mindfulness, as described by the authors was defined as a state of actively looking for novel perspectives" (p. 132). Based on their data, Anglin et al. (2008) were able to conclude that, "when mindful learning is encouraged through conditional instruction, female performance improves to a point where both genders perform equally well on novel math tasks" (p.137).

These two studies serve to illustrate the role research has recently played when the gender gap is examined. As with all studies, many factors may influence results. Although results from both researchers (i.e., Anglin et al., 2008; Shapka, 2009) indicated specific instructional strategies that may narrow the achievement gap, the gap is extant. In the next section, race and socioeconomic status are examined as factors that may affect academic achievement**.**

Race, Socioeconomic Status, and Academic Achievement

Race has long been considered a factor in academic achievement. Brown-Jeffy (2009) examined the interactive effects of school characteristics (i.e., racial make-up) and individual student achievement. After comparing data from the National Assessment of Educational Progress (NAEP), Brown-Jeffy (2009) confirmed findings of previous researchers (e.g., Bali & Alvarez, 2004; Jencks & Phillips, 1998; Stevens, Olivarez, Lan, & Tallant-Runnels, 2004) who documented that students of color have not scored as high as their White peers on standardized testing. Brown-Jeffy (2009) posited that students in schools who have a higher minority population (> 50%) score lower on standardized mathematics testing than their White counterparts. Brown-Jeffy also cited socioeconomic status as the single greatest influence on achievement, as defined by standardized testing.

Considering the academic achievement of Hispanic high school students, Capraro, Capraro, Yetkiner, Rangel-Chavez, and Lewis (2009), examined scores from over 3,000 students in Colorado. They noted that language acquisition and socioeconomic status might have been factors that contributed to the underperformance by Hispanic students. The results of their study confirmed the well-documented achievement gap between Hispanic students and their White and Asian counterparts as measured by standardized tests.

The findings of Capraro et al. (2009) are similar to the findings of Tanner (2006), who examined data on

students from a school district with 80.9% Hispanic population and 70.4% economically disadvantaged. Tanner examined 4,570 10th grade student scores on the 2006 administration of the TAKS test, to determine if score differences existed between students enrolled in music, and those students who were not enrolled in music. Students enrolled in music outscored their non-music peers on TAKS Reading and TAKS Mathematics tests. Tanner (2006) also noted that, as a group, 10th grade non-music students had an average mean score that was below the passing standard for TAKS.

Although Tanner (2006) did not find a statistically significant difference based on ethnicity or socioeconomic status, the lack of difference might have been the result of a largely homogenous sample, in which the high percentage of Hispanic (80.9%) and low socioeconomic status (70.4%) may have confounded the statistical model (Field, 2009). However, when scale scores from Tanner's results were examined, an achievement gap between White and Hispanic students was evident, regardless of music enrollment. On the TAKS Reading test, White students in Tanner's sample averaged 2273, versus 2160 for Hispanic students. On the TAKS Mathematics test, results were similar as White students in Tanner's sample averaged 2195, versus 2079 for Hispanic students.

Lorence (2008) investigated the effect of socioeconomic status on the 1999 Texas Assessment of Academic Skills (TAAS) test and compared scores to the Stanford-9 test. He determined that the SES of a student, as well as that of the school had a statistically significant effect on standardized testing. Students from lower SES family backgrounds and from lower SES schools, scored lower on both types of testing. These results appeared to corroborate the findings of Brown-Jeffy (2009).

Another aspect of Lorence's (2008) study was to compare score increases reported on the TAAS test with increases from National Assessment of Educational Progress (NAEP) test results. He concluded that gains in scores by White and Black Texas students on the TAAS test were not reflected equally by gains in NAEP test scores. However, in the time period he examined (i.e., 1996-2000) scoring increases by Hispanic students were noted on both TAAS and NAEP (2008).

Darling-Hammond (2007) also noted that the scoring gains reported in Texas had not been substantiated by other means of measurement, such as NAEP scores. Additionally, she speculated that the reported gains might have been due to the increased dropout rates by students of color, or that students of color simply were not tested. She further lamented that as achievement gaps had increased, curriculum offerings for non-tested subjects had decreased. Thus, enrichment opportunities such as fine arts were offered less frequently. This sentiment was echoed by Gullatt (2007), who asserted "NCLB identified arts as core academic content. Nevertheless, the core seems to be getting reduced to only those content areas that are tested, and the study of arts has become a victim of the present political environment" (p. 218).

High Stakes Testing

Recently, standardized testing has been reconceptualized as high-stakes testing (e.g., Caine & Caine, 2001; Koretz, 2008; Nichols & Berliner, 2007). The impact of high stakes testing on academic achievement has been examined (Caine & Caine, 2001; Gay, 2007; Hursh, 2005, 2007; Koretz, 2008; Nichols & Berliner, 2007; Ravitch, 2010). As prescribed by the NCLB Act, students must achieve adequate yearly progress (AYP) in order for schools to maintain acceptable ratings. When schools do not meet AYP requirements, penalties are imposed. Thus, schools have begun to teach primarily what is tested in order to satisfy the NCLB Act, and to avoid penalties for not achieving standards. Consequently, a narrowed scope of curriculum has resulted from the NCLB requirements (Caine & Caine, 2001; Gay, 2007; Hursh, 2005, 2007; Koretz, 2008; Nichols & Berliner, 2007; Ravitch, 2010). Specific to this review, the impact of high stakes testing on the arts in schools, as prescribed by the NCLB Act, has been examined (Beveridge, 2010; Gay, 2007; Hursh, 2005, 2007; Spohn, 2008).

Testing in Texas

In Texas, accountability through testing has been a part of the Texas Education Code since 1979 (TEA, 2004b). Although testing in Texas began as an assessment of minimum skills, the national trend toward mastery of skills resulted in the development of the TAKS test in 2003 (TEA, 2004b). The Texas model of accountability was a strong influencing force on the development of the NCLB Act testing regulations (Ravitch, 2010; Wolf, 2007). A major component of the NCLB Act has been AYP and exit level requirements. To address these required NCLB standards, Texas education code prescribes that students must pass all four sections of the TAKS test in grade 11 to graduate from high school. Thus, extensive data have been collected since 2003 on student achievement, as measured by the TAKS test.

Wolf (2007) extolled the benefits of frequent testing, along with the narrowing of curriculum that has resulted from the accountability sanctions prescribed by the NCLB act. However, students and teachers in the arts subjects have often decried the loss of available instructional time due to increased focus on testing. In response to the loss of

what is perceived as opportunities for academic enrichment, and decreased arts instructional time, researchers have attempted to show the concept of transfer between musical experiences and academic achievement (e.g., Andrews, 1997; Bahr & Christensen, 2000; Butzlaff, 2000; Standley, 2008; Vaughn, 2000).

Music in Schools

In his seminal work, *History of Public School Music in America*, Birge (1953) traced the origins of public school music instruction. He focused on the work of Lowell Mason in Boston who in 1834, "issued his famous *Manual of Instruction*, which became the handbook of every singing-school teacher" (p. 27). Following several years of petition and demonstration of skills by students, music was formally approved as a part of Boston public school music curriculum on August 28, 1838 (Birge, 1953). The addition of music to public school curriculum soon spread across the United States. By 1910, several extant methods were published to promote musical literacy (Birge, 1953; Branscome, 2005). Throughout the ensuing 84 years, many different music education method books were published. These varied books had an impact on the development of nine national standards for music education, as developed by the Music Educators National Conference (MENC) (Branscome, 2005).

Developed by the MENC (1994), the nine standards for music education are: (a) singing, alone and with others, a varied repertoire of music; (b) performing on instruments, alone and with others, a varied repertoire of music; (c) improvising melodies, variations, and accompaniments; (d) composing and arranging music within specified guidelines; (e) reading and notating music; (f) listening to, analyzing, and describing music; (g) evaluating music and music performances; (h) understanding relationships between music, the other arts, and disciplines outside the arts; and (i) understanding music in relation to history and culture. The national standards have provided a framework for music instruction across the United States (Conway, 2008; MENC, 1994). However, these standards have not been subjected to uniform measurement. Further, they encompass a broad perspective of music education, and have not been disaggregated to specific grade levels or a scope and sequence format.

Texas Music Curriculum

The State of Texas has curriculum standards for music education as well (TEA, 1997). Published as Chapter 117 of the Texas Education Code, the Texas standards closely resemble the national standards (TEA, 1997). However, the TEKS have been organized into four large strands (TEA, 1997). The Texas Education Code contains a description of the four strands:

Four basic strands--perception, creative expression/performance, historical and cultural heritage, and critical evaluation--provide broad, unifying structures for organizing the knowledge and skills students are expected to acquire. In music, students develop their intellect and refine their emotions, understanding the cultural and creative nature of musical artistry and making connections among music, the other arts, technology, and other aspects of social life. Through creative performance, students apply the expressive technical skills of music and critical-thinking skills to evaluate multiple forms of problem solving. (TEC, 2001, Ch. 117)

Another distinguishing feature of the TEKS for music is that they are organized by grade level. Whereas the nine national standards are broad in scope, the TEKS for music are specific and gradually increase in specificity and complexity. Each set of essential knowledge and skills is divided into elementary, middle school, and high school. For example, the TEKS for a student in high school music level IV are different than the TEKS for a student in elementary music (i.e., Grades 1-5).

To address the teaching of the TEKS for music in high school, several courses are offered in Texas. Among the courses approved by the TEA to address music TEKS are choir, band, and orchestra. The TEKS provide a broad framework for school districts to develop sequenced curriculum.

Band, Choir, and Orchestra in Texas

In the State of Texas, band, choir, and orchestra are among the approved high school courses that fulfill the requirements of the fine arts TEKS (TEC, 2001, Ch. 117). According to the TEA website, courses in each subject (i.e., band, choir, and orchestra) may be taken in four consecutive levels. For students enrolled in band, 12 course numbers are available, for students enrolled in choir eight course numbers are available, and orchestra has eight course numbers available. Instrumental students may enroll in instrumental ensemble as either a band or orchestra student. Also, a student may be enrolled in more than one musical ensemble concurrently, or consecutively. Table 1 contains these course offerings.

Table 1

Course Offerings for High School Music in Texas

Music Offering	Level 1	Level 2	Level 3	Level 4
Band				
Band	Y	Y	Y	Y
Jazz Band	Y	Y	Y	Y
Instrumental Ensemble	Y	Y	Y	Y
Choir				
Choir	Y	Y	Y	Y
Vocal Ensemble	Y	Y	Y	Y
Orchestra				
Orchestra	Y	Y	Y	Y
Instrumental Ensemble	Y	Y	Y	Y

A way in which competency in the music TEKS is demonstrated annually is participation by choirs, bands and orchestras in University Interscholastic League (UIL) music contests. These contests provide specific ways in which students may demonstrate mastery of TEKS concepts in an adjudicated format. In the 2009-10 school year, more than 500,00 students participated in UIL music contests (UIL, 2011). According to the UIL website, 849 marching bands, 3,208 concert bands, 1,152 orchestras, 2,750 choirs, 109,699 solo entries, and 16,846 ensemble entries competed in UIL contests during the 2009-2010 school year (UIL, 2011). Similarly, 35,882 students entered the all-state audition process in band, orchestra and choir (TMEA, 2011).

Music and Academic Achievement

The notion that studying one discipline (e.g., music) may improve another set of cognitive skills has been defined as transfer (Foregard et al., 2008) that may enhance cognitive functioning. As previously discussed, neurological changes have been documented for individuals with musical training. Similarly, the effect of music on emotion has been discussed (Kreutz et al., 2004; Sammler et al., 2007; Steinbis et al., 2006; Webster & Weir, 2005). The remainder of this review of literature contains critiques of dissertations, meta-analyses, and individual studies that have been conducted to demonstrate correlational relationships or imply causality for the positive effect of music study on academic achievement. Finally, the review will include those articles in which the benefits of music participation are acknowledged, but for reasons other than academic achievement.

Studies Published in Academic Journals

A keyword search for music and academic achievement yielded results that included quantitative studies and literature reviews. The majority of the searches (14 of 22 articles) indicated the positive relationships between music and academic achievement. In other articles, authors (e.g., Cox & Stephens, 2006; McKelvie & Low, 2002; Pietschnig, Voracek, & Formann, 2010) chose not to endorse claims that music instruction or listening can have positive academic benefits. Several authors (e.g., Graziano, Peterson, & Shaw, 1999; Kinney, 2008; Schellenberg, 2004; Schneider & Klotz, 2000) ascribed positive benefits to students that came from music participation, but acknowledged that other factors such as motivation, SES, and family background may have confounded their study results.

Music and Academic Achievement Dissertations

Several keyword searches were conducted to find dissertations written about music and academic achievement. Using Academic Search Complete, eight dissertations, which had been written since 2006, were located. Of these eight dissertations, four were specifically targeted studies about the relationship of middle school music students with academic achievement.

Middle School Music Students and Academic Achievement

Huber (2009) examined relationships between instrumental music instruction and reading achievements. Although her literature review was scant, she was highly critical of Howard Gardner's (2006) multiple intelligence theory. Huber's study was weakened by a small (n = 267) sample size. The result of her study did show a "positive but weak relationship between the study of music and reading development among middle school students" (p. 79). This finding was echoed in her acceptance and rejection of null hypotheses, as only four were rejected. Additionally, no mention of statistical adjustments (e.g., Bonferroni) was made, although multiple instances of data analyses were described. Thus, the statistical significance of her results might be questionable.

Helmrich (2009) examined ways in which music instruction may have positively affected algebra achievement scores during a three year period in Maryland. She gave extensive review of brain functioning and neurology as associated with music and with mathematics. For her study, she utilized a sample size of 6,076 participants, which bolstered the credibility of her findings. Interestingly, she noted that students who received instrumental music instruction appeared to achieve at a higher academic level than students who received choral music instruction or no music instruction. However, Helmrich also demonstrated that students who received choral instruction achieved at a higher academic level than students who received no musical instruction. In her concluding chapters, she gave attention the cognitive, neurological, and developmental benefits that may be gained for adolescents who receive formal musical instruction.

Similar to Huber (2009), Deere (2010) analyzed the relationship of musical participation to academic achievement in middle school students. Deere (2010) utilized two quantitative data gathering methods in her study; namely, surveys completed by 215 adults in two school districts, and a comparison of 271 students' test scores between 4th grade music and non-music students and 8th grade music and non-music students. In her study, Deere, replicating a 2006 study by Linan, surveyed teachers, administrators and principals in two school districts in western Tennessee. Results from 215 respondents indicated " 93.9% of School System A and 90.6% of School System B agree or strongly agree that music education does influence the learning environment" (Deere, 2010, p. 77). In the second part of her study, Deere examined differences in reading and mathematics scores on the Tennessee Comprehensive Assessment Program test (TCAP). Although statistically significant differences were shown for the 4th grade students (music students scored higher on the TCAP reading and mathematics tests), the results were not similar for 8th grade students. On the TCAP reading tests, music students scored higher than their non-music counterparts, but did not score statistically significantly higher on mathematics tests. The results for 8th grade students appear to contrast to the results of Helmrich (2009), who revealed that students who had received three years of musical instruction exhibited higher mathematical achievement on Maryland standardized testing than students who received less musical instruction.

Kurt (2010) demonstrated positive associations between instrumental study and literacy achievement as defined by the Iowa Test of Basic Skills, and the Reading Measures of Academic Progress developed by the Northwest Evaluation Association. Utilizing a pairwise comparison design, Kurt compared high SES versus low SES students. Additionally, he compared students who had received instrumental instruction for a short time, versus those students who had received instrumental instruction for a long time. However, his use of a small sample size (n = 38), and no mention of statistical adjustments he used for repeated measures of testing, made his conclusions statistically questionable.

In sum, four dissertations regarding middle school music students and academic achievement were examined. Due to methodological weaknesses that were present in two of the four dissertations, two dissertations (Deere, 2010; Helmrich, 2009) provided useable information regarding the positive association of music instruction and academic achievement in middle school.

High School Music Students and Academic Achievement

Dissertations in which the relationship of studying music in high school and academic benefits associated with studying music were located in Academic Search Complete and ERIC. The three dissertations were published in a period of five years from 2006 to 2011. Of the three extant dissertations, one (Allen, 2006) was a qualitative study, and two (Davenport, 2010; Tanner, 2006) were quantitative.

Allen (2006) surveyed 187 high school students, as well as 18 counselors about the perceived academic benefits of fine arts instruction. He also analyzed data from standardized tests (i.e., SAT, ACT, and TAKS) to determine whether music students outperformed non-music students. The qualitative inquiry yielded strong indications that students in the arts, as well as high school counselors who participated in the surveys, perceived that the arts had a positive effect on academic achievement. Data from the standardized tests indicated that, for the sample (n = 187) examined, students in the arts outperformed their campus averages and state averages. Although Allen's sample size may not allow for generalization, his results did concur with Davenport (2010), who compared English and

mathematics scores of students enrolled in instrumental music programs versus students not enrolled instrumental music programs in Maryland.

Davenport (2010) compared two groups of 90 students each; students enrolled in instrumental music programs versus students not enrolled instrumental music programs. His quantitative study participants were drawn from a sample population of over 121,000 students (Davenport, 2010). He divided the sample evenly between students who were not enrolled in music and students who were enrolled in music. A unique feature of Davenport's (2010) study was that he compared both middle school students and high school students. Within each comparison group (i.e., middle school and high school), standardized English and mathematics test scores from Maryland School Assessments (MSA) were examined. Davenport concluded that music enrollment had no statistically significant effect for middle school students. However, high school instrumental music students out performed non-instrumental music students on the MSA English and Mathematics tests (Davenport, 2010). Davenport's conclusions provided a general sense of the influence high school instrumental music instruction may have had on academic achievement, as defined by standardized testing. However, he chose not to analyze the potential mediating effect of gender, ethnicity, or SES on his research findings. Further, his results are in contrast to Deere (2010) and Helmrich (2009), who each concluded that instrumental instruction contributed to academic achievement in middle school students.

Similar to Allen's (2006) research, Tanner (2006) explored how high school music enrollment may have contributed to academic achievement on the 2006 administration of the TAKS test. Tanner, however, chose to focus his research on a sample of 4,570 students in a large (63,000 students) school district on the border of Texas and Mexico. Tanner's results revealed that grade 10 students enrolled in music (i.e., band, choir, or orchestra) did outperform their non-music counterparts on the TAKS English and TAKS Mathematics test (Tanner, 2006). According to the data examined, Tanner concluded that music enrollment produced a small effect size (d = 0.06) when gender and ethnicity were considered (Tanner, 2006). Potentially, the large percentage of minority students (87%) and of economically disadvantaged (70%) in the sample of 4,570 students may have contributed to Tanner's finding that SES and ethnicity were not statistically significant factors in academic achievement. However, Tanner did posit that gender was a statistically significant factor, in the academic achievement of music students who outperformed non-music students on TAKS English and Mathematics tests. Specifically, "Female students who participated in a music program outscored all other groups" (Tanner, 2006, p. 57). Gender, although statistically significant, had a small (d = 0.05) effect size, according to Cohen's (1988) criteria. Another interesting result of Tanner's study was that music students, on average, passed both TAKS English and Mathematics tests, whereas non-music students, on average did not pass the TAKS Mathematics tests (Tanner, 2006).

Similarities existed in the three dissertations written about academic achievement differences for high school music versus non-music students. Each author (Allen, 2006; Davenport, 2010; Tanner, 2006) concluded that students enrolled in high school music classes outperformed their colleagues who were not enrolled in music classes. Although Tanner (2006) was the only author to include effect sizes in his presentation of findings, each author considered a different sample size, with similar conclusions. Tanner's sample (n = 4,570) was sufficiently large to have statistical power (Faul et al., 2007). Allen's sample (n = 187) and Davenport's sample (n = 180) were both considerably smaller. However, Allen (2006) and Davenport (2010) each employed criterion and purposive sampling in different ways. Allen began his mixed method study with a survey and focus groups, and followed the survey results with quantitative analysis of the academic achievement of the students in his sample versus campus and state averages. Davenport utilized stratified random sampling to create two comparison groups for middle school students and high school students. Although each author employed different research methods and sampling strategies, in all three studies, academic achievement was compared for music students versus non-music students, as measured by standardized testing. Specifically, Allen (2006) and Tanner (2006) examined TAKS data; Davenport (2010) examined MSA data. All three researchers indicated, although utilizing vastly different samples, that students enrolled in music outperformed their non-music counterparts on standardized tests. In addition to dissertations written about the potential of music instruction to positively affect academic achievement, journal articles were located through use of Academic Search Complete and ERIC.

Meta-Analyses of Music's Effect on Academic Achievement

Searching for meta-analyses that reviewed studies of the potential for music to impact academic achievement yielded five results. The meta-analyses were conducted from 2000-2008. A comparison of the meta-analyses is presented in Table 2. Of the five studies, two were by the same author (Hetland, 2000a, 2000b). In her first analysis, Hetland (2000a) reviewed studies that had been conducted whose participants were children ages 3-15. Specifically, she examined studies in which music instruction preceded spatial-temporal tasks, such as object assembly. In her second analysis, Hetland (2000b) compared studies in which listening to music prior to spatial-temporal tasks enhanced the participants' success on spatial-temporal tasks. She concluded that modest effects were present which indicated that spatial-temporal task performance increased after participants listened to music (Hetland, 2000b).

Butzlaff (2000) compared 30 studies about the effect of music on academic achievement. Participants whose data he examined were primarily high-school students who had taken the SAT (10 studies), and the remaining participants ranged from kindergarten to 12th grade (Butzlaff, 2000). He concluded that, of the 24 correlational studies he examined, all showed strong correlations between academic success in reading achievement and music instruction. However, he also posited that the six experimental studies he examined showed little or no evidence of causality (Butzlaff, 2000). Much of the data examined by Butzlaff came from College Board SAT information. Vaughn (2000) analyzed the relationship of mathematics achievement to musical instruction in high school students. Similar to Butzlaff (2000), Vaughn examined 10 years of SAT data. Her conclusion was that there existed "a modest positive association between the voluntary study of music, on the one hand, and mathematical achievement, on the other hand" (2000, p. 154).

A compendium, commissioned by the Arts Education Partnership, titled *Critical Links*, (2002) compiled 15 studies, including meta-analyses (Butzlaff, 2000; Hetland, 2000a, 2000b; Vaughn, 2000), as well as 11 other studies, and one additional meta-analysis by Standley (1996) about the effect of music to achieve therapy objectives. Deasy cited the previously mentioned meta-analyses by Hetland (2000a, 2000b), as well as Butzlaff (2000) in support of the concept of transfer. Deasy also included two studies (i.e. Bilhartz, Bruhn, & Olson, 2000; Costa-Giomi, 1999) that investigated links between private piano instruction and cognitive development. Although none of the results from studies in the music section of *Critical Links* allowed readers to imply causation, correlation between music and improved academic functioning was present.

In 2008, Standley conducted a meta-analysis of 30 studies that investigated the relationship of music instruction to developing reading skills. Her analysis involved studies whose participants ranged from pre-Kindergarten to 8th grade. Although the sample sizes were relatively small (average n = 64.7), Standley did note an overall effect size of Cohen's d = 0.32 (2008, p. 22). Standley observed that music instruction appeared to have a greater effect on reading skills than she observed in studies about other reading strategies. A comparison of the five meta-analyses is presented in Table 2.

Table 2

Meta-Analyses of Music and Academic Achievement

Author	Year	Studies	Mean Effect Size	Participant Ages
Butzlaff	2000	30	r = .10	9-12 grade
Hetland	2000	15	r = .21	PreK-9
Hetland	2000	26	r = .23	PreK-9th
Standley	2008	20	d = 0.32	PreK-8th
Vaughn	2000	30	r = .23	9-12 grade

In his concluding essay following the music section of the compendium *Critical Links*, Scripp (2002) suggested that, "music functions as a catalyst for cognitive skills and aspects of social-emotional development across disciplines especially when conditions for transfer are optimized through teaching to principles and processes that engage and deepen learning across disciplines" (p. 132).

Considering the aforementioned meta-analyses, two trends emerged: the methods of researchers and participant characteristics. Specifically, younger students were often studied in interdisciplinary settings. Although studies were conducted in which children were assigned to control groups and condition groups, as in experimental design research, the majority of the studies were correlational or causal-comparative in design. In studies that involved older students, researchers relied heavily on self-reported data, such as SAT demographic data. The correlation was often asserted that academic functioning was improved by music instruction, or even simply by listening to music. However, given the complex nature of any educational setting, readers are cautioned about implied causality from these meta-analyses. The quest to ascribe improved academic functioning to music participation has also been explored in journal articles.

Academic Achievement and Music Participation

Several studies (i.e., Fitzpatrick, 2006; Gouzouasis et al., 2007; Miksza, 2007; Southgate & Roscigno, 2009) were

examined in which the academic achievement of a large sample of students who studied music was compared to students who did not study music. Fitzpatrick (2006) examined Ohio standardized test scores, and concluded that students who studied instrumental music in grades 9 through 12 outscored their cohorts who did not study instrumental music. In the sample of over 15,000 students, Fitzpatrick noted that, for the 2003-04 school year, students who studied instrumental music outscored their non-music counterparts on all tests. Specifically, Fitzpatrick observed that students who studied instrumental music "outperformed non-instrumental students of like socioeconomic status in every subject and at every grade level" (p. 77).

Although Fitzpatrick's study was limited to one school district in Ohio, other researchers (i.e., Gouzouasis et al., 2007; Miksza, 2007; Southgate & Roscigno, 2009) have compared, at the national level, test score differences for students who studied music versus those students who did not study music. In each of these studies, researchers noted positive associations between music enrollment and academic achievement. Moreover, each of these studies yielded similar results, namely, that students enrolled in choir, band, or orchestra outscored their non-music counterparts on various measures of academic achievement. A summary of these studies is presented in Table 3.

Table 3

Large Scale Studies of Test Scores for Music Students Versus Non-Music Students

Year	Author	Location	*n*	Data Source	Major Finding
2007	Gouzouasis et al.	Canada	61,431[a]	British Columbia Standardized test	Music students in grades 11 and 12 outscored non-music students in math and English
2007	Miksza	United States	5,335	NELS:88	Music students' scores were consistently higher than non-music students
2009	Southgate & Roscigno	United States	7,781 4,736	NELS:88, ECLS:K	For both ages, music students achieved at higher levels in English, math

[a] This figure is a 3 year average

Additional Benefits of Music

Many researchers have espoused the correlations between music participation and academic achievement. However, the role of music has been examined in ways other than as a means to improve academic achievement. The topics explored by these authors included music in life, motivation, and engagement.

Importance of Music in Life and School

Music was examined in light of its importance in the life of adolescents (Campbell et al., 2007). Music was viewed as an integral part of the life of adolescents. Specifically, overwhelming support was expressed for music as a necessary component of adolescent life, with support for and comments to probe concerning the work of music educators (Campbell et al., 2007).

The role of music in high school life was explored by Abril and Gault (2008) as they surveyed 541 principals from various areas of the United States. Their results indicated that principals, while not viewing improved academic function as a result of music participation, did acknowledge the importance of music in schools. Abril and Gault (2007) noted that aspects of music the principals most valued were,

broad educational outcomes that were thought to be most effectively met through participation in music included cooperation/teamwork and self-esteem. Cooperation is a skill necessary for ensembles to be successful in performance, and self-esteem is likely to be observed through the students' various performances throughout a school year. (p. 65)

Motivation and Engagement

Academic achievement has been associated with engagement and motivation (Walker & Greene, 2009). Specifically, student membership in a school group has been associated with engagement and motivation. Schmidt (2005) surveyed 300 band students in grades 7-12, and concluded that motivation and inclusion in a group was a key factor in their academic success. Similarly, Walker and Greene (2009) queried 249 high school students to ascertain

factors involved in academic success. Although the focus of their study was not specifically music participation, they examined academic motivation in the high school setting. Based on the responses of their participants, Walker and Greene reported, "high school students who report a sense of belonging are more likely to focus on the development of understanding and then use cognitive effort to make that understanding possible" (2009, p. 469). This study has applicability to the notion that being in a musical group (i.e., band, choir, or orchestra) may serve as a motivational force for those students. Schmidt (2005) posited that participants in his study expressed their belief that being in a group positively affected their work outcomes. Eady and Wilson (2004) expressed similar thoughts about the interdisciplinary aspects of music and the benefits of integrating music across various areas of curriculum.

In a related manner, Črnčec et al. (2006) explored the "potential cognitive and academic benefits of music to children" (p. 579). A thorough review of literature (107 references) was provided as the authors explored the potential effect of music listening on tasks, music instruction on academic achievement, and effect of music on cognitive arousal (Črnčec et al., 2006). They concluded that, "the narrow focus on children's cognitive development inherent in the literature serves to exclude other important domains, including socio-emotional and physical development" (2006, p. 589). The focus of this review is on the extant literature written to address the relationship of music instruction and academic achievement.

Summary

In sum, studies have been conducted in which music enrollment appeared to be positively correlated to academic achievement (i.e., Catterall, 1998; Fitzpatrick, 2006; Gouzouasis et al., 2007; Miksza, 2007; Southgate & Roscigno, 2009). However, each of the authors cautioned that other factors (e.g., SES, race, and gender) may have influenced their results. Considering the literature in this review, gaps have become evident. Several studies involved younger children (e.g., Bahr & Christensen, 2000; Deere, 2010; Helmrich, 2009; Huber, 2009; Johnson & Memmott, 2006; Kinney, 2008; Kurt, 2010; McKelvie & Low, 2002; Rauscher & Shaw, 1998; Schellenberg, 2004), but few researchers (e.g., Allen, 2006; Cox & Stephens, 2006; Fitzpatrick, 2006; Gouzouasis et al., 2007; Schneider & Klotz, 2000;) specifically considered high school students. Researchers have utilized standardized test scores from large sample in Canada (Gouzouasis et al., 2007). However, no other studies of this magnitude, in which scores on state standardized tests were examined, have been conducted in the United States. Several studies have been conducted in the United States in which researchers utilized small sample sizes (e.g., Davenport, 2010; Deere, 2010; Kurt, 2010). Davenport (2010) considered a stratified sample of 180 students from a population of over 121, 000 students (p. 47). Tanner (2006) examined 17,904 10th grade student scores from one school district of over 63,000 students. Kurt (2010) utilized a small sample size (n = 38), as did Deere (n = 271). As the No Child Left Behind Act has mandated Annual Yearly Progress on state standardized tests, research has been scant in which the academic achievement of music students has been compared to the academic achievement of non-music students and utilized state standardized testing as a measure of academic achievement.

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On The Information Literacy Of College Language Teachers Under Information Technology Environment

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ABSTRACT

Nowadays, teachers' information literacy has become a key factor in foreign language teaching. Information literacy of foreign language teachers includes four aspects: information awareness, information knowledge, information competence, and integration competence.

The questionnaire is designed to investigate the current situation of information literacy of foreign language teachers. It is distributed among 244 college English teachers in 16 universities in China. The findings show that on the whole, college English teachers' information literacy is at a low level. This hinders the effective use of information technology in foreign language teaching.

It is necessary for foreign language teachers to improve their information literacy under the technology-based environment of foreign language teaching. Practical suggestions are put forward from the following aspects: foreign language teachers' learning; construction of foreign language resources; preparation for courses with the help of information resources; classroom teaching practice and supervision of students' homework in autonomous learning.

Keywords: Information Technology; Information Literacy; Information Resources; Information Capability; Foreign Language Teachers

1. Introduction

21st century is the century of Information Technology; therefore Information Technology Education is the inevitable result of the development of the era. According to the documents released by the Ministry of Education, Information Technology should be a great approach that helps improve the effect of teaching, and we should make full use of teaching software and teaching resources and improve the establishment of new model of language teaching and online evaluation system.

In recent years, with the rapid development of the information technology, digital language labs have replaced the simulated ones. The equipments become more integrated and multifunctional. Besides the traditional functions, most language labs can provide various learning systems like Interactive Online Learning System, Teacher-student Communication Platform, Resource Management System, Online Testing and Evaluation Platform and so on. Furthermore, a lot of universities have begun to construct their own database for foreign language teaching. However, since most college English teachers are not informational conscious and not competent in dealing with the information resources, they can not make the best of them. Moreover, great emphasis has been put on the construction of the state-of-the-art language labs, while teachers' information literacy remains at a pretty low level.

2. Connotation of Information Literacy

College English as a compulsory course for college students has always played an important part in the college education curriculums. With the rapid development of Information Technology, great opportunities have been created for college English education. In 2004, the Ministry of Education launched a reform applying computers and internet in college English teaching. Autonomous learning has been realized since then. College English teaching has transformed from teacher-centered mode to student-centered mode. During this revolutionary transformation, the development of Information Technology is a key factor that accelerates the change. This means the college English teachers should arm themselves with modern teaching principles, the competence of using information technology, and a sense of doing research, which will help them cultivate more creative talents.

According to Aiwu Pan (2011), Information Literacy refers to the competence to recognize, obtain, evaluate, use and transfer of the information. Teachers' Information Literacy means the competence to collect, analyze,

process, and present the information in class. In addition, teachers should be familiar with information technology and be competent in solving the problems under the Informative Teaching Mode. Li Yu (2009) pointed out that English teachers of the new age should have Information Literacy which includes information awareness, information knowledge, information competence, integration competence and information ethic. We believe, compared with information ethic, the first four aspects of Information Literacy are more essential to the practice of online teaching and students' self-learning supervision. Therefore, we mainly investigated the first four aspects in this research.

Information awareness refers to the teachers' sensitivity to information technology and their recognition of its importance. Information knowledge is what teachers know about the theories and techniques of information technology. Information competence is the core of information literacy, which means teachers' capacity for receiving, analyzing, processing, evaluating, creating and transmitting information. Integration competence is what teachers' information literacy intends to achieve. Teachers can design teaching activities, fulfill teaching tasks according to teaching principles, characteristics of courses with the help of necessary multimedia, internet and so on.

3. The Research

Under the information technology environment, college English teachers have to meet the new requirements: besides the basic language competence, college English teachers of the 21st century should have a good command of information literacy. Information literacy of college English teachers should include the ability of enhancing the effect of teaching by applying the information technology to make the most of the database of foreign language teaching and multimedia teaching model. Besides, it should reflect the teachers' particular attitude towards technology, and their special needs. Hence, how to evaluate and improve college English teachers' information literacy remains a problem.

To investigate the status quo of information literacy among college English teachers, the questionnaire with questions concerning these four aspects is designed. The questionnaire consists of 25 items and all of the questions are close-ended. The questionnaire survey was first pilot studied on some college English teachers in order to see whether some items need to be deleted, added, modified, or reordered, whether the questions could reflect the real problems. Then the survey was carried out on a large scale. Altogether 244 college English teachers in 16 universities participated in the survey. The questionnaires were completed during a summer training course organized by Foreign Language Teaching Research Press. 244 pieces of questionnaire were distributed and all of them were returned. The data collected through the questionnaire were input into SPSS for analysis. During the process of input, all of the incomplete questionnaires were discarded, and finally the data from 234 questionnaires were valid and ready to be analyzed. The recovery rate is 95.9%.

Of all the 234 respondents for the valid questionnaires, 51 are male, accounting for 21.8%; and 183 are female, accounting for 78.2%. There are more female subjects than the male ones. That is because the female college English teachers outnumber the male teachers, which is in accord with the reality. About half of the teachers are in the 31-40 age bracket (54.3%); generally speaking, the majority are young teachers who are in the 21-40 age bracket (77.8%). The teachers who are in the upper age bracket (above 51) only account for a very small proportion of 3%. It reflects the age structure of college English teachers of the present day. With the educational reform, English has become a major concern in college education, more English teachers have been recruited, and most of them are young teachers who have just graduated. The majority of college English teachers are graduates (78.6%); teachers who have bachelor's degree account for 15.8%, and only a small number of them have doctor's degree (4.7%). Most of them who only have bachelor's degree are the teachers who are in the upper age bracket.

4. Status quo of College English Teachers' Information Literacy

The findings show that on the whole, college English teachers' information literacy is at a low level. This hinders the effective use of information technology in college English teaching.

Firstly, most teachers don't have a deep understanding about the concept of information technology. 71.4% respondents think that information technology refers to computer, internet, and multimedia teaching. Only 28.6% teachers include software teaching platform, self-learning system in information technology. As for the requirement for teachers in college English teaching, more than a third of the respondents (35.8%) believe that teachers only need to operate computer and internet skillfully. They think of the ability to sort out valuable information and the keen insight to make judgment as less important. Although most teachers have already realized the importance of applying information technology in teaching, they are not clear about how to use it in practice. They do not have an overall understanding of informative teaching, and they only have an obscure view of the requirements for teachers in this brand new teaching mode. To sum up, college English teachers' one-sided understanding of information technology prevents the widespread use of it in language teaching.

Secondly, college English teachers' information knowledge needs improving. Although most teachers are

thrilled with the application of information technology in college English teaching, they do not have a clear view of the principles of network teaching, not to speak of the principles of self-learning platform. Only a small proportion of teachers have a basic understanding of the network teaching process. They are quite familiar with the computer, projector, multimedia teaching software, and network courseware, but have a little knowledge of online learning management system, teaching platform, online testing and evaluation system and so on. It is not enough for teachers to know the basic computer skills; and they also need a deeper understanding of information technology and especially its application in English teaching.

Thirdly, college English teachers' information competence is at a pretty low level. College English teachers' information competence includes three aspects: basic knowledge and competence in personal computer use, multimedia application ability in modern teaching, and competence in using the internet. Basic knowledge and competence in personal computer use refers to a good command of the commonly used software such as Word, Excel, and Power Point etc. In the survey, we discovered that a great number of college English teachers are not competent in applying information technology in teaching. While the majority of teachers know how to make PPT (85.9%), how to apply excel software to create tables (71.4%), and how to use word processor to produce files (94.4%), most teachers' ability to utilize these systems stay on the lower level. As for the multimedia application ability in modern teaching, the majority of teachers claim that they do not know the techniques of incorporating sounds, moving pictures, 3D images and others into a whole file, let alone making one's own multimedia courseware. Furthermore, although almost every teacher can have access to the internet, they do not make full use of it. While the majority of respondents search for information from libraries, Baidu website, Google website and via other search tools, only a small proportion of them (26.5%) can make use of free digital libraries, language database on the internet to search for teaching materials. They think that they can't make the best of information technology in college English teaching. 76.1% of the respondents express the idea that they lack the ability to supplement their teaching with the help of audio and video resources. Meanwhile, they are not proficient in downloading and uploading audio and video resources to share with their students and colleagues. In order to promote the development of network-based language teaching and autonomous learning, college English teachers' information competence especially their multimedia application ability and competence in using the internet needs to be improved.

College English teachers' basic knowledge and competence in personal computer use

	Word Processor	Excel	Power point
Frequency	221	167	201
Cumulative percent	94.4%	71.4%	85.9%

Fourthly, most college English teachers recognize the importance of computer network technology in college English teaching. As for the question "what is the objective of applying information technology in language teaching?", 90.2% of the respondents choose such alternatives as "creating vivid teaching environment", "stimulating students' interest in learning", "optimizing the effect of teaching". Only a few of them (9.8%) include "replacing the teacher" or "coping with inspection" in their choices. That is to say, teachers are aware that information technology is essential to their teaching. However, most of them (88%) only utilize ready-made PPT teaching material, and mobile storage in their teaching. Few of them (12%) take internet and language resources as their tools in teaching, not to mention, consciously construct language resources for students and teachers.

Fifthly, college English teachers don't have enough awareness of information technology and curriculums integration. The integration of information technology and curriculums refers to a new approach of teaching that integrates information technology, information resources, human resources and the curriculums. Few teachers consider the integration as computer aided teaching or organizing teaching activities with the help of multimedia. There are various types of elements that affect the integration. In the survey, 72 teachers believe the application ability of information technology is the most influential factor, accounting for 30.8%; 52 teachers point out creating favorable teaching environment is very important, accounting for 22.2%; 63 teachers choose digital learning resources as the essential factor, accounting for 26.9%; and 47 teachers have no idea about the integration of information technology and curriculums, accounting for 20.1%. While some teachers have very positive attitudes, a large proportion of teachers were pretty passive (obey the arrangement) when asked their attitude towards the integration.

Sixthly, teachers express their wishes to improve their information literacy by means of technology training. They hope that universities can offer training courses in information technology regularly and give lectures about the latest development in information-based language teaching. Furthermore, it is fundamental for foreign language

colleges to invite experts to demonstrate the usage of some techniques in language teaching. The information technology can play the full role in aiding language teaching unless the administrators and teachers recognize its importance and make joint efforts to improve hardware, software as well as the practical skills in utilizing them.

5. Ways To Improve College English Teachers' Information Literacy

According to the survey, we can conclude that it is important for college English teachers to improve their information literacy under the technology-based environment of foreign language teaching. In order to make full use of information technology and promote college English teaching, we should cultivate the teachers' information literacy, improve their information competence. To fulfill the objective we have to organize trainings for teachers, encourage self-learning of the teachers, promote the construction of foreign language teaching database, and apply information technology in the teaching practice. Practical suggestions are put forward from following three aspects.

In the first place, universities, language labs and teachers should work together to construct user-friendly foreign language resources with large capacity and high quality. The language resources can be greatly beneficial for students to practice and teacher to teach. Teachers are the implementers of the teaching activity; therefore, they should have a deeper understanding of the process of teaching and know the needs of the students. Through collecting, evaluating and analyzing the resources, college English teacher will realize the importance of information, and their ability of processing the information will be greatly improved.

In the second place, trainings for information technology and other relevant activities should be organized, such as short-term training, teaching competition, and network courseware making competition. College English teachers' lack of information literacy will hinder the application of information technology in language teaching. Gaoda He (2002) believes that a real network English teaching expert should be an expert of network techniques and also an expert of the English language, and he should be a language expert first of all. Therefore, the essential problem for network English teaching and autonomous learning is that most English teachers are not experts of information technology. Through technical training, we may effectively improve college English teachers' information competence. The trainings may include theories of information technology, the basic application of computer network, courseware designing and making, design and implementation of teaching system, design and making of WebPages, and theory and practice of the integration of information technology and curriculums. Engineers from the companies should also be invited to show how to use the machines in language labs. In the survey, 96.2% of the teachers express their willingness to have the training of information technology. Besides, by organizing competitions, teachers are encouraged to learn more skills and practice what they have learned in the training course.

In the third place, teachers should consciously use the information technology in their teaching practice. Teachers should make good preparation for courses with the help of information resources. Teachers' conscious effort can enhance the effect of classroom teaching practice. The ultimate aim of learning information technology is to apply it in the practice of language teaching. The objective of teachers' efforts to improve their information literacy is also to solve the problems in the practice of language teaching and research. Besides, teachers' supervision of students' homework in autonomous learning is especially important. Teachers should not only pay attention to release information and homework on the learning platform, but also give timely evaluation on the effect of students' learning.

6. Conclusion

The development of computer and internet has brought about unprecedented opportunities and challenges for college English education. To seize these opportunities and comply with the development in the era of information technology, college English teachers should make great efforts to improve their information literacy and help establish the new teaching mode in this Information Age.

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Peer Advising System: Collaborative-Reflection-in-Action Model of Professional Development

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ABSTRACT

Drawing on data from a writing program at a large mid-western university in the US, this article examines the influence of a peer support group on new teaching assistants' development and socialization as writing instructors during their first year of graduate school. It illustrates how new instructors' guided participation in the collaborative reflective practices—the process of sharing the stories of their teaching while developing their own pedagogies and revisiting their experiences with their peer advisors and group members—becomes a focal element of their development as writing instructors in their first year of teaching in the program. Elaborating on the effects of collaborative reflection training on new graduate students, the article also illustrates how a peer advising system can build a collaborative teacher culture, which can ultimately build a collaborative school culture.

Keywords: Peer Advising, Reflection-in-Action, Critical Friends

Introduction

It has been widely recognized by teachers and teacher educators that the key factor to teacher change and long-term development is reflection (Farrell, 2007; Jay & Johnson, 2002; Pennington 1995; Williams, et al., 2001). The notion of reflection has been studied by many scholars since Dewey's original concept of reflection as "a purposeful inquiry" that requires "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it" (1933, p. 9). As a guide to my inquiry, this article uses Donald Schön's (1987) notion of reflection-in-action. The concept of "reflection-*in*-action", as opposed to reflection-*on*-action, underscores the importance of the practitioner's understanding of his own practice *while* engaged in the action rather than contemplating his action after the practice. It suggests that the practitioner's routine interactions and everyday activities have a great influence on his professional development. Schön's framework of reflection-in-action shares the basic insights with the theories of learning-in-practice. Lave and Wenger (1991) develop a social-practice view of learning through the notion of a community of practice, which they define as "a set of relations among persons, activity and world, over time and in relation with other and overlapping communities of practice" (p. 98). This view of learning highlights that learning takes place in a social co-participation framework, not in the individual's mind or brain. Schön's notion of reflection-in-action and the theories of learning-in-practice suggest the importance of paying attention to the process by which the novice member is initiated into the group's practices and the crucial influence of colleagues on the new member's socialization process into the practices.

Although research points out the crucial role of a peer support group for first-year teachers' development and socialization (Day, 1999; Francis, 1995; Fullan, 1993; Gootesman, 2000; Hargreaves, 1994; Oliphant, 2003; Senior, 2006; Tsui, 2003; Williams, et al, 2001), most discussions tend to focus on pre-service and in-service teachers. Just as the needs and interests of beginning teachers are different from those of experienced teachers (Farrell, 2003), the needs and interests of new graduate students who learn to teach as part of their TAships can be quite different from those of pre-service and in-service teachers. The purpose of this article is to examine the influence of a peer support group on new teaching assistants' development and socialization both as students and instructors during their first year of graduate school—an anxious time as they are beginning graduate school as new students, yet also as new teachers. Elaborating on the effects of collaborative reflection training on new graduate students, the article illustrates how a peer advising system can build a collaborative teacher culture, which can ultimately build a collaborative school culture.

Background & Methods

This article is based on the findings of an ethnographic study that examined the literacy practices of a writing program based on my participant observation in the program as a teaching assistant during my graduate study at a large mid-western university. The writing program is housed in the English Department, which offers undergraduate and graduate degrees in Literature, Creative Writing, and Writing Studies. The program offers approximately 200 sections of freshman writing courses each year, and the writing courses are the main source of teaching assistantships for their graduate students in the department. Most of the students, except for first-year students and international students, teach two courses per semester. Every new instructor must participate in the peer advising system for one year.

The main data used in the study are two kinds: (a) observations, institutional and instructional documents, and interviews; (b) the field notes taken during my participant observation in the department that offered the writing program both as a student and as an instructor. The data for the original research were collected from fall 2007 to fall 2009; however, the observation data used in this article are based on my participation in the peer advising system, the TA orientation, and rhetoric instructor workshops as one of the new instructors in the program from fall 2008 to spring 2009. The semi-structured interviews conducted with the Program Director and new instructors in the peer advising group in which I participated are the basis for the interview data. The institutional documents include the TA Handbook, professional development seminar materials, TA Orientation and instructor workshop handouts, Common Syllabus, and sample assignments. The miscellaneous notes I took based on my participant observation in the program during the period are also a crucial part of the data for this study. The article begins with a short description of how graduate students in the program are trained to become writing instructors based on the peer advising group in which I participated. After the brief overview of the program's induction practice, the article addresses the implications of such a training system for graduate students' professional development.

Literacy Socialization of Graduate Students as Writing Instructors

A peer advising group usually consists of one advisor and 3-5 new instructors. In my first semester of teaching in the writing program, I was assigned to a peer support group advised by Erin, a doctoral student in Writing Studies with two other instructors: Sharon , a first-year MA student in Writing Studies, and Andrew, a first-year MA student in Creative Writing. Our group's peer advisor during the second semester was Robyn, a doctoral student in Literature. Both advisors taught various sections of writing courses not only at the university but also at other institutions where they received their MA degrees. We were introduced to Erin during our TA orientation. She attended every session of the orientation and met with us for one hour each day to recapitulate the main points and to provide further explanations on other aspects of teaching that were not covered during the orientation.

Our group met once a week in the first semester and every two weeks in the second semester. We discussed a variety of pedagogical and administrative issues such as syllabus design, course assignments, class activities, lesson planning, grading and commenting, classroom management, trouble shooting, teaching demonstration, class observation, and teaching evaluations. We also discussed the instructor training workshops and the professional development seminar that we were required to take in the first semester of teaching in the program. As we were provided with a variety of materials during the professional development seminar and the rhetoric instructor workshops throughout the year, the peer group meetings were a great opportunity to revisit the materials and to reinforce our understandings of certain pedagogical approaches to teaching writing that were promoted in the program (e.g. writing process pedagogy, ethnographic approach, genre pedagogy, multi-modal composition, etc).

Our peer advisors constantly encouraged us to reflect on our approaches to teaching the writing courses and to document our reflective thoughts—both in class and out of class—in our teaching journals. They asked us to use the journal notes for our self reflection letters which we were required to submit at the end of each semester. They observed our classes and led us to identify the strengths and weaknesses of our teaching practices. Erin observed each of our classes twice in the first semester, and Robyn observed once in the second semester. They met with us individually when we received our student evaluations at the end of each semester and discussed positive aspects of our teaching and the areas to be improved. They also led us to reflect on our commenting practices and provided feedback both in writing and in our individual meetings. Erin looked over our comments on two sets of student papers in the first semester, and Robyn looked over one set of student papers in the second semester. Toward the end of each semester, they encouraged us to reflect on the connections between our teaching persona and the teaching philosophy statements that we wrote in the professional development seminar and to include our thoughts in our self reflection letters. We were also asked to reflect on our experiences using the Common Syllabus and its accompanying materials as well as the default textbooks that new instructors were required to use in the first year and to include our evaluations in our self reflections letters. The Common Syllabus had a great impact on new instructors' approaches to teaching writing because many sample assignments, class activities, and other supported materials were developed around the Common Syllabus. New instructors' opinions have a great influence on designing the new Common Syllabus and selecting default textbooks to be used by another group of new instructors in the following year.

At the end of each semester, our peer advisors met with us before we submitted our self-reflection letters to the program office. The goal of the self-reflection letter was to encourage new instructors to reflect on their teaching over the course of the semester and to plan ahead if there were certain aspects of their teaching they want to change for the next semester. The letter was also intended to help the peer advisor write a more accurate evaluation letter of each advisee's instructional practices. Our peer advisors wrote evaluation letters for each of us based on our self reflection letters, their class observations, our commenting practices on students' work, our participation in the group meetings and instructor training workshops, and the progress we had made throughout the year. During the time of this research, it was often found that instructors on the job market included the evaluation letters from their peer advisors in their teaching portfolios.

In short, the group meetings allowed for a more *informal* space to explore our approaches to teaching writing and to reflect on our growth as writing teachers in collaboration with group members in our first year of teaching in the program. It also needs to be noted that, in our group meetings over the year, we shared not only the stories of our teaching (the winning and losing moments in our classrooms) but also stories of our graduate school life (the resonating and frustrating moments as new graduate students). We often talked about how we should *balance* being both full-time graduate students and teachers and how we should support each other as we were experiencing the same challenges. We recognized that having a fellow graduate student assigned to us as a peer advisor was crucial for our first year of teaching during graduate school.

Collaborating on Reflection with Critical Friends

The program's induction practice for new instructors shows how it guided the instructors to engage in multiple levels of reflection—*immediate* reflection required for their weekly group meetings and *delayed* reflection required at the end of each semester—to foster more *systematic* reflection training on their teaching, which can ultimately help the instructors develop critical reflection on their practices. The cycle of revisiting their teaching experiences and making sense of it with the help of peer advisors and other group members illustrates the collaborative "reflection-in-action" (Schön,1987). It highlights the crucial role of "critical friends" who support each other and collaborate "in a way that encourages discussion and reflection in order to improve the quality of teaching and learning" (Farrell, 2001, p. 369).

During the interview (September 7, 2009), Sharon , an MA student in Writing Studies, articulated the influence of the peer support group on her first year of teaching during graduate school:

We had a very short time to prepare our semester-long courses, so any guidance or advice from the peer advisor or others in the group was absolutely necessary for me. While program directors were also available to help me, I saw my peer advisers and group members as my *"go-to" support system* to make it through the first year as a rhetoric teacher and first-year graduate student. I know I could have completed my first year without a peer advising system, but I would have felt much less connected to other teachers, much more ignored by the program in general, and likely would have floundered much more my first semester of teaching. (italics added to indicate her emphasis)

As illustrated above, the peer advising meetings were a venue for the graduate students to develop their pedagogies, share their teaching materials, learn strategies to troubleshoot problems, identify their strengths and weaknesses as writing teachers, connect theory with practice, and evaluate not only their teaching practices but also certain pedagogies promoted in the program. They also revisited the materials that they received during the TA orientation, the professional development seminar, and instructor workshops throughout the year. The new instructors' guided participation into the program's literacy practices points out how they become more competent not only as instructors but also as graduate students with the help of their group members in "the zone of proximal development" (Vygotsky, 1978).

During the interview (October 18, 2009), Andrew, an MFA student in Creative Writing, elaborated on the influence the peer group meetings on his development as a reflective teacher in the first year:

We were constantly asked to reflect on our experiences of teaching the courses throughout the years. Looking back, I think the peer group meetings helped me become a more reflective teacher. I'd never taught a writing course before, so I was not familiar with the process pedagogy, ethnographic methods, or genre pedagogy. I often felt overwhelmed by the amount of new information we received as new instructors in the first year, so, the peer group meetings helped me reinforce the departmental norms about how we should teach the freshman courses in terms of designing assignment, grading, commenting, lesson planning, etc. It was great that we went through all the information again with the group members … So much reflection throughout the year, but it was great that we did the reflection together.

His statement suggests that the new instructors' participation in the peer advising system can help them develop a lens to correlate the concepts of theory, practice, and reflection, which is the crucial for their growth as

graduate students as well as classroom teachers. He articulated the difficulties he had balancing the two important tasks as a student teacher in the first year of graduate school and stressed that the peer advising meetings helped him balance being both a full-time graduate student and a writing instructor in the first year of graduate school.

Sharon elaborated on the influence of the group meetings on balancing her graduate school life as both a student and an instructor as well as on her understanding of the disciplinary socialization of graduate students as writing instructors during her interview:

The peer group meetings helped me to contextualize my work as a graduate student within and around my teaching such as how to balance being a good, thoughtful teacher alongside being a good, thoughtful graduate student in my own courses. The group meetings helped me to feel a bit less anxious about balancing my graduate student identity with my teacher identity and to know that I was not alone in the process of it all. Also, the peer group helped to see how my teaching philosophy might be similar or different to others' developing philosophies. I remember thinking it was interesting how graduate students' various backgrounds—such as a Literature background as compared to a Creative Writing background—influenced how one approached one's teaching and the structure of a class.

As most new instructors were learning to teach four-credit courses for undergraduate students with little to no training, during the time of this research, it was clear that many new instructors had difficulty *balancing* their student identity with teacher identity in the first semester—an anxious time as they began their graduate studies while learning to become a teacher. The group meetings provided them with a venue in which they could learn how to balance their student identity with their teacher identity as they shared not only the stories of their teaching but also stories of their graduate school life. The peer advising system is also an important window through which to explore how the instructors develop an awareness of the dialectical relationship between what they read in their fields of study and how they actually teach in the classroom. As illustrated in the article, through peer advising meetings, a graduate student in Literature socializes on a regular basis with other graduate students in Writing Studies and in Creative Writing. Sharing their experiences of teaching writing, they become more aware of how each instructor's diverse scholarly interests and disciplinary backgrounds influence their approaches to teaching writing. This process can ultimately help instructors develop "social languages" (Gee, 1999), which is "an identity kit" used to get recognized by others and themselves as they become full participants in "the community of practice" (Lave & Wenger, 1991).

During the interview (August 6, 2009), the Program Director stressed that the instructors' socialization process was essential for their development as writing teachers:

If you closely look at it, it is really socialization. Students get together and share syllabi and assignments. So somebody from Writing Studies picks up somebody's film assignment, or the assignment of somebody from Women's Studies, or Literature or from Cultural Studies, etc. There is a lot of cross-fertilization as faculty and students work together in the program. It's an amazingly diverse, hybrid setting ... and the peer advising system plays an important role for the literacy socialization of the instructors in our program.

The wording "cross-fertilization" conveys the complex literacy socialization process of the instructors who are learning to become writing teachers while graduate students. The peer advising system is basically the infrastructure that cultivates such a cross-fertilization process for new instructors in the writing program. The program's induction practice shows how the program provided a system of collective scaffolding for new instructors by structuring forms of social interaction that promoted the literacy socialization process between experienced and new instructors in "the zone of proximal development" (Vygotsky, 1978). The idea of scaffolding, which is closely related to the concept of "zone of proximal development", refers to a process through which a student learns by working with a more competent individual on the skills and knowledge that are needed to perform specific tasks through a kind of apprenticeship. Also, the program's induction practice for new instructors shows that the freshman writing courses ultimately become a key training ground and research site for the graduate students in the department as they learn to lay the groundwork for their future lives as instructors.

Results

The article illustrates that the new instructors' guided participation in collective reflective practices can play an important role for their development both as writing teachers and as graduate students. It points out the importance of providing both *formal* and *informal* spaces for novice instructors to explore their approaches to teaching during their first year in the program—the crucial time as they begin their graduate studies as a student while learning to become a teacher. It also shows how the program's culture is shaped and sustained by their instructors' literacy socialization. Through peer advising meetings, instructors see the materials that other instructors have developed and start to use those materials in their classes. When they become peer advisors later on, they are likely to share the materials with their group members and provide their advisees with similar guidance. Thus, the cycle of collective

scaffolding is *repeated*. During the period of this research, although it was not the case with every peer advising group, most peer advising group members appeared to continue to support one another in various ways when their members went on the job market—especially when they prepared for their teaching portfolios and teaching demonstrations—even after their first year of teaching. Thus, the peer support system can help build a collaborative teacher culture, which can help build a collaborative school culture.

Conclusions

Many teacher training programs aim for sustained, autonomous professional development. This article suggests that a peer advising system can help new instructors develop reflective practices and promote the literacy socialization between new and experienced teachers, which can ultimately lead to more sustained professional development for graduate students. A successful operation of a peer advising system depends on many factors such as group chemistry, each member's psychological states, their disciplinary backgrounds, their research and teaching interests, the program's leadership, and the program's pedagogical foundation. Group members' psychological states are especially crucial to foster collaborative reflective practices because not all teachers are ready to reflect and reflection is not for everyone (Golby & Appleby, 1995; Moon and Boullon, 1997).

Nowadays, graduate students are often hired to teach various courses both at undergraduate and graduate levels. Graduate students can bring multiple benefits for both parties when they are provided with effective training. First, the courses provide graduate students with a teaching laboratory for their professional growth and development (during the period of this research, some peer advisors in the program reported that their experiences training new instructors enhanced their opportunities for getting a job). The growing files of teaching materials and resources—which have been developed through the collaborative reflection between new and experienced instructors over the years—can become a foundation of the program's instructor training system and pedagogical development. It will also financially benefit universities; it would cost too much if regular faculty members teach such courses. Thus, it is crucial to find effective ways to train graduate students during the first year of their apprenticeship in the profession. This article suggests that a peer advising system can help new teaching assistants' development and socialization both as students and instructors during their first year of graduate school, and such a system can help build a collaborative teacher culture, which can eventually help build a collaborative school culture.

Longitudinal studies are needed to trace the influence of a peer support system on instructor development to further examine how such a training system can be translated into high quality practice after they leave the program. The connections between the effectiveness and the long-term benefits of such programs for novice instructor training should be further explored and assessed.

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Perspectives Of Teachers Woring In Trnc Education Institutions And Supervisors Of The Ministry Toward The Current Supervision System In Trnc

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ABSTRACT

The aim of this study is to determine the point of views of the teachers who work in Secondary Schools and the auditors in the National Education Supervision Assessment and Steering Committee, on the Control System which is still used in Turkish Republic of Northern Cyprus and to offer solution for the audit system to be more effective and productive according to this data.

With this aim the researcher, established the research in qualitative pattern, and asked open ended questions which are semiestablished in terms of the structure. In this context, the research was carried out by means of interviewing with 25 teachers who work in Secondary Schools and 15 ministry supervisors.

In this study, four sub-problems are asked to understand the problem of ' Do teachers and ministry supervisors perceive the audit system differently?'

1- Do teachers and ministry supervisors know the contents of the audit systems enough and think that it is transparent?

2- Do teachers and ministry supervisors believe that ministry supervisors have necessary competence?

3- Do ministry supervisors think that teachers have necessary competence and knowledge?

4- Do teachers and ministry supervisors think that the audit system is modern and it covers all its shareholders? Do they want to pass to multiple performance system?

The findings obtained from the research state that the teachers are uncertain about the aims of the audit system and that they do not trust the assessment phase adequately. According to the research findings, the teachers are anxious about the aim and the practice of the supervision. The limitedness of the research is the low number of participants and that the findings do not represent the opinions of all the secondary school teachers who work in Turkish Republic of Northern Cyprus. The importance of the research is that this research contributes to other researches about the education audit system in Turkish Republic of Northern Cyprus which are not studied enough till now and this research offers suggestion about the future practice and rules on the education supervision of Ministry of National Education.

Keywords: Education, Auditor, Teacher, Supervision, Turkish Republic of Northern Cyprus

1. INTRODUCTION

Many definitions for education are available. Despite the differences in the definitions available, the main idea that all of them have in common is that education is the process of developing aimed behaviours through planned activities. (TRNC MOE Inspection Office, HANDBOOK OF THE INSPECTOR, 1997) Education tried to make people earn the wanted qualities through learning. Thus, it is crucial is to know what the learning process of humans is and managing the learning according to this process (Başaran, 1994). For education and teaching to meet its aim, certain

standards and quality should be met. In order to improve quality in education, the "supervision" process of schools supervised by themselves or supervision units is very important.

Supervision can be thought as the process of understanding whether organizational activities are appropriate for the determined principles and regulations in the direction of accepted objectives. A healthy and functionally running supervision system is expected to determine deviation intentions from the measures even before they occur and before causing big losses in the organization and offer readjustments. A supervision system with this power can be called as a healthy system (Aydın, 1993). The aim of supervision in education system is to enable and maintain school efficacy. Even if the supervision is done by school administration or superior administrators and supervisors, the goal does not change; school efficacy is what is aimed. The efficacy of the school is dependent on meeting the organizational, administrative and educational objectives (Başar, 2000).

A qualified evaluation system is needed to determine and correct teachers' inadequacies and mistakes. The data collected at the end of the evaluation will direct education, determine the areas open for improvement in education and provide professional development. However, this type of development cannot be expected with the supervision-based evaluation used in the education system of our country.

Supervision and evaluation are the two terms that are often mixed up. According to Knoll (1987), while leadership is in the foreground in supervision; in evaluation, a judgmental role is in the foreground from the perspective of the evaluatee. Evaluation has an important place in education-teaching activities. It is mandatory to do some measurements of a quality in order to make a decision. The evaluations carried out in education supervisions enable to express the quality of the works done in a quantitative way. According to the modern and scientific understanding of supervision, supervision does not solely aim control but is also carried out with the aim of improving the system and education-teaching process. Therefore, it is crucial to consider all inputs of the system for an objective and healthy supervision (Jenkins, 1998). According to Bernardin and Beatty, there are two objectives in evaluating personnel. First one is to develop benefitting from human resources; and the other one forms the basis for personnel affairs (Bernardin and Beatty, 1984). Evaluations do not only improve employee's efficacy but also determined the needs for development. An effective evaluation provides a goal for the personnel. The personnel feel the need to work efficiently to reach that goal. Thus, an efficient evaluation is needed for both catching the total quality as the whole institution and for the personnel to renew themselves.

When Grown refers to the duties of the supervisors, he states that firstly, the supervisor should help the teachers and administrators as the teacher of the teachers; mainly the supervisor should provide professional guidance needed by the teachers in order to enable teachers to conduct the expected teaching and prepare the learning opportunities appropriate for the students (Öz, 1977).

It is a fact that supervisor contact with different groups of people at guidance, on-the-job training, evaluation, investigation and inspection levels during the education supervision process. The development ways of the supervisor actively participating in this busy cooperation and interaction in the supervision process leads to shaping the ethical principles, and forces the supervision area and the supervisor for this (Aksoy, 1998).

The evaluation process is very important in education organizations, similar to all other types of organizations because determining whether the education service meets its goals in education institutions is essential for improving education-teaching activities and providing better education. Another point that determines the significance of evaluation process in educational organizations is the need to transfer or adapt the modern developments into the education process. In that sense, the most important responsibility in improving education-teaching activities falls onto the supervisors, school administrators and teachers; because the centralist education systems the improvement of education-teaching activities is done from the centre and the views of education shareholders are disregarded. In order to prevent this, education shareholders need to send their views on education-teaching, the shortcomings determined, developmental applications and their suggestions to the central organization.

In order for the above mentioned to happen, the beliefs or perceptions of education shareholders related to issues like supervision, education and administration should be in the same direction. This synergy in beliefs should be more in the direction of unifying different views for beneficial works rather than creating a monotype view. In that sense, this study aims to determine the supervision beliefs of supervisors and teachers who can be considered as important shareholders in the supervision process.

2. EDUCATION SUPERVISION SYSTEM IN TRNC

We can explore Inspection in the Education of Turkish Cypriots parallel to the development and evaluation of education. Due to the lack of information on the Ottoman Era Education System, this topic in explored in two parts:

1. Inspection in the British Era Education System (1878 – 16.08.1960)

2. Inspection in the Turkish Cypriot Education (from 16.08.1960 to present):

2.1. Inspection in the British Era Education System

A British Chief Inspector with no real function, two Primary school Chief Inspectors (one Turkish and one Greek) responsible for the administration, supervision and inspection of primary schools, and expert inspectors known as "Organizer" were available under each Chief Inspectorship. There were no special inspector staffs for secondary education.

3 Secondary Education Inspectors (1 Turkish Science inspector, Dr. Hüsnü Feridun and 2 Greek Trade-Economics and History-Geography Inspectors) formed the Secondary Education Inspectorship Unit by connecting to the British Chief Inspector on September 1st, 1954. This formation aimed to closely monitor the secondary education institutions collaboratively with the mixed secondary education inspection group formed by the British Colony Ruling. As a result of this, a Turkish School was going to be inspected by a Greek inspector or a Greek School was going to be inspected by a Turkish inspector. As a result of the reactions, it was divided into two as the Turkish and Greek Chief Inspectorships after two years.

As Cyprus was included in the British Commonwealth, upon his arrival in Cyprus in 1955, Mr. Tudhope, one of Queen's Inspectors linked to the Central Authority of the Ministry in Education in London, rapidly started forming two separate inspection groups for both communities, separate inspection and administration staff from each other, and the primary education and secondary education inspectorships for both communities and came together under their own Chief Inspectorship. Inspectors who were considered appropriate were sent to England through British Council for trips and seminars in order to improve inspection running.

In his 3-years of service as Education System Director in Cyprus, Mr. Tudhope brought a renovation called the "Major Inspection". According to this, every school was subjected to "Major Inspection" maximum every two years and comprehensive reports are prepared in addition to the regular inspections. (KASAPÇOPUR, 2007).

2.2. Inspection in the Turkish Cypriot Education

2.2.1. Republic of Cyprus Era

Supervision was at the hands of British until 1960 in Cyprus where the whole island was under the control Britain at the beginning of 1900's. When Turks took over the ruling in 1960, they also took inspections at schools under their responsibility. However, there were no definite criterion for teacher and school inspection, these criterion were formed by the inspector based on his/her previous experience and knowledge. The inspector was checking the building first, followed by monitoring the principal and finally lesson inspection, meaning inspecting the teachers. (TAŞKIN, 2011)

The following information was provided in the report written by Dr. Hüsnü Feridun, Science Inspector, on the 1958–1959 Academic Year to the Turkish Federation Presidency:

"Inspection of the primary schools: The inspection team should be made more effective with less staff. A team of total 14 inspectors: 1 Chief Inspector, 6 Inspectors, 7 Special Inspectors (2 for Arts, 2 for Physical Education, 1 for Music, 1 for School Gardens and 1 for Home Economics) were available for primary schools. These people were mainly responsible for seeking advice, guidance as well as writing reports.

Inspection of secondary schools: The Secondary Schools Inspectorship has a team of 5 people consisting of Chief Inspector (Turkish and Philosophy), Science Courses Inspector, History-Geography Inspector and Maths Inspector for its 14 Secondary Schools". (FERİDUN, Boğaziçi Publishing)

According to the Turkish Cypriot Community Council Education Office Organization Regulations that took effect on January 1st, 1961; the education affairs of the Turkish Cypriot Community were to be run by the Education Office. The Education Office was managed by a Director and Vice-Director and it was formed by three branches: Primary Education Branch, Secondary-Vocational-technical Education Branch, and Special Education Branch.

The political head of the Education Office is the related member of the Education Affairs of the Enforcement Council formed from the members of the Turkish Cypriot community Council (KASAPÇOPUR, 2007).

2.2.2. Era of Turkish Community Governing

It is not possible to keep the Turkish Cypriot Education and inspection in education separate from the political life of the Turkish Cypriot community. These issues can only be explored parallel to the political eras. After the Turkish Cypriots were excluded from the Republic of Cyprus on December 21st, 1963; they had to form their own government. The governing eras of the Turkish Cypriot Community until today are as follows:

General Committee Era (21.12.1963 – 28.12.1967) / Temporary Turkish Cypriot Ruling (28.12.1967 –

21.04.1971) / Turkish Cypriot Ruling (21.04.1971 – 01.10.1974) / Autonomous Turkish Cypriot Ruling (01.10.1974 – 13.02.1975) / Turkish Federated State of Cyprus (13.02.1975 – 15.11.1983) / Turkish Republic of Northern Cyprus (15.11.1983 – to present) .

From the middle of the 1989 "Foundation, Duties and Working Principles Regulations" were started to be designed and forming were started to be based on this regulations.

2.2.3. Legal Foundations of the Current Supervision in TRNC

Basic arrangements have been made regarding education and supervision by stating the following:

1- 59(2). Amendment of TRNC Constitution:

"All teaching and education activities are free under the monitoring and supervision of the Government."

2- 68(1). Amendment of the National Education Law:

"The Ministry is responsible for running, monitoring and supervising education and teaching services under the name of the government. The Ministry fulfils these duties with the organization and institutionalizing within its structure."

3- 23(2). Amendment of the National Education Law:

"Education and teaching activities can be run in relation to the rules of the 53rd Amendment under the monitoring and supervision of the government, with the hands of real people and private law legal entities".

The Inspection Office of the Turkish Republic of Northern Cyprus is formed based on the Law of National Education Supervision, Assessment and Direction Board (Founding, Duties and Working Principles) dated May 2nd, 2006. In the structure of this board, division of duties have been done among the levels of the Ministry, District and Schools.

It is said that "The duties stated in this law are carried out by the supervision and assessment boards listed below and the hand of the Education Chief Supervisor and Education Supervisors related to these boards"; and is made up of organs like:

1- **Supreme Board:** Supreme Board of Education Supervision, Assessment and Direction

2- **General Board:** General Board of Education Supervisors

3- **District Boards:** District Education Supervision, Assessment and Direction Boards, and

4- **School Boards:** School Education Supervision, Assessment and Direction Boards.

The coverage and duties of the boards formed are explained in detail in the law; and the duties and authorities of the **Education Supervisors** are listed as follows:

— Education Supervisors report the results of their supervision, assessment, research and evaluation carried out under the supervision of the Education Chief Supervisor in charge, as well as the shortcomings, flaws, inadequacies and inappropriateness to the Presidency of the Supreme Board through the Education Chief Supervisor in charge;

— Guides, directs and trains the teachers on the job within the framework of principles and measures determined during lesson, teacher and institution education supervisions and evaluations;

— Fulfils the duties given to him/her by the President of Education Supervision Board, Vice-President (Vice-Principal) or the Education Chief Supervisor in charge and have to conclude the duties with a report;

— Is responsible to for fulfilling the duties to the President of Supreme Board and Vice-President (Vice-Principal) and related Education Chief Supervisor and fulfilling other duties given by his/her superiors.

2.3. Main Differences between the Old Inspection System and the New Education Supervision System

Comparing the main differences of the Old Inspection System and the New Education Supervision System in structural, functional, objective, Assessment-Evaluation and Guidance aspects will help to perceive the current situation better and interpret the findings of the study related to the perceptions of supervisors and teachers toward the supervision system in a healthier manner.

TABLE-1: Main differences between the Old Inspection System and the New Education Supervision System

Structural Aspects	
Old	Head of Inspection Unit and Inspectors
New	Supreme Board, General Board, District Boards and School Boards
Functional Aspects	
Old	Evaluation solely based on inspector findings Teacher Supervision
New	A board structure where duties and responsibilities are shared (multi-supervision multi-evaluation)
	Evaluation based on multi-performance analysis
	Indication of Success (The difference of the level of students/institution reached from the previous level)
Assessment-Evaluation and Guidance Aspects	
Old	Curriculum-focused (Which topics are covered? In how much time?)
	The effort of teacher transferring information and the amount of knowledge transferred
	Precautions only at the event of a problem
New	Focused on Student, Teacher and School Performance (What subjects-skills are acquired? At what level?)
	"What" and "how well" students/school learn is in the foreground
	Continuous guidance External Supervision (Once every one or two years) District Supervision Boards (Periodic and continuous local supervision and guidance) School Education Evaluation Boards, with Expert-Guidance-Formatter teachers (Continuous internal supervision and guidance)

3. AIM OF RESEARCH

The aim of this study to collect the opinions of teachers working in Secondary Schools and of supervisors working in the National Education Assessment and Guidance Board on the current Supervision System in TRNC; suggest possible solutions; and shed a light for the future studies.

4. SIGNIFICANCE OF RESEARCH

The lack of information caused by the low number of studies carried out on this topic in TRNC and the importance of supervision in education field have formed the basis for the significance of this study.

Finding out the perceptions of teachers working in State Secondary Schools and supervisor toward supervision, determining the differences in these perceptions and exploring the reasons behind these differences, what can be done to eliminate such differences is crucial for health running of the supervision process and reaching organizational goals.

It is an important step for the organizational aims of education-teaching activities and reaching the general objectives of National Education to show mutual approaches by teacher and supervisors during the supervision

process.

5. PROBLEM STATEMENT

Do teachers and supervisors perceive the supervision system in different ways?

In order to help understand the problem better and take a more detailed look, four sub-problem questions have been formulated:

1- Are teachers and supervisors sufficiently informed about the contents of the supervision system and do they consider the system to be transparent?

2- Do teachers and supervisors think the supervisors possess sufficient resources for this duty?

3- Do supervisors believe that teacher have sufficient field knowledge and resources?

4- Do teachers and supervisors think that the current supervision is modern and it covers all shareholders? Do they want to move to the multi-performance system?

6. METHODOLOGY

6.1. RESEARCH MODEL

The research is designed as qualitative model based on the review of related literature and expert opinions. Qualitative research is based on interpretative approach. Qualitative research is defined as the research during which qualitative data collection methods such as observation, interview and document analysis is used, and that follows the process of putting perceptions and events forward in a realistic and wholly way in natural setting. In other words, it is an approach that considers researching and understanding social concepts in their related setting on the basis of forming a hypothesis (Yıldırım and Şimşek, 2004).

6.2. DATA COLLECTION

Semi-structured interview techniques from qualitative research techniques have been used in this study. Semi-structured interviews are techniques in the middle of two extremes, and they give the researcher the needed flexibility and convenience. (Karasar, 1999).

The underlying situation will be explored healthier rather than superficial through the interview technique used in this research. Suitable for this model, semi-structured, open-ended questions were asked to supervisors and teachers. The most significant benefit of semi-structures interviews for the researcher is that they provide more systematic and comparable results due to following the pre-structured protocols. (Yıldırım and Şimşek, 2004)

6.3. POPULATION AND SAMPLE

This study was carried out with 25 teachers working at Secondary Schools in Nicosia from branches like Physical Education, English, Biology, Turkish, Computer, Science and 15 Ministry supervisors. Research was done through purposeful sampling on limited number of people throughout the study.

6.4. DATA ANALYSIS

This study is a field study as it tries to identify the thoughts of supervisors and teachers related to an issue (supervision system). Descriptive method has been adopted because an assessment is considered. At the description stage, the researcher identifies the data collected in a comprehensive way and by doing this; the researcher aims the reader to get the information from first-hand related to the data collection environment, details of the data, opinions of the participants and the research process. (Yıldırım and Şimşek, 2005) The implementation of the research is in a way of data collection through interview questioned formed by the researchers after literature review. 14 questions have been formed for the supervisors and 13 questions were formed for the teachers. Frequency values of the data collected in the research have been calculated. Additionally, supervisor and teacher opinions have been quoted for internal reliability and validity of the research findings.

A research frame appropriate for the qualities of supervision principles have been formed for data collection through interviews and analysis of the collected data.

7. FINDINGS

7.1. Findings related to the first sub-problem

After the analysis made upon the question on the transparency of the system and if it is sufficiently known to the supervisors and the teachers, it is understood that they meet at a common point that the system is well-known and transparent. This is shown in Table 2.

TABLE–2: Are the teachers and supervisors sufficiently informed about the contents of the supervision system and do they consider it to be transparent?

Supervisor	Have you sufficiently informed the teachers under your responsibility about the supervision criterion you will implement?		
		f	%
	Yes	13	86,67%
	No	1	6,67%
	Partly	1	6,67%
	What do you think about the current supervision system? Do you consider it to be transparent and scientific?		
		f	%
	Yes	3	20,00%
	No	5	33,33%
	Partly	7	46,67%
Teacher	Do you believe that your supervisor evaluates your performance transparently enough?		
		f	%
	Yes	15	60,00%
	No	8	32,00%
	Partly	1	4,00%
	Don't Know	1	4,00%
	Does your supervisor provide sufficient information on the criterion to be implemented and what is expected of you?		
		f	%
	Yes	15	60,00%
	No	10	40,00%
	What do you think about the current supervision system? Do you consider it to be transparent and scientific?		
		f	%
	Yes	10	40,00%
	No	12	48,00%
	Partly	3	12,00%

7.2. Findings related to the second sub-problem

Based on the answers gathered from supervisors and teachers, it is determined that supervisors are perceived to have enough resources for the supervision responsibility. This is shown in Table 3.

TABLE–3: Do teachers and supervisors believe that supervisors are sufficiently equipped?

Supervisor	Do you consider the time allocated to evaluating teachers is enough?		
		f	%
	Yes	4	26,67%
	No	9	60,00%
	Partly	2	13,33%
	Do you contribute to the professional development of the teachers under your responsibility? Do you find their general knowledge and pedagogical field knowledge satisfactory?		
		f	%
	Yes	12	80,00%
	No	2	13,33%
	No Answer	1	6,67%
	Do you believe that you have enough resources while evaluating your teachers?		
		f	%
	Yes	15	100,00%
	No	0	0,00%
	Do you explain your views on the lesson after finishing the observation of a teacher's lesson?		
		f	%
	Yes	15	100,00%
	No	0	0,00%
Teacher	Do you consider the time allocated to evaluate you is enough?		
		f	%
	Yes	12	48,00%
	No	13	52,00%
	Do your supervisors contribute to your professional development? Do they provide enough help to make various teaching programs and work planned?		
		f	%

	Yes	15	60,00%
	No	9	36,00%
	Partly	1	4,00%
	Do you believe that supervisors have enough resources while evaluating you?		
		f	%
	Yes	15	60,00%
	No	8	32,00%
	Partly	2	8,00%
	Do you receive feedback from your supervisor after they finish observing your lesson?		
		f	%
	Yes	21	84,00%
	No	1	4,00%
	Partly	1	4,00%
	No Answer	2	8,00%

7.3. Findings related to the third sub-problem

While the supervisors believe that teachers possess sufficient resources; the teachers reflected that they do not have sufficient resources through the behaviour they showed within the supervision system. This is shown in Table 4.

TABLE–4: Do supervisors believe that teachers have enough field knowledge and resources?

Inspector	Do teachers show the expected qualities?		
		f	%
	Yes	1	6,67%
	No	2	13,33%
	Partly	3	20,00%
	No Answer	9	60,00%
Teacher	What kind of attitude do you develop if you are unprepared when the supervisor comes to observe you? Would you do any preparations?		
		f	%
	Yes	11	44,00%
	No	14	56,00%

	Do you feel uncomfortable while being observed by a supervisor?		
		f	%
	Yes	23	92,00%
	No	2	8,00%

7.4. Findings related to the fourth sub-problem

It is understood from the analysis results that teachers have partly different opinions of moving towards the multi-performance system compared to the supervisors; though the current system is considered to be transparent it still has some flaws. This is shown in Table 5.

TABLE–5: Do teachers and supervisors consider the current supervision system as modern and covering all shareholders, would they prefer to move to multi-performance system?

Inspector	Do you believe that you are able to fully measure teachers' performance with the criteria you are implementing?		
		f	%
	Yes	2	13,33%
	No	7	46,67%
	Partly	6	40,00%
	If you are asked to choose between the multi-performance system (supervisor, principal, unit, student, parent) which is aimed at and the current supervision system, which one would you prefer? Would you want multi-performance system?		
		f	%
	Yes	14	93,33%
	No	0	0,00%
	In-between	1	6,67%
	How would you evaluate the teachers' interest toward supervision? Is it positive?		
		f	%
	Yes	11	73,33%
	No	2	13,33%
	Partly	2	13,33%
Teacher	If you are asked to choose between the multi-performance system (supervisor, principal, unit, student, parent) which is aimed at and the current supervision system, which one would you prefer? Would you want multi-performance system?		

	f	%
Yes	11	44,00%
No	12	48,00%
Partly	1	4,00%
No Answer	1	4,00%
How are the supervisor-teacher relationships within the supervision system?		
	f	%
Positive	16	64,00%
Negative	8	32,00%
Partly	1	4,00%

8. IMPLICATIONS AND RESULTS

Under the light of the finding related to the research carried out in order to find out if there are any differences in the perspectives of teachers and supervisors toward the TRNC education supervision system and if there are any, what kind of a difference is it; it was found that there is no totally unrelated perception related to the system, similar perceptions and judgments exist; however, it is needed to clarify the boundaries and what exactly is the system and what it should be for parties but mostly for teachers. According to this, it is understood that:

1- Though the current system is considered to be transparent and scientific, there are still problems and flaws,

— From supervisor statements like*, in-service training should be improved, supervisor reports should be valued, and inspections should come to a conclusion,*

— *Being scientific should be given priority, rather than political concerns,*

— *Evaluation Reports should be shown to the teachers,*

— *It should be open and sharing*,

— Also from teacher statements like*, there is no briefing,*

— *Criterion is not mentioned.*

2- Some aspects of the system are not understood either by the supervisors or the teachers,

— From supervisor statements like, *I'm not sufficiently informed on some parts,*

— *We can't measure enough even when we use the criterion fully,*

— *Information gathered from administrative staff may not be unbiased,*

— *It is difficult to observe in one or two days' time,*

— Also from teacher statements like, *Transparency is dependent on the supervisors,*

— *It changes from one supervisor to the other,*

— *There should be at least 2 evaluations in 1 semester.*

3- The old "inspection" understanding is still on-going and the new "supervision" concept and its contents are not yet to be internalized,

— From teacher statements like, *supervisor-teacher relationship should be friendly,*

— *Should not express a dominant quality,*

— *Performance cannot be evaluated in 40 minutes,*

— Also from supervisor statements like*, the relationship should be appropriate for the stats of both sides.*

4- There are differences in the supervisor practices during supervisions,

— From teacher statements like, *teachers are not receiving enough help,*

— *Supervisor exchanges perspectives and informs,*

— *They do not stick with the criterion they announce at the beginning of the year.*

5- Teachers feel uncomfortable about supervision,

— From the answer YES that 92% of the teachers gave to the question: *"Do you feel uncomfortable while being observed by a supervisor?"*

6- The number of supervisors is low and supervisions cannot be done on time,

— from the *answer NO given by 60.00% of the supervisors on the question: "Do you consider the time allocated for evaluating teachers is enough?"* and

— from statements like *Only new teachers are evaluated.*

7- Supervisors are not effective enough,

— From statements like, *Supervisors have too many responsibilities, they are low in number, there is to initiative for school autonomy,*

— *In-service training should be improved, supervisor reports should be valued, and inspections should come to a conclusion.*

8- Supervisors find teachers partly adequate,

— From the answer *PARTLY given by 20.00% of the supervisors to the question: Do teachers show the necessary qualities?* and

— From statements like, *Teachers should be able to think outside the course book with classroom management and material development skills,*

— *They should be aware of current developments, be devoted and open to team-work.*

9- Teachers want to see Supervisors as 'Guide',

— From the answer *GUIDE given by 56.00% of the teacher to the question: 'In your opinion, what should be the role of supervisors in the TRNC Supervision system?'*

10- The 'Multi-Performance System' which is what is aimed, is generally seen appropriate but it still evokes some suspicions amongst teachers,

— from the answer *NO given by 48.00% and the answer YES gıven by 44.00% of the teachers to the question: 'If you are asked to choose between the multi-performance system (supervisor, principal, unit, student, parent) which is aimed at and the current supervision system, which one would you prefer? Would you want multi-performance system?'*

9. SUGGESTIONS

1- Supervisors should be put into continuous in-service training on the modern supervision methods and techniques.

2- Supervisors should be given the opportunity to improve themselves. For this, they should be encouraged for post-graduate study and follow the researches in their field.

3- Transportation problems of the supervisors should be solved. It should be made easier for supervisors to benefit from state vehicles.

4- Number of supervisors should be increased to reduce the teacher ratio per supervisor.

5- Supervisors who supervise education should not also be given inspection duties. Inspection supervisors should be employed separately.

6- Precautions should be taken for the betterment of positions and status of supervisors.

7- People who studied Education Management and Supervision as undergraduate and/or post-graduate

should be employed as supervisors.

8- In-service training programs should be developed to inform the teachers and change their perceptions on supervision.

9- Precautions should be taken to inform teachers during and after the supervision process on the criterion and supervision results.

10- The not-yet-finished parts of the education supervision (district boards and school boards) should be finished as soon as possible.

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Reliability And Validity Study Of The Assessment Of 6 Year Old Children's Emotional Skills Test (Aces) In Trnc

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ABSTRACT

The main purpose of this research is to study the validity and reliability of the Turkish Republic of Northern Cyprus sample of the Assessment of 6-year-old Children's Emotional Skills Test based on the sample for Turkey developed by Schultz and Izard (1998) and adapted by Durmuşoğlu Saltalı, et al. (2009). In this context, the research is of descriptive nature. Samples for this study are 143 six year old children attending preschools in the Nicosia Municipality of the Turkish Republic of Northern Cyprus Ministry of National Education. 49.7 percent (71) are male and 50.3 percent (72) are female students. This test is composed of three sub-tests in emotional recognition, emotional comprehension and emotional expression. To test construct validity, "Principal Component Analysis" (PAC) method of factor analysis is conducted. Varimax rotation is used in factor analysis. By checking the factor load in the factor one item is a part of, and checking factor loadings in other factors, it was made sure that the factor load difference between each factor is at least 20.

In terms of item analysis, item sub-tests, item-test correlations, item averages (item difficulties) and item standard deviation are calculated. Test and sub-test correlation coefficients are calculated. For reliability, KR-20 internal consistency coefficients are calculated. Consequently, when viewed the context of this study data we can say that psychometric properties of Assessment of Children's Emotion Skills-ACES' which validity and reliability made by Durmuşoğlu Saltalı and friends were not suitable enough. . In this test the validity and reliability ofthe other samples may be appropriate as assessed in a sample of T.R.N.C. In this sense, development of a new test for suitable culture may be helpful to fill the space in recognition, understanding and expression of emotions.

Keywords: Emotional skills, emotional expression, emotional identification, emotional understanding.

INTRODUCTION

The Emotional Differentiation Theory (DET) of Izard defined in 1993 states that there are six fundamental emotions experienced by humans; interest, joy or happiness, rage, sadness, fear, and disgust. Such emotions start developing in the early years of life. The higher cognition develops in a child, "pure" fundamental emotional feedback is reduced. In early childhood development, "Emotion-Cognition" interactions show primary effect in the development of emotion Tables. Stability in the development of a child allows for the child to recognize and differentiate between emotions (Schultz, Izard, Stapleton, Buckingham and Bear, 2009).

In all cultures, people experience emotions. Emotions are universal. Between the years of 1890 and 1950, it was believed that children experienced only a few emotions. We now know that babies experience fundamental emotions (Min-Ju Tsai, 2008).

Recognition and comprehension of emotions occurs via messages by smiling, frowning, being surprised, and fluctuations in tone of voice. Children younger than 3 years of age learn to differentiate and name emotions such as sadness, happiness, and fear by observing adults' non-verbal hints such as gestures, mimics, facial expressions and tone of voice. Happiness, sadness, fear, surprise and anger are observable in a child right after birth. Even though evidence of pride, shame, guilt and humiliation are present after the sixth month, these emotions don't carry meaning before two years of age (Elksnin and Elksnin, 2003).

Research pertaining to the expression of emotion indicates a positive influence on the initiation and regulation of social changes. While positive influence has made friendship building and sharing easy, negative influence indicates a problematic effect on social exchange. According to the direct observational reports of parents and teachers, positive emotions such as friendship and self-confidence are at a higher ratio than negative emotions such as aggression and sadness. Also, positive emotions lead children to display positive social behavior in their interactions with their peers and in expressing their emotions (Denham, McKinley, Couchoud and Holt, 1990; Denham, 2006). Similarly, prior to formal education, children by virtue of emotional expression within their cognitive structure make reasons for such emotions evident. Children slowly start to differentiate between negative emotions such as anger as opposed to sadness and gradually start using the language of emotions. Toward the end of this phase, as they acquire more emotional experience, children start recognizing contradictory feelings with complex dimensions (Denham, 1998). Studies (Transfer, Morris, 2010) indicate that children with more appropriate social feedback prior to school age develop stronger emotional recognition and emotional control in peer to peer interactions. Observational reports by teachers indicate that lack of emotional recognition may be the reason for behavioral and comprehension related difficulties. It is important that preschool children recognize and understand their own emotions within interactive environments as well as comprehend the increase in their interactions with others and comprehend and express emotions in order to develop social-cognitive skills. Defined as such, emotional competency calls attention to the social interaction concept as an important component (Denham, 1998; Martin and Green, 2005).

School failure may become an addition to social skill issues of children with emotional or behavioral disturbances. They may exhibit such issues in many of their relationships with others including themselves, their classmates and teachers, in a multitude of ways. They may exhibit difficulty, violence, aggression and other destructive behaviors in expressing their physical and emotional needs. Social skill training is utilized in developing interpersonal skills in children with emotional and behavioral problems. Supportive social networks generate more positive results in and outside the classroom (Quinn, Kavale, Mathur, Rutherford and Forness, 1999).

Many studies show that during early childhood, it is highly probable to observe behavioral problems, especially right before school. Such studies indicate that behavioral problems are more concentrated within the years between the infant stage where the child is dependent on parents and the time he or she declares his orher independence in elementary school. Data indicate that 10 percent to 15 percent of problematic behavior is observed in preschool age children (Campbell, 1995). From this angle, it is possible to claim that a child's social and emotional development within the first years of their life is the foundation for social and emotional behavior in later years (Ainsworth, 1978).

Research in which effects of intelligence, genetics and social environment are studied, factorssuch as an individual's general state of health, emotional framework, parental educational level, environmental factors pertaining to the educational setting are observed to affect the level of use of their potential intelligence and skills. Furthermore, it is emphasized that social-emotional and cognitive support given during preschool years positively affects the child's perception of self, self-confidence, level of readiness and social-emotional adaptation. Children who happen to grow up in positive environments are observed to have an advantage when it comes to educational maturity (Oktay, 1983;Davaslıgil, 1985;Çataloluk, 1994; Turaşlı, 2006).

In a study where positive social influence on children's emotional education from preschool years until 8th grade is researched, Payton, Weissberg, Durlak, Dymnick, Taylor, Schellinger and Pachan (2008) summarized the results of three large scale evaluations of the effects of programs developed to boost the social and emotional skills of elementary and middle school-aged children. These studies pointed out how social-emotional development programs relate to students' social-emotional skills, their attitudes toward others, positive social behaviors and academic performance. In these programs, students' behavioral problems and emotional difficulties were alleviated. When compared to the results of other studies, it is exceptionally significant that findings indicate social-emotional development programs as the most successful among all youth development programs (Payton, Weissberg, Durlak, Dymnick, Taylor, Schellinger, Pachan, 2008).

In a study done by Durlak, Weissberg, Dymnick, Taylor, Schellinger (2011) on the effect of the development of social and emotional learning of students, findings from a meta-analysis based on 270,034 students from 213 schools are presented. Findings from the study indicate that attendants show significant (11 percent reflected on performance) success in social and emotional skill, attitude, behavior and academic performance points.

Based on studies, developing children's skills in socially relating to adults and peers, arranging their emotions to express them appropriately, with circumstantial considerations in mind, was proven to ease children into adapting to their families and their social environments while boosting their school success and predicting future social competency (Çorapçı, Aksan, Arslan, Yalçın, Yağmurlu, 2010).

Findings in educational literature emphasize the positive effects of emotional-social educational development programs that start in preschool years. In this context, it can be said that preschool years, the most important years of

life, and education given during these years play a major role in the social and emotional development of children.As a result, emotional skills gained during a child's development include skills such as noticing and recognizing emotions, comprehending and expressing emotions, understanding others' emotions, being able to differentiate positive emotions from negative ones, accepting and being able to control such emotions. Magnuson et al. (2007), point out that school based studies on social-emotional development are inadequate (Gormley, Phillips, Newmark, Perper, 2009). Thus, latest studies in literature and research on emotional facial expressions focus on the face and majority of these studies work with limited expression sets (Keltner and Ekman, 2003).

ACES (Assessment of 6-year-old Children's Emotional Skills Test) developed by Schultz and Izard (1998) who happen to have important studies in the field is adapted to Turkey by Durmuşoğlu Saltalı, et al. (2009) as there appears to be a lack of studies and gauges to evaluate the emotional skills of preschool aged children with the hopes that such tests contribute to studies on preschool aged children's emotional development in Turkey and may be utilized in such. Assessment of 6-year-old Children's Emotional Skills Test (ACES) aims to measure skills in recognition of emotions, comprehension of emotions and expression of emotions.

The population of Turkish Republic of Northern Cyprus (TRNC) possesses unique social and cultural traits dissimilar to those of the Turkish population on mainland Turkey. For this reason, it is speculated that the results of Assessment of 6-year-old Children's Emotional Skills Test (ACES) that was adapted to the Turkish example will be different in TRNC. It is possible to claim that finding out the skills of preschool aged children attending schools in TRNC would be important in predicting direct effects of preschool education on future years.

In this study, in light of above, results of the validity and reliability studies of Assessment of 6-year-old Children's Emotional Skills Test (ACES) in TRNC are put forth.

THE STUDY

The main purpose of this research is to study the validity and reliability of the Turkish Republic of Northern Cyprus sample of the Assessment of 6-year-old Children's Emotional Skills Test based on the sample for Turkey developed by Schultz and Izard (1998) and adapted by Durmuşoğlu Saltalı, et al. (2009). In this context, the research is of descriptive nature.

Samples for this study are 143 six year old children attending preschools in the Nicosia municipality of the Turkish Republic of Northern Cyprus' Ministry of National Education. 49.7 percent (71) are male and 50.3 percent (72) are female students. Samples are students from 8 preschools, as varied as possible when it comes to their socioeconomic standing. Level of socioeconomic standing is set forth based on information provided by the Ministry of National Education. Two schools out of 8 are attended by children of families of lower socioeconomic class. Three schools are attended by children of middle and upper middle socioeconomic class families whereas two schools are attended by children of middle and lower middle socioeconomic class families and one school serves children from families of upper socioeconomic class.

In this study, Assessment of 6-year-old Children's Emotional Skills Test developed by Schultz and Izard (1998) and adapted by Durmuşoğlu Saltalı, et al. (2009) is used as the data collection tool. This test is composed of three sub-tests in emotional recognition, emotional comprehension and emotional expression. Emotional recognition sub-test is composed of 12 pictures depicting facial expressions of happy, sad, angry and scared. Emotional comprehension test composes of 12 everyday emotional states children may come across and emotional expression sub-test composes of children's emotional responses to 12 incidents. Test scores are calculated by attributing the right answer 1 point and by attributing 0 (zero) to the wrong answer and 0 (zero) to the *I don't know* choice.

First, researchers studied the validity of language in Assessment of 6-year-old Children's Emotional Skills Test. Text of the test is first translated from English to Turkish by three experts in the field and then the translated text in Turkish is translated back to English by three linguists with expertise in the English language. Corrections on the example situations are made based on the assumption that some of the points in the text did not fit in with the Turkish cultural context.

Test is executed on 51 girls (45.9 percent) and 60 boys (54.1 percent) out of 111 six year old students attending private and government preschools in Konya. Factor analysis along with test and item analysis are conducted on data acquired from test results. As a result of factor analysis used to determine the construct validity, three factors (sub-test) comprised of recognizing emotion, comprehending emotion and expressing emotion and obtained 10 items of these sub-tests. It was stated that items out of each sub-test were removed as a result of item analysis. KR-20 reliability coefficients for sub-tests are as follows: .83 for recognizing emotion; .89 for comprehending emotion; .83 for expressing emotion. KR-20 reliability coefficient for the overall test is .81. Reliability coefficients acquired by the halving method are as follows: Sub-test for recognizing emotion, .82; sub-test for comprehending emotion, .87; sub-test for expressing emotion, .78 and for the overall test, .79. Also, item difficulties and item resolving powers are put

forth as appropriate as per the item analysis (Durmuşoğlu Saltalı, et al., 2009).

It was planned that the schools create appropriate space for individual meetings as the implementation of the test necessitate she research assistant and the child to meet in a quiet and comfortable room. Research assistants were selected from a pool of Cyprus International University Preschool Teaching Department students that volunteered and had field experience. Students who had previously taken or who were, then, taking the Scientific Research Methods Course were preferred and given priority over the rest. A meeting where students were introduced to the test and where informative materials were handed out ran approximately 60 minutes. These materials included sections discussing how best to conduct the test and what to pay attention during the process. To observe how to conduct the test, volunteer students were taken to one of the preschools on an agreed upon day. For approximately 120 minutes, students observed the researcher apply the scale. In a meeting after the completion of the test, students' observations were assessed and their questions were answered. As a result, students were given tools in order to aptly conduct the test on their own. Students arrived in pairs at schools they had designated with the researcher. Pairing students to conduct the test was an attempt at minimalizing the risk and challenges that may arise during application.

Prior to jumping to data analysis, the author who conducted the validity and reliability study of the test for Turkey was contacted via e-mail. The author was asked to provide information about the method used for the factor analysis of the scale. The author stated that all details pertaining to the method can be found in an article he and a co-author published (Durmuşoğlu Saltalı, et al., 2009). But when the aforementioned article was examined, information on methodology was not found. Likewise, David Schultz, one of the scientists who developed the test was contacted via e-mail. Both authors were asked to provide more information in order to shed light on the validity and reliability of the study. The author in Turkey mentioned that he had lost all documentation pertaining to the validity and reliability test study. Also, Schultz stated that a test factor analysis was not conducted though when the results of the test were assessed, it was determined that the test is valid and reliable. In addition, Schultz also mentioned having lost the report he had prepared about the test. As a result, the following statistical techniques were used in data analysis.

To test construct validity, "Principal Component Analysis" (PAC) method of factor analysis is conducted. Varimax rotation is used in factor analysis. By checking the factor loadings in the factor one item is a part of, and checking factor loadings in other factors, it was made sure that the factor loadings difference between each factor is at least 20.

In terms of item analysis, item sub-tests, item-test correlations, item averages (item difficulties) and item standard deviation are calculated. Test and sub-test correlation coefficients are calculated. For reliability, KR-20 internal consistency coefficients are calculated.

FINDINGS

For construct validity, in the factor analysis conducted by using the "Principal Component Analysis" (PAC) method on the overall test (a total of 36 items) and varimax rotation, a 12 factor structure is obtained. In this structure, recognizing, comprehending and expressing emotions are confused. In other words, factors were not separated from one another to scale these other three dimensions. Also, by using the same method by forcing the factor analysis to three factors, recognizing, comprehending and expressing emotions were confused. Thereupon, factor analysis on individual sub-tests on recognizing, comprehending and expressing emotions were conducted. Data collected from the analysis is presented under the subtitles of "Recognizing Emotions Test, Comprehending Emotions Test, and Expressing Emotions Test".

Recognizing Emotions Test

Items pertaining to the "Recognizing Emotions Test" (12 items) were analyzed by factor analysis by using the Principal Component Analysis method and the varimax rotation.

The analysis showed that four different factors, whose eigenvalues related to the "Recognizing Emotions Test" are 1.73, 1.32, 1.14, 1.02 and whose variance percentage are 21.67, 16.60, 14.29, 12.80 were obtained (Table 1). These four factors explain 65.37 percent of the total variance. Factors are labeled in the sequence of, "scared, sad, happy, and angry" as they relate to emotions.

Table 1.Recognizing Emotions Test, Items' Factor Loadings, Eigenvalues, Percentages of Variance Explained, Item Sub-Test Correlation Coefficients, Item-Test Correlation Coefficients, Item Average and Item Standard Deviation Values

Sub Tests and Items	Commu-nialities	Factor Loadings				Item-Sub-Test *r*	Item-Test *r*	*M*	*SD*
		1	2	3	4				
1. Scared (KR20= .43)									
7	.65	**,80**				,80	,45	.63	,48
2	.60	**,69**		,19	,28	,78	,57	.67	,47
2. Sad (KR-20= 40)									
5	.71	-,27	**,76**	,22		,86	,39	.66	,47
3	.62	,29	**,73**			,66	,44	.82	,38
3. Happy (KR-20= .36)									
12	.65	,16		**,77**	-,12	,61	,41	.86	,34
6	.53			**,70**	,16	,88	,49	.69	,46
4. Angry (KR-20= .30)									
8	.74		-,31	,25	**,76**	,77	,38	.76	,42
1	.69	,18	,33	-,20	**,71**	,72	,43	.79	,40
Eigenvalue		1.73	1.32	1.14	1.02				
Variance Explained %		21.67	16.60	14.29	12.80				

Kaiser-Meyer-Olkin "Measure of Sampling Adequacy" value (.52) indicates an average compatibility value. Bartlett "Sphericity" test results are observed to be at ($\chi 2$=77.748) .0001 level of significance. As seen on Table 1, item communality values are over .50. When factor loadings pertaining to factors are studied, factor loadings fluctuate between .80 and .69. When item sub-test correlations are studied, correlation coefficient is observed to fluctuate between .61 and .86 while the item-test correlation coefficient fluctuates between .38 and .57. KR-20 internal consistency coefficients are calculated as follows: "scared" sub-test .43; "sad" sub-test, .40; "happy" sub-test, .36; and "angry" sub-test, .30. KR-20 for the overall test is .46.

On Table 2, correlation coefficients for the total points for Recognizing Emotions Test and sub-test points are included. When the Table is observed, correlation between sub-test points and total test points appear quite high while the correlation between individual sub-tests appears quite low.

Table 2. Correlation Coefficients for Recognizing Emotion Test and its Sub-Tests

	Total	Scared	Sad	Happy
Scared	.65**			
Sad	.53**	.06		
Happy	.59**	.15	.17*	
Angry	.54**	.20*	.006	.09

** $p < .01$, * $p < .05$

Emotion Comprehension Test

Items pertaining to the "Emotion Comprehension Test" (12 items) were analyzed by factor analysis by using the "Principal Component Analysis" method (PAC) and the varimax rotation. The analysis showed that three different factors, whose eigenvalues related to the "Emotion Comprehension Test" are 1.69, 1.60, 1.33 and whose variance percentage are 21.21, 20.03, 16.71 were obtained (Table 3). These three factors explain 57.96 percent of the total variance. Factors are given labels "angry, happy, scared" as they relate to emotions. Items that relate to comprehending emotions did not come together during factor analysis.

Table 3.Emotion Comprehension Test, Items' Factor Loadings, Eigenvalues, Percentages of Variance Explained, Item Sub-Test Correlation Coefficients, Item-Test Correlation Coefficients, Item Average and Item Standard Deviation Values

Sub-Tests & Items	Commu-nalities	Factor Loadings			Item-Sub-Test *r*	Item-Test *r*	*M*	*SD*
		1	2	3				
1. Angry (KR-20 = .56)								
8	.61	**,77**	,12		,76	,59	.37	,48
11	.53	**,72**	,10		,68	,51	.28	,45
3	.50	**,68**	-,18		,71	,51	.44	,50
2. Happy (KR-20 = .56)								
5	.62		**,76**	-,19	,70	,25	.88	,32
1	.54		**,73**		,71	,35	.87	,33
10	.52		**,65**	,30	,59	,33	.90	,28
3. Scared (KR-20 = .44)								
4	.69	,19		**,80**	,78	,50	.62	,48

9	.59	-,15	**,75**	,81	,36	.55	,50
Eigenvalue		1.69	1.60	1.33			
Variance Explained %		21.21	20.03	16.71			

In regards to Emotion Comprehension Test, Kaiser-Meyer-Olkin "Measure of Sampling Adequacy" value (.53) indicates an average compatibility value. Bartlett "Sphericity" test results are observed to be at (χ2=113.048) .0001 level of significance. As seen on Table 4, item communality values are over .50.When factor loadings pertaining to factors are studied, factor loadings fluctuate between 80 and .65. When item sub-test correlations are studied, correlation coefficient is observed to fluctuate between .59 and .81while the item-test correlation coefficient fluctuates between .25 and .59. KR-20 internal consistency coefficients are as follows: "angry" sub-test .56; "happy" sub-test, .56; "scared" sub-test, .44. KR-20 value for the overall test is .42.

On Table 4, correlation coefficients for the total points for Emotion Comprehension test and sub-test points are included. When the Table is observed, correlation between sub-test points and total test points appears quite high while the correlation between individual sub-tests appears quite low.

Table 4. Coefficient Correlations between Emotion Comprehension Test and Sub-Tests

	Total	Angry	Happy
Angry	.72**		
Happy	.47**	.03	
Scared	.54**	.04	-.008

** *p*< .01

Emotion Expression Test

Items pertaining to the "Emotion Expression Test" (12items) were analyzed by factor analysis using the "Principal Component Analysis" method (PAC) and the varimax rotation. The analysis showed that three different factors, whose eigenvalues related to the "Emotion Expression Test" are 2.00, 1.62, 1.35 and whose variance percentage are 22.28, 18.07, 15.00 were obtained (Table 5). These three factors explain 55.35 percent of the total variance. Factors are given labels in the particular sequence of "happy, scared, angry" as they relate to emotions. Items that relate to comprehending emotions did not come together during factor analysis.

Kaiser-Meyer-Olkin "Measure of Sampling Adequacy" value of Emotion Expression Test indicates an average compatibility value (.53). Bartlett "Sphericity" test results are observed to be at (χ2=159.256) .0001 level of significance. As seen on Table 4, aside from four items (2,8,9,11), item communality values are over .50.

Table 5. Emotion Expression Test, Items' Factor loadings, Eigenvalues, Percentages of Variance Explained Item Sub-Test Correlation Coefficients, Item-Test Correlation Coefficients, Item Average and Item Standard Deviation Values

Sub-Tests & Items	Commu-nalities	Factor Loadings			Item-Sub-Test *r*	Item-Test *r*	*M*	*SD*
		1	2	3				
1.Happy (KR-20= .64)								

3	.72	**,83**		-,15	,77	,40	.80	,40
5	.63	**,77**		,15	,62	,42	.88	,32
9	.49	**,64**	,21	,17	,74	,52	.80	,40
2.Scared (KR-20= .55)								
12	.71	-,19	**,81**	,11	,75	,47	.59	,49
10	.62	,17	**,76**		,73	,56	.62	,48
8	.46	,15	**,53**	-,39	,68	,39	.50	,50
3.Angry (KR-20 = .37)								
6	.52		,31	**,64**	,67	,52	.36	,48
2	.46	,20	-,10	**,64**	,71	,40	.45	,50
11	.35			**,58**	,58	,30	.26	,44
Eigenvalue		2.00	1.62	1.35				
Variance Explained %		22.28	18.07	15.00				

When factor loadings pertaining to the factors are observed, factor loadings fluctuate between .53 and .83. When item sub-test correlation coefficients are studied, correlation coefficient is observed to fluctuate between .58 and .77 while the item-test correlation coefficient fluctuates between .30 and .56. KR-20 internal consistency coefficients are as follows: “happy” sub-test 64; for “scared” sub-test, .55; for the “angry” sub-test, .37. KR-20 value for the overall test is .50.

Table 6. Coefficient Correlation between Expressing Emotion Test and Sub-Tests

	Total	Happy	Scared
Happy	.61**		
Scared	.65**	.09	
Angry	.61**	.16*	.02

** p < .01, * p < .05

On Table 6, correlation coefficients for the total points for Emotion Expression test and sub-test points are included. When the Table is observed, correlation between the sub-test points and the total test points appears quite high while the correlation between individual sub-tests appears quite low.

CONCLUSIONS

In this study, validity and reliability studies on the Assessment of 6-year-old Children’s Emotional Skills Test (ACES)developed by Schultz and Izard and the Turkish study generated by Durmuşoğlu Saltalı, et al. (2009) for the Turkish Republic of Northern Cyprus sample, were conducted. As a result of the overall test (36 items) factor analysis, it was observed that a structure with 12 factors where recognizing, comprehending and expressing emotions items were intermixed had emerged. Factor analysis done by forcing three factors yielded similar results. In other words, it was observed that the results of the factor analysis conducted were not consistent with the results of Durmuşoğlu Saltalı, et al. (2009) factor analysis and a three factor structure did not emerge. Whereupon, recognizing,

comprehending and expressing emotion sub-tests in this study are treated as individual tests and factor as well as item analysis were conducted with in each test. It is possible to claim that the main reason for this is that recognizing, comprehending and expressing emotions in reality require different skills and when addressed as one, they become indistinguishable.

As a result of factor analysis, a 4 factor structure for recognizing emotions test, a 3 factor structure for comprehending emotions test and a 3 factor structure for expressing emotions test were formed. In recognizing emotions test, it was observed that "scared, happy, angry and sad" states converged in 4 separate factors, and in comprehending and expressing emotions tests, items pertaining to the state of "sad" did not function. The item related to "sad" was observed to have intermixed with the item related to "happy" in the factor analysis. In other words, in terms of recognizing emotions, children are able to differentiate between the four emotions shown to them in pictures. Yet, regarding the emotion of sadness, on the level of comprehending and expressing emotion, it is possible that they interfuse. One possible reason for this may be that the hypothetical situations described in the emotion comprehension and expression tests were not constructed according to the cognitive levels of 6-year-olds. Thus (Transfer, Çelik, Tuğrul, Yalçın, 2002) studies show that frequent use of specific words qualifying facial expression of emotions increase the likelihood of children naming facial expression of emotions correctly to a great degree and that there is a positive relationship between preschool age children's verbal competency skills and their performance of defining such expressions (Deutsch, 1974, 1975; Felleman et. al., 1983).

In addition, the difference between the social and emotional fabric of TRNC and the Turkish society can be thought as another reason. As a result of observations, it is noted that Turkish Cypriot families are very protective of their children. Especially mothers being supported by their own mothers in child rearing and the big influence of grandmother's in care and education of children appear to be significant. Mother's leaving the initiative of rearing and educating their children to grandmothers allow for the grandmothers' traditional understanding of providing grandchildren with opportunities they could not offer to their own children. As a result of all their needs and wants being satisfied, these children seldom experience sadness and the feeling of lack. It is believed that this understanding was prevalent in the previous generation as well. Thus, the very first emotions experienced are between the mother and the child (Pehlivantürk, 2004). Especially the mother's emotional responses are very important and meaningful for the baby. For this reason, how mothers in the TRNC community experience and reflect such may be of importance. Martin and Green's (2005) study where 50 mothers and their 3.5 year olds were studied is worthy of attention in regards to this point. Each mother-child pair was filmed while conducting an activity which entailed telling a story with various emotions. Mothers enacted the stories. Words relating to emotions used by the mother and the child, authentic emotional expressions and emotional etiquette with the total number of times of expression of emotions were encoded in the videotapes. In the same manner, explanations of emotional cause and effect in the stories by mothers and the mothers' explanation of emotional expectations from their children were encoded. At the end of the application, the total sum of the emotional expression components (emotion words, authentic expression of emotion, emotional etiquette) and children's expression of emotion appeared to be closely related. Similarly, it was observed that mothers' expression of emotions show a positive correlation with the cumulative emotional expression with children and it was observed that children's authentic expression of emotions and labeling of emotions show a positive relationship.

Again, a lack of cosmopolitan, active lifestyle in TRNC, and a lack of neighborhood/street culture (playing with peers in the neighborhood may enrich the social and emotional wealth of a child) may be the reason for children lacking exposure to a variety of social experiences.

In other words, it is possible to claim that studies pertaining to the topic need to generate groundwork prior to the actual study so that a higher sampling adequacy can be acquired. At the same time, it was observed that for all three tests, the Bartlett "Sphericity" test result at .0001 level was significant. In this context, it is possible to claim that the "test sizes" were appropriate.

Points of recognizing, comprehending and expressing tests and the related sub-tests' coefficient correlations are observed, the correlation coefficient between the test and the sub-test points appear to be high and the correlation coefficient of sub-tests between one another appear to be low. It is possible to claim that the low correlation rates among sub-tests indicate that each sub-test measured separate traits. It is possible to assess that the high correlation rate between the overall test and sub-tests indicate that the test succeeded in measuring the predetermined traits. Thus, Walden and Field (1982) conducted a study on the emotional facial expressions of preschool age children. This study included 40 children attending the same preschool between the ages of 3 and 5. In this study, happy and sad expressions matched at the same frequency. Furthermore, the fact that children had succeeded in matching happy faces on all four phases drew attention.

In general, item sub-test correlations are observed to be quite high. It is possible to assess that the item holds a significant place in the sub-test and the traits meant to be measured are measured. These correlations can also be interpreted as the item validity coefficient. Items' total test point correlation values, when compared to the sub-test point correlations, appear to be lower. Nonetheless, aside from the 5th item on the emotion comprehension test, all item correlations seem quite good. Thus, Widen and Russell (2003), in their study where they observed free labeling of facial expressions included 80 (40 girls and 40 boys) preschool children ages between 4 year and 0 months and 5 year and 11 months. In emotional stories, five emotions about cliché incidents (happy, sad, angry, scared, and disgusted) were created based on specific results of the previous laboratory studies as they relate to the cause and effect relations of emotional incidents. A total of 800 applications, 400 on labeling facial expressions of children and 400 on stories, were completed. In stories, the margin of error appeared to be the lowest within emotions of "happiness" and "sadness". In labeling, children succeeded 100 percent in labeling "sadness" and 75 percent in labeling "happiness". In general, the percentage of success in labeling was 57 percent.

Item-test correlations may be evaluated as item discriminating power. When item-test correlations are observed, the item sub-test or the item discriminating power; other words the level of differentiation between children that comprehend and those that don't, do appear to be quite high.

Item averages also provide item difficulty. In other words, the percentage of correct answers given to an item can be assessed as item difficulty. Observing item difficulties in tests, it becomes evident that they all have easy and difficult items.

In this study, it appears that the KR-20 reliability coefficients in general are quite low. If these tests are to be conducted in TRNC, it is crucial that its results be assessed with utmost care and attention.

As a result, within the framework of data collected in this study, it is possible to state that psychometric attributes of the validity and reliability of "Assessment of 6-year-old Children's Emotional Skills Test" (ACES) conducted by Durmuşoğlu Saltalı, et al. (2009) are not compatible enough. As assessed in the TRNC sample, it may be useful to apply validity and reliability tests to other samples as well. In its current condition, this study indicates that the test is not reliable enough and its use may yield objectionable results. For this particular reason, a new and culturally more sensitive test that will reflect levels for emotional recognition, comprehension and expression accurately should be developed.

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The Effect of Personality Types on the Learning Styles of Agricultural Students (A case study in Iran)

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ABSTRACT

Learning styles play a vital role in education and teaching because it helps teachers with understanding how students learn. This study was directed towards the effect of personality characteristics on the learning styles of students. The statistical population of the study consisted of the students College of Agriculture and Natural Resources Tehran University in the 2009-2010 academic year (N=3859) convened the universe of the study, out of which 260 people determined as sample using Cochran Formula. A quantitative research methodology was used to conduct the study. The specific method chosen to investigate the research questions was a series of three paper form questionnaires. Majority of students had assimilator learning style and dimensions of personality treats including extraversion, agreeableness, conscientiousness, openness to experience and neuroticism, were in medium level. For the big five personality factors expect neuroticism, a consistent positive association with learning styles was found. Consequence of standardized canonical discriminant function coefficients indicates importance of conscientiousness variable for distinction between converger learning style and three other learning styles, the importance of extraversion for distinction between diverger and two other learning styles and openness to experience for distinction between accommodator and converger learning styles.

Keywords: Learning styles, Personality types, Education, Teaching, Agricultural students, Iran.

Introduction

Ancient Greek philosophers had a good advice for us – "Know Yourself". This is a useful advice, especially when we discuss about learning in higher education. With our limited knowledge, it is difficult to make rational choices about learning (Eysenck, 1978**)**. The differences that exist between personality type and learning style are aspects that represent individual differences which further complicate learning, in addition, to allow individual to know their behavioral strengths and weaknesses in a more objective light (Eysenck, 1978; Threeton, and Walter, 2009). Also (Coffield, Moseley, Hall and Ecclestone, 2004) concluded that personality based learning style provides a more useful conceptual basis for understanding individual difference in learning. According to (Heinström, 2000) personality traits are expressed in learning styles, which are in turn reflected in learning strategies, which eventually produce a certain learning outcome. One concept in particular which has provided some valuable insights into learning in both academic and other settings is learning style. There is general acceptance that the manner in which individuals choose to or are inclined to approach a learning situation has an impact on performance and achievement of learning outcomes (Cassidy, 2004). Learning is acquiring new knowledge, behaviors, skills, values, preferences or understanding, and may involve synthesizing different types of information People learn and process new information in different ways. It should be noted that every student has his\her own learning style. These differences (personality, perception, ability, intelligence) affect students' motivation and attitudes towards the lessons. Therefore, these differences affect the effectiveness of the lesson. Beside those, the student's gender, intelligence and personal characteristics influence the learning style as well (Erden and Altun, 2006). As the learning style is related to individual characteristics and

preferences, learning styles reflect the students' preferences on how they perceive the environment, interact with this environment, react and learning experience in this process (Kazu, 2009). (McCarthy, 1987) Described "learning styles" as the individual's perception and use of the knowledge and in the other definition learning style describes the process that learners use to sort and process information. (Gardner, 1999) identified that a strong relationship exists between a teacher's learning style and preferred teaching style. According to (Jonassen, 1981) teachers tend to teach the way they were taught. These critical findings present a problem that requires attention as we do not all comes from the same mold in regard to our specific learning style or personality. Therefore it is suggested that all learning style research and application efforts need to stress the development of the individual and the whole learner. Learning styles, as well as personalities should be accounted for when considering the topic of curriculum development and instruction. With the overload of curricular assessment demands, and a vast amount of learning style models, educators may find themselves in a state of confusion regarding the use of learning style models in the classroom. This phenomenon creates a problem that requires attention learning style is an important factor in different areas including students' academic achievement, how students learn and teachers teach, and student-teacher interaction. People show a preference for a particular style of learning, and the speed and efficiency of their learning is a function of their most and least preferred style considering (Othman, Sumarni and Foong, 2007) the learning style is an inborn characteristic which does not easily change during the lifetime, but can change and be developed during the life of the individual through the experiences. Learning style is a general concept which emphasizes the learning differences such as the quality of an umbrella. Thus it has an essential place in the lives of individuals. Most people are not aware of their learning style preferences. Being aware of our students' learning styles, psychological qualities and motivational differences will help us regulate our lessons appropriately and in terms of the conditions (Entwistle, 1981). In addition s/he will integrate it in the process of learning so s/he will learn more easily and fast and will be successful. It is not so difficult to appreciate the learning styles and identity them. Studying with knowledge of the learning style helps an individual to reach his/her goals quickly. Students can easily become bored and frustrated if the teaching method is only tapping into one types of learning style, as most classes have students with a range of learning style preferences (Boydak, 2001). When the lessons are taught by taking into consideration the individuals' learning styles; their interests and successes increase considerably (Kazu, 2009). Many researchers agree that learning styles play a vital role in education and teaching because it helps teachers with understanding how students learn. For instance, Felder and Spurlin, 2005) point out that learner with a strong preference for a specific learning style may have difficulties in learning if the teaching style does not match with their learning style**.** To improve the learning progress of students and to make learning easier for them, learning styles are considered more and more in technology enhanced learning systems. Confirmed this by a study showing that students attending an online course that matches with their preferred learning style (either sequential or global) achieved significantly better results than those who got delivered a course that did not match their learning style (Eysenck and Eysenck, 1975) noted that personality and learning are closely linked. Several studies have indicated and explained the relationship between learning styles and personality traits (Avery, 1985; Jeskey, 1985; Busato, Prins, Elshout and Hamaker, 2000; Anastasi, 1976; Aragon, Johnson and Shaik 2002; McClanaghan, 2000; Furnham, 1992). For the LSI, (Furnham, 1992) found a positive correlation between extraversion and the learning styles ``converger'' and ``accomodator''. Neuroticism correlated negatively with the learning styles ``assimilator'' and ``accomodator''. (Jackson and Lawty-Jones, 1996), Replicated the correlations reported by (Furnham, 1992), suggesting the same substantial overlap between personality traits and learning style. Learning styles are also described as types of learning like, for example, concrete experience, reactive observation, abstract conceptualization and active experimentation, resulting in four learning styles: divergers, accommodators, convergers and assimilators (Kolb, 1976; Kolb, 1984). (Busato, Prins, Elshout, and Hamaker, 1999; De Raad and Schouwenburg, 1996) investigated the relation between learning style and personality with the Inventory of Learning Styles (ILS) and the Big Five personality factors. Learning styles are one component of a relatively stable personality type. Several studies have examined the relationship between learning style and personality type. Thus, this study determines whether a relationship exists between the personality types and learning styles. This topic was examined for the purpose of providing more information regarding how to better serve the educational needs in preparing this student population for the world-of-work. Therefore, this study answers the following questions:

- What are the predominant personality types of agricultural students?
- What are the predominant learning styles of agricultural students?
- Is there a relationship between students, personality types and their learning styles?

Research Methodology

Sample

The statistical population of the study consisted of the students College of Agriculture and Natural Resources Tehran University in the 2009-2010 academic year (N=3859) convened the universe of the study, out of which 260

people determined as sample using Cochran Formula. The sample size was later increased to 297 people for enhancing precision of the study. Out of them 297 students were selected through Proportional Stratified-randomization method (n=297).

Instrumentation

A quantitative research methodology was used to conduct the study. The specific method chosen to investigate the research questions was a series of three paper form questionnaires. The first questionnaire was a participant background information survey, containing a series of questions relating to: gender, age, and so on. The remaining two questionnaires included personality traits inventory (NEO-FFI) and learning style inventory (LSI).

Learning style

The learning styles were measured by the LSI (Kolb and Kolb, 2005). In Kolb's model, individuals prefer to gather information either through concrete experience (CE) or abstract conceptualization (AC) and process that information either through reflective observation (RO) or active experimentation (AE). CE includes affective learning skills, while RO involves perceptual learning skills. Four learning-style categories are possible based upon how a person combines preferences in gathering and processing information. Accommodators combine CE and AE; Divergers combine CE and RO; Assimilators combine RO and AC; and Convergers combine AC and AE (Evans, Forney, and Guido-Dibrito, 1998) (see figure 1). The identified strengths of Divergers are described as their imaginative abilities and understanding of people, while their weaknesses are found in their inability to make decisions or being paralysed by alternatives. Assimilators are said to be oriented towards building theoretical models and use inductive reasoning. A weakness of this style may occur with the lack of practical applications generated from theory. Convergers use deductive reasoning and prefer the application of ideas; convergers are also relatively unemotional and would rather work with things than with people. Making decisions too quickly and solving the wrong problem have been identified as weaknesses of convergers. The accommodator is quick to involve himself in new situations in a trial-and-error manner. Trivial improvements and being involved in seemingly meaningless activities are noted as weaknesses. There are 12 sentences with a choice of endings in the questionnaire. Rank the ending for each sentence according to how well people think each one fits with how ones would go about learning something. Then, using the spaces provided, ranks a "4" for the senesce ending that describes how people learn best, down to a "1" for the sentence ending that seems least like the way ones learn. Different studies have been confirmed LSI questionnaire (Kolb, 1985; Atkinson, Murrel and Whiters, 1990; Veres, Sims and Locklear, 1991; Loo, 1997; Geller, 1979; Newstead, 1992; Sims, Veres, Watson, and Buckner, 1986; Evans, Forney and Guido-Dibrito, 1998; Ferrell, 1983; Yahya, 1998).

In the present study, the Cronbach alpha coefficients are 0.75, 0.77, 0.81 and 0.84, respectively for the diverger, coverger, assimilator, and accommodator scales.

Example of completed sentence set:

When I learn:

1. I am happy 2. I am fast 3. I am logical 4. I am careful

4= most like you 3= second most like you 2= third most like you 1= least like you

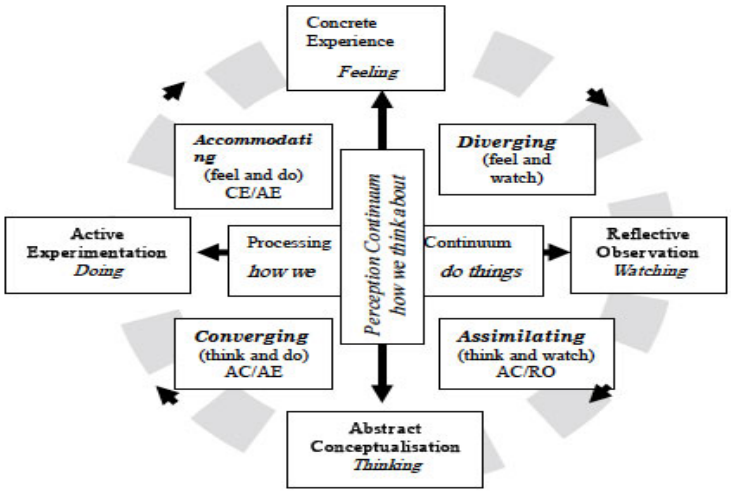

Figure1. Kolb's learning styles (Chapman, 2006)

Personality

The initial NEO Personality Inventory has been made by (Costa and McCrae, 1986). For many researches applications, the NEO-PI-R is rather lengthy because 240 items measure of the Five Factor Model; Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience to provide a shorter measure, (see figure 2), developed the 60-items NEO-FFI, an abbreviated version based on a level factor analysis of the (1985) version of the NEO PI (Costa and McCrae,1992; Costa, McCrae, and Holland, 1984). FFI Composed of 60 statements, the NEO Five-Factor Inventory is considered a brief and comprehensive measure of the five personality dimensions. Each of the five dimensions is assessed by 12 statements. For each of the items, the participants rated themselves on a 5-point Likert scale from 1 to 5 (or from 5 to 1), with verbal anchors of strongly disagree, disagree, neutral, agree, and strongly agree. The statements are scored in both directions. For some items, indicating ''strongly disagree'' results in a score of 1 and indicating ''strongly agree'' earns a score of 5. For other items, indicating ''strongly disagree'' results in a score of 5 and indicating ''strongly agree'' earns a score of 1. The total score for each personality dimension is the summed score from the 12 statements of each scale. People scoring high on the E scale tend to be sociable and assertive, and they prefer to work with other people. Openness to Experience is characterized by such attributes as open mindedness, active imagination, preference for variety, and independence of judgment. In addition, people who score high on the O scale tend to be less conservative and traditional. People high on the A scale tend to be tolerant, trusting, accepting, and easily moved. Furthermore, they value and respect other people's beliefs and conventions. People high on the C scale are characterized as being organized, purposeful, strong-willed, responsible, and trustworthy. Also, they tend to be task-focused and achievement-oriented. Respondents indicated their responses to the items on a 5-point Likert scale ranging from ''Not at all like me'' (coded 1) to ''A lot like me'' (5). Indeed, many scholars (Taylor, and MacDonald, 1999; Costa and McCrae, 1992) have asserted that the big five personality traits model accounts for a large amount of the variability in personality. A short version of the NEO Personality Inventory is the NEO Five-Factor Inventory (Costa, and McCrae, 1992), which also has been proved to reliably assess the five personality dimensions (Courneya and Hellsten, 1998).

In the present study, the Cronbach alpha coefficients are 0.83, 0.75, 0.8, 0.79, and 0.79, respectively for the neuroticism, extraversion, openness, agreeableness, and conscientiousness scales.

Neuroticism

Neurotic individuals tend to be anxious, self-conscious, moody, and insecure. They are more susceptible to psychological distress and generally cope more poorly with stress than others (Costa and McCrae, 1986). Thus, neuroticism has been negatively linked to subjective well-being.

Extraversion

Extraverts tend to be talkative, social, gregarious, and assertive. The extraversion is also characterized by a need for activity, excitement, and stimulation (Wallach& Wing, 1969). The extraverts tend to be more physically and verbally active whereas the introverts are independent, reserved, steady and like being alone. The person in the middle of the dimension likes a mix between social situations and solitude. Extraverts are adventurous, assertive, frank, sociable and talkative.

Openness to experience

Individuals who attain score highly on openness to experience tend to be curious, imaginative, broad-minded, and unconventional. Openness to experience implies receptivity to experience, including one's own inner feelings and emotions. Open individuals are attentive to and curious about both their inner and outer worlds (Costa and McCrae, 1992). People with a high openness have broader interests, are liberal and like novelty. This factor relates to intellect, openness to new ideas, cultural interests, educational aptitude and creativity. The openness to experience can be connected to activities like writing, science and art (Wallach& Wing, 1969).

Agreeableness

Agreeable people are generally good-natured, cooperative, supportive, caring and concerned for others. The agreeableness scale is linked to altruism, nurturance, caring and emotional support versus hostility, indifference, self-centeredness and jealousy. Agreeable people are altruistic, gentle, kind, warm and sympathetic (Costa and McCrae, 1992).

Conscientiousness

Conscientious individuals are likely to be dependable, responsible, rule abiding, and achievement-oriented. One hallmark of conscientiousness is self-discipline (Costa, McCrae and Holland, 1984). The conscientious, focused person is concentrating on only a couple of goals and strives hard to perceive them. He is career oriented, while the flexible person is more impulsive and easier to persuade from one task to another. Conscientiousness has been linked

to educational achievement and particularly to the will to achieve. The more conscientious a person is the more competent, dutiful, orderly, responsible and thorough he is.

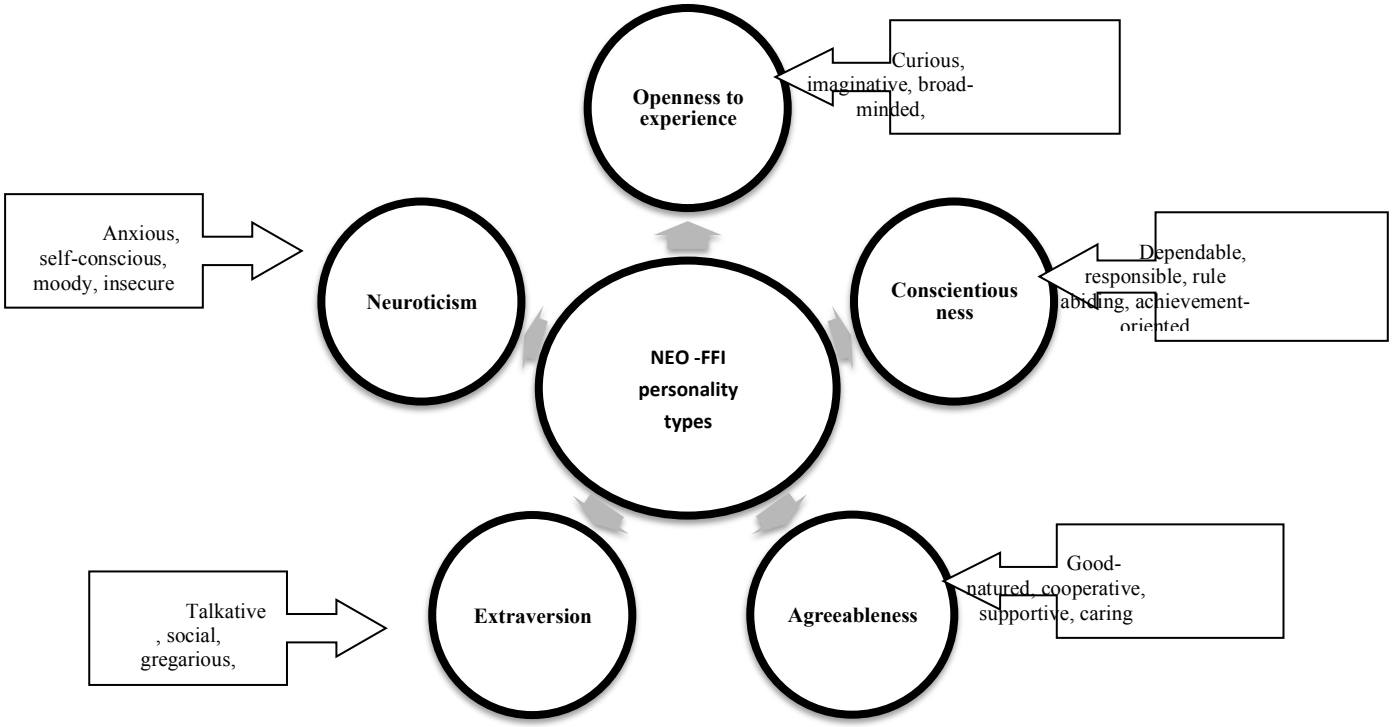

Figure2. NEO- FFI personality classifications (1992)

Results

In Table1, the most learning style was assimilator, with 39 percent, followed by diverger, with 25.3, by Converger, with 20.6 and Accommodator with 15.1.

Table 1- Frequency of learning style among Students College of Agriculture and Natural Resources Tehran University

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	diverger	75	25.3	25.3	25.3
	converger	61	20.6	20.6	45.9
	assimilator	117	39	39	84.9
	accommodator	44	15.1	15.1	100.0
	Total	297	100.0	100.0	

Note. (a) Accommodating people have the ability to learn primarily from hands-on experience, (b) Diverging people are best at viewing concrete situations from diverse points of view, (c) Converging people are best at finding practical uses for ideas and theories, and (d) Assimilating people are best at understanding information and putting it into logical form (Kolb & Kolb, 2005b).

In Table 2, the most of agricultural students were in medium level in personality traits (conscientiousness, extraversion, agreeableness and openness to experience) except for neuroticism that was high level.

		Neuroticism		Conscientiousness		Extraversion		Agreeableness		Openness to experience	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Valid	12-24	70	23.56	45	21.22	72	24.2	93	31.31	90	30.3
	24-48	72	24.24	150	50.5	151	50.8	124	41.75	160	53.88
	48-60	155	52.2	84	28.28	74	24.9	80	26.94	47	15.82

Table 2 - Frequency of personality types among Students College of Agriculture and Natural Resources Tehran University

In Table 3, the correlations between Conscientiousness, Extraversion, Agreeableness, Openness to experience and learning style. There is a very comparable pattern of correlation between learning style and the Big Five personality factors.

Table 3- Correlation coefficient between learning style and personality traits

Variable	Pearson Chi – Square	
	Value	Asymp. Sig. (2-sided)
Neuroticism	58.184	0.324
Conscientiousness	404.722	.000**
Extraversion	373.391	.000**
Agreeableness	333.674	.000**
Openness to experience	412.329	.000**

**. Correlation is significant at the 0.01 level (2-tailed)

In table 4, 5, 6, 7 the multiple stepwise discriminant analysis was used to determine relations between independent variable (personality traits) and dependent variable (learning style). According to results of table 4, 83.5396 percent of variance of variable learning style by the first model, 74.6496 percent of variance by the second model and 46.24 percent of variance by the third model is represented. Consequence of standardized canonical discriminant function coefficients in Table 5 indicates importance of conscientiousness variable for distinction

between converger learning style and three other learning styles, importance of extraversion for distinction between diverger and two other learning styles and openness to experience for distinction between accommodator and converger learning styles.

Considering the results shown in the Table 6, discriminant Analysis equation in standard situation will be as follow:

$$Y_1 = -20.311 + 0.022\,X_1 + 0.051\,X_2 + 0.035\,X_3 + 0.318\,X_4 + 0.016\,X_5 \quad (1)$$

$$Y_2 = -3.562 + 0.056\,X_1 + 0.177\,X_2 - 0.011\,X_3 - 0.072\,X_4 - 0.012\,X_5 \quad (2)$$

$$Y_3 = -8.590 + 0.034\,X_1 - 0.007\,X_2 + 0.132\,X_3 - 0.053\,X_4 + 0.125\,X_5 \quad (3)$$

Where Y_1 is converger learning style separate of (diverger, accommodator, assimilator) learning style; Y_2 is diverger learning style separate of (accommodator, assimilator) learning style;Y_3 is Accommodator learning style separate of Assimilator learning style; X_1 is Neuroticism;X_2 is extraversion; X_3 is openness to experience;X_4 is conscientiousness; X_5 is agreeableness.

Table 4 - Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 3	.022	1106.397	15	.000
2 through 3	.137	580.045	8	.000
3	.538	180.600	3	.000

Table 5 – Eigen values

Function	Eigen value	% of Variance	Cumulative %	Canonical Correlation
1	5.084(a)	57.3	57.3	.914
2	2.937(a)	33.1	90.3	.864
3	.858(a)	9.7	100.0	.680

Table 6 - Standardized Canonical Discriminant Function Coefficients

Variable	Function		
Neuroticism	**1**	**2**	**3**
Extraversion	.086	.217	.131
Openness to experience	.279	.975	-.040
Conscientiousness	.201	-.064	.750
Agreeableness	.967	-.219	-.160

Table 7 - Canonical Discriminant Function Coefficients

Variable	Function		
Neuroticism	**1**	**2**	**3**
Extraversion	.022	.056	.034
Openness to experience	.051	.177	-.007
Conscientiousness	.035	-.011	.132
Agreeableness	.318	-.072	-.053
(Constant)	.016	-.012	.125

Discussion

According to results of our research, most agricultural students were in medium level in personality traits (conscientiousness, extraversion, agreeableness and openness to experience) except for neuroticism that was high level because of lack of motivation, interest between students and job opportunities, using the teaching method of theory by teachers. Neuroticism is linked to lack of concentration, fear of failure and experiencing studying as stressful. Moreover neuroticism is linked with a lack of critical ability and problems in understanding how things relate to each other (Schouwenburg, 1995). This can be linked to the surface learning style. The student with a surface approach concentrates on memorizing without any concern of finding a deeper meaning or understanding of the material. They are most concerned about getting through the exams and are not really interested in the material itself. Their motivation is extrinsic and they take on a strategic, syllabus-bound approach to studying (Eysenck, 1978).

Assimilator was the most learning style with 39 percent among agricultural students, based on Kolb and Kolb (2005), best learning style for agricultural student is accomodiator.

The multiple stepwise Discriminant analysis determined relations between learning styles and personality traits; the consequence of indicated importance of conscientiousness variable for distinction between converger learning style and three other learning styles, importance of Extraversion for distinction between diverger and two other learning styles and Openness to experience for distinction between accommodator and converger learning styles. They are relevant except for neuroticism. The magnitudes of these correlations correspond to those between learning style and the big five personality traits reported by (Busato, Prins, Elshout, and Hamaker, 1999, 2000; De Raad and Schouwenburg, 1996; De Fruyt and Mervielde, 1996). (Furnham, 1992; Jackson and Lawty-Jones, 1996), Reported there are considerable higher correlations between personality and learning style. According to (Furnham, 1992) researches have indicated personality variables related closely and coherently to learning style. (Blickle, 1996) Found that particularly conscientiousness and openness were related to learning style. Personality traits are expressed in learning styles, which are in turn reflected in learning strategies, which eventually produce a certain learning outcome (De Raad and Schouwenburg, 1996). Personality traits serve as directors or blocks for motivation and learning strategies (Cano, Garton and Raven, 1992; Schouwenburg, 1995). Conscientiousness is related to work discipline, interest in subject matter, concentration and considering studying as quite easy (Schouwenburg, 1995). Students using the strategic approach are good at organizing their work, managing their time and work hard in their studies. They care about their working conditions and have clear goals for their studies. They have an intrinsic motivation and a positive study attitude (Entwistle, 1981). Openness is linked with questioning and analyzing arguments (Schouwenburg, 1995). It is further related to critical evaluation, searching literature and making relationships (deep approach) (Blickle, 1996). The students with a deep approach want to find out the deeper meaning in the text. They are critical, logical and relate what they learn to their previous knowledge. Their motivation is intrinsic and they look for a personal comprehension independent of the syllabus (Entwistle, 1981).

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The Efficacy Of Teacher-Parent Rapport On Bosnian High School Students' English Language Skills

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ABSTRACT

In education, the efficacy of teacher-parent rapport (interconnection) is of great importance in learner's educational, social and private life. I think parents can play a pivotal role in fostering a very delicate and crucial relationship between the student and the teacher. Accordingly, family is a positive ignition in learner's learning process at any given time. In this study, we set our sights on to research the efficacy of teacher-parent rapport on 32 Bosnian high school EFL learners' competency in their target language. Add to that, we researched to decide the function of Bosnian learners' families' roles in education and to detect whether this rapport prompts the parents or not. In this study, we held a correspondence with parents by' Smart School' (e-school). It is called 'elektroniski dnevnik' in Bosnia. Smart School applications are primarily developed for the purpose of better informing parents, having in mind to be short, light and offer more accessible way to obtain information about the marks and the absence of their child. By way of addition, in our research, parents had ability to check grades online through the internet and we sent SMS messages. By these Smart School mails and messages, we daily informed parents about learner's marks in exams and quizzes, projects, and the learner's behavioral matters and absence or presence of their children. At the end of this study, we have found that daily interconnection and corresponding with parents can improve the learner's English markedly. Especially home-visit of English teacher to student's home was appreciated by parents. In parallel with, the high value that we have given to this rapport honored parents and prompted them.

Keywords: EFL learners, teacher-parent rapport, English language, prompt, Smart school

INTRODUCTION

In education, there is an inseparable triangle system and the parts of this triangle are teacher,student and parent. The triangular responsibility for student development should be shared by the teacher, student and parents equally. We should foster effective school triangles. Although all the three are involved in this triangle, unfortunately the graceless task of shouldering the great burden lies with the teacher solely. The teacher will not mind teaching, as long as the other two partners (learner and parent) contribute their shares in moderate measures. The expectation of teacher here would be more from the parents than from the learner himself, for the clear reason that the parent has a steady contact and that is why, an expansive control over his child. So he is naturally more concerned about how best to bring to parents properly into the circle of responsibility without appearing to be too demanding on their time. Thus, as we mentioned before, parents can play a pivotal role in fostering a crucial rapport between the student and teacher, and any slip by them, may cause a disaster that could be very steep for the learner.

Constant parent involvement seriously increases the expectancy that suitable learning will occur in the classroom and at home. Parents play such a crucial role in their children's academic, physical, social, and moral development that we, as teachers, make a huge mistake if we view them as anything other than indispensable collaborators. If we are committed to bringing the best out of our students and teaching the whole child, we need to build long-term relationships of loyalty, trust, and reverence with their parents. Investing the time and effort to work closely with parents throughout the year increases our chances of following our mission and meeting our goals.

Parents are often valuable classroom resources. The better we know parents, the more we will be aware of the

various ways in which they can assist the class. This assistance may come in such forms as classroom volunteering, donations of supplies and other materials, technology support, and arranging for special field trips. Forming trusting relationships with parents can reduce the feelings of isolation that so many teachers, especially newer ones, often experience. (Reifman, 2011)

A skilled teacher is experienced in imparting knowledge and managing the classroom in a way that generally works for her and her students. Yet, regardless of how creative some teachers are at handling large classes and a variety of needs, often there isn't the ideal time and circumstance to tend to each child. This is where a parent's role becomes important. Parents are experts about their own children. They are likely to be the first to notice changes in their children that might either affect, or derive from, the school environment. By coordinating with teachers whether about academic or personal issues parents can help smooth the way for their children and maximize the effectiveness of teachers' time.

In order to find an adequate place in the society the students need both the support of their parents and the school. This goal can be achieved when all who participating in the education process of the pupil cooperate. This cooperation provides help; create opportunities for a genuine partnership among parents, teachers and students.It will help to enable the youth to leave the school and enter the community without a shock.

A child performs better if s/he feels his/her parents are supportive of her school. If s/he perceives that both parents and teachers are in agreement about issues related to school, this united front gives a child clear guidance. If a child feels dissention between parents and teachers, there is too much likelihood that s/he will respond with manipulation or other negative behaviors. However, when teacher, student and parent work together toward a common goal, there is no room to deviate from the subject into controversial roles. Energy, instead, can be devoted to positive accomplishments. The teacher is most aware of how parents can be helpful academically to the children in her class. Teacher is expert on how he is teaching the curriculum, when she wants a child to work independently and when a little help from a parent is appropriate. A parent who listens to the teacher's suggestions about how to assist the child will be the most useful to the child.

If the student perceives that her teachers and parents have a good rapport, s/he will not be acught in the anxiety of feeling that she can't please either. If the parent has a different idea that might help her child, s/he cancommunicate this to the teacher directly, and they can come to a mutually agreed position. In this way, rapport is maintained in the child's eyes (Holman, 2012).

There is significant research to suggest that parental involvement in children'slearning is positively related to achievement. Cotton and Wikelund (1989) in their study on parental involvement in education propose that the more intensely parents are involved in their children's learning; the more beneficial are the effects on pupil achievement. Moreover, they state that this holds true for all types of parental involvement in children's learning and for all types and ages of pupils.

PURPOSE OF THE RESEARCH

In Bosnia, the population of young generation is too low so it is easy for every high school graduate to study in university. That is why, parents generally visit the school once a term or never where their child studies unless there is a big problem in school like fighting, failing in the exams etc.. They think that teacher is the only person who shapes his child on his own. As I teacher, my ideal parent is who always in touch with teacher of his child and follow his/ her studies with care during the year.

Teachers and parents need to have a continual good rapport during the term to improve the learner's language development. The purpose of this research is to determine how teacher- parent rapport affects the Bosnian high school learners' English language proficiency. In our research, we have 2 English classes with 16 students in each. We will use one of them as an empirical class and the other as a control class. These two groups will have two English KET exams. The first exam will be taken at the beginning of the research and they will take a final exam (15 weeks later) at the end of the term. Then we will try to determine whether the scores of students in empirical class differ from first exam to final exam. At the same time, we will try to determine whether the scores of students in control class differ from first exam to last exam.

As it was mentioned before, this research study was an attempt to investigate the efficacy of teacher-parent rapport on Bosnian high school students' success in English. We used KET (Key English Test) exam. KET is a basic level qualification English language test.

Contributors

This research study was carried out with the participation of 32 male elementary-level English language high school students at Sarajevo College in Bosnia and Herzegovina. The proficiency level of the students was determined

by a KET test done in Sarajevo. The 32 contributors (participants) were between 15 to 16 years old. They were grouped as empirical and conrol groups. I was the English teacher of both the empirical group and control group and still I am. They had English six hours in a week. I used almost the same techniques, methods and materials in these two different classes..

Instruments

In the beginning of the school in September, both of these classes had, KET (Key English Test) , a proven proficiency test to have idea about the students English language ability and homogeneity of their English skills. KET was my first instrument to achieve my goal. KET was adopted from British Council.(British Council, 2013, KET).

My second instrument was Smart School system where I mailed and sent messages, daily and weekly, to my students' parents about their marks, absences, their participation in activities, homeworks, behavioral problems, their birthdays etc. Also by using this system, they sent me so many mails. My third instrument was 'Aim High 2'workbook, student's and teacher's books,Oxford University Press.(Tim Falla & Paul Davies, 2013) .The last instrument was final

KET exam which tried to evaluate the course achievement. KET was implemented to both empirical and control classes. Thenceforth, the two scores of (first KET & second KET) were compared. As a result of the first KET, students were divided into two sixteen students groups as empirical and control groups. I, as researcher and the English teacher of the classroom, put the students of each group into equal KET level proficiency. That means both empirical and control groups were at the same English level. Both of these groups had 15 weeks of intensive English courses in the school.

The parents of the empirical group students routinely involved in education and they were in contact with me (English teacher), being pivotal role in their child's English learning and moral science teacher of their child. Parents were like live camera which was monitoring 24 hours in 15 weeks. After first KET exam was implemented, the parents of emprical group were called to school and informed about their active and energetic pivotal role in this research. Then they received daily and weekly mails, messages and reports by Smart school system about anything concerning their child. Moreover, every parent called individually by English teacher every Saturday and once home – visit was done by English teacher to student's home. After 15 weeks inspired with full hope,

The English teacher implemented the last KET to empirical and control groups to bring to light whether there existed any visible difference between the students in the two groups.

RESULTS

Here are the final KET results of the **control** and **empirical** group students.

- How much do students improve after 15 weeks study?

In the table 1; We will see the language improvements of students in control group.

In the table 2: We will see the improvement of students in empirical group in which teacher- parent had good rapport (relation) on the students' language learning.

The **only** difference between the two modes of estimation was that:

In **empirical** group there was **the efficacy of teacher-parent rapport** factor on the Bosnian learner's language learning process.

In the table 1 below: we will see the improvement of students in control group after 15 weeks intensive study.

CONTROL GROUP KET DECEMBER 2013 Results (Sarajevo College)

				Reading and Writing			CAMBRIDGE ESOL STANDARD RESULT

1	SCI	1A	Selim Kenan	53	21	87.06	PASS WITH MERIT
2	SCI	1A	Krespo Zlatkom	50	24	87.06	PASS WITH MERIT
3	SCI	1A	Radžiahmetović Sakir	49	24	85.88	PASS WITH MERIT
4	SCI	1A	Hamzić Amel	50	22	84.71	PASS
5	SCI	1A	Keč Omer	50	22	84.71	PASS
6	SCI	1A	Idrizović Amir	44	23	78.82	PASS
7	SCI	1A	Hajić Semir	46	20	77.65	PASS
8	SCI	1A	Hasanbegović Latif	45	21	77.65	PASS
9	SCI	1A	Alibegović Saris	41	23	75.29	PASS
10	SCI	1A	Agović Sedim	46	18	75.29	PASS
11	SCI	1A	Manjgafić Kemal	42	22	75.29	PASS
12	SCI	1A	Merdžanić Nermin	41	23	75.29	PASS
13	SCI	1A	Pupalović Adise	43	20	74.12	PASS
14	SCI	1A	Zaimović Ali	39	22	71.76	PASS
15	SCI	1A	Teco Abu	41	17	68.24	LEVEL A2
16	SCI	1A	Ajdin Tarik	38	19	67.06	LEVEL A2

Table 1. Control group students' final KET results.

In the table 2 below: we will see 'How did the teacher-parent rapport contribute to Bosnian students' improvement on KET?

EMPRICAL GROUP KET DECEMBER 2013 Results (Sarajevo College)

Rank				Reading and Writing 60	Listening 25		CAMBRIDGE ESOL STANDARD RESULT
1	SCI	1B	Ibrahimović Selim	60	24	98.82	PASS WITH DISTINCTION
2	SCI	1B	Lutura Esat	58	25	97.65	PASS WITH DISTINCTION
3	SCI	1B	Slovo Vedit	58	25	97.65	PASS WITH DISTINCTION
4	SCI	1B	Jusuf Faris	58	24	96.47	PASS WITH DISTINCTION

5	SCI	1B	Tiril Emir	57	25	96.47	PASS WITH DISTINCTION
6	SCI	1B	Sećirspahis Tamza	57	24	95.29	PASS WITH DISTINCTION
7	SCI	1B	Mrka Fuat	56	25	95.29	PASS WITH DISTINCTION
8	SCI	1B	Račanović Harik	56	25	95.29	PASS WITH DISTINCTION
9	SCI	1B	Hinić Murat	56	25	95.29	PASS WITH DISTINCTION
10	SCI	1BB	Nulahalilovic Palik	56	25	95.29	PASS WITH DISTINCTION
11	SCI	1B	Salkanović Hamit	57	23	94.12	PASS WITH DISTINCTION
12	SCI	1B	Sašić Edin	55	25	94.12	PASS WITH DISTINCTION
13	SCI	1B	Coso Denis	55	25	94.12	PASS WITH DISTINCTION
14	SCI	1B	Fišić Selim	55	25	94.12	PASS WITH DISTINCTION
15	SCI	1B	RAvdičević Kerim	56	23	92.94	PASS WITH DISTINCTION
16	SCI	1B	Brabus Varis	55	24	92.94	PASS WITH DISTINCTION

Table 2. Emprical group students' final KET results. (teacher-parent rapport)

Independent – sample **t-test** was used to compare the results of the first KET in order to find out whether there were any significant differences between the **control** group and **empirical** group in September. To analyze the results of the final KET, we used **t-test.**

This study was a research to see the efficacy of teacher-parent rapport on Bosnian high school students English language skills. At the beginning, the proficiency level of the students was determined by a KET (Key English Test) exam. 16 students were assigned to the control group and a class of 16 students were chosen as empirical group.

At the end of the 15 weeks, 32 students' final KET exam scores in both groups were compared to determine the ' efficacy of teacher-parent rapport on Bosnian students' language proficiency'.

In the following sections the results of each test will be put under the investigaton one by one to find out if there were any important differences between the results of the control group and the empirical group' tests or not.

First Question:

- Do the scores of students in **empirical group** significantly differ from first KET to the final KET?

Table 3 shows the results of paired sample t-test through which empirical group scores in first and final KET tests were compared. By considering the mean of the first KET which is 15.34 and the mean of the final KET which is 21.55. we can conclude that there is a huge improvement in the scores of the empirical group.Table 4 shows that scores of students in the empirical group significantly differs from the first KET at the beginning of the term to the final KET after 15 weeks. This reveals that teacher-parent rapport has improved Bosnian students' language skills.

Table 3: Comparison of first KET and final KET (empirical group)

	Mean	N	Std. Deviation	Std. Error Mean
sum of scores first KET	15.3400	25	.65542	.13908

Table 4: paired Samples Statistics t-test for the empirical group

	Paired Differences					t	df	Sig. (2- tailed)
	Mean	Std. Deviation	Std. Error Mean	90% Confidence Interval of the Difference				
First and final KET	5.18000	.80134	.37026	5.75193	5.33709	13.817	24	.0001

According to the above *T-Test table*, Sig equals 0.0002 and it is smaller than 0.04. So we can conclude that students' scores on the final KET in the empirical group are significantly different from their scores on the first test. According to the results students in empirical group have got better and higher scores in final KET than on the first KET.

Second Question:

- Do the scores of students in **control group** significantly differ from first KET to the final KET?

Table 5 shows the results of paired sample t-test through which the control group scores in the first and final KET were compared. The mean of 13.2500 for the first KET and 13.7700 for the final KET reveals the fact that the difference between the scores on the first KET and final KET was indifferent and insignificant and there were no improvements. Table 5 shows that the scores of students in the control group do not significantly differ from the first KET at the beginning of the term to the final KET at the end of the term.

Table 5: Comparison of first and final KET (control group)

KET	Mean	N	Std. Deviation	Std. Error Mean
sum of scores first KET	13.2500	25	.63232	.13554
sum of scores final KET	13.7700	25	1.03266	.10724

According to the below *T-Test Table,* Sig equals 0.52 and it is greater than 0.04.So we can conclude that students' scores in the final KET in the control group are not significantly different from their scores in the first KET. *Table 4* and *Table 5* indicate that students in the control group have got higher scores on the second test but it is not a significant difference.

Table 6: Paired Samples Statistics t-test for the control group

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
first and final KET	.42000	.60588	.13135	-.71127	-.33751	-2.572	36	.512

CONCLUSION

In my opinion, parents are the most valuable classroom resources. As we mentioned before, parents play a pivotal role in fostering a very delicate and crucial relationship between the student and teacher. Teacher-parents good rapport results in. By the end of the research parents increased their contact with their children's school and the number of parents actively involved in their children's school increased significantly.

In education, the efficacy of teacher-parent rapport (interconnection) is of great importance in learner's educational, social and private life. It is obvious that family is a positive ignition in learner's learning process. The more families support their children's learning and educational progress, the more the children tend to do well in school and continue their education. Students behave sensibly when they know that their parents and teachers communicate frequently.

Sometimes I, as an English, couldn't solve some discipline problems and recorded these problematic

Students' videos in the classroom and invited them to school in my office hours. Parents watched the videos and warned their children. By cooperating with my students' parents, we solved a bleeding problem which was exploded in my classroom management.

This research indicates that teacher-parent's good rapport decreases students behavioral problems in the classroom. After the study most parents were likely to have special program to check and control their children's education. Parents represented that they were interested to spend more time with their children after school time to talk about what happened in the classroom. In this study parents enjoyed using Smart school system effectively like communication such as phone calls, e-mail messages, and face to face meetings.

Limitations of the study

There are some limitations in this study.

In running this research, the researcher confronted with some limitations. First of all, some of the students' parents were separated and we had difficulty in connection and confused to contact whether with father or mother. Second, negotiation with parents was not an easy endeavor because all of the parents were not very cooperative. Third students did not like their parents be informed daily or weekly from their learning process.

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Turkish Version Of The Distance Learning Service Quality Scale (DLSQ): The Validity And Reliability Study

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ABSTRACT

The aim of this research is to examine the validity and reliability of the Turkish version of the Distance Learning Service Quality Scale (DLSQS; Shaik., Lowe. & Pinegar, 2006). The sample of this study consisted of 435 university student. The results of confirmatory factor analysis demonstrated that the 23 items loaded on three factors and the three-dimensional model was well fit (x^2= 475.46, *df*= 217 *p*= .00, RMSEA=.052, NNFI=.95, CFI=.96, IFI=.96, and SRMR=.054). The internal consistency coefficients was .88 for the overall scale. The corrected item-total correlations of DLSQS ranged from .30 to .56. Overall findings demonstrated that this scale is a valid and reliable instrument for measuring individuals' disposition to distance learning service quality.

Keywords: Distance learning, validity, reliability, confirmatory factor analysis

INTRODUCTION

Quality management (QM) used in production sector started to be applied in other sectors such as service, health and education. Organizations that desire to produce quality products and services need to prioritize the concept of quality that focuses on constant transformation and development in order to reach their goals in the ever increasing competitive environment and to leave their competitors behind. In line with this, total quality management approach comes into prominence in educational organizations (Numanoğlu, 2001). According to Chang (1993) benefits are QM can be listed as decreasing waste by providing the use of resources at minimum level, increasing product and service quality, providing opportunities during the process for constant improvements and increasing customer satisfaction regarding process and product (Tezsürücü & Aybarç-Bursalıoğlu, 2013:101). Hämäläinen et Jakku-Sihvonen (1999) cites quality based educational factors as the objectives of education and training, effectiveness of the educational program, learning environment and learning experiences, student qualifications, cooperative teaching methods, outcomes, products and results of training-education, independent, alternative assessment methods including the evaluation of learning process, practice based system for effective education and training and economic resources to ensure all these elements (Doğan, Apaydın & Önen, 2006). Concept of "procuring" which is specific to educational organizations is emphasized in quality education in the place of quality assurance systems' "guarantee", implementation of quality services in education and focusing on educating qualified individuals (Güleş, Kabasakal & Kuzu, 2011).

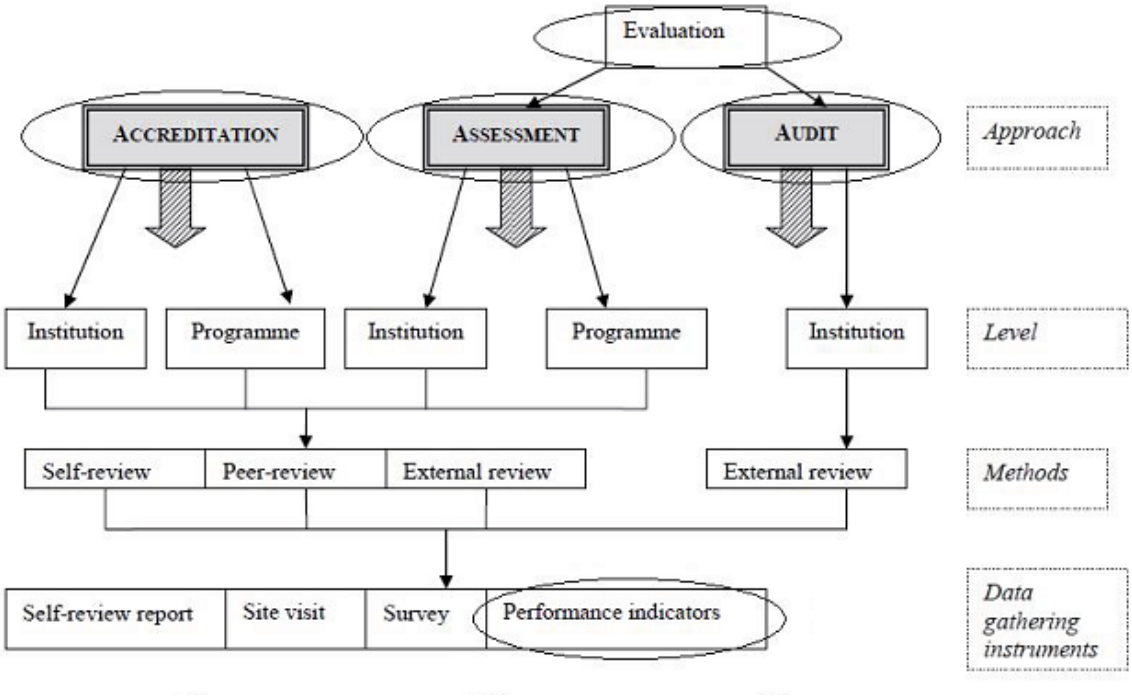
Radical changes and developments take place in today's globalized world in all sectors as well in the sector of education in line with advances in science and technology. In the changing constructs, concept of quality has started to be discussed in the name of quality education in higher education institutions which have started to be documented through QM system. Quality assurance and QM approaches are developed in line with the needs of the stakeholders according to recent conditions in higher education institutions in terms of adapting quality to education. In this process, higher education institutions should adapt their quality assurance work to the system of education and adopt transparency and accountability in their management approaches. It will be possible to achieve success in the competitive environment only in this manner. Requirements and suggestions of stakeholders should be taken into consideration in the development of educational programs for higher education institutions and plans for educational programs should be made according to the characteristics of the labor force needed for different sectors by interacting with industrial organizations and trade associations, practical information should also be emphasized in programs and practices along with theoretical knowledge, learning and research should be ongoing, individuals should be supported to learn how to access information in addition to learning information and apply what they have learned and process of finding employment and career development should be monitored with the help of graduate tracking

system (Tezsürücü & Aybarç-Bursalıoğlu, 2013). Concept of quality in higher education can be defined as the sum total of efforts to educate intellectual individuals that can generate labor force with quality, qualified, productive as well as with modern mindsets who will contribute to the development of the country.

According to Mok (2000), quality and quality assurance concepts have been regarded as two highly important concepts in higher education in recent years. Higher education institutions and administrators consider quality processes important and contemplate about how they can implement quality assurance systems in their institutions effectively (Tezsürücü & Aybarç-Bursalıoğlu, 2013).

Total quality system in higher education is composed of three operations: monitoring, assessment and review. Needs of stakeholders benefiting from higher education services are tried to be met through these three operations. Priority is given to the provision of quality services and generating trust. Input for higher education is assessed through accreditation in terms of quality assurance system whereas assessment evaluates outputs. Total quality system also designs, plans and implements quality processes (Karahan, 2013). According to Johnson and Golomskilis (1999), quality policies in higher education should be examined based on four main elements. First of these is the quality of the educational programs. The others are the quality of educational management, quality of teaching and quality of research (Doğan, Apaydın & Önen, 2006). Main factors of quality assurance systems in higher education are accreditation, assessment and monitoring (Bernhard, 2012).Effects of these three factors are presented in Figure 1 as approach, level, methods and data collection tools.

Figure 1. Major Elements of Quality Assurance Systems in Higher Education



Source: adapted from Bernhard 2012, p.50

According to Hämäläinen et Jakku-Sihvonen (1999), there are four approaches in the assessment of quality in education: self-assessment, internal assessment, external assessment and international assessment. Self-assessment is the assessment provided by the educational institutions themselves, internal assessment is the assessment of operations in the institution, external assessment is the evaluation of the institution by independent evaluators I independent of the institution and international assessment is the development of individual quality evaluation systems by institutions in the framework of the partnership of countries and evaluating their education-training practices based on these systems (Doğan, Apaydın & Önen, 2006).

QM should be included in higher education both in all the practices of education-training framework and in all phases of scientific research undertaken in the institution. QM in higher education is practiced in organizational/institutional development, selection, assignment and development of academic, administrative and technical personnel, provision of academic buildings and facilities such as libraries and laboratories and provision of physical infrastructure such as open areas, development and implementation of educational programs and improvement of university-industry-society interactions (Kalaycı, 2008).

Higher education institutions have important roles and responsibilities in today's globalization process to be

effective in social and individual contexts with the help of information economy and information technologies and to become prominent in the economically competitive environment. High quality higher education systems are needed in order to undertake these tasks and to achieve success especially in information economy. Rapid transformations in information technologies and in the field of communication that are highly important for higher education institutions are followed by these institutions and used effectively. Internet access is provided on campus, student portals are generated, access to online resources are available and distance education is provided out of campus in the framework of web-based education (Yılmaz, 2013). In this context, quality assurance and accreditation of both on-campus services as well as out of campus services provided with the help of web-based education are important in higher education institutions.

Since educational services are offered to students, students are at the center of education sector in which they are considered to be the clients. Other clients in the sector of education are educators, work environment and the society. It is important to make a note here that (Tribus, 1997) the product of education sector is not the student but the education of the student. Therefore, assessment during the process of quality assurance will be provided based on educational services provided to students and quality of education will increase as a result of assessing expectations and views of students. Students who are included in the educational process are effective members of ongoing development and quality improvement (Yenen & Gözlü, 2003). In this context, evaluating student views obtained by development and implementation of assessment measures to identify student views on quality education is crucial. Purpose of this study is to develop distant education service quality measure for higher education students.

METHOD

Participants

The sample of this study consisted of 435 (280 female and 155 male) Sakarya University student.

Procedure

Primarily translation of the DLSQS into Turkish was based on the recommendations of Shaik., Lowe & Pinegar (2006). As the first step two specialists who were a native Turkish speaker fluent in English translated English version into Turkish. Discrepancies in initial translations were addressed with the assistance of a third independent translator. The Turkish version of the DLSQS was then translated back into English by three English-speaking language specialists who were blinded to the original scale and the objective of the study. The differences between translated versions were evaluated and a satisfactory compliance with the original scale was achieved by consensus of the translators. The completed Turkish version was evaluated for cultural appropriateness by three academicians from department of English Language and Literature, controversial items were determined and necessary modifications were done. The updated version was reevaluated by the original group of expert reviewers, to finalize the Turkish version used in this study.

After that a study of language equivalence was executed and then the validity and reliability analyses of the scale were examined. In this study confirmatory factor analysis (CFA) was executed to confirm the original scale's structure in Turkish culture. Also concurrent validity, internal consistency reliability and the item-total correlations were examined. Data were analyzed using LISREL 8.54 and SPSS 17.0 package programs.

RESULTS

Construct Validity

The results of confirmatory factor analysis indicated that the model was well fit (x^2= *475.46, df= 217 p= .00, RMSEA=.052, NNFI=.95, CFI=.96, IFI=.96, and SRMR=.054*). Factor loadings and path diagram of Turkish version of DLSQS are presented in Figure 2.

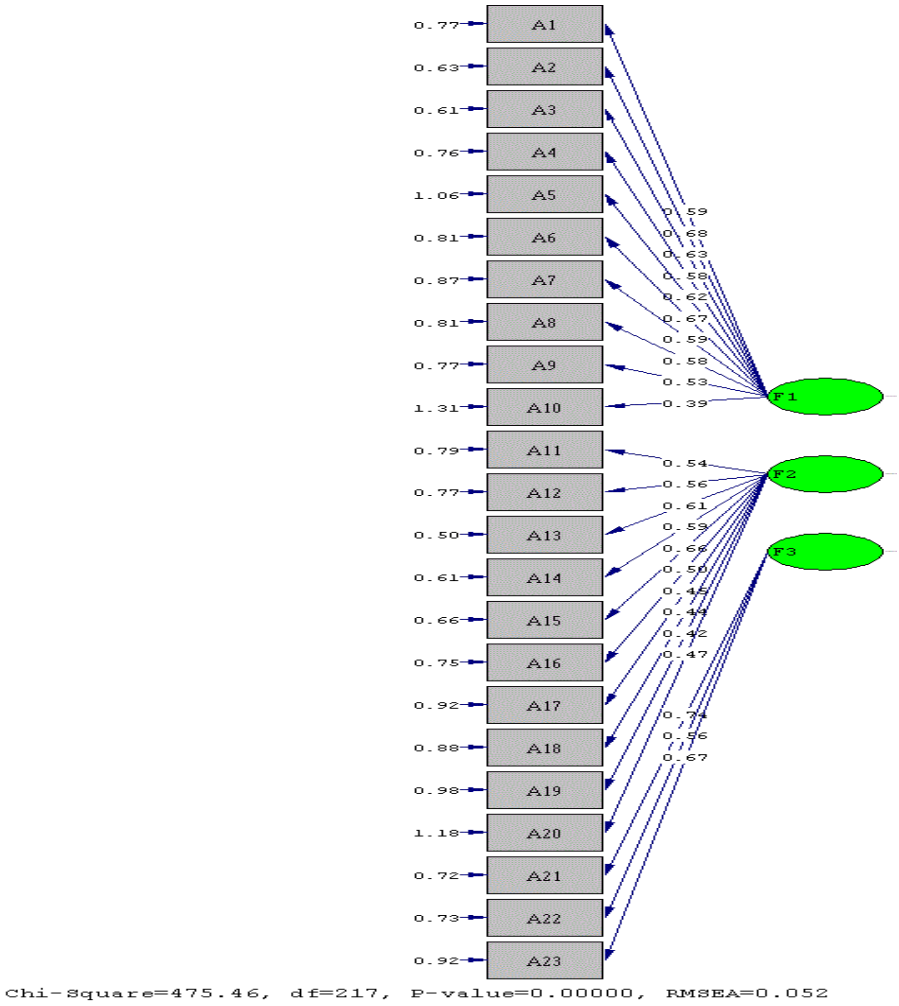


Figure 2. Factor Loadings and Path Diagram for the DLSQS

Reliability

For reliability of the Turkish version of the DLSQS internal consistency coefficient was calculated. The Cronbach's Alpha internal consistency of the scale was .88 for whole scale. The corrected item-total correlations of DLSQS ranged from .30 to .56.

DISCUSSION

The purpose of this study was to adapt the DLSQS into Turkish and examine its psychometric properties. Confirmatory factor analysis demonstrated that the factor structure was harmonized with the factor structure of the original scale. Thus, it can be said that the structural model of the DLSQS which consists of three factors was well fit to the Turkish culture (Bentler & Bonett, 1980; Hu & Bentler, 1999; Schermelleh-Engel & Moosbrugger, 2003). The internal consistency reliability coefficients of the scale were high (Büyüköztürk, 2010; Kline, 2000). Considering that item total correlations having a value of .30 (Büyüköztürk, 2010). Overall findings demonstrated that this scale had high validity and reliability scores and that it may be used as a valid and reliable instrument in order to measure the individuals' disposition to distance learning service quality. Nevertheless, further studies that will use DLSQS are important for its measurement effectiveness.

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