Arts and Social Studies Research

Book · August 2020

CITATIONS	READS
0	640

3 authors:

Dare Ojo Omonijo
Olabisi Onabanjo University
104 PUBLICATIONS   **504** CITATIONS

Michael Chibuzor Anyaegbunam
Nnamdi Azikiwe University, Awka
51 PUBLICATIONS   **130** CITATIONS

Chukwuemeka Arinzechukwu Felix Okoye
Nnamdi Azikiwe University, Awka
37 PUBLICATIONS   **25** CITATIONS

Arts and Social Studies Research
Vol. 2

Book Publisher
International

Arts and Social Studies Research

Vol. 2

Arts and Social Studies Research

Vol. 2

Editor(s)

Dr. Vlasta Hus

Professor,
Department of Elementary Teacher Education, University of Maribor, Slovenia.
Email: Vlasta.Hus@um.si;

Contents

Preface

This book covers all areas of arts and social studies. The contributions by the authors include teaching; approaches; social studies; short-term study abroad; global citizenship; critical study abroad; language development; lexical development; syntactic development; algorithmic learning; primary education; subtraction errors; teaching practice; intuition; intuitive rules; language learning; anxiety; psychological factors; English language; education; socio-educational intervention; digital society; parenting styles; parental discipline style; demandingness; enforcement; punishing; social skills; motivation; tertiary institutions; dominant race; hegemony; writing; Dual Language Programme (DLP); accounting; accounting calculations etc. This book contains various materials suitable for students, researchers and academicians in the field of arts and social studies.

Teaching Approaches, Methods and Techniques in Social Studies Education

Okafor, Victor Emeka[1]* and Nwosu Juliana Ngozi[2]

ABSTRACT

The book chapter explored some of the teaching approaches, methods and techniques of teaching social studies in Nigerian schools. It discussed some of the scholars views on teaching approaches, methods and techniques in social studies education. The paper also explained other approaches, methods and techniques of teaching social studies such as collaborative method, internet technology, Field trip. The advantages and disadvantages of these methods and approaches of teaching were also discussed. The paper concluded that social studies teachers are expected to use each of these methods, techniques or approaches appropriately for the teaching of social studies.

Keywords: Teaching; approaches; methods; techniques; social studies.

1. INTRODUCTION

Social studies is taught as a core subject in primary, secondary and teachers training colleges. The faculty of Education, Ahmadu Bello University has pioneered the first Bachelor of Education programme in Social studies. Many Nigerian universities now run NCE and Degree programmes in social studies. The most commonly used methods in teaching social studies are lecture method, story telling, illustrated talk, and prepared speech [1].

It can hardly be denied that the present classroom instruction in social studies is far from adequate, as demonstrated by research works such as Okafor [2], Okafor [3] and Agboola [4]. These studies are unanimous in condemning the present instructional trend in social studies instruction whereby classroom work is concentrated on the acquisition of cognitive objectives by students and on the propagation of knowledge for its own sake while the main thrust that prompted its instruction and teaching in schools (for acquisition and exhibition of skills by learners) is relegated to the background. Okafor [1] has demonstrated the following lapses in terms of teaching and learning of social studies, that learning remains more passive than active; and that values are relegated to the background.

These development are capable of producing in the minds of the learners what Dubey [5] has branded disabling emotions. This disposition according to him is capable of diminishing learning and therefore might succeed in neutralizing the development of the tenets of the affective domain in the minds of the students. King [6] opined that social studies instruction warrants a refinement of the traditional approaches through the use of participatory and simulating instructional material in classrooms. Okafor [1] stressed that emphasis should shift from rote learning to opportunities for students exploration and discovery.

2. SCHOLARS VIEWS ON TEACHING APPROACHES, METHODS AND TECHNIQUES IN SOCIAL STUDIES EDUCATION

Osakwe and Itedjere [7] have called for a methodological change in the teaching of social studies in secondary schools. One way of inspiring the change is to demonstrate through experimental and

[1]*Department of Curriculum and Instructional Technology, Nwafor Orizu College of Education Nsugbe, Anambra State, Nigeria.*
[2]*Department of Education and Foundations, School of Education, Federal College of Education Technical Umunze, Anambra State, Nigeria.*
*Corresponding author: E-mail: victorokafor22@gmail.com;

empirical evidences that new innovative technique can lead to effective instructional outcome and sustain students interest in the subject more than the conventional methods. Okafor [2] and Dubey [5] advocated the adoption of inquiry approach as the needed innovation in social studies methodology. According to them, social studies is essentially a discipline of inquiry, when properly inculcated to the students, it trains in the skills of observation, gathering and analysis of information and interaction. Theiman [8] observed that adolescents who have strong inquiry skill are more likely to develop friendships, be viewed as effective problem solvers, cultivate greater interest in school and perform better academically.

Inquiry methods include opinion pools, interviews, questionnaire and field trips. Hardy [9] opined that inquiry method is the only teaching strategy that gives students a chance to explore the process of learning social studies. Through inquiry method of instruction, teachers facilitate students moving from the stage of collecting data to a higher cognitive level of thinking as they interpret data and make sense of discoveries [10].

Mezieobi [11] encourages social studies teachers to employ creative activity method in social studies instruction. According to him creative activity enable students communicate their ideas and feelings on papers, their ideas could be expressed in form of drawing and painting, designing, making costumes and creative writing. The method train students to communicate information effectively, provide them with opportunity to develop their manipulative skills, self expression and conceptual development.

Osakwe and Itedjere [7] recommended the use of problem solving methods in teaching and learning of social studies. They maintained that problem solving method focuses on the analysis and interpretation of data that have been collected. It encourages students to think for themselves and arrive at the conclusion by using information available to them. Problem solving methods include puzzles, work cards, sorting among others. They are used to classify groups of words or sentences, identify pictures with their appropriate words and the methods enable children to use their imagination [12].

Jacinta and Regina [13] have advocated the use of fields trips as a way of enriching social studies lesson. They opined that fields trips provide students with valuable practical experiences and sustain the students interest in the subject. Lawry [14] advocated the use of project method, the underlying principle of the method is that concepts are comprehended through observation and that learning takes place through direct contact with materials. Project is a learning activities selected, planned, designed and executed by learners collectively or individually to clarify facts, acquire new knowledge, skills and to solve identified problems under the teacher's guidance and supervision.

Kossock and Iyortsuun, [15] opined that questioning technique is a fundamental tool of teaching social studies and lie at the very heart of developing critical thinking abilities in students. What purpose does questioning technique serve in the classroom situation? Teachers' question in the classroom must be used to actively involve the learners in the process of thinking. According to Carin and Sund [16], questions and questioning are means by which a child first expresses the desire to understand a problem and they subsequently become the means by which a teacher assesses whether or not a child has satisfactorily assimilated something already learned.

In most cases, students questions are expressions of doubts and needs, due to the nature of Nigerian society where in some cases children are discouraged from asking questions to their elders. For this reason, the teacher of social studies has the added challenge of treating children's questions with understanding and, sympathy [12]. Teacher questions must be used to actively involve the learners in the process of thinking. Teacher's questions serve two main purposes; it is used to test previous knowledge. Revise the previous lesson and it is used to stimulate thoughts. Most of the purposes of questions are involved with critical thinking [11].

3. OTHER APPROACHES, METHODS AND TECHNIQUES OF TEACHING SOCIAL STUDIES

3.1 Co-operative/Collaborative Method

Collaboration simply means working together, that is working together with atleast one other person to attain a new goal. Collaboration is an important work place skill identified by the United States Department of Labour as one of the keys to successful adult employment [17]. Social studies provides an opportunity for students to wrestle with many of the issues and dilemmas they will face as citizen in a democratic society. Such issues include cultural variety, language differences. Studying such issues provides opportunity for students to work with others, learn how to handle conflict, solve problems, develop concern for others and interact with the value issues that they encounter daily in their environment.

If we want to create tolerant citizens we can collaborate effectively as members of a group, we must teach our students to work together and respect different points of view [8]. The common saying is that "two good heads are better than one". The proverb is really more realistic when it is applied to the classroom situation.

Advantages:

1. Collaborative method ensures greater retention of subject matter.
2. It improves attitude towards learning.
3. It enhances interpersonal relationship among students.
4. It encourages trust building, leadership and communication skills among the members and the entire society.
5. It enables the learners to resolve some conflicts, solve problems, criticize ideas and building on each other's information.
6. Co-operative learning can be effectively used in collaborating with other methods of teaching.

Disadvantages:

Many teachers do not have the background training in handling this method of learning (Chin and Khoo, 2005).
Since it involves group work with different ideas on identified concepts, it may generate noise which may be uncomfortable for some instructors.
Many learners do not participate effectively in the learning process especially where there is no individual accountability.

3.2 Internet Technology

The internet is a computer network used for worldwide communication. Infact, internet is the network of networks. A network refers to a group of computers that share communication lines. The internet is a veritable resources for learning social studies. Teachers and students get current information on different topics in social studies, it allows the user to engage in inquiry by exploring nearly unlimited resources available on the net.

3.2.1 Webquest: Method of using internet technology for teaching of social studies

Webquest is inquiry oriented activities in which most of all the information used by learners are drawn from the World Wide Web. Students are guided and assisted to obtain information from the internet in order to write an assignment. Webquest supports learner's thinking at levels of analysis, synthesis and evaluation. Webquest are designed to complement and not to replace other class activities. The teacher must sort through websites targeting information that are appropriate for students in terms of reliability, clarity, accuracy, readability and graphic appeal. It is those sites identified by the teacher that the students will later go through in the course of writing their assignments or class practice.

The teacher must be prepared to impart the necessary ICT skills such as basic word processing, how to use the internet, how to use the search engine etc in the students.

3.2.2 Benefits of using internet technology for teaching and learning of social studies

The following are some of the benefits students can derive from using internet technology for teaching and learning of social studies.

The internet contains a rich source of information that social studies students would find very useful. According to Ehman and Glenn [18], the internet provides rich information the students could not have gained anywhere.

Students who took part in webquest acquire improved computer skills in word processing and the use of internet for curricular and extra curricular activities.

3.2.3 Challenges of using internet technology for teaching and learning of social studies

1. Teachers require a lot of time to go through various website before preparing webquest.
2. Basic infrastructures such as computer, internet access etc are not available in many schools in Nigeria.
3. Many teachers in Nigeria have not received ICT training and cannot make use of the internet themselves and as such cannot pass this knowledge to their students.

3.3 Field Trip

Field trip is an educational visit. They take students away from the classroom so that they will be able to see things with their own eyes. During the visit, the students may be accompanied by their teacher as they go to a place or places of interest to broaden and deepen their understanding of a topic they have covered in the syllabus.

Advantages of Field Trip:

1. It gives students valuable practical experiences.
2. It helps to sustain the students interest in the subject.
3. It helps to improve school-community relationship.
4. It makes learning more permanent
5. It helps students to appreciate the contribution of various sectors of the economy to national development.
   6. It helps introduce students to job opportunities in their later life.

Disadvantages of Field Trip:

i. Field trips are difficult to organize and they take longer time and thus cut into the periods of the other subjects on the school time table.
ii. Also, there could be accident which may result to loss of lives.

4. CONCLUSION

Effective teaching demands that teachers should use new strategies and resources in this era of globalization. The era requires student who can think critically, construct knowledge and communicate well. The students should be able to work collaboratively, access information to solve problems.

It is imperative that a teacher is expected to use each of these methods, techniques or approaches appropriately for the teaching of social studies. Teaching resources must be effectively utilized by the teacher for learning to be real and retention to be high. Bligh [19] emphasizes that a teacher should find ways to involve as many other ways of learning their lessons as possible. Other methods of teaching can be used in teaching social studies, but inquiry, co-operative and internet technology are

some of the best ways that can actually improve the effectiveness and efficiency in teaching and learning of social studies in Nigerian schools.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Okafor VE. Evaluation of social studies instruction in junior secondary schools in Anambra State: Unpublished Ph.D. Dissertation, Imo state University, Owerri; 2012.
2. Okafor VE. Effects of inquiry method on students achievement and interest in social studies. Nigerian Journal of Humanities and Social Sciences. 2007;1:212-221.
3. Okafor VE. Teaching methodology: Approach in social studies. Onitsha: Joanee Educational Publisher; 2008.
4. Agboola JA. An investigation into the political socialization of Nigerian school children at different levels of education. Unpublished Ph.D Dissertation. Ahmadu Bello University, Zaria; 1994.
5. Dubey DL. Problems and issues in teaching the methods of social studies in NERC: Social studies teaching issues and problems. Benin: Ethiope Publishing Corporation; 1997.
6. King A. Guiding knowledge construction in the classroom: Effect of teaching children how to question and how to explain. London: Macmillan; 1994.
7. Osakwe EO, Itedbere OO. Social studies for tertiary students in Nigeria. Enugu: New Age Publishers; 1993.
8. Thiemann G. Creating effective citizens. The social studies professional. National council for the Social Studies. 2007;202:1-3.
9. Hardy L. Getting science right. American School Board Journal. 1998;185(1):26-28.
10. Layman P. Concept of inquiry method. New York: Teachers College Press; 1996.
11. Mezieobi KA. Themes in social studies education in Nigeria. Owerri: Whyte and Whyte Publishers; 1992.
12. National Education Research Council. Guidelines on primary school curriculum: Report of the national work shop on primary education Lagos: NERC; 1993.
13. Jacinta R, Regina C. The college influence on students character. Washington D.C.: The American Council on Education; 1991.
14. Lawry K. Effect of guided cooperative questioning on children's questioning on children's knowledge construction. Journal of Experimental Education. 1987;61(2):27-48.
15. Kissock C, Iyortsuun P. Foundation of social studies. Unpublished monograph. Federal College of Education, Obudu; 2000.
16. Carin S, Sund A. Doing what scientist do: Children learn to investigate their world: Portsmouth, N.H. Heinemann; 2010.
17. Akubue FN. Innovative strategies for teaching social studies. Social Science Education Review 2008;1(1):59-65.
18. Ehman L, Glenn C. Interactive technology in social studies teaching and learning. New York: Macmillan; 2005.
19. Bligh DA. What is the use of lecture? Jossey: Bass Publication; 2000.

Biography of author(s)

Dr. Okafor, Victor Emeka
Department of Curriculum and Instructional Technology, Nwafor Orizu College of Education Nsugbe, Anambra State, Nigeria.

Research and Academic Experience: He is a principal lecturer in curriculum studies and has taught for 12 years in College of Education and carried out research works within those working periods.

Research Area: Gender Studies, Curriculum Innovation, Social Studies, Curriculum and Instruction.

Number of Published papers: He has One Hundred and Twenty (120) Published works in Journals, Books and Book chapters.

Special Award (If any): Award by Social Studies Students Association of Nigeria as an Outstanding Head of Department of Social Studies 2014.

Any other remarkable point(s): He belongs to many Professional Associations, he also an external examiner in Social studies and Curriculum studies to many Tertiary Institutions in Nigeria. He was a visiting Lecturer at Imo State University Owerri, Nigeria.

Nwosu Juliana Ngozi
Department of Education and Foundations, School of Education, Federal College of Education Technical Umunze, Anambra State, Nigeria.

Research and Academic Experience: She is a senior lecturer in social studies and has taught for 12 years in College of Education and carried out research works within those working periods.

Research Area: Gender Studies, Social Studies, Teacher Education and learning styles.

Number of Published papers: She has many publications in Journals, Books and Book Chapters.

Special Award (If any): Award of Meritorious service by Women in Colleges Education.

Any other remarkable point(s): She was the Head of Department of Social Studies Federal College Technical Umunze, Anambra State, Nigeria. She is a member of many committees in the college.

A Short-term Study Abroad Program and Its Long-term Impact on Participants: A Perspective on Global Citizenship

Todd M. Vanden Berg[1*] and Lissa Schwander[2]

ABSTRACT

This paper explores the long-term impact of a short-term study abroad program on alumni of the program years after having taken the course. Through using a mixed measure survey, the data reveals that short-term study abroad programs can have a significant and direct impact on the lives of alumni. The specific program considered has impacted alumni choices of international tourist destinations, activities alumni participate in while traveling abroad, as well as the choices alumni make concerning lodging while traveling abroad. In short, after participating in a short-term study abroad program, alumni have developed a global citizenship identity.

Keywords: Short-term study abroad; Jamaica; long-term impacts of study abroad programs; global citizenship; critical study abroad.

1. INTRODUCTION

This paper explores the impact of a short-term study abroad program on travel and tourism decisions by alumni of the program. The program is a three-week course in Jamaica, focused on issues of international development with particular emphasis on the role of travel and tourism and the impact on Jamaica. The three-week course is one of several opportunities offered to students during Interim (a three-week January Term required for all students). This particular course has been offered ten times since 2002, and faculty involved have long wondered if the interim has had any long-term impact on alumni of the program.

Short-term study abroad programs (eight weeks or less) are by far the most popular form of study abroad at U.S. colleges and universities. Despite this, there is scant scholarship on the potential long-term impact of such programs. This study examines the long-term impact of this particular program on alumni, including decisions about travel and tourism, professional and volunteer activities, as well as intercultural understanding.

During the fall of 2015 a mixed measure survey was sent to alumni of the Jamaica interim using Qualtrics Survey Software. 56% of those surveyed responded. Data suggests that this short-term study abroad program has had a significant, direct, long-term impact on alumni. The program has impacted alumni choices of international tourist destinations, activities alumni participate in while traveling abroad, as well as the choices alumni make concerning lodging while traveling abroad. Alumni responses also indicate that intercultural sensitivity was positively impacted by the program. In short, alumni have moved to develop a global citizenship identity.

2. STUDY ABROAD PROGRAMS

For much of the world today, intercultural contact is increasing in frequency and intensity (globalization), and in U.S. colleges and universities this can be seen in the ever-increasing

[1]*Department of Sociology and Social Work, Calvin University, Grand Rapids, Michigan, USA.*
[2]*Department of Sociology, Anthropology and Social Work, Central Michigan University, Mount Pleasant, Michigan, USA.*
*Corresponding author: E-mail: tvdberg@calvin.edu;

participation of students in study abroad programs. The Institute of International Education (IIE) puts the number of U.S. students who participated in study abroad programs at 304,467 for the 2013/14 academic year. This is a 62.8% increase from the 2003/4 academic year [1] Mach also highlights these data [2].

In addition to increased numbers of student participation, the nature and scope of study abroad programs have changed dramatically in recent decades. There has been a shift away from full academic calendar year programs toward short-term study abroad programs generally accepted to be from one to eight weeks long [3]. Mary Dwyer, when looking at the data from The Institute for the International Education of Students Programs, found that in the 1950s/60s 72% of students participating in study abroad programs were abroad for a full year. In the 1990s this number had dipped to 20% [4]. At the national level, in 2015, only 3% of U.S. students who studied abroad did so for an entire academic calendar year. 35% of the students studied for a quarter/semester, but the majority of students (62%) who studied abroad did so in a short-term program [5]. Short-term study abroad programs dominate study abroad programs at an ever-increasing rate.

This study is conducted at a mid-size liberal arts institution in the Midwest that ranks #2 nationally among baccalaureate institutionsfor students who study abroad during college [6]. The college offers eight international semester programs in Britain, China, France, Ghana, Honduras, Hungary, Peru, and Spain, as well as a semester in Washington D.C.

In the 2015/16 academic year 70% (590) of students from this institution who studied abroad did so in off-campus interims/May terms while 30% (249) did so in semester abroad programs. As for students who study abroad for a full year, the Director of Off-Campus Programs estimates that it is less than one student per year (personal communication).

3. LITERATURE REVIEW

Most attempts to measure the impacts of short-term study abroad programs do so through considering student's perceived attitudes or by indirect measures. For example, as Lisa Chieffo and Lesa Griffiths state in describing their study of short-term study abroad programs, "this project did not attempt to measure actual learning outcomes or changes in behavior. Instead, the results reflect perceived and recalled student activities and attitudes"(p.167) [7]. Such approaches are the norm. It is not uncommon for such studies to use pre- and post-test assessment tools: the pre-test being given just prior to leaving on the short-term study abroad program, while the post-test is given immediately after returning or within a few weeks after return. A variety of measurement instruments have been used to analyze the impact of study abroad programs including the Cross-Cultural Adaptability Inventory [8,9], and the Intercultural Development Inventory (IDI) [10,11,12,13,14]. The IDI is based on the Developmental Model of Intercultural Sensitivity [15,16], which measures a respondent's developmental stage in guiding and limiting interaction across difference.

This project seeks to use direct measures to assess alumni attitude and experience with the study abroad program, but equally important, it seeks to examine alumni behavior, such as travel choices, as a result of participation in the program. We believe alumni attitudes and behavior that are more culturally competent and take into consideration local economies are a key component to global citizenship.

There are very few longitudinal studies of short-term study abroad programs, although the importance of such studies in order to improve international education has been noted [17]. Rexeisen and colleagues [18] used a pre and post-test measure of the IDI four months after students completed short-term study abroad. Heather Rowan-Kenyon and Elizabeth Niehaus's case-study interviewed students one year after studying abroad [19]. They found that "students who had engaged in subsequent learning opportunities continued to find meaning in their study abroad experience. The experience had faded into a distant memory for students who did not integrate the experience into their lives in some way" (p. 213). Both studies, though valuable, are not adequately longitudinal related to alumni behavior well after program participation and/or graduation.

Unlike short-term programs, semester long study abroad programs have been the subject of assessment, including longitudinal studies. Don Degraaf and colleagues focused on personal and professional development of students who participated in semester long programs while in college [20]. Controlling for such things as location and length of the program, major area of study, and gender, this study reinforced the positive long-term impacts of semester-long study abroad programs. Richard Dukes and colleagues in their study of semester at sea alumni, 10 years after participation, found that the study abroad experience led to a maintenance of a global perspective and also contributed to positive personal growth of participants [21]. Yemi Akande and Carla Slawson conducted a large- scale longitudinal study of alumni in programs of The Institute for the International Education of Students (IES) [22]. Their results also suggest a positive long-term impact on program participants. Respondents in their study reported benefits that included better understanding of self, openness to diversity and ease in interacting across difference, and improved language skills. A significant number of respondents (72%) also reported continued travel abroad and 95% of respondents reported that their study abroad programs continued to influence their understanding of world events. Marianne McGarrity in a large-scale longitudinal study on alumni from the School of International Travel, examined the impact of study abroad programs on academic, professional and personal outcomes [23]. This study concluded that study abroad programs influenced career choice and graduate study and furthermore suggested that study abroad alumni are highly accomplished and socially conscious, choosing education, health and nonprofit fields in large numbers (p. 1). In another large-scale longitudinal study spanning over 50 years, Mary Dwyer concluded that "study abroad has a significant impact in the areas of continued language use, academic attainment measures, intercultural and personal development and career choices (p. 161) [24]. Dwyer also reports, however, that in some cases, participants involved in shorter term, non-semester long programs such as intensive summer study abroad programs, reported similar outcomes. She suggests that well planned, intensive programs can net significant outcomes across a variety of measures (p. 161). She notes that further study on short-term study abroad programs is needed to better asses their impact.

Michael Paige and colleagues in their extensive research on the impact of study abroad programs also found that study abroad programs had positive impact on participants and their professional and personal engagement across several dimensions, including civic engagement and social entrepreneurship (p. S29) [25,26] (see also Fry [27]). Using date from the 2006 cohort of the Wabash National Study of Liberal Arts Education, Mark Salisbury in his study examining the effect of study abroad programs on intercultural competence found that such programs have significant effects on positive development of intercultural competence [28]. However, he cautions that study abroad programs do not influence the "multiple domains that encapsulate intercultural competence equally" (p. 93). He reports that respondents were more inclined toward intercultural interaction; however, on other domains, such as comfort with diversity, there were not significant positive effects. Controlling for several variables, including pre-college characteristics and self-selection, Salisbury's research suggests "that study abroad influences students' diversity of contact but has no statistically significant effect on relativistic appreciation of cultural differences or comfort with diversity" (p.2). He does conclude however, that even when controlling for several variables and factors, "on average, studying abroad significantly affects the positive development of intercultural competence" (p. 92).

We were interested in considering the development of global citizens in alumni, and as Dianna Murphy and colleagues argue, "developing global citizens is clearly a long-term outcome" (p.2) [29]. So our goal was to see if our Jamaica Development Interim had a long-term impact on alumni behaviors.

4. DESCRIPTION OF JAMAICA DEVELOPMENT INTERIM

Our institution is one of 103 colleges/universities in the U.S. that have a January Term (Interim) [30]. Most interims are take place between the fall and spring semesters, but there are a few that run as May Terms. Interims typically take place over a three-week period. Off-campus interims afford a wide variety of options for students to study abroad without committing to a full-semester study abroad program. At our institution, students are required to take three interims during their undergraduate experience as part of graduation requirements, and following a liberal arts philosophy, students are encouraged to take courses outside of their major; off-campus interims are popular. During the Interim

of 2017, a total of 33 off-campus Interims/May Term courses were offered, 23 of which were international study abroad programs.

The Jamaica Development course was taught ten times between 2002 and 2019. Class sizes have grown over the years from 15 students in the first year to our most recent class in 2017 of 35. Although the course content, lectures, and locations visited over the years have changed, the central theme of the Interim has always been to study issues of development relating to Jamaica, specifically the role of tourism as it relates to development. Additional topics studied during interims have included island history, colonialism, the African Diaspora, development theories, debt, corruption, remittances, migration, free-trade, and community development. We, along with faculty at the University of the West Indies, Mona, lecture on these topics. Other guest speakers include representatives of the World Bank, USAID, and representatives from local churches and social service agencies.

Beyond lectures, students are assigned and expected to read a considerable number of articles related to issues of development and tourism, as well as articles that introduce them to Jamaican society, systems and structures, and Jamaica's location in the global economy. Although readings have been updated throughout the years to reflect current issues and contexts, readings always seek to provide students with broad information about Jamaican history and the topics covered in the course (see Reader Table of Contents in Appendix B). The lectures and readings are tied specifically to the experiential component of the interim. Site visits include diverse organizations, including the University of the West Indies, a dairy farm, a coffee processing plant, a chicken processing plant, a coffee plantation, a spice factory, a sea turtle sanctuary, various community development organizations, local churches, and tourist attractions such as the Black River, YS Falls, Dunns River Falls, the National Art Gallery, Port Royal, Lime Cay, and the Pelican Bar. As discussed below, in all of the locations where we travel, we stay in Jamaican owned facilities (see in Appendix A the 2019 calendar and syllabus of the interim).

The course is developed and planned as an educational experience. Just as the readings and lectures are intentional toward this end, travel and lodging choices are also developed with the overall course theme in mind. We travel to four locations: Kingston, Mandeville, Treasure Beach, and Montego Bay.

Implicit in and foundational to the interim, we hope to afford students the beginning of the process of grappling with their place in an ever-increasing globalized context. We hope our students somewhere down the line will ultimately become *global citizens*. But as Davies has commented, the term "global citizen" is too broadly used to be useful [31], and so we follow Woolf who more specifically defines global citizen to mean, "someone who is, or who aspires to be, broad minded, intellectually engaged with other cultures, aware of the interdependence of nations, committed to tolerance and understanding of difference" (p. 48) [32]. We would add to this definition of global citizen, "someone who seeks to better the world for all its members." And so, our definition of global citizenship is:

> Someone who is, or who aspires to be, broad minded, intellectually engaged with other cultures, aware of the interdependence of nations, committed to tolerance and understanding of difference, and someone who seeks to better the world for all its members.

We believe active engagement to better the world is a key element of global citizenship. We affirm Reilly and Senders call for study abroad programs to "deliberately position [themselves] as an active force in the service of global survival" (p.262) [33]. They call this approach to study abroad programs "Critical Study Abroad." We attempt to achieve "critical study abroad" in our interim and have consciously attempted to structure our interim in order to afford the potential development of global citizens.

We do this in two ways. First, we hope to instill in students a self-awareness of their place within their cultural context. As Clyde Kluckhohn has famously said:

Ordinarily we are unaware of the special lens through which we look at life. It would hardly be fish who discovered the existence of water. Students who had not yet gone beyond the horizon of their own society could not be expected to perceive custom which was the stuff of their own thinking. Anthropology holds up a great mirror to man and lets him look at himself in his infinite variety (p. 11 [34].

This is a life-long task in that culture is continually changing and because culture is largely learned unconsciously. Such awareness is a key component of global citizenship.

Second, we hope to instill in students a positive attitude in approaching, and then interacting with, people from other cultures. Again, this is not natural for humans, as we are all inclined to ethnocentrism. As Hugh and Pauline Massingham state in *The Englishman Abroad*:

> The born traveler—the [person] who is without prejudices, who sets out wanting to learn rather than to criticize, who is stimulated by oddity, who recognizes that every man is his brother, however strange and ludicrous he may be in dress and appearance—has always been comparatively rare (p. XVII) [35].

The Jamaican interim has been developed to stimulate students to think critically about their surroundings and the activities in which they are engaged during the study abroad experience and then to bring the lessons learned with them as they engage in future travel.

5. METHODS

Research participants were limited to alumni who participated in the program between 2002 and 2013. Students participating in the 2015, 2017, and 2019 were not included due to continued enrollment in college at the time the survey was distributed. The survey was sent to 116 alumni of the program. Qualtrics survey software was to distribute the survey via email and to analyze the 16 Likert scale questions. The open-ended questions were independently coded by the investigators. The response rate of 56% (N=65) was encouraging, and we believe, hinted that the interim may indeed have had an impact on alumni.

The research questions directed to alumni of the Jamaican Development Interim focused on several issues: the role and impact of participation in the short-term study abroad program on travel and tourism decisions, participation in volunteering activities, increased intercultural/global sensitivity, and more broadly, life and career choices.

An alumni survey tracer using used mixed methods was sent to all participants of the interim prior to 2015 interim. The first section of the survey asked sixteen questions using a Likert scale from 1 (strongly disagree) to 10 (strongly agree). Three questions (5,9,13) were taken from Zorn [36]. The majority of questions were original and specifically applied to the objectives/goals of the Jamaican Development Interim. The focus of these questions was on the travel/vacation habits of alumni, topics that lend both to a longitudinal survey as well as to potential measures of global citizenship. An additional open-ended question was included, affording alumni the opportunity to comment how they thought the interim impacted them. Open-ended survey questions included the following:

1. The Jamaica Development Interim has had a long-term impact on my interactions with people from other cultures.
2. The Jamaica Development Interim has affected the destinations I choose when traveling abroad.
3. The Jamaican Development Interim has affected my decisions on the activities I participate in when traveling abroad.
4. The Jamaica Development Interim affected my decisions on where I stay when traveling abroad.
5. The Jamaica Development Interim has caused me to reassess my outlook on life at home.
6. The Jamaica Development Interim has influenced career decisions that I have made since graduation.

7. The Jamaica Development Interim has facilitated an international or intercultural dimension to my volunteer activities.
8. The Jamaica Development Interim has facilitated an intercultural dimension to my social or religious activities.
9. The Jamaica Development Interim has contributed to my self-confidence.
10. The Jamaica Development Interim has affected my use of material culture.
11. The Jamaica Development Interim has affected my decision-making process on my use of disposable income.
12. The Jamaica Development Interim has enhanced my understanding of United States culture.
13. The Jamaica Development Interim has enhanced my understanding of United States politics.
14. The Jamaican Development Interim has influenced my discussions with others about international and trans-cultural issues.
15. The Jamaican Development Interim has affected my perspective on minority issues at home.
16. The Jamaica Development Interim has affected my perspective on minority issues abroad.
17. Please share with us how the Jamaica Development Interim has or continues to impact you.

According to the Open Doors Report on International Education Exchange, female participation rates in off-campus programs exceeds that of their male counterparts. They report that of those students participating in study abroad programs in 2014/15, 65% were female and 35% male [37]. The female/male participation rate in the Jamaica Development Interim, as well as the survey response rate mirrors the national averages: 75.4% of respondents were female and 24.6% were male.

The Jamaica Development Interim is an inter-disciplinary course and draws students from many majors across the college. Students participating in the interim were from the following majors: Accounting, Art, Business, Economics, Education, English, Exercise Science, Geography, Interdisciplinary, International Development, International Relations, Nursing, Philosophy, Psychology, Speech Pathology, Social Work, Sociology, and Video Production. As mentioned previously, students are encouraged to take interims outside of their majors.

Most attempts to measure the impacts of short-term study abroad programs do so through considering student's perceived attitudes. This project attempts to gather information using more direct measures of analysis that move beyond assessing attitudes to reporting and measuring behavior.

Beyond the common use of indirect measures in assessment, most scholarship that attempts to study the impact of short-term study abroad programs distribute surveys immediately after the program is completed. We were interested in considering the potential long-term impact of short-term study abroad programs. With this in mind, our goal was to assess whether the Jamaica Development Interim had a long-term impact on alumni behaviors. Alumni received the survey between two and thirteen years from taking the interim.

Studies assessing the impact of short-term study abroad programs often focus on topics of cultural sensitivity or global awareness, often considering issues such as intercultural awareness and personal growth. Although students participating in the interim are introduced to and in some ways immersed in a culture quite different than their own, intercultural development is not the primary goal of this particular interim. It is, however, embedded in the content, including readings, activities, lectures, and travel experiences that challenge students to think beyond their own experiences and understandings of the world. The content of this interim focuses primarily on the role and impact of international development on Jamaica, with a particular focus on the role of travel and tourism on the island. This content lends itself well, we believe, to assessing alumni behavior as a result of participation in the interim.

The theme of tourism is a major component of the interim, and students study the economics of tourism in Jamaica, the sustainability of tourism, eco-tourism, authenticity and tourism, cultural tourism, community tourism, and issues of leakage. Students also attend lectures and read multiple articles on these topics. Experientially, students move across different locations

in Jamaica, experiencing travel and tourism on the island from many different perspectives. At the end of the interim, students spend a few days on the Hip Strip of Montego Bay – the historical epicenter of tourism in Jamaica. After spending most of the interim in Kingston, Mandeville, and Treasure Beach it is in Montego Bay that students participate in tourism from an etic perspective – often "feeling out of place" as one alumni put it. Given our experiences with students engaged in this interim over the years and their reactions to "being tourists" at the end of their time in Jamaica, we believe that the study of tourism during the interim may impact alumni in their future choices of travel/vacations. This study speaks to that primary question with the majority of questions in the survey specifically addressing the tourism choices of these alumni.

6. LIMITATIONS

There are limitations to the methodology. The alumni survey has a selection bias in that those who participated in the survey were probably more likely to have had positive long-term impact from the interim experience. Further, the data can only suggest correlations rather than causation. In addition to this, as many of the studies discussed in the literature review, this study has no control group. That said, the study strongly shows the potential for short-term study abroad programs to have sustainable and direct impact on alumni.

7. RESULTS AND DISCUSSION

For the Likert questions on the survey, we used the Net Promotor Score to assist in measuring the long-term impact of our interim course [38]. The Net Promotor Score (NPS) was originally designed to measure customer loyalty to a company and was originally based on one question: "How likely is it that you would recommend our company/product/service to a friend or colleague? NPS scoring is typically based on a 1–10 scale. Based on the original NPS question, respondents who score 9–10 are "promotors," considered likely to exhibit value-creating behaviors, remaining customers for longer, and making more positive referrals to other potential customers. Those scoring 7–8 are "passives," while those scoring 1–6 are considered "detractors"; such respondents are less likely to display value-creating behaviors. The NPS score is derived from subtracting the detractors from the promotors. The NPS score can be from -100 to 100. Any positive score is considered good, any NPS approaching 50 is considered excellent.

NPS scores have moved beyond the original question into broader questions. We used the NPS to measure "value-creating behavior" in terms of long-term impact of short-term study abroad programs. Our results were clear and dramatic. Five questions received positive NPS scores. The five questions that received positive scores can be considered specific indicators of the long-term impact of the interim.

Three of the five questions directly relate to issues concerning alumni travel practices. The remaining two concern issues relating to intercultural sensitivity and support previous scholarship that highlight the impact of study abroad programs on cultural sensitivity. We independently did content analysis on the open-ended question: "Please share with us how the Jamaica Development Interim has or continues to impact you." Our independent coding of this questions mirrors the NPS analysis. What follows are the five questions that received positive NPS scores, as well as examples of direct responses by alumni as we have coded them. We have given considerable space to alumni comments due to the strength of the comments, as well as our desire to honor the alumni who participated in the interim.

Q2: "The Jamaica Development Interim has affected the destinations I choose when traveling abroad." (7.9 NPS).

Jamaica Development Interim Alumni Survey

"The Jamaica interim has…"

Choice Description	Crosstab	N	% of Total Respondents
Affected the destinations I choose when traveling abroad.	All	65	28% 20% 12% 11% 9% 6% 6%

Answer Description:
2 | 0 - Strongly Disagree | 4 | 5 | 3 | 9 | 6 | 7 | 8 | 10 - Strongly Agree

% of Total Distinct count of RespondentID for each N broken down by Choice Description and Crosstab. Color shows details about Answer Description. The marks are labeled by % of Total Distinct count of RespondentID. The data is filtered on Choice Description (copy), which keeps Affected the destinations I choose when traveling abroad.. The view is filtered on Answer Description, Crosstab and Choice Description. The Answer Description filter keeps 11 of 12 members. The Crosstab filter keeps multiple members. The Choice Description filter keeps 15 of 28 members. Percents are based on each row of the table.
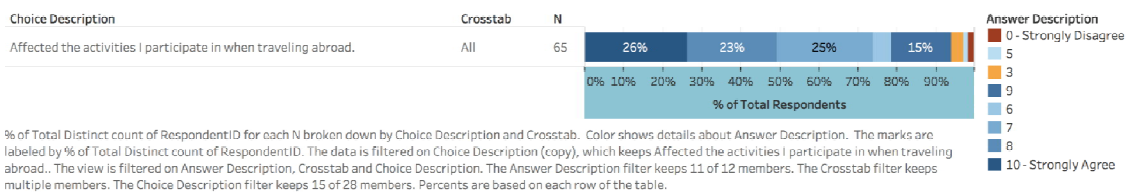
"When traveling I avoid all-inclusive resorts and I do not consider vacationing on cruise ships (influenced by watching Life and Debt and visiting Ocho Rios and Montego Bay). I have a better understanding of the impact of international trade policies and corporate investment in developing countries (Life and Debt, Alcoa's bauxite extraction plant). I understand the economic importance of products sourced and processed in country and give preference to those types of products (Blue Mountain Coffee, Pick-A-Pepper)."

Q3: "The Jamaica Development Interim has affected my decisions on the activities I participate in when traveling abroad." (32.31 NPS).

Jamaica Development Interim Alumni Survey

"The Jamaica interim has…"

Choice Description	Crosstab	N	% of Total Respondents
Affected the activities I participate in when traveling abroad.	All	65	26% 23% 25% 15%

Answer Description:
0 - Strongly Disagree | 5 | 3 | 9 | 6 | 7 | 8 | 10 - Strongly Agree

% of Total Distinct count of RespondentID for each N broken down by Choice Description and Crosstab. Color shows details about Answer Description. The marks are labeled by % of Total Distinct count of RespondentID. The data is filtered on Choice Description (copy), which keeps Affected the activities I participate in when traveling abroad.. The view is filtered on Answer Description, Crosstab and Choice Description. The Answer Description filter keeps 11 of 12 members. The Crosstab filter keeps multiple members. The Choice Description filter keeps 15 of 28 members. Percents are based on each row of the table.

"In terms of long-term impact—I would argue this trip had more influence than all of my other interims... Even five years later, I can truly say this trip has had a lasting impact on the way I go about travel, and interpret different cultures and traveling decisions, whether it be lodging, food, environmental impact, or cultural impact."

"It [the interim] helped me also to understand how important it is to support small family owned and operated businesses."

"If I were to travel abroad again, I would want to ensure I am staying someplace that is beneficial to their economy and environment."

"I love to go on trips. Whether it is a night camping in a backyard, a weekend trip to the back woods of Kentucky or traveling through another country, I am a big fan. What I learned in Jamaica has contributed to all of the trips I have gone on since. Before that interim trip I did not think about how the things that my friends and I do, or where we eat, or where we stay has a direct effect on the dynamics of the place we are visiting. When vacationing our footprints, our dollars, and our stories have a direct effect on the economies, the environments, and the cultures of those places. I now am conscientious of sustainable tourism practices, staying with locally owned facilities, and getting to know the people in whose home we are guests."

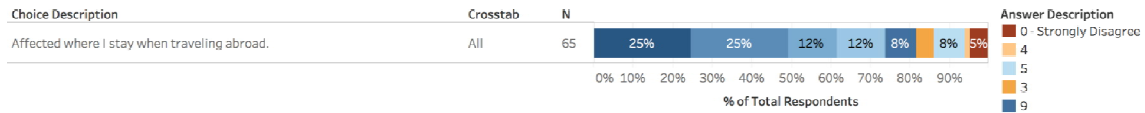"[The interim] taught me that because of the way the tourism industry works, traveling abroad somehow lands you in a place just like home and does not allow you to fully immerse yourself in the country you're visiting. The people and culture are what make a country—not the glamour of a resort. This interim trip was an eye-opening experience and something that has impacted my travel choices since."

Q4: "The Jamaica Development Interim affected my decisions on where I stay when traveling abroad." (4.69 NPS).

Jamaica Development Interim Alumni Survey

"The Jamaica interim has..."

Choice Description	Crosstab	N						
Affected where I stay when traveling abroad.	All	65	25%	25%	12%	12%	8%	8% 5%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%
% of Total Respondents

Answer Description: 0 - Strongly Disagree, 4, 5, 3, 9, 6, 7, 8, 10 - Strongly Agree

% of Total Distinct count of RespondentID for each N broken down by Choice Description and Crosstab. Color shows details about Answer Description. The marks are labeled by % of Total Distinct count of RespondentID. The data is filtered on Choice Description (copy), which keeps Affected where I stay when traveling abroad.. The view is filtered on Answer Description, Crosstab and Choice Description. The Answer Description filter keeps 11 of 12 members. The Crosstab filter keeps multiple members. The Choice Description filter keeps 15 of 28 members. Percents are based on each row of the table.

"It has impressed upon me the importance of supporting the local economies of the places I visit by intentionally choosing locally owned accommodations, restaurants, etc., and the importance of respecting the environment in the activities I choose to engage in.

I can truly say this trip has had a lasting impact on the way I go about travel and interpret different cultures and traveling decisions—whether it be lodging, food, environmental impact, or cultural impact."

Q14: "The Jamaica Development Interim has influenced my discussions with others about international and trans-cultural issues." (7.69 NPS).

Jamaica Development Interim Alumni Survey
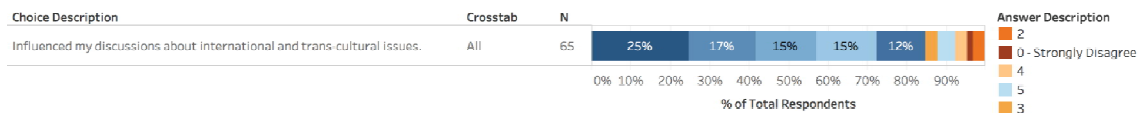
"The Jamaica interim has..."

Choice Description	Crosstab	N					
Influenced my discussions about international and trans-cultural issues.	All	65	25%	17%	15%	15%	12%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%
% of Total Respondents

Answer Description: 2, 0 - Strongly Disagree, 4, 5, 3, 9, 6, 7, 8, 10 - Strongly Agree

% of Total Distinct count of RespondentID for each N broken down by Choice Description and Crosstab. Color shows details about Answer Description. The marks are labeled by % of Total Distinct count of RespondentID. The data is filtered on Choice Description (copy), which keeps Influenced my discussions about international and trans-cultural issues.. The view is filtered on Answer Description, Crosstab and Choice Description. The Answer Description filter keeps 11 of 12 members. The Crosstab filter keeps multiple members. The Choice Description filter keeps 15 of 28 members. Percents are based on each row of the table.

"I find myself more openly giving an opinion or feelings about tourist attractions that encourage the culture of that specific country and the tourist attractions that have been specifically made only for tourists rather than for a celebration of the culture of that specific country."

"I love telling people about my experience in Jamaica. I am quick to advocate for people living in third world countries especially when it comes to the tourist attractions and hotels. My passion to seek out natively run establishments I owe to my Jamaica interim. I want to be able to help put money back into their economy rather than foreign owned business that ship money back to the US and Europe. What an eye-opening trip! I loved every second."
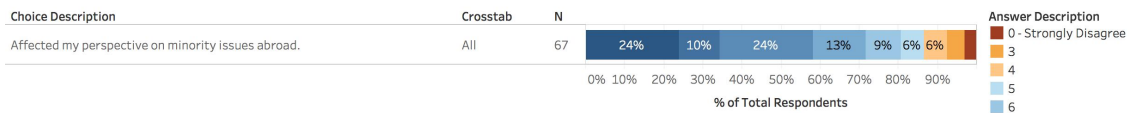
"I think I'm less afraid to travel to "bad" areas and countries and encourage others to do the same. So many people I have talked to about traveling to Jamaica all have said resorts and cruises convinced them it just isn't safe for white people to leave the compound! I never really felt unsafe, even late at night."

"I'm increasingly aware of others who take trips to Caribbean island nations and their activities, most involving some sort of all-inclusive resort or hotel. The trip has helped frame my conversations as well as what I would argue is a stable and socially responsible response to foreign travel."

Q16: "The Jamaica Development Interim has affected my perspective on minority issues abroad." (9.23 NPS).

Jamaica Development Interim Alumni Survey

"The Jamaica interim has..."

Choice Description	Crosstab	N								
Affected my perspective on minority issues abroad.	All	67	24%	10%	24%	13%	9%	6%	6%	

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%
% of Total Respondents

Answer Description
- 0 - Strongly Disagree
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Strongly Agree

% of Total Distinct count of RespondentID for each N broken down by Choice Description and Crosstab. Color shows details about Answer Description. The marks are labeled by % of Total Distinct count of RespondentID. The data is filtered on Choice Description (copy), which keeps affected my perspective on minority issues abroad.. The view is filtered on Answer Description, Crosstab and Choice Description. The Answer Description filter keeps 11 of 12 members. The Crosstab filter keeps multiple members. The Choice Description filter keeps 16 of 29 members. Percents are based on each row of the table.

"[To] see how others view America, how our spending and political choices shape other cultures and countries was impactful for me. It becomes more real when you see it first-hand. I valued the experience as it helps you to see how much variety is in the world, how big it is, and yet how similar we all are to each other."

"I believe it [the interim] created a broad base of compassion for and interest in other cultures such that I approach new immigrants or refugees with enthusiasm and an openness to learn from their perspectives."

"This interim experience is in large part what led me to choose an internship my senior year at Calvin which involved working in the lives of foreign refugees with Bethany Christian Services. Which, in turn, has led me to believe that I am meant to serve a more diverse community, and the main reason I am pursuing graduate school for an MSW degree. The Jamaica interim along with travel to Haiti and Mexico, provided experiences outside of my comfort zone which have grown me in the healthiest of ways which is extremely valuable to me."

"My biggest lesson from the trip was there are no easy answers. The wide spectrum of people we interacted with showed how complex the issues were and so were the solutions. One more thing to note that still impacts me today. As a minority at Calvin, one of our biggest criticisms was how we segregated ourselves from the rest of the Calvin community. The Jamaican trip was one of the first times many of my white Calvin friends were ever minorities. What was interesting to me was how they exhibited the same traits they complained about us. So, for instance, even though opportunities existed to mingle with locals, they would still sit amongst themselves to eat. But the take away for me was the need to walk in another person's shoe to be able to understand their actions."

"The Jamaica Interim invited me to get a glimpse of the unique culture of Jamaica. It helped me also to understand how important it is to support small family owned and operated businesses. It allowed me to experience Jamaica in a way most Americans do not. I was fortunate enough to see the foundations of a beautiful country, but also the trials and challenges they face on a daily basis. I still speak about it today and have come in contact with native Jamaicans and I can have a conversation with them and understand better where they are from. So thankful I was able to be a part of such a great group and interim in Jamaica. "

8. CONCLUSIONS

This project was designed to determine if short-term study abroad programs can have a long-term impact on alumni. We have shown that this is indeed the case. Years after participating in the Jamaica Develop Interim, alumni clearly and robustly identify how the interim has impacted them in actions/attitudes relating to travel/tourism as well as in their orientation to co-cultural and inter-cultural interactions.

Richard Slimbach states in his wonderful book, *Becoming World Wise: A Guide to Global Learning,* "…one of the central assumptions of this text is that merely learning *about* the world is not enough. Global learning must be not only *in* the world but also *for* it" (p. 8) [39]. He goes on to state that, "educational travel has a limited, though profoundly important, contribution to make to people's own development" (p. 23). We resonate with both of these sentiments and have made an effort in our

Jamaica Development Interim to equip students to see themselves as global citizens with moral and even spiritual responsibilities to and partnerships with others in the world. Our data suggests that our alumni have indeed become global citizens, and that this is at least in part directly related to participating in the Jamaica Development Interim. We realize our data does not represent all short-term study abroad programs, but for those attempting to achieve the lofty goals set out by Slimbach for global learning, such objectives can indeed be reached—objectives that can have a profound and long-term impact on alumni and our ethno-sphere. We encourage all those involved in study abroad programs to set the bar high and develop study abroad programs that support life-orienting changes for students, as well as positive impacts on the host communities with whom the students interact. Doug Reilly and Stefan Senders in "Becoming the Change We Want to See: Critical Study Abroad for a Tumultuous World" suggest nine areas to consider when organizing a study abroad program that can produce global citizens and thus a better world [40]. We highly recommend incorporating these areas when teaching a study abroad program.

ACKNOWLEDGEMENTS

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Open Doors Report on International Educational Exchange.
    Available: http://www.iie.org/opendoors.
2. Mach Andrew. Why Americans are choosing to study abroad in record numbers. The Christian Science Monitor; 2011.
3. Donnelly-Smith, Laura. Global learning through short-term study abroad. Peer Review. 2009;11(4):12.
4. Dwyer MM, Peters CK. The Benefits of Study Abroad. Transitions Abroad Magazine; 2004.
5. Available:http://www.iie.org/Research-and-Publications/Open-Doors/Data/US-Study-Abroad/Infographic
6. Available:https://calvin.edu/academics/global/
7. Chieffo, Lisa, Lesa Griffiths. Large-scale assessment of student attitudes after a short-term study abroad program. Frontiers: The Interdisciplinary Journal of Study Abroad. 2004;10:165-177.
8. Mapp Susan C. Effect of short-term study abroad programs on students' cultural adaptability. Journal of Social Work Education. 2012;48(4):727-737.
9. Kitsantas, Anastasia. Studying Abroad: The Role of College Students' Goals on the Development of Cross-Cultural Skills and Global Understanding. College Student Journal. 2004;38(3).
10. Kelley, Colleen, Judith E. Meyers. The cross-cultural adaptability inventory. National Computer Systems; 1993.
11. Anderson, Philip H., et al. Short-term study abroad and intercultural sensitivity: A pilot study. International Journal of Intercultural Relations. 2006;30(4):457-469.
12. Rexeisen Richard J, et al. Study abroad and intercultural development: A Longitudinal Study. Frontiers: The Interdisciplinary Journal of Study Abroad. 2008;17:1-20.
13. Hammer, Mitchell R, Milton J. Bennett, Richard Wiseman. Measuring intercultural sensitivity: The intercultural development inventory. International Journal of Intercultural Relations. 2003;27(4):421-443.
14. Jackson, Jane. Globalization, internationalization, and short-term stays abroad. International Journal of Intercultural Relations. 2008;32(4):349-358.

15. Bennett Milton. Towards Ethnorelativism: A Developmental Model of Intercultural Sensitivity. Aus: Paige, RM. 1993;21-71.
16. Bennett Milton, Mitchell R. Hammer. The intercultural development inventory. Portland, OR: The IDI Corporation; 2002.
17. Anderson, Philip H, et al. Short-term study abroad and intercultural sensitivity: A pilot study. International Journal of Intercultural Relations. 2006;30(4):457-469.
18. Rexeisen Richard J, et al. Study Abroad and Intercultural Development: A Longitudinal Study. Frontiers: The Interdisciplinary Journal of Study Abroad. 2008;17:1-20.
19. Rowan-Kenyon, Heather T, Elizabeth K. Niehaus. One year later: The influence of short-term study abroad experiences on students. Journal of Student Affairs Research and Practice. 2011;48(2):213-228.
20. DeGraaf Don, et al. The long-term personal and professional impacts of participating in a study abroad program." Frontiers: The Interdisciplinary Journal of Study Abroad. 2013;23:42-59.
21. Dukes, Richard, et al. A longitudinal study of a semester at sea voyage. Annals of Tourism Research. 1994;21(3):489-498.
22. Akande Yemi, Carla Slawson. Exploring the long-term impact of study abroad: A case study of 50 years of study abroad alumni." International Educator. 2000;9(3):12-17.
23. McGarrity, Marianne. Long-Term Impacts and Outcomes: SIT Study Abroad; 2014.
24. Dwyer Mary M. More is better: The impact of study abroad program duration. Frontiers: The Interdisciplinary Journal of Study Abroad. 2004;10:151-163.
25. Paige R. Michael, et al. Study abroad for global engagement: the long-term impact of mobility experiences. Intercultural Education 20.sup1. 2009;S29-S44.
26. Paige RM, Fry GW, Stallman EM, Horne A, La Brack B, Josic J. SAGE Survey. Minneapolis, MN: University of Minnesota; 2007.
27. Fry Gerald W, et al. Study abroad and its transformative power. Occasional papers on international educational exchange. 2009;32.
28. Salisbury, Mark H, Brian P. An, Ernest T. Pascarella. The effect of study abroad on intercultural competence among undergraduate college students. Journal of Student Affairs Research and Practice. 2013;50(1):1-20.
29. Murphy Dianna, et al. The Impact of Study Abroad on the Global Engagement of University Graduates. Frontiers: The Interdisciplinary Journal of Study Abroad. 2014;24:1-24.
30. Available:http://diycollegerankings.com/beyond-college-rankings-january-terms-interim-terms-and-winter-terms/1295/
31. Davies Lynn. Global citizenship: abstraction or framework for action? Educational Review. 2006;58(1):5-25.
32. Woolf, Michael. Another Mishegas: Global Citizenship. Frontiers: The Interdisciplinary Journal of Study Abroad. 2010;19:47-60.
33. Reilly, Doug, Stefan Senders. Becoming the change we want to see: Critical study abroad for a tumultuous world. Frontiers: The Interdisciplinary Journal of Study Abroad. 2009;18:241-267.
34. Kluckhohn Clyde. Mirror for Man: The Relation of Anthropology to Modern Life. Harrap; 1950.
35. Massingham Hugh, Pauline Massingham. The Englishman Abroad: With 12 pages of half-tone plates and 13 ill. in the text. Phoenix House; 1962.
36. Zorn CeCelia R. The long-term impact on nursing students of participating in international education. Journal of Professional Nursing. 1996;12(2):106-110.
37. Available:https://www.iie.org/Research-and-Insights/Open-Doors/Data/International-Students/Primary-Source-of-Funding/2015-16
38. Reichheld, Frederick F. The one number you need to grow. Harvard Business Review. 2003;81(12):46-55.
39. Slimbach, Richard. Becoming World Wise: A Guide to Global Learning. Stylus Publishing, LLC; 2012.
40. Reilly D, Senders, S. Becoming the change we want to see: Critical study abroad for a tumultuous world. Frontiers: The Interdisciplinary Journal of Study Abroad. 2009;18:241-267.

APPENDIX A

Globalization, Development, and Tourism in Jamaica

Interim 2019 – January 3-22

IDIS W47   - a 3 semester hours course
             - a CCE (cross-cultural engagement) approved course

Instructors:

Course Description:

Jamaica with its vibrant multi-national urban center of Kingston, attractive tourist destinations and impoverished rural countryside, provides the backdrop for examining issues facing less developed countries. The interim exposes you to Jamaican culture and history, including the African diaspora, Jamaica's colonial experience, and Jamaica's contemporary identity in an ever-increasing globalized world. Through readings, engaging lecturers by faculty from the University of the West Indies/Calvin, representatives of various local and international organizations, we will examine the social and economic issues facing Jamaicans today including political unrest, tourism, debt, sustainability, migration, and the influence of the United States in Jamaican affairs. We will travel through both the interior and the coast of Jamaica seeing first-hand the various approaches to development/tourism occurring in Jamaica. Field trips will also be used to examine the various political, social, economic and international trends that have shaped the island and impacted its potential for successful development.

Interim Objectives:

At the end of the course students will be able to:

1. Describe various ways in which Jamaican culture, history, politics, and economics influence development efforts on the island,
2. Identify the various ways in which Jamaicans participate in globalization
3. Identify domestic and international challenges in development and consider how policy initiatives may resolve them,
4. Identify and describe the cultural and economic impact of tourism within the country,
5. Begin to develop a global citizen perspective,
6. Articulate a Christian response/perspective to the issues facing developing countries, particularly Jamaica,
7. Appreciate the rich history and culture of Jamaica and her people, and

Possible activities while in Kingston:
-Lectures at the University of the West Indies
-USAID lecture
-Devon House visit
-Port Royal tour
-Lime Cay Island visit
-Church service
-Art Museum
-Bob Marley Museum
-Dunns River Falls (Ocho Rios)

Possible activities while in Mandeville:
-Black River& YS Falls Eco-tour
-Coffee Factory tour

Possible activities while in Treasure Beach:
-Boat tour and Pelican Bar visit
-Community organizations visit
-Sea Turtle sanctuary visit

Possible activities while in Montego Bay:
-Visit Negril
-Interviewing community members
-Beach participant observation
-Visit Rose Hall

Requirements:

1. Briefs - 20% of grade- In order to facilitate participation in the class sessions each assigned reading must have a written response – a brief. If no specific questions are assigned to the readings then the brief must address:
   a. Your reaction to the reading (a couple of paragraphs per essay)
   b. A minimum of two questions that can be raised in class drawn from the essay.
   c. Each brief should be written on a separate page with the date, and title of the essay/author written on top of the page.

2. Personal Journal - 20% of grade - A daily journal must be written that reflects on your experiences of the day – academically or personally. This is a personal journal intended to help you to consciously reflect on your experiences. You will be asked to confirm that your journal has been written at the end of the interim but you will not have to hand in this journal due to the more personal nature of its content.

3. Cross-cultural Engagement - 20% of grade - To fulfill the CCE core requirement as well as heighten the value of this interim course, there is a reflective written paper required that considers issues of cultural diversity. There is no set length assigned to this paper. I recommend that you write this assignment while in Montego Bay – near the end of interim. The papers will vary based on student experiences over the interim, but possible topics of reflection may follow the below listed topics:
   o How might a Jamaican understand globalization in ways similar/dissimilar to a person from the U.S.?
   o Compare communication styles of U.S. and Jamaicans.
   o What was the most significant frustration for you in your intercultural communication experience?
   o What might you like to emulate of the Jamaican culture back in the U.S.?
   o Compare your understanding of how Christianity is expressed in the U.S. to Jamaica. What might Christians in the U.S. learn from those in Jamaica and visa-versa?
   o Has your view of the world changed in light of your time in Jamaica?

4. Getting Oriented Assignment from Slimbach 20% of grade - Follow the directions that are clearly articulated in this assignment. You will be required to have completed five of the orientation exercises. These five exercises will be converted into your Analytic Journal Response (AJR). Refer to the Slimbach essay for the procedure of this assignment. You can refer to the end of the Slimbach essay for examples of what AJR might look like.

5. Host community beach Interview – 20% of grade - This assignment will take place in Treasure Beach and Montego Bay and may be completed alone or in pairs. We will discuss the assignment while in Mandeville.

Summing up assignments to be handed in:
To successfully complete the interim course five written components must be handed in after arriving back in Grand Rapids.
1. Briefs on the readings.
2. A signed statement that you completed your personal journal.
3. The CCE component assignment.
4. The AJR from the Slimbach - getting oriented assignment.
5. Tourism Interview materials - signed consent form and completed interview

APPENDIX B

Table of Contents

Cultural Orientation (no brief for #1 – Getting Oriented Assignment)

1. Getting Oriented –Slimbach Author's permission for copies granted by Slimbach.
2. Chambers, Erve. 2005. Can Anthropology of Tourism Make Us Better Travelers? In *Tourism and Applied Anthropologists: Linking Theory and Practice*. Tim Wallace, ed. NAPA Bulletin 23. Pp. 27-44. http://onlinelibrary.wiley.com/doi/10.1525/napa.2005.23.1.27/pdf
3. Week, Laura. I am not a tourist: Aims and implications of "traveling." http://tou.sagepub.com/content/early/2012/07/20/1468797612454627.full.pdf
4. Wilk, Richard. Euphemisms for the Global Other. http://www.anthropology-news.org/index.php/2018/08/15/euphemisms-for-the-global-other/

Jamaica Overview (one brief for #5 - 8, brief for #9, brief for #10)

5. Jamaica Profile(BBC)http://www.bbc.com/news/world-latin-america-18784062
6. Jamaica Country Profile (BBC) http://www.bbc.com/news/world-latin-america-18784061
7. Jamaica Overview (The World Bank)http://www.worldbank.org/en/country/jamaica/overview#3
8. Jamaica Overview(USAID) https://www.usaid.gov/jamaica/history
9. Mason, Peter. 2000. History: Island of Conflict. In *Jamaica: A guide to the people, politics, and culture*. Peter Mason. New York: Interlink Books. Pp. 13-28.
10. Lewis, F. William. 2013. Urban Rastas in Kingston, Jamaica. In *Magic, Witchcraft, and Religion: A Reader in the Anthropology of Religion*. 9th ed. McGraw-Hill. Pp. 278-383.

Economic Development

11. Griffith, Matthew. 2002. Case study of the impact of CAP on a developing country: importation of milk solids into Jamaica from the EU. *Trocaire Development Review*, Doublin, Pp. 99-106. (ISSN 0790-9403).
12. Welch, Robert L, and Lius A. Vivanco. 2016. Chapter Seven, Economics: Working, Sharing, and Buying. In Cultural Anthropology: A Concise Introduction. Oxford University Press. Pp. 124-141.
13. Isbister, John. 2006. Promises Not Kept: Poverty and Betrayal of Third World Development. 6th ed. Kumerian Press. Pp. 1-6, 30-64, 226-238.
14. Sachs, Jeffery D. The Development Challenge. March April 2005. *Foreign Affairs*. Vol. 84. No. 2. Pp. 78-90.
15. Korten. David. From Relief to People's Movement. 1996. In *Getting to the 21st Century*. Kumerian Press. Pp. 113-132.

Tourism and Development

16. Isaacs, Jack Coburn. The Limited potential of ecotourism to contribute to wildlife conservation. http://globalforestcoalition.org/wp-content/uploads/2010/12/Ecotourism-Isaacs1.pdf
17. Litvin, S. W., and K-A Fyffe. 2008. Tourism: A view from the fray.: A Jamaican case study. Int. Business and Globalisation, Vol. 2, No. 2, 160-172. https://www.researchgate.net/profile/Stephen_Litvin/publication/240296165_Tourism_a_view_from_the_fray_a_Jamaican_case_study/links/55d3a11408ae7fb244f58d39.pdf
18. Vanden Berg, Todd M. 2014. An Inquiry into Jamaican Perspectives on Tourism. *Tourism, Culture, & Communication*. Vol. 14. No. 2. Pp. 103-115. Author's permission for copies granted by Vanden Berg.
19. Conway, Dennis. Re-branding alternative tourism in the Caribbean: The case for "slow tourism." "http://journals.sagepub.com/doi/pdf/10.1057/thr.2010.12
20. Hawkes, Ethan and Robert J. Kwortnik Jr. Connecting with the Culture: A Case Study in Sustainable Tourism. https://scholarship.sha.cornell.edu/cgi/viewcontent.cgi?article=1260&context=articles

Biography of author(s)

Dr. Todd M. Vanden Berg
Department of Sociology and Social Work, Calvin University, Grand Rapids, Michigan, USA.

He is a cultural anthropologist teaching at Calvin University. His academic interests include global Christianity, the interplay between anthropology and Christianity, Jamaican perspectives on tourism and tourists, and community tourism.

Dr. Lissa Schwander
Department of Sociology, Anthropology and Social Work, Central Michigan University, Mount Pleasant, Michigan, USA.

She is a social worker and sociologist. Her academic interests include immigration and diversity and inclusion, particularly the pedagogical approaches to teaching intercultural communication, interaction and understanding, both on U.S. campuses and through study abroad programs.

How Gestures Pave the Way for Lexical Development: Advanced Study

Amir Yousef Farahmandi[1*]

ABSTRACT

In development, children often use gestures to communicate before they use words. The question is whether these gestures merely precede language development or are fundamentally tied to it. I examined four children making the transition from single words to two-word combinations and found that gesture had a tight relation to the children's lexical and syntactic development. First, a great many of the lexical items that each child produced initially in gesture later moved to that child's verbal lexicon. Second, children who were first to produce gesture-plus-word combinations conveying two elements in a proposition were also first to produce two-word combinations. Changes in gesture also predict changes in language, suggesting that early gesture may facilitate future developments in language.

Keywords: Gesture; words; language development; lexical development; syntactic development.

1. INTRODUCTION

People move their hands as they talk – they gesture. Gesturing is a robust phenomenon, found across cultures, ages, and tasks. Gesture is even found in individuals blind from birth [1]. Young children communicate using gestures before they are able to speak. Children typically produce their first gestures between 9 and 12 months, usually pointing to indicate objects in the environment [2,3]. Even after children begin to talk, they continue to produce gestures in combination with words (e.g., pointing at cup while saying "cup"; e.g., [4], and these gesture-plus-word combinations generally precede production of two-word combinations. Gesture development thus predates language development. The question we address here is whether gesture is fundamentally tied to language development.

Over the past 20 years, two lines of research have underscored the important role of gesture in the first stages of communicative development. One body of work [3] has indicated that the onset of intentional communication between the ages of 9 and 13 months is marked in part by the emergence of a series of gestures – giving, showing, pointing, and ritualized requests – that precede the appearance of first words. These gestures, called *performatives,* or more recently, *deictic gestures,* are used to refer to external objects or events and express only communicative intent on the part of the child [5]. The precise referent of these gestures can only be interpreted by referring to the extra linguistic context in which communication occurs. Some researchers have attributed a special role to pointing, which [6] described as an important way of establishing the joint attention situations within which language will eventually emerge.

A second line of work [3,7], looking at children in approximately the same age range, has reported striking parallels between early vocal production and gestural schemes of symbolic play. Many of the referential meanings expressed by these symbolic gestural schemes (e.g., eat) were equivalent to those conveyed by first words (e.g., *"puppa"* <lunch>; [8]. In addition, both the production of first words and the representation of symbols in the gestural modality have been shown to undergo a

[1]*Shiraz University of Medical Sciences, Shiraz, Iran.*
Corresponding author: E-mail: afarahmandi@gmail.com;

similar process of progressive decontextualization. Children's first gestures and words are initially found as parts of routines from which they are progressively detached until they are used in a referential manner to name new objects or events independent of a specific context [9].

Taken together, these findings highlight the remarkable similarities between production in the gestural and the vocal modalities during the first stages of language acquisition. They also raise an interesting issue with regard to the communicative and linguistic value of early words and gestures.

The gestures that children produce early in language development provide a way for them to communicate information that they cannot yet express verbally. For example, pointing gestures (e.g., point at cup) offer children a technique for referring to objects before they have words for those objects. Moreover, gesture-plus-word combinations offer children a technique for communicating two pieces of information within a single utterance before they can produce two-word utterances (e.g., point at cup while saying ''mine''; [10,11,12]. The fact that gesture allows children to communicate meanings that they may have difficulty expressing verbally raises the possibility that gesture serves a facilitating function for language learning. If so, changes in gesture should not only predate but also predict changes in language.

I tested this hypothesis by examining gesture production in relation to lexical and syntactic development in the early stages of language development. I asked (a) whether children's use of gesture to refer to specific objects is related to the emergence of verbal labels for those objects and (b) whether children's production of gesture-plus-word combinations is related to the emergence of two-word utterances.

Sometime around the end of the first year, normal children make the crucial discovery that things have names. Although naming is in some sense the quintessential linguistic act, [13,14] have argued that it is just one manifestation of a more general symbolic capacity reflected in such diverse domains as memory for objects, imagery, problem solving, imitation and symbolic play. Recent correlational studies provide only partial support for this hypothesis. Some areas of non-linguistic development do indeed correlate with the emergence of meaningful speech, in particular symbolic play, imitation, and some limited aspects of tool use in problem-solving [3]. However, several other central areas of sensorimotor development do not seem to correlate with language at all, at least in the earliest stages of one-word speech. These include spatial relations and object permanence [3]. These correlational patterns suggest a revision of the Piaget-Werner hypothesis, in the direction of "domain specific" or "local homology" models [3] in which tasks are correlated in limited ways at particular points in time when they share specific underlying structures.

Goldin-Meadow and Alibali [15] investigated the contribution that gestures make to how we communicate and think. According to them, gesture can play a role in communication and thought at many timespans [15]. They found that the gestures speakers produce when they talk are integral to communication and can be harnessed in a number of ways. (*a*) Gesture reflects speakers' thoughts, often their unspoken thoughts, and thus can serve as a window onto cognition. Encouraging speakers to gesture can thus provide another route for teachers, clinicians, interviewers, etc., to better understand their communication partners. (*b*) Gesture can change speakers' thoughts. Encouraging gesture thus has the potential to change how students, patients, witnesses, etc., think about a problem and, as a result, alter the course of learning, therapy, or an interchange. (*c*) Gesture provides building blocks that can be used to construct a language. By watching how children and adults who do not already have a language put those blocks together, we can observe the process of language creation. Our hands are with us at all times and thus provide researchers and learners with an ever-present tool for understanding how we talk and think [15].

Goldin-Meadow [16] argues that even a child who has never seen or heard language is able to invent a language [16]. She writes about children who are congenitally deaf and cannot learn the spoken language that surrounds them and also those who have not been exposed to sign language, either by their hearing parents or their oral schools and argues these children use their hands to communicate – they gesture [16].

Clues to the puzzle of how language and cognition interact are now being sought in comparisons between development of vocal and gestural language. The logic behind such comparisons is the idea

that traditional views of language as synonymous with speech may have resulted in inaccurate perceptions of relations between cognitive and language milestones. For example, data showing that a specific cognitive skill immediately precedes a specific milestone in vocal language may be conceptualized as causative. Such a conclusion, however, would presumably need to be reevaluated if the same language milestone were achieved significantly earlier in the gestural modality. Given the long history of attention to language as exclusively vocal in nature, many such reevaluations might be required. Thus, the empirical question of whether or not development of language proceeds differently in the two modalities is of pressing theoretical import [17].

US research into the nature of sign language, the acquisition and development of American Sign Language (ASL) and the education of hearing impaired children are strongly developed. In fact, scholars in the United States have considered the deaf community as a social group and hence have studied AS L as an integral system, without primary reference to the English language with which it is in contact. This community view has also resulted in a focus on acquisition of language by children in settings outside formal education and on an interest in various bilingual models for educational programs [18].

Because gestures are produced along with speech and thus in the service of communication, they take on the intentionality of speech [19]. But gestures are not part of a codified system – their forms and meanings are constructed in an ad hoc fashion in the context of the speech they accompany. They are communicative acts that are free to take on forms that speech cannot assume or, for a child at the earliest stages of language learning, forms that the child cannot yet articulate in speech. And children use gesture before they are able to speak [19].

While children are developing and they have limitations as what to say, gestures are of use and they help children to express themselves more freely. Children typically begin to gesture between 8 and 12 months [19]. They first use deictics, pointing or hold-up gestures whose meaning is given entirely by the context and not by their form. Pointing gestures typically precede spoken words by several months and give children an easy way to refer to objects before they have words for those objects [19].

We all know that people use gestures when they talk. But the question is that is this behavior learned from watching others move their hands when talking? According to Iverson & Goldin-Meadow [20], individuals who are blind from birth never see such gestures and so have no model for gesturing. But these researchers show that congenitally blind speakers gesture despite their lack of a visual model, even when they speak to a blind listener. Gestures therefore require neither a model nor an observant partner [20].

When hearing children acquiring a spoken language make the transition from prelinguistic gestural communication to language, a modality change occurs. Deaf children acquiring a sign language communicate prelinguistically and linguistically in the same visual-gestural modality. Thus, comparison between hearing children acquiring spoken language and deaf children acquiring sign language may help to clarify the relationship between prelinguistic communication and language [21].

Broadly speaking, the phenomenon of gesture can be viewed in two seemingly opposite ways. On one of these views, it is a 'window' into the mind, and is regarded as part of the individual speaker-gesture's ongoing mental life. Part of the story of gesture is the role that it performs in *interaction*: gestures as something engaged in our social lives [22].

The phenomenon of gesture has been remarked upon for at least 2000 years, across domains as diverse as philosophy, rhetoric, theater, divinity and language. The gestures that are most salient to speakers, and to listeners, are the codified (or conventionalized) forms that can substitute for speech. There is, however, another type of gesture that people routinely produce – informal non-codified hand movements, fleetingly generated during the course of speaking. The content of these gestures is not typically the objects of public scrutiny. As a result, these speech-accompanying gestures have the potential to reflect thoughts that may themselves be relatively unexamined by both speaker and listener. This type of gesture may thus reveal aspects of thought that are not seen in other, more codified forms of communication [1].

2. METHODS

2.1 Participants

Four typically developing children (1 male, 3 females) participated; they were all from middle- to upper-middle-class monolingual Persian-speaking families. On average, each child was observed 8 times, between 6 and 10 times to be more precise.

2.2 Procedure

The children were taken both still frames and continuous videos for approximately 30 min. This took place in their day care center, during play with a primary caregiver and during a snack or mealtime. Toys were provided by the researcher, but the children were also free to play with their own toys.

2.3 Coding

I focused on gestures and speech used communicatively. The child had to make an effort to direct the listener's attention (e.g., through eye gaze, vocalization, postural shift) for a behavior to be considered communicative. A com-municative behavior could be gesture on its own, speech on its own, or a combination of gesture and speech produced together.

2.4 Coding Gesture

Two additional criteria were used to ensure that a gesture was functioning as a communicative: First, the gesture could not be a direct manipulation of some relevant person or object. All acts performed on objects were excluded, except for instances in which a child held up an object to bring it to another person's attention, an act that serves the same function as pointing. Second, the gesture could not be a ritual or game.

Each gesture was classified into one of three categories: Deictic gesture, conventional gesture, or ritualized reach. *Deictic gestures* indicate referents in the immediate environment. Children produced three types of deictic gestures: (a) *showing*, holding up an object in the listener's potential line of sight; (b) *index point*, extending the index finger toward a referent; and (c) *palm point*, extending a flat hand toward a referent. The referent of a deictic gesture was assumed to be the object indicated (or held up) by the hand. *Conventional gestures* have a form and meaning that are either culturally defined (e.g., nodding the head ''yes'') or specified in the context of particular caregiver-child interactions (e.g., smoothing the hands over the hair to mean ''pretty''). *Ritualized reaches* are arm extensions toward an object, usually accompanied by repeated opening and closing of the palm.

2.5 Coding the Relation between Gesture and Speech

All instances in which a gesture was produced co-temporally with speech were classified as gesture-plus-word combinations and were divided into two categories based on the relation between the information conveyed in the two modalities. One category included gestures that complemented speech by singling out the referent indicated by the accompanying word (e.g., pointing to flowers while saying "*gol*" (flowers) to indicate the flowers on the table). The second category included gestures that supplemented speech by providing a different but related piece of information about the referent (e.g., pointing to a picture of a bird while saying ''*khaab*'' (sleep) to indicate that the bird in the picture is "sleeping").

3. RESULTS

3.1 Object Reference in Gesture and Early Lexical Development

Do the early gestures that a child produces have any relation to the words that the child subsequently utters? For these analyses, I identified all instances in which children referred to an object and

classified them into three categories: speech only (i.e., using only a word to refer to an object), gesture only (i.e., using only a gesture to refer to an object), or speech and gesture (i.e., using both a word and a gesture, not necessarily at the same time, to refer to an object). In fact, only nouns and deictic gestures were included in the lexical analyses. If a child only pointed at a ball (one or more times) during the session, ball was counted as one type in the gesture-only category. If the child only said "*toop*" (ball) one or more times during the session, ball was counted as one type in the speech-only category. If a child produced the word "*toop*" (ball) and also pointed at a ball in the same session whether simultaneously or at different times, I counted ball as one type in the speech-and-gesture category.

The children relied extensively on gesture to refer to objects: Approximately half of each child's object references across sessions occurred in gesture only. But gesture did become less important over time.

Gesture thus appears to provide a way for children to refer to objects at a time when they are not producing words for those objects. If gesture serves a facilitating function in lexical development, one might expect an individual lexical item to enter a child's repertoire first in gesture and then, over time, transfer to speech. To explore this possibility, we identified lexical items that a child used in multiple sessions and classified them into four categories according to whether they (a) appeared initially in speech and remained in speech, (b) appeared initially in gesture and remained in gesture, (c) appeared initially in speech and transferred or spread to gesture, or (d) appeared initially in gesture and transferred or spread to speech. Items that appeared initially in both speech and gesture were excluded from this analysis.

Modality had a clear impact on lexical development. Significantly more items were produced initially in gesture than in speech. Moreover, a significant proportion of the items either switched or spread from one modality to the other (as opposed to staying in one modality. Items were more likely to move from gesture to speech than from speech to gesture. On average, children produced a gesture for a particular object before they produced the word for that object. Thus, the results are consistent with the gestural-facilitation hypothesis, as we were able to predict a large proportion of the lexical items that eventually appeared in a child's verbal repertoire from that child's earlier gestures. Because the relation between a deictic gesture and its referent is more transparent than the arbitrary relation between most words and their referents, gesture can provide children with a temporary way to communicate about objects, allowing them to circumvent difficulties related to producing speech [17,14]. Gesture may thus serve as a transitional device in early lexical development.

4. DISCUSSION

It was found that gesture both precedes and is tightly related to language development. At the lexical level, items found initially in children's gestural repertoires subsequently appeared in their verbal lexicons. At the sentence level, the onset of gesture-plus-word combinations conveying two elements of a proposition predicted with great precision the onset of two-word combinations. The findings of the study are thus consistent with the hypothesis that gesture plays a facilitating role in early language development.

What might gesture be doing to facilitate language learning? One possibility is that gesture serves as a signal to the child's communicative partner that the child is ready for a particular kind of verbal input. Consider a child who points at his or her father's hat while saying "dada." The child's caregiver might respond by saying, "Yes, that's daddy's hat," in effect "translating" the child's gesture-plus-word combination into a two-word utterance and providing the child with timely verbal input [21].

Gesture may also play a role in language learning by affecting the learners themselves. Although gesture and speech form a single integrated system, gesture exploits different representational resources than does speech [22]. Meanings that lend themselves to visuospatial representation may be easier to express in gesture than in speech [23].

In addition to relying on a different representational format, gesture reduces demands on memory. Pointing at an object is likely to put less strain on memory than producing a word for that object.

Gesture may thus provide a way for new meanings to enter children's communicative repertoires. It may also give children a means for practicing these new meanings, laying the foundation for their eventual appearance in speech. There is, in fact, evidence that the act of gesturing can itself promote learning [24].

In sum, the findings underscore the tight link between gesture and speech, even in children at the earliest stages of language learning. Gesture may even pave the way for future developments in language [23].

"*khaaleh sooskeh mikhaast bereh biroon*" (Auntie Cockroach wanted to go out) Four-year-old Mina is telling the famous Persian story about a cockroach who wanted to leave home and she went to a store to buy something and then she was proposed by the shopkeeper. Here, Mina is saying this utterance using her both arms showing an iconic gesture for the word "out" indicating the direction towards out (deictic gesture).

"*zanet nemisham*" (I won't become your wife)

In this picture, Mina is telling the same story saying this utterance stretching out her both arms showing an iconic gesture for a negative response (I won't become your wife) (deictic gesture).

In this picture, four-year-old Hamid is telling a story about ancient Persian kings. His is looking at his right palm and fingers while talking about the number of kings existing then (deictic gesture). It is important here to note a shift between an emphasis on gesture as more informative than the oral speech at the peak of the gesture [25].

"*baa ham zendegiye khoobi daashtan*" (they had a good life together)

Four-year-old Rose is telling a story about a crow, a turtle, and an antelope. Here, at the beginning of the story, she brings her hands together to show that the animals had a good life together (deictic gesture).

"*komak*" (Help!)

In this story, Rose says that the three animals, the crow, the turtle, and the antelope, had a happy life together. Once, the antelope did not show up at play and the other two were concerned. So they decided that since the crow could fly, it goes and looks for the antelope. Suddenly, the crow heard someone saying 'Help'. The antelope was trapped by a hunter. Rose is uttering the word "*komak*" (Help) circling her lips as if she is the antelope asking for help.

"*baʔdan*" (then; later)

She keeps saying "*baʔdan*" (later) anytime she wants to say what happened next while telling the story (deictic gesture).

"*aahoo faraar kardeh*" (the antelope has escaped)

This is toward the end of the story when she says the trapped antelope was freed by a mouse who chewed the trap and that when the hunter arrived he saw the antelope had escaped.

"*baagh-e bozorg*" (big garden)

Five-year-old Yekta was the best narrator/story teller among others in terms of using gestures. She is telling the story of some antelopes and foxes living in a big garden. She stretches out her arms showing "*bozorg*" (big) for the size of the garden (deictic gesture).

"*panj taa roobaah*" (five foxes)

She is showing her left palm and five fingers to show there were five foxes in the garden (deictic gesture).

There is no doubt that a study of four participants may not warrant firm conclusions. There must be further study for sufficient justifications. Furthermore, variables such as participants' native culture and how gestures are interpreted in those cultures can be taken into consideration.

5. CONCLUSION

It can be concluded that gesture has a tight relation to the children's lexical and syntactic development. In this study, many of the lexical items that each child produced initially in gesture later moved to that child's verbal lexicon. Also, children who were first to produce gesture-plus-word combinations conveying two elements in a proposition were also the ones who first produced two-word combinations. It can be said that changes in gesture also predict changes in language, suggesting that early gesture may facilitate future developments in language.

The children who participated in this study relied heavily on gesture to refer to objects: approximately half of each child's object references across sessions occurred in gesture only. However, gesture became less important over time.

Gesture thus appears to provide a way for children to refer to objects at a time when they are not producing words for those objects. If gesture serves a facilitating function in lexical development, one might expect an individual lexical item to enter a child's repertoire first in gesture and then, over time, transfer to speech. Modality had a noticeable effect on the children's lexical development. Significantly more items were produced initially in gesture than in speech. On average, children produced a gesture for a particular object before they produced the word for that object. Since the relation between a deictic gesture and its referent is more transparent than the arbitrary relation between most words and their referents, gesture can provide children with a temporary way to communicate about

objects, allowing them to circumvent difficulties related to producing speech [17,14]. Gesture may thus serve as a transitional device in early lexical development.

What might gesture be doing to facilitate language learning? One possibility is that gesture serves as a signal to the child's communicative partner that the child is ready for a particular kind of verbal input. Gesture may also play a role in language learning by affecting the learners themselves. Although gesture and speech form a single integrated system, gesture exploits different representational resources than does speech [22]. Meanings that lend themselves to visuospatial representation may be easier to express in gesture than in speech [23]. In addition to relying on a different representational format, gesture reduces demands on memory. Pointing at an object is likely to put less strain on memory than producing a word for that object.

In sum, the findings underscore the tight link between gesture and speech, even in children at the earliest stages of language learning. Gesture may even pave the way for future developments in language [23].

CONSENT

As per international standard written participant consent has been collected from the concerned parents of the participants and preserved by the authors.

ACKNOWLEDGEMENTS

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Goldin-Meadow S. The role of gesture in communication and thinking. Trends in Cognitive Sciences. 1999;3(11):419-429.
2. Bates E. Language and context: The acquisition of pragmatics. New York: Academic Press. 1976;13.
3. Bates E, Benigni L, Bretherton I, Camaioni L, Volterra V. The emergence of symbols: Cognition and communication in infancy. New York: Academic Press; 1979.
4. Greenfield PM, Smith JH. The structure of communication in early language development. New York: Academic Press. 1976;90.
5. Iverson JM, Capirci O, Caselli MC. From communication to language in two modalities. Cognitive Development. 1994; 9(1):23-43.
6. Bruner JS. The ontogenesis of speech acts. Journal of Child Language. 1975; 2(1):1-19.
7. Nicolich LM. Beyond sensorimotor intelligence: Assessment of symbolic maturity through analysis of pretend play. Merrill-Palmer Quarterly of Behavior and Development. 1977;23(2):89-99.
8. Volterra V, Camaioni L, Benigni L, Bates E. Le prime parole [First words]. Giornale Italiano di Psicologia. 1981;8:243-263.
9. Caselli MC. Communicative gestures and first words. In Volterra V, Erting CJ. (Eds.) From gesture to language in hearing and deaf children. New York: Springer-Verlag. 1990;56-67.

10.   Butcher C, Goldin-Meadow S. Gesture and the transition from one- to two-word speech: When hand and mouth come together. In D. McNeill (Ed.) Language and gesture, New York: Cambridge University Press. 2000;235–258.

11.   Capirci O, Iverson JM, Pizzuto E, Volterra V. Gestures and words during the transition to two-word speech. Journal of Child Language. 1996;23:645-674.

12.   Goldin-Meadow S, Butcher C. Pointing toward two-word speech in young children. In Kita S (Ed.) Pointing: Where language, culture, and cognition meet. Mahwah, NJ: Erlbaum. 2003; 85–107.

13.   Piaget J. Play, dreams and imitation. New York: Norton. 1962;24.

14.   Werner H, Kaplan B. Symbol formation: An organismic- developmental approach to language and the expression of thought; 1963.

15.   Goldin-Meadow S, Alibali MW. Gesture's role in speaking, learning, and creating language. Annual Review of Psychology. 2013;64:257-283.

16.   Goldin-Meadow S. Gesture's role in creating and learning language. Enfance; Psychologie, Pedagogie, Neuropsychiatrie, Sociologie. 2010;3:239.

17.   Goodwyn SW, Acredolo LP. Symbolic gesture versus word: Is there a modality advantage for onset of symbol use? Child Development. 1993;64(3):688-701.

18.   Sirotkin SA. The transition from gesture to word. Journal of Russian and East European Psychology. 1979;17(3):46-59.

19.   Bavin EL. The Cambridge handbook of child language; 2009.

20.   Iverson JM, Goldin-Meadow S. Why people gesture when they speak. Nature. 1998; 396(6708):228-228.

21.   Colterra V, Erting CJ. From gesture to language in hearing and deaf children. Gallaudet University Press; 1998.

22.   McNeill D. (Ed.). Language and gesture. Cambridge University Press. 2000;2.

23.   Iverson JM, Goldin-Meadow S. Gesture paves the way for language development. Psychological Science. 2005;16(5):367-371.

24.   Goldin-Meadow S, Wagner SM. How our hands help us learn. Trends in Cognitive Sciences. 2005;9(5):234-241.

25.   Soozandehfar SMA. Six-year-old kiamehr's gestation of first language gesticulations in the oral narrative context of story-telling: A case of iranian context; 2013.

Biography of author(s)

Amir Yousef Farahmandi
Shiraz University of Medical Sciences, Shiraz, Iran.

He is an experienced assistant professor teaching English as a foreign language (TEFL) and currently he is working at the Department of English at Shiraz University of Medical Sciences, Shiraz, Iran. He received a B.A. degree in English Translation, an M.A. degree in Applied Linguistics, and a Ph.D. in TEFL. He has been teaching English as a foreign language for more than 24 years now. His focus is on English for Specific Purposes (ESP) and English for Academic Purposes (EAP). He also had several articles published in TEFL area. His research interest includes phonology, syntax, writing, discourse, and first language acquisition (FLA). He also teaches IELTS classes and he is very much interested in it.

_____

Qualitative Research into the Nature of Errors in Subtraction Algorithm in Primary Education

Ana B. Sánchez-García[1*]

ABSTRACT

Aims: We have examined the interaction between formal, intuitive and algorithmic knowledge in the solution for the subtraction operation.
Study Design: Qualitative analysis.
Place and Duration of Study: Department of Didactic, Organization and Investigation Methods (University of Salamanca), between February 2005 and July 2006.
Methodology: We included the verbal protocols of nine children aged between seven and ten years old who solved a total of 180 subtractions. The volume of data obtained via verbal protocols has allowed us to study the influence of the conceptual framework and the way in which the children interpret algorithmic process in the first stage of teaching.
Results: The results have allowed certain suggestions to be made with regard to the relation between formal, procedural and intuitive components that have a bearing on the generation of errors, and offer deep insights into how teachers influence the acquisition of mathematical concepts in the primary education stage.
Conclusion: The child's intuitive interpretations formed in structural schemata, the vocabulary that forms part of these, and the semantic interpretation of zero uphold the sources that generate analogue transfer. It is important to consider its influence in order to improve the algorithmic teaching processes.

Keywords: Algorithmic learning; semantic approximation to error; primary education; subtraction errors; empirical research; teaching practice; intuition; intuitive rules.

1. INTRODUCTION

The study into errors made whilst solving subtractions has been a subject of research approached from analysis that has a bearing on either a conceptual framework [1,2,3,4,5] or a procedural framework [6,7,8,9,10,11,12] as primary cognitive components of error generation.

From the point of view of those investigations that analyze the conceptual framework, further studies exist that try to analyze the construction of mathematical significances and the errors made during this process via the semantic structures of the problems and the linguistic knowledge inherent in these [13,14,15,16,17,18,19]. The latter are primarily found in the context of problem solving and more specifically in the analysis of formulations, which form the starting point of the solving process.

There is an important theoretical model that focuses attention on the semantic interpretations influence within arithmetic operations. It has reported that a formal and intuitive knowledge is taught by using tacit intuitive models [20,21,22,23,24,25,26] According to [24], "the intuitions are very sensitive to the influences of the context and the teacher has to identify the intuitive tendencies of the student and to try to explain their sources… for helping the student to overcome the difficulty…" (p. 24).

---

[1]*University of Salamanca, Department of Didactic, Organization and Methods of Investigation Pso Canalejas, 169, Faculty of Education, Salamanca 37008, Spain.*
*Corresponding author: E-mail: asg@usal.es;

The work carried out in this field of research can provide a theoretical explanation that supports the existence of systematic errors in algorithm learning in schools. The latter assertion could be linked to an important contribution such as the semiotic perspective of analysis of mathematics learning contexts, which acknowledges the influence of language on the generation of mathematic concepts in the classroom context [27,28,29].

In the present chapter, we make reference the influential works that describes the generation of errors in the subtraction algorithm and also present a research which proves that conceptual intuitive components have a definite influence on the origins of errors. More specifically, the vocabulary inscribed in the intuitive representations, plays an essential role in the generalization of learning algorithmic and therefore, in the origin of errors. Thus, the interactions between intuitive interpretations and algorithmic components may become obstacles in the learning process [23].

2. ERRORS IN THE LEARNING OF SUBTRACTION

Research in the field of systematic errors made during the learning of the subtraction algorithm comes from different theoretical perspectives. Firstly, the syntactic approach, related to VanLenh's Repair Theory, which has provided important results regarding the procedural mechanisms that govern the generation of systematic errors made in the process of solving a subtraction algorithm [30,7, 8,9,10,31,11,6,32]. This theoretical framework explains the learning process of cognitive skills in instructional settings [11] and how and why we make mistakes. The theory suggests that when a procedure cannot be performed, an impasse occurs and the individual applies various strategies, which are called "repairs", to overcome the impasse. Some repairs generate incorrect results called "buggy" procedures. Repair theory assumes that people learn procedural tasks by induction and that bugs are introduced in the examples provided during the instruction or the feedback received while doing practice [6,11].

The second theoretic approach evaluates types of comprehension and the conceptual foundation that children acquire when learning the multiple digit subtraction algorithm. A deep analysis of the latter approach has been carried out by authors such as [33,34,35,36,37,38,3,39,40]. These authors consider the comprehension of the principles and concepts that organize the learning process as essential in order to avoid the errors which arise during learning. They therefore study the existence of a relation between understanding and skills in mathematics for children and instruction, and how these influence this relation [41,42,37,44,40,43]. A rapprochement occurs between events, methods and strategies used in the teaching of the algorithm [44].

On this theoretical level we could also refer to other research focused on the influence of the semantic structures of arithmetic problems on the completion of those problems [25]. From the results of these studies we can deduce that the relationship between the formal intuitive components of mathematics learning [23] and linguistic knowledge is a key element in the generation of errors within problems containing the operations of multiplication and division. In a similar way, as regards the semantic structures, there is an important theoretical model that focuses its attention on the influence of semantic interpretations within arithmetic operations. Fischbein's Theory [21,23,24] described the notion of intuitive models and the role they play in algorithmic knowledge.

"According to Fischbein, intuitive knowledge is a type of immediate, implicit, self-evident cognition that leads in a coercive manner to generalizations" [45, p.537]. Fischbein considered the interaction between three of the components of mathematics knowledge: intuitive, formal and algorithmic. "The formal aspect refers to axioms, definitions, theorems and proofs. The algorithmic aspect refers to solving techniques and standard strategies. The intuitive aspect refers to the degree of subjective, direct acceptance by an individual of a notion, a theorem, or a solution…" [23, p.244], and it is organized in tacit models that [21] describes as imperfect mediators that lead to incorrect interpretations of the algorithm. Analogies play an important role in the construction of models. They are a source of models and may occasionally be a source of misconceptions [21].

At times, during algorithmic learning, a conflict takes place between the intuitive aspect and the formal interpretation of the procedure. Thus, on an educational level, algorithmic error could be predicted via

this irrelevant interpretation of the procedure. "In this case, the teacher has to identify the intuitive tendencies of the student and to try to explain their sources" [24, p. 24]. Likewise, [46] stress the predictive power of these irrelevant interpretations of the process.

In this spirit, [47] asserted that many of the errors made by students in subtraction can be explained by the influence of a number of intuitive rules. Such an assertion is part of the Intuitive Rules Theory [48,46,50,51], proposed to explain and predict inappropriate responses to a wide range of mathematics and science tasks. In this theory, the authors confirm that many students react by giving similar answers in a wide range of tasks that are not conceptually related, although they so have one component or external trait in common. From the analysis of these answers, they conclude that many of them can be explained by the influence of three rules: 'More A- more B', 'Same A- Same B'; 'Everything can be divided endlessly'. They consider these rules intuitive because students feel as if their explanations were self-evident and sufficient [52]. They likewise possess attributes of globality (the students tend to repeat them in different situations) and coerciveness, because the alternatives are often excluded as unacceptable [52].

Tirosh and Stavy [51] report that students' responses to a variety of mathematical comparison tasks were influenced by the intuitive rule 'Same A- Same B' in tasks where 'the two objects or systems to be compared were equal in respect to one quality or quantity (A1 = A2) but different in respect to another one (B1 = B2). In some of the tasks, the equality in quantity was perceptually or directly given. In other cases, the equality in quantity A could be logically derived. A common incorrect response to all these tasks, regardless of the content domain, was B1= B2 because A1 = A2' [52, p. 62]. They also affirm that this rule could be activated by a perceptual or logical input. On this point, they suggest that it could be innate and stress that it is reasonable to assume that children generalize such experiences into a universal maxim: 'Same A- Same B', because this rule is often applied in different situations within the school context. This fact would promote its generalization. In light of this theory, we suggest that algorithmic reasoning is affected by intuitive rules. Specifically, we believe that the rule 'Same A- Same B' plays an important role in this affirmation.

Other authors have informed of the intuitive component in algorithmic knowledge [53,54,55,5,26]. [26] believes that the interpretative aspects are essential in the generation of errors in vertical multi-digit subtraction. Sander's results confirm that errors are generated by a negative analogue transfer mechanism that occurs in educational environments whose sources are inadequate. He considers two sources that support the "Remove and Distance" analogy, integrated in the conceptual schema that support the skill and used by children, either spontaneously or as the result of certain learning situations. According to [26], interpretations based on these sources initially give rise to errors of a semantic nature. Subsequently, these errors influence procedural errors.

Previous ideas have led us to focus more on the process of mathematical knowledge transfer and its possible role in the generation of errors in subtractions. Some authors such as [56,57,58,21,59,60,26, 10,11,61] have studied this kind of transfer. Fischbein [23] believe that this process facilitates the relation between conceptual and procedural knowledge. Fuson [34] points out that it is very common for teachers to rely on school textbooks when introducing algorithms in mathematics classes. This may interfere with the children's ability to make generalizations. Likewise, [11] believes it is not only the examples given in the text books which interfere with the generalization of the subtraction algorithm process, but also those offered by teachers or fellow students.

Consequently, the sources that feed the process of arithmetic knowledge transfer can be induced from the learning context. According to [24] and [51], intuitions are sensitive to the influence of the context. If that is so, we should further investigate the nature of the mathematic processes, methods, and language used in algorithmic learning situations.

In this study, we have specifically focused on analyzing the influence of the semantic perspective on the origin of errors within the subtraction algorithm teaching and learning context, keeping in mind the theoretical contributions of Fischbein in particular.

In our research area, the results of leading studies define certain fundamental theoretical aspects, which constitute the central nucleus in the generation of errors made in subtractions. These are linked to the following affirmations: (I) the relationship between intuition and algorithmic knowledge is essential to study the nature of the errors [21,62,23,47]. (II) Algorithmic subtraction learning occurs through inductive mechanisms, using examples [12,10,11], via a learning process of analogy [26,10,11]. (III) Errors arise from an investigative or heuristic process [11] during the resolution of a new problem and (IV) The nature of the error is related to the conceptual acquisition occurring in the first phase of the learning process and therefore, the mistake is due to a lack of understanding of the meaning of 0 and of the positional place-value concepts [63,64,33,34,35,43,65,66].

This last assertion is rooted in the contributions of the previously mentioned authors, who suggest that not all the theory should rest on the procedural component. Therefore, subtraction algorithm learning, as well as requiring a certain aptitude for logical reasoning, as highlighted by [67], and a certain level of development, also involves comprehension of the procedure, and these authors propose a set of basic principles closely related to the acquisition of base-10 structures, on which the aforementioned comprehension is based. These are; *(i) Additive composition of quantities, (ii) Conventions of decimal place value notation, (iii) Calculation through partitioning and (iv) Re composition and conservation of the minuend quantity* [5, p. 49].

These authors believe that the cause of errors does not reside in syntactic or procedural aspects, which are considered superficial. They would, in short, be the result of violating one or more of the previously mentioned principles which are a basic element in the conceptual structure of the procedure.

The conceptual structures are very well described by Resnick [4], who differentiates between *relational knowledge*, made up of proto-quantitative structures, and *representational knowledge,* which includes knowledge of verbal counting. The relational structures are: *(i) Comparison,* through which children have at their disposal a series of terms such as more, less, smaller than,*(ii) Increase – reduction*, which allows them to determine changes in quantity and*(iii) Part – Whole*, which allows the whole to be divided into smaller parts.

The progressive integration of both types of knowledge facilitates the execution of the algorithms. From our point of view, the intuitive component defined by Fischbein is related to the interpretations that children make of the conceptual and relational structures defined by Resnick, and it is right at this point where we locate the interaction between the intuitive, the formal and the procedural components in the processes of understanding the subtraction algorithm.

[8,11], considers an error to be an invention resulting from an investigation process carried out during the resolution of the subtraction, although we would be dealing with a heuristic strategy, influenced by conceptual knowledge and the child's primary intuitive interpretations of the algorithm.

The intuitive interpretations of algorithmic practice or performance when starting the subtraction learning process are especially relevant when they are applied to different situations [38] through negative analogue transfer mechanisms [21,26]. In Fischbein's words:

> "Analogies may be the source of misconceptions when correspondences are assumed which in fact are not parts of the structural mapping between the two systems. Often such misconceptions will arise through an incompatibility between a formal property of the system being modelled and an intuitive property of the modelling representation, which is consciously or tacitly guiding the cognitive processes" [21, p. 142].

According to [68], the analogue transfer process would consist of a structural alignment between two mental representations with the aim of finding the maximum consistency between them. From our point of view, this process would facilitate the generation of errors during algorithmic learning, since they can serve to guide intuitive interpretation. This is because intuitive conceptual interpretations during the first stage of instruction play an important role in attempts to adapt previously known algorithmic procedures to solving new problems or novel situations.

So, the instruction intervenes in the generation of errors via processes acquired by memorization, which are highly influenced by teaching that does not encourage understanding of conceptual knowledge [53,33,34,43,3,39]. Thus, interaction processes determine the choice of resources that constitute the understanding of the skill [27].

That is to say, as [21] and [26], we maintain that the sources of analogue transfer used by children are not appropriate. In other words, the conduct displayed by children is characterized by a lack of understanding of the formal component in multi-digit subtraction, and the intuitive interpretation of this formal-procedural component [24].

It generates errors of a semantic nature, which are based on an analogue transfer process, in the first stage of instruction. The child carries out one by one all the elements that form the set of arithmetic skills based on the superficial features of the examples used during instruction. These are transferred to new subtractions whose structures are different from the ones which were initially solved and which were useful as example prototypes during instruction.

However, by looking at the conceptual background in greater depth, in the present chapter the results obtained with regard to the influence of children's intuitive interpretations on the mechanisms underlying the operation are reported. With this aim, we take as referents, on the one hand, the examples used in the instruction [10,11], memorized as routines in the first learning phase, and on the other hand, a series of structural schemata or action schemas [24], that can be found at the root of the execution of arithmetic skills and are useful for establishing relations between the quantities that make up the operation, allowing the child to develop as they solve the problem.

These structural schemata are; *'Taking one part of the whole' and 'Covering a distance'* [4], and "intuitions depend on a structural schema…Intuitions may, sometimes, be related to adequate schemata, but, sometimes, they may be manipulated by non-adequate schemata…." [24, p. 44]. The child's interpretations formed in these non-adequate structural schemata, and the vocabulary that form part of these, constitute the resources that generate analogue transfer. This being so, the reason why instruction promotes these resources is that sometimes it does not develop the understanding of the algorithmic principles and ignores the intuitive interpretations and beliefs of the students.

Finally, the aim of the present chapter is to broaden the theoretical framework and demonstrate how, when children start to learn, they develop intuitive interpretations of the procedure based on a series of concepts or specific vocabulary organized within the conceptual field of subtraction.

In summary, a basic assumption, which will be described in the present paper, is that the child's intuitive interpretations formed in structural schemata, the vocabulary that forms part of these, and the semantic interpretation of zero constitute the base for sources that generate analogue transfer and they affect the origin of the subtraction error.

3. MATERIALS AND METHODS

3.1 Introduction

In order to confirm the aforementioned premises, we designed a 'pilot study' as part of a wider research framework. The main aim of this pilot study was to analyze the semantic nature of errors in subtractions with borrowings. Before describing this pilot study, we set out some aims and significant results, which are useful as referents for the study, and that form part of the wider research subject.

The general aims of the research are linked to the following; (i) To confirm the level of acquisition of the set of basic principles defined by [5], (ii) To study the generation of systematic errors in our educational context and understand the typology of these errors.

Some of the most significant results of this research are those obtained in relation to knowledge of Base-10. A sample of 357 primary school students between the ages of 7 and 12 were assessed with

a multiple choice test made up of 10 items through which we aimed to authenticate if the children had acquired the basic concepts necessary to comprehend the subtraction process.

We obtained a low percentage of right answers: 44.5% of the sample (N=357). Only 4.3% of the test population worked with knowledge related to place-value of the digits within the numbers. Control of the natural series of the digit, on the other hand, only yielded 21.5% of the correct answers [64,65].

Regarding the generation of systematic errors *1, we found higher percentages than in previous studies as [11]. Thus, 55.55% of students in the third grade (aged 8-9) showed systematic errors, 52.05% in the fourth grade (aged 9-10) and 26.66 % in the fifth grade (10-11).

Logically, these results led us to investigate the semantic aspects that configure conceptual knowledge and its development in the classroom in the first phase of algorithmic acquisition. This phase corresponds to the second and third grade of primary education in our country (children aged 7-9). With that in mind we developed the pilot study described below.

3.2 Objectives

i.   To analyze the semantic nature of errors in subtraction with borrowing.
ii. To study the intuitive tendencies related to the subtraction process
iii. To identify the structural schemata on which the intuitive tendencies are based and to analyse how the language used influences these structures.

3.3 Context of the Study

The context in which we carried out our research is located in a western province of Spain. The population used in the sample is made up of four schools. For the pilot study described in this paper, we took as a reference one of the schools, which we have named "centre 2". This school is located in the mountainous area of the province of Salamanca, which is undergoing growing depopulation and has a low birth rate. The school fulfils a particular characteristic due to the small number of children in the school, only 18 in total. These children are taught by the same teacher from the beginning of their schooling, which is when conceptual structures for multi-digit numbers are configured.

From the interviews carried out with the teacher, we concluded that the methodology used in the classroom was primarily textbook based. The subtraction algorithm learning process is carried out through a sequence of lessons which cover the 2nd and 3rd grades of primary education, that is to say, children aged from 7 to 9. A new aspect related to the acquisition of the procedure is introduced into each lesson: two-column subtraction, three-column subtraction and borrowing…, and practice exercises taken from the book or proposed by the teacher are done as well. Generally, the topics are taken from textbooks. That is to say, the teacher follows a traditional approach in which the algorithm is introduced in a directed way.

Moreover, the research findings in the cross-sectional study of the errors made in this school revealed that these errors were mainly semantic in origin. Nonetheless, we wished to study their origins in greater depth as well as their possible relation to the context of instruction these children had received.

3.4 Sample

A sample of 18 primary school students between the ages of 7 and 12 were tested with the VanLehn 20 subtractions test [11, p. 170]. This test is comprised of 20 multicolumn subtractions, seventeen of which are subtractions with borrowings. According to the author, this test has been carefully designed in order to obtain different errors [11, p. 193].

For a pilot study we called for all students from 2nd, 3rd, and 4th, (N=9, aged 7-10) grades of primary school, which made up school sample (2). These children had been instructed in algorithms from the outset by the same teacher, due to the geographic-administrative characteristics previously

mentioned. All the children from the 2nd, 3rd and 4th grade (N=9) were tested with the test consisting of the VanLehn 20 subtractions and gave a spoken explanation of the way in which they resolved each subtraction. The nine children were chosen for three reasons: (i) they were in the academic grades where the first phase of subtraction with borrowings is taught, which is where the greatest number of errors of a semantic nature can be found, and (ii) they had been taught by the same teacher throughout their schooling.

This last reason was to provide us with some type of relation between linguistic knowledge, encouraged via instruction, and the development of the arithmetic skill to be established.

3.5 Instruments

Taking as a reference the contribution of [68] in relation to the [69] diagnostic method, we used a transcription of verbal recording protocol whereby were transcribed the results of the verbal reports of the children from each of the 20 subtractions in the [11] test, which allowed us to describe the cognitive abilities and specific vocabulary entailed in solving the algorithm. The dimensions of the transcription protocol were:

- Part A: Identification Data: Code, age, centre, Start and finish time.
- Part B: description of cognitive conduct in the resolution of subtractions: Verbalization, Correct/error and type, Sequence of actions, Observations.

An example of Part B of the protocol is included below, where it is appreciated the "Smaller – from-larger" error transcription process in one of the students.

Table 1. Example of "Smaller – from-larger" error transcription in the protocol

Subtraction	Verbal reports	Correct/type of error	Sequence of actions	Observations
1564 -887= 1323	Subtraction no. 10: Four minus seven, three. Six minus eight, two. Five minus eight, three. One minus nothing, one.	Error: "Smaller from larger"	Four minus seven Writes result Next column Six minus eight Writes result Next column Five minus eight Writes result Next column One minus nothing Writes result	Structural schema: Less than. Nothing concept = blank space

3.6 Procedure

A qualitative analysis for the study of the data obtained via the verbal reports was employed. This methodology allowed studying the natural language used in the process of solving the subtractions. Technological means to make audio recordings, which were later transcribed in text format using the Sound Scriber computer program, were used.

In order to reduce the large volume of data, we drew up an ordered collection of information, presented in an operative and extensive way which would allow questions arising from the research to be resolved. The data obtained from the verbalizations with the coding function of the Matrix in the computer program Nud*ist 4.0. were transformed and this allowed to determine the semantic conceptualization of zero and whether or not transfer sources, defined by [26] as "Distance and Remove", existed in the texts and which of these were most used by the children in the test.

In this process, the strategy used was to establish categories (Metacategories: "Distance and Remove" and "Semantic Conceptualisation of Zero"). In order to analyze the number of text fragments included in each metacategory, we used enumeration units found, each unit being equivalent to a line of text. Verbalcodes to the different fragments of text which gave information on the metacategory contents with the aim of verifying the categorization process carried out in the text were assigned. These codes were made up of the expressions used by the children when solving the procedure that forms part of the structural schemata on which the arithmetic skill is based.

Below is an example of the categories which have been analyzed in each of the metacategories:

Table 2. Example of categories and codes

	Metacategories		
	Metacategory: Distance	**Metacategory: Remove**	**Metacategory: Conceptualisation of 0**
Codes	Started with/finished with Counted up to I went from…to From…to	Less than Take from I take I had I took I subtracted from	There is nothing in the zero Zero has nothing Zero minus nothing Zero is worth nothing Zero = nothing

4. RESULTS

4.1 Analysis of the First Period of Subtraction Algorithm Acquisition

Before applying the previously defined instruments, using VanLehn's 20 subtraction test (1990) what the frequency and typology of the most common errors were in the first phase of learning using a sample of 357 primary school students between the ages of 7 and 12 were checked. To do this, the 2nd and 3rd grade of Primary Education forming part of this sample (aged 7-9) (N=135) were taken as referents. The results are presented in Table 3, which shows the dominant errors in frequencies and percentages according to the terminology used by [11]. It can be seen that the error categories Smaller- from-larger and Diff, 0-N=N have a very high number of occurrences; although the analysis of higher years at school shows that these disappear.

Table 3. Distribution (in %) of occurrences of 8 errors with the greatest frequency in the 2nd and 3rd grade (aged 7-9). N= 135

Error type	Example*[2]	2nd Grade(N = 63)		3rd Grade (N = 72)	
		Number of occurrences	**%**	**Number of occurrences**	**%**
Smaller-from-larger	81-38=57	119	18.25	20	5.18
Fact errors	7-3=5	44	6.75	35	9.07
Borrow-no-decrement	64-44=28	81	12.42	46	11.92
Diff, 0-N=N	80-27=67	63	9.66	30	7.77
Forget-borrow-over-blank	347-9=348	41	6.29	11	2.85
1-1=1-after-borrow	812-518=314	38	5.83	18	4.66
Borrow-from-zero-is-ten	604-235=479	19	2.91	39	10.10
Diff, 0-N=0	40-21=20	16	2.45	6	1.56
Other errors		231	35.43	181	46.89
Total		652	100	386	100

Table 4 shows the same analysis as that used for Table 3, but this time the analysis was performed on the 2nd and 3rd grade (aged 7-9) students of the sample a (N=9) taken for the pilot study described here.

Table 4. Distribution (in %) of occurrences of 8 errors with the greatest frequency in the 2nd and 3rd grade (aged 7-9) in school (2), where the pilot study was carried out

Error type	Example*[2]	2nd Grade (N = 2)		3rd Grade (N = 4)	
		Number of occurrences	%	Number of occurrences	%
Smaller-from-larger	81-38=57	0	0	30	43.47
Fact errors	7-3=5	1	3.22	0	0
Borrow-no-decrement	64-44=28	4	12.90	0	0
Diff, 0-N=N	80-27=67	0	0	9	13.04
Forget-borrow-over-blank	347-9=348	0	0	0	0
1-1=1-after-borrow	812-518=314	0	0	0	0
Borrow-from-zero-is-ten	604-235=479	1	3.22	2	2.89
Diff, 0-N=0	40-21=20	5	16.12	6	8.69
Other errors		20	64.51	22	31.88
Total		31	100	69	100

The results shown in Tables 3 and 4 highlight the difference in frequency of the appearance of errors (Smaller- from-larger, Diff, 0-N=N and Diff, 0-N=0) between the two school grades (Table 3). Likewise, in Table 4 we show the frequency ofappearance of errors such as Smaller-from-larger, Diff, 0-N=N y Diff, 0-N=0 in School (2) where the study was carried out. At this school we found a tendency for these errors to increase in 3rd grade. The "Other errors" category in Table 4 includes errors such as: Borrow-across-zero (904-7=807), 1-1=0-after-borrow (812-518=314). The causes behind these errors will be discussed in the next section.

The previous results suggest that errors are semantic in nature. This being the case, it is possible that these first errors are not a result of an "impasse" [8,11], but a consequence of the first *intuitive interpretation* formed in a non-adequatestructural schemata of the procedure [21,23,26] and based on an inadequate understanding of the conceptual domain or formal knowledge of the algorithm. The general characteristics of the errors revolve around conducts that systematically have a bearing on situations with a higher level of cognitive difficulty and complexity in the sphere of the conceptual understanding of the procedure. This fact will be projected when executing the skill, giving rise to violations of the rules that govern the process.

Generally speaking, as an effect of age and instruction an adequate acquisition of all the structural schemata of arithmetic skills is progressively acquired, and does away with these false conceptions, causing some of these errors to disappear by the 4th year of primary education. This idea allows us to confirm the existence of conceptual or semantic errors.

4.2 Intuitive Interpretations in the First Phase of Learning the Algorithm

As previously stated in section 3.6, in order to analyze the verbal reports, various expressions [26] that children use in the resolution of the algorithm related to the structural schemata were identified: '*taking one part of the whole' and 'going from one initial situation to another final one'* and the semantic interpretation of 0 as a collection void of elements [53] were added. These structural schemata are very well described by [4]. In order to analyze the arithmetic knowledge of the selected children, we took into account relational schemata: (i) *Comparison,* by which children have at their disposal a series of terms such as more, less, smaller than, *(ii) Increase – reduction,*which allows them to determine changes in quantity and (iii) *Part – Whole,* which allows the whole to be divided into smaller parts. It is possible that the specific vocabulary of these schemata influences the child's initial interpretations of the subtraction procedure.

In order to obtain information on these interpretations, a total of 329 units of text were analyzed, each unit corresponding to a line of text taken from the children's verbalizations during the execution of the 20 subtractions. The verbal reports of the nine children selected from school (2) for 180 subtractions were analyzed. For the data analysis, Frequency Tables and commentary of the textual units in each of the three established meta-categories: *'Distance, Remove and Conceptualisation of the Zero'* were

used. In Table 5, a set out the expressions or categories which we identified most frequently in the text and which [26] defined as *'Distance and Remove'* can be observed. Also, what Resnick [4] defines as the relational knowledge of the subjects is fundamentally limited in our sample to the meta-category*'Moving'*within the semantic categories 'Less than' (53.49%), 'Take' (20.12%) and finally 'from…to' (19.14%). That is to say, if we add the percentages of the meta-category 'Remove' which is adapted to the structural schemata 'taking a part of the whole', it could concluded that it is the most common analogue transfer source in the sample.

If we advance a further step, however, and analyze what conceptual interpretation the children have of zero, we can see with greater clarity that the semantic or conceptual interpretation together with the interpretation of the procedure as "taking one part of the whole" has a significant influence on the production of errors.

4.3 Example of the Intuitive Rule 'Same A- Same B'

From the analysis of the verbalizations and the results offered in the previous table, it could be deduced that the concept*'nothing'*is intimately associated with zero in the sample. According to [70] this fixation on the idea that zero is nothing is a consequence of the emphasis on the cardinal aspect of number. According [71 cited by 53], we believe that such a coincidence in the verbalizations of all the children in the sample must be due to the fact that in the initial learning of zero as an intuitive estimation of a void set of elements the children use the example: '*zero is nothing*' or '*zero has nothing*', which the children memorized without completely understanding it, and applied it, through the analogue transfer mechanism, to all the zeros of the algorithm we evaluated. Thus, the intuitive estimation of zero depends on a structural schema that is adequate only for a set void of elements, but not adequate when zero is a positional holder. This may constitute an explicit example of the intuitive rule 'Same A- Same B' described by [49]. We suggest that the incorrect generalization of the initial intuitive estimation of zero as aset void of elements is analogous to the incorrect generalization of zero as lacking place-value in base-10.

Table 5. Distribution (in %) of occurrences of the meta/category Distance and Removing (N=9)
Subtractions analysed = 180

Meta-category: Distance				Meta-category: Remove			
Categories	Number of occurrences	%	Total units of text	Categories	Number of occurrences	%	Total units of text analysed
Started with/finished with	1	0.30	329	Less than	176	53.49	329
Counted up to	1	0.30	329	Take from	12	3.65	329
I went from…to	1	0.30	329	I take	66	20.12	329
From…to	63	19.14	329	I had I took	15	4.57	329
				I subtracted from	4	1.21	329

This can be seen in the examples of some of the subtractions shown below:

Subtraction n°. 17: (702-108=604, here I borrowed one and from eight to twelve I got four; here I didn't borrow anything; because it was zero and zero and zero, gave me zero; I borrowed one from seven; leaving me with six).

Subtraction n°.14: (102-39=137, two minus nine seven, nothing minus three, one minus nothing one).

Subtraction n°.14: (102-39=137, two minus nine seven, zero minus three, one minus nothing one).

Table 6. Distribution (in %) of appearance of the meta-category: Conceptualisation of 0. Semantic interpretation of zero, (n=9). Subtractions analysed = 180

Meta-category: Conceptualisation of 0			
Categories	Number of occurrences	%	Total units of text analysed
There is nothing in the zero	1	0.30	329
Zero has nothing	1	0.30	329
Zero minus nothing	8	2.40	329
Zero is worth nothing	2	0.61	329
Zero = nothing	199	60.48	329

4.4 Analysis of the Erroneous Concepts Developed Via the Transfer Process

In the above examples we can see that the student's answers possessed attributes that were self-evident, sufficient and global, since the students tended to repeat them in different situations, and coercive; because the alternatives are often excluded as unacceptable, as indicated by [52].

A mechanical use of analogy therefore occurs, through the student's inability to apply concepts from an analogous domain to a designated domain [56,57,58,60,61].

The erroneous concepts developed via the transfer process, embodied in the transfer source *"take one part of the whole",* of this first conceptual intuitive interpretation promotes the use of the concept *"nothing"* with the same semantic meaning in all situations. This situation can be difficult to rectify and in our case culminates in the generation of algorithmic errors. That is to say, during the instruction of these children, the subtraction algorithm had been associated with a non-significant learning of the place-value of the figures and the rule of transforming zero in subtractions with borrowings. These children consider zero to be a void set of elements and lacking place-value in base-10. This characteristic has a negative influence on the execution of the procedure by disarranging or disturbing the rules that govern the algorithmic process and generating errors, which are of a semantic nature.

It may be that the children from our sample learnt the algorithm without understanding its structural principles, limiting themselves to mechanically following the rules set out by the teacher [41]. They interpret multi-digit numbers as single-digit numbers. There is, therefore, a lack of understanding of place–value concepts [2,43].The teaching methodology used would contribute to certain errors being produced throughout the whole stage of Primary Education because the teacher has not identified the intuitive interpretations of the student, or tried to explain their sources [24].

These errors would be registered within the transfer source "*take from*", and would therefore be the result of the child's conceptual background from which the erroneous interpretation of the procedure was formed.

In Table 7 shown below, the conceptual interpretation of the most common transfer source in the development of this type of error can be observed.

If we carefully analyze the conduct involved in the "Smaller-from-larger" error, it can be seen that the child has basically internalized the first part of the procedure as "take from", but has not understood the directionality of the subtraction [33,35,34]. The child thinks that the "whole" is always the largest part; and this is an intuitive interpretation. Hence, they compare the digits unaware that the "whole" is in the subtrahend. So, they compare and subtract the minuend from the subtrahend and disregard the rule about the petition of "loans".

According to [23], a conflict takes place between formal, intuitive and algorithmic components. This action means that all the principles that govern the process are violated, principles such as the place-value of digits, the conservation of the minuend, and so on. The result denotes a lack of conceptual knowledge, which has a bearing on the lack of corrective revision within the procedure [38]. This in

turn is facilitated by this kind of knowledge. Because of this, the child is unable to act in an adequate manner in this discipline and resorts to the application of the heuristic for linear substitution [72,73], or better stated, of an analogy based on intuitive interpretations of inadequate structural schemata.

Table 7. Distribution (in %) of the occurrences of the most common errors in school (2). School grades analysed 2nd, 3rd, 4th, 5th, and 6th. Children aged 7-12. (N=18). Subtractions analysed = 360

Error	%	Interpretation from the Transfer Source: Moving
Smaller-from-larger (e.g. 81-38=57)	26.60	When one takes or moves one part of the whole, the part is always smaller than the whole*3
1-1=0-after-borrow (e.g. 812-518=314)	15.23	If from one unit a unit is taken the result is 0. We believe the child takes the borrowing from the minuend and is therefore left with 0 and 0-N = 0. We are faced with the same situation as in error 0-N = 0. Because as these children conceive it, zero is nothing and therefore nothing can be taken from it. It would basically be the same conduct as in the following one.
Diff, 0-N=0 (e.g. 40-21 = 20)	12.38	It is impossible to take some part of the zero which for these children is made up of a set void of elements. Therefore, they opt for the interpretation of the error Smaller-from-larger. When one part of the whole is taken or moved, the part is always smaller than the whole.
Diff, 0-N=N (e.g. 80-27=67)	10.47	As zero is worth nothing, nothing can be taken or borrowed from it.
Borrow-across-zero (e.g. 904-237=577)	8.57	As zero is worth nothing, one cannot borrow across from it.
Other errors	26.75	

The impoverished quality of conceptual knowledge present in this conduct is fundamentally associated with the acquisition of basic structures that constitute the numeric series and of rules that define the positional and grouping system.

Moreover, these errors can be generated by the incorrect option of extrapolation, produced by an analogue transfer [21,26]. Specifically in the bug "*smaller –from-larger*", the child carries out a linear extrapolation of a standard rule "take one part of the whole", which is transferred from a simple subtraction to a multicolumn subtraction with borrow. That is to say, the child takes the rule learnt during instruction, which was generalized through examples, joint and isolated practice exercises and converted into a high level pattern, and transfers the rule to fit a new situation in which he/she has possibly been trained but not in a comprehensive manner. This characteristic significantly hinders the learning of the procedure or the acquisition of the whole pattern of rules governing the skill of subtraction with borrowing. As such, the student perceives the whole process as an *'isolated chain of conducts'* in the same way as a single column simple subtraction, unable to understand the hierarchically organized structures that prevail in the process of multicolumn subtraction with borrowing. The process of generation and production of this error prevails in this characteristic. We can also see that having deficient knowledge of the conceptual basis of zero, which is associated with a lack of "place-value" or *"positional holder"* [73], leads to application of the incorrect reasoning that "one cannot subtract anything from nothing". We acknowledge the influence of language in the semantic understanding of zero and the intuitive interpretations in the first phase of learning. The children in the test sample use the word "nothing" with various semantic meanings.

5. CONCLUSION

The current chapter focused on the nature of errors in subtraction algorithm. According to [24] and [48], students' intuitive ideas manipulate their formal reasoning and algorithmic procedures. In the study we present, the intuitive tendencies related to the subtraction process shown by students in the lower grades of Primary Education have been thoroughly examined. To explain these intuitions we

have identified the structural schemata on which they are based and analyzed the influence of the language used on such structures.

The research findings show that errors involve conducts that systematically have a bearing on the more complex cognitive phases of the process and are directly related to the comprehension of concepts, essential to the significant learning of arithmetic, basically in the field of principles governing the Base - 10 system [34,73]. We have also demonstrated how intuitions children draw from the experiment interact with the formal knowledge of the algorithm. That is to say, the results obtained in the research confirm some of the contributions of Fischbein's theory and the Intuitive Rules Theory of [48,46,49,50,51]. One of the most relevant questions analyzed is the relation between formal, procedural and intuitive knowledge in the subtraction algorithm.

We can also see the difficulty involved in the conceptual understanding of zero and the influence of the language used in the teaching process on this type comprehension. We believe that the vocabulary or specific linguistic understanding of the structural schemata which organize the skill is decisive in the generation of errors (see the results in Tables 5 and 6). As a result, we analyzed the intuitive estimation of zero, which depends on a structural schema adequate only for a void set of elements, but inadequate when zero is a positional holder. This may constitute an explicit example of the intuitive rule 'Same A- Same B' described by [49]. Thus, we have identified the structural schemata on which intuitions depend. This issue is of undoubted importance in the field of didactic procedures.

We have also verified that when children start to learn they construct intuitive interpretations of the practice or performance of algorithms. Going into more detail along this line, we have shown that these intuitive interpretations play an important role in the generation of errors and that they possess the attributes of being self-evident, sufficient, global and coercive.

We have shown, however, that the vocabulary inscribed in the structural schemata that support the execution of the skill is important in learning transfer or generalization.

As such, we believe that by simplifying the acquisition model into two parts (the acquisition of the process and the syntactic interpretation of the same); VanLehn underestimated to a certain degree the formal and intuitive knowledge on which the procedural skill is based in the first stage of learning. It is this knowledge, as we understand it, which holds the whole conceptual framework that has a determining influence as a channeling element of the rules of the altered process. We are therefore faced with two types of errors: (I) those which at their genesis have as a matrix the conceptual or semantic influence closely related to inadequate and memory-based instruction and which do not take into account the possible interaction between formal and intuitive knowledge; (II) those which are the result of having generalized these erroneous procedures, which are internalized and become procedural ones, erroneously modifying the algorithm's syntax.

We consider that in the situations analyzed, the conceptual background is not adequately registered in the mind of the learner. This fact causes the children, throughout their learning, to have doubts as to how to act when faced with new situations which they haven't practiced previously. This conduct, which we may describe as a brief heuristic investigation process (in this sense we do concur with [11] characterizes itself because, in the attempt to solve subtractions children resort to situations which have given them positive results in the past. An analogue transfer process takes place, which we situate in the 4th grade of primary education, a level at which the conceptual teaching of the algorithm reaches its culmination and which we highlight as a dividing line between errors of a conceptual nature and those of a procedural nature.

In the present chapter, we have shown that the interpretations and the resources used by the children when solving the algorithm should be taken into consideration by the teacher because they have a decisive influence on the conceptual understanding of the algorithm. During instruction, teachers should pay particular attention to the language used in the teaching process, as well as to intuitive notions that children build during the learning process of the algorithm, which, as we have seen, are crucial in the acquisition of the structures that reinforce this competency. So, the previous contributions made could help teachers in the didactic planning of subtraction algorithm teaching, as

they help clarify the nature of algorithmic processes, the method that should be used and the influence of language when teaching subtraction in the classroom.

To sum up, a basic assumption that we consider as influential in the origin of the subtraction error is that the child's intuitive interpretations formed in structural schemata, the vocabulary that forms part of these, and the semantic interpretation of zero uphold the sources that generate analogue transfer. It is important to consider its influence in order to improve the algorithmic teaching processes.

NOTES

1. We consider a mistake to be systematic when it is made in a high number of frequencies and throughout all the years.
2. Examples of errors taken from [11, p. 220-232].
3. Description of interpretation taken from [26]

ACKNOWLEDGEMENTS

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Fuson K. Role of representation and verbalization in the teaching of multi-digit additions and subtractions. European Journal of Psychology of Education. 1986;1:35-36.
2. Fuson K. Research on whole number addition and subtraction, in: Grouws, D.A. Handbook of Research on Mathematics Teaching and Learning, a project of the National Council of Teachers of Mathematics, Maxwell Macmillan International, New York. 1992;243-275.
3. Resnick L. Syntax and semantics in learning to subtract, in: Carpenter, T, Moser, J., Romberg, T. Addition and subtraction: A cognitive perspective. Lawrence Erlbaum Assoc., Hillsdale, NJ. 1982;136-155.
4. Resnick LB. A developmental theory of number understanding, in: Ginsburg, H. P. The development of mathematical thinking. Academic Press, New York. 1983;109-151.
5. Resnick LB, Omanson SF. Learning to understand arithmetic, in: Glaser, R.Advances in instructional psychology. Lawrence Erlbaum Assoc, Hillsdale, NJ. 1987;41-95.
6. Brown JS, VanLehn K. Repair Theory, a Generative Theory of Bugs in Procedural Skills. Cognitive Science. 1980;4:379-426.
7. Brown JS, VanLehn K. Towards a generative theory of "bugs", in: Carpenter, T. P., Moser, J.M., Romberg, T. A. Addition and subtraction, A cognitive perspective, Erlbaum, Hillsdale, NJ. 1982; 117-135.
8. VanLehn K. Bugs are not enough: Empirical studies of bugs, impasses and repairs in procedural skills. Journal of Mathematical Behaviour. 1982;3:3-71.
9. VanLehn K. On the representation of procedures in repair theory, in: Ginsburg, H. The Development of Mathematical Thinking. Academic Press, New York. 1983;201-252.
10. VanLehn K. Arithmetic procedures are induced from examples, in: Hiebert, J. Conceptual and procedural knowledge. The case of mathematics. Hillsdale, Lawrence Erlbaum, N.J. 1986;133-179.
11. Van Lehn, K. Mind bugs: Origins of procedural misconceptions. MIT Press, Cambridge, Mass; 1990.
12. VanLehn K, Brown JS. Planning nets: A representation for formalizing analogies and semantic models of procedural skills, in: Snow, R. E., Federico, P. A., Montague, W. E. Aptitude, learning, and instruction. Lawrence Erlbaum, Hillsdale., NJ. 1980;95-137.

13. Carpenter TP, Moser JM. The development of addition and subtraction problem-solving skills', in Carpenter, T.P., Moser, J.M. and Romberg, J. M. Addition and subtraction: A cognitive perspective, Hillsdale, NJ: Erlbaum. 1982;9-24.

14. Carpenter TP, Moser JM. 'The acquisition of addition and subtraction concepts', in Lesh, R. and Landau, M. (Eds.), Acquisition of Mathematics: Concepts and Processes. New York: Academic Press. 1983;7-44.

15. De Corte E, Verschaffel L. The effect of semantic structure on first graders´ strategies for solving addition and subtraction word problems. Journal for Research in Mathematics Education. 1987;18(5):363-381.

16. Nesher P. The three determinants of difficulty in verbal arithmetic problems. Educational Studies in Mathematics. 1976;7:369-388.

17. Nesher P, Greeno JG, Riley MS. The development of semantic categories for addition and subtraction. Educational Studies in Mathematics. 1982;13(4):373-394.

18. Nesher P, Hershkovitz S. The role of schemes in two-step problem: Analysis and Research findings. Educational Studies in Mathematics. 1994;26:1-23.

19. Nesher P, Katriel T. A semantic analysis of addition and subtraction word problems in arithmetic. Educational Studies in Mathematics. 1977;8:251-269.

20. Gvozdic K, Sander E. When intuitive conceptions overshadow pedagogical content knowledge: Teachers' conceptions of students' arithmetic word problem solving strategies. Educational Studies in Mathematics. 2018;98(2):157-175.

21. Fischbein E. Intuition in science and mathematics, An Educational Approach, D. Reidel, Dordrecht; 1987.

22. Fischbein E. Tacit models and mathematical reasoning. For the learning of Mathematics. 1989;9(2):9-14.

23. Fischbein E. The interaction between the formal and the algorithmic and the intuitive components in a mathematical activity, in: Biehler, R., Scholz, R.W., Straser, R., Winkelmann, B. Didactics of mathematics as a scientific discipline. Kluwer Academic, Dordrecht, The Netherlands. 1994;328-375.

24. Fischbein E. Intuitions and schemata in mathematical reasoning. Educational Studies in Mathematics. 1999;38:11-50.

25. Fischbein E, Deri M, Nello MS, Marino MS. The role of implicit models in solving verbal problems in multiplication and division. Journal for Research in Mathematics Education. 1985;16(1):3-17.

26. Sander E. Solving arithmetic operations: A semantic approach. Proceedings of the 23rd Annual Conference of the Cognitive Science Society. Edinburgh. 2001;915-920.

27. Bromme R, Steinbring H. Interactive development of subject matter in the mathematics classroom. Educational Studies in Mathematics. 1994;2:217-248.

28. Steinbring H. Epistemological investigation of classroom interaction in elementary mathematics teaching. Educational Studies in Mathematics. 1997;32:49-92

29. Steinbring H. What makes a sign a mathematical sign? An epistemological perspective on mathematical interaction. Educational Studies in Mathematics. 2006;60:133-162.

30. Brown JS, Burton RB. Diagnostic models for procedural bugs in basic mathematical skills. Cognitive Science. 1978;2:155-192.

31. VanLehn K. Learning one subprocedure per lesson. Artificial Intelligence. 1987;31:1-40.

32. Young RM, O´Shea T. Errors in children's subtraction. Cognitive Science. 1981;5:153-177.

33. Fuson K. Role of representation and verbalization in the teaching of multi-digit additions and subtractions. European Journal of Psychology of Education. 1986;1:35-36.

34. Fuson K. Research on whole number addition and subtraction. handbook of research on mathematics teaching and learning, a project of the national council of teachers of Mathematics, Maxwell Macmillan International, New York. 1992;243-275.

35. Fuson K, Briars DJ. Using base-ten blocks learning/teaching approach for first and second grace place value and multidigit additions and subtraction. Journal for Research in Mathematics Education. 1990;21:180-206.

36. Hiebert J, Lefevre P. Conceptual and procedural knowledge in mathematics, An introductory analysis, in:Hiebert, J. Conceptual and procedural knowledge: the case of mathematics. Lawrence Erlbaum Associates, Hillsdale, NJ. 1986;1-27.

37. Hiebert J, Wearne D. Instruction, understanding, and skill in multi digit addition and subtraction. Cognition and Instruction.1996;14(3):251-284.
38. Olhlson S, Rees E. The function of conceptual understanding in the learning of arithmetic procedure. Cognition and Instruction. 1991;8:103-179.
39. Resnick LB. A developmental theory of number understanding, in: Ginsburg, H. P. The development of mathematical thinking. Academic Press, New York. 1983;109-151.
40. Resnick LB, Omanson SF. Learning to understand arithmetic, in: Glaser, R. Advances in instructional psychology. Lawrence Erlbaum Assoc, Hillsdale., NJ. 1987;41-95.
41. Steffe L, Cobb P. Construcción of arithmetical meanings and strategies. Springer-Verlag, New York; 1988.
42. Baroody AJ, Ginsburg HP. The relationship between initial meaningful and mechanical knowledge of arithmetic, in: Hiebert, J. Conceptual and procedural knowledge: The case of mathematics. Lawrence Erlbaum Associates, Hillsdale., NJ. 1986;75-107.
43. Cockburn AD, Littler G. Mathematical misconceptions. Sage, London; 2008.
44. Kamii C. Young children reinvent arithmetic: Implications of Piaget's theory. New York, Teachers College Press; 1985.
45. Tirosh D, Tsamir P. What can mathematics education gain from the conceptual change approach? And what can the conceptual change approach gain from its application to mathematics education? Learning and Instruction. 2004;14:535-540.
46. Stavy R, Tirosh D. How students (mis-)understand science and mathematics, Intuitive rules. Teachers College Press, New York; 2000.
47. Tirosh D, Tsamir P, Hershkovitz S. Insights into children´s intuitions of addition, subtraction, multiplication and division, in: Cockburn, A. D., Littler, G. Mathematical misconceptions. Sage, London. 2008;54-71.
48. Stavy R, Tirosh D. Intuitive rules in science and mathematics: The case of 'more of A-more of B.' International Journal of Science Education.1996;18:653-667.
49. Tsamir P. Enhancing prospective teachers' knowledge of learners' intuitive conceptions: The case of same A–same B. Journal of Mathematics Teacher Education. 2005;8(6):469-497.
50. Tirosh D, Stavy R. Intuitive Rules in science and mathematics: The case of everything can be divided by two. International Journal of Science Education.1996;18:669-683.
51. Tirosh D, Stavy R. Intuitive Rules, a way to explain and predict students´ reasoning, Educational Studies in Mathematics. 1999;38:51-66.
52. Stavy R, Babai R, Tsamir P, Tirosh D, Lin F, Mcrobbie C. Are intuitive rules universal? International Journal of Science and Mathematics Education. 2006;4:417-436.
53. Baroody AJ. Elpensamiento matemático de los niños. Aprendizaje-Visor, Madrid; 1988.
54. Gellman RS, Gallistel CR. The child's understanding of number. Harvard University Press, Cambridge, MA; 1978.
55. Huttenlocher J, Jordan NC, Levine SC. A mental model for early arithmetic. Journal of Experimental Psychology, General. 1994;3:284–296.
56. Brown D, Clement J. Overcoming misconceptions via analogical reasoning, Abstract transfer versus explanatory model construction. Instructional Science. 1989;18:237-261.
57. Clement J. Using bridging analogies and anchoring intuitions to deal with students´ preconceptions in physics, Journal of Research in Science Teaching.1993;30:1241-1257.
58. Duit R. On the role of analogies and metaphors in learning science. Science Education. 1991;75:649-672.
59. Gentner D, Loewenstein J, Thompson L. Learning and Transfer, a General Role for Analogical Encoding. Journal of Educational Psychology. 2003;2:393-408.
60. Thagard P. Analogy, explanation, and education. Journal of Research in Science Teaching. 1992;29:537-544.
61. Zook KB, DiVesta FJ. Instructional analogies and conceptual misrepresentations. Journal of Educational Psychology. 1991;83:246-252.
62. Cockburn AD, Parslow-Williams P. Zero, Understanding an apparently paradoxical number, in: Cockburn, A. D., Littler, G. Mathematical misconceptions. Sage, London. 2008;7-23.
63. Fiori C, Zuccheri L. An experimental research on error patterns in written subtraction. Educational Studies in Mathematics. 2005;60:323-331.
64. López R, Sánchez-García AB. Los componentes generadores de errores algorítmicos. Caso particular de la sustracción. Revista de Educación. 2007;344:377-402.

65. López R, Sánchez-García AB. Análisis de los errores sistemáticos en la sustracción. Enseñanza de las Ciencias, Revista de Investigación y Experiencias Didácticas. 2009;27:49-58.
66. Piaget J, Szeminska A. La genèse du nombre chez l´enfant. Delachaux-Niestlé, Neuchâte; 1941.
67. Gentner D. Analogy in scientific discovery: The case of Johannes Kepler, in: Magnani, L., Nersessian, N.Model-Based Reasoning. Springer, Boston, MA. 2002;21-39.
68. Ohlsson S, Langley P. Psychological evaluation of path hypotheses in cognitive diagnosis, in: Mandl, H., Lesgold, A. Learning issues for intelligent tutoring system. Springer-Verlag, New York. 1988;42-62.
69. Newell A, Simon JA. Human problem solving. Vol. 104. No. 9. Englewood Cliffs, NJ: Prentice-Hall; 1972.
70. Haylock D, Cockburn A. Understanding Mathematics in the Lower Primary Years, A Guide for Teachers of Children 3-8, 2nd Edition. Paul Chapman Publishing, London; 2003.
71. Kulm G. Strategies and activities: Learning to add and subtract. Washington, D.C.: The National Institute of Education; 1985.
72. Gentner D. Structure-mapping: a theoretical framework for analogy. Cognitive Science. 1983;7: 155-170.
73. Resnick LB. Education and learning to think. National Academies Press; 1987.

Biography of author(s)

Ana B. Sánchez-García, Ph.D.
University of Salamanca, Department of Didactic, Organization and Methods of Investigation Pso Canalejas, 169, Faculty of Education, Salamanca 37008, Spain.

Research and Academic Experience: Doctor in Education**, s**he has completed research stagesat universities in EEUU, one of them as a Fulbright researcher in autism. She is currentlya Professor in the Department of Didactic, Organization and Research Methods at University of Salamanca, where she teaches classes on Inclusive School, Needs and Educational Intervention of children with disabilities. Author of more than 100 publications, she has given conferences and courses both in EEUU, Europe and South America, in addition to various Spanish Universities and Institutions. Member of the University institute of Integration in the Community (INICO), she is a researcher in the Curricular Investigation Research Group and collaborates in other recognized research groups such as "Diversitas" or "Research on Disability".

Research Area: Teaching, Inclusive Education, Mathematical Learning Difficulties and Autism.

Number of Published papers: 31.

Special Award (If any): The best doctoral dissertation in Social Sciences award granted by the University of Salamanca.

Any other remarkable point(s): She is currently an advisor to the Vice-Rector for Postgraduate and Special Plans in Health Sciences and Director of the Master's Degree in Teacher Training and Improvement.

_____

A Cognitive Based L2 Learning through Neurolinguistic Factors

S. Sajna Beevi[1*#], R. Abilasha[2] and M. Ilankumaran[3]

ABSTRACT

Language is an important aspect of human for communication. It is the most effective way of communication and considered to be a remarkable achievement in human's life. English language plays an important role in the present society and as a window of the world. The demand of English Language has developed in all the countries and it has emerged as a good communication language. Speaking skill is an essential part of English language learning. When a new language is learned, learners usually face lack of confidence, anxiety, nervousness and apprehension. Psychological factors make a huge difference in learning to speak a language. This article 'Psychological Factors Affecting English Language Learning: A Neurolinguistic Perspectives' aims at emphasizing the importance of factors which affect the language learning. Psychological factor is one of the greatest obstacles and it dominates the learner's perception. Neurolinguistic factor deals with a study of human mind and relation between the languages. Neurolinguistic Programming is an approach to communication and personal development. It is also regarded as an excellent method for second language learning which supports learners to achieve perfection in their performance. It brings out the control of complicated feelings and thoughts by using mind techniques, like visualization. It helps to improve the mental status about the hesitation of learners. Psychological factors are caused by the feeling of making mistakes, lack of self-esteem and anxiety about a situation. The purpose of the study is to find out some possible solutions dealing with the causes and effects by Neurolinguistic Programming and help learners to overcome lack of confidence and anxiety over learning language.

Keywords: Language learning; anxiety; psychological factors; English language; Neurolinguistic.

1. INTRODUCTION

Communication comes out with exchanging thoughts, feelings and emotions through interaction. Language stands as a platform for communication. It assists to exchange and explore ideas to one another. It is one of the most remarkable as well as constituent characteristics of man. It provides a space for revealing ideas about great varieties of concepts. There are so many varieties of language throughout the world.

Every language explores its tradition and culture and helps to unlock the knowledge of human through fine interaction. It is a universal thing and one of the greatest necessities of human life. It shapes social interactions and makes every human unique. Culture and society are closely related by the language and it links individuals and the outside world and thereby helping to sculpt out an individual from infancy. With the help of language, children come to know more about the world as it stands as a fundamental element of civilization. Man could not have developed but for language. Language alone differentiates humans from the animals.

[1]Department of English, Noorul Islam College of Arts and Science, Thuckalay, Kumaracoil-629180, Tamil Nadu, India.
[2]Department of English, Holy Cross College (Autonomous), Nagercoil-629002, Tamil Nadu, India.
[3]Department of English, Noorul Islam Centre for Higher Education, Thuckalay, Kumaracoil-629180, Tamil Nadu, India.
*Corresponding author: E-mail: sajnahameed278@gmail.com;

2. ENGLISH LANGUAGE AND LANGUAGE TEACHING

English is one of the most influential languages in the world. In different countries, it is spoken as the first language and in India it is considered the second language. It has different forms like British English, Canadian English, American English etc. These are all dialects which mean it differs in the way of speaking. In India, English is used not only for the purpose of communicating with the outside world but also used for inter-state and Intra-state communication. It stands as conversationists among Indians who speak different languages. English is vital in the field of education, legal and finance.

English language is spread all over the world and it is the base for education. Owing to its popularity, English is used as a second language in India having a teaching pattern. Due to its development and progress, different teaching methods have been included to teach English effectively. English language teaching has many changes from time to time. It is taught for the development of language skills. In olden days, it was taught through black boards, audio tapes, etc. After the growth of technology, several applications are implemented to influence both the learners and the teachers.

3. CHALLENGES IN LEARNING ENGLISH AS A SECOND LANGUAGE

There are many reasons challenging English language teaching in India. The reasons are systemic faults ranging from vague syllabus, outdated methodologies to wrong assessment pattern [1]. There are also practical challenges like large classroom size, lack of expert language educators, etc. Among all these reasons, the learners face psychological challenges for learning a new language. These, in particular, cause variances amongst individual language learners. The factors that impact individual learners are Motivation, Attitude, Aptitude, Age and Personality. Anxiety and poor motivation prevent the learners from learning and acquiring the language skills [2]. Neurolinguistic Programming can help to resolve these challenges [3].

4. PSYCHOLOGICAL FACTORS AFFECTING LANGUAGE LEARNING

"Psychological aspects are the factors that formulate, inspire, and promote learning in different ways" [4]. Language skill is deeply controlled by mental process [3]. Psychological factors express both positive and negative effects. Some psychological factors are lack of confidence, self-esteem, anxiety, language stress, fear of making mistakes, etc. Anxiety that affects the learner's oral performance as well as their ability in expressing what they learn [5]. When the learners are motivated to speak, their self-esteem is high and they are not anxious and their oral performance seems to be better. On the other hand, learners who are anxious, with lack of self-esteem and motivation face many difficulties in learning achievements. These factors perform a crucial part in learning and speaking the second language. It may be the greatest obstacle that affects the oral performance of learners. Learners have a feel of fear to open up their mouth because of all these factors and mostly they are silent. The affective domain is a crucial element in learning because it may be one of the causes of success or failure since feelings shape learners attitudes and change them [6].

5. CAUSES OF PSYCHOLOGICAL FACTORS

Language learning is a part of intellective, emotional and physical development of learners and it takes place in a complicated ambience of the society. Mostly, learners are forced to adapt English language without having any proper backup. A learner cannot easily adapt fluency and accuracy which may be a reason to cause the psychological barricades among the language. Psychological factors play a prominent role in learner's progress in acquiring willingness and commitment to listening instruction [7]. It is a common issue faced by most of the English language learners and they remain silent inside the classroom due to fear of committing mistakes. Such learners do not ascertain their mistakes as a natural part of learning but as a threat to their reputation and dignity.

Causes for apprehension:

- Looking foolish in front of others
- Get negative evaluation from the teachers.

- Afraid to express their ideas
- Negative comments from their peer.
- Classroom atmosphere they experienced before.

Causes for shyness:

- Learners who lack feel confidence about them may express shyness.
- Apprehension also makes the learners shy.
- Afraid of being laughed by peers.
- Fail to adapt the learning situation.

Causes for anxiety:

- Low ability to communicate in English cause communication anxiety.
- The reason could be limited knowledge in language.
- Stressful situation.
- Anxiety comes out with the fear of being tested.
- Students prefer to be silent, due to fear.

Causes for lack of motivation:

- Lack of knowledge in instructional program.
- Uninspiring teaching and boring classrooms.
- Lack of pleasant atmosphere for healthy learning.
- Lack of bonding between teachers and learners.
- Monotonous teaching reduces the motivational level of a learner.

6. NEUROLINGUISTIC AND ITS PERSPECTIVES

Neurolinguistic Programming (NLP) technique is the best way for second language teaching. Psychological factors influence learning in a positive or negative way. It plays a prominent role in learning a language. Neurolinguistic study comes under these psychological aspects. It is the study of bond between the brain, language and behavior. It is proximately a new study of collaboration in relation to the functioning of mental process and language. The NLP helps to improve interpersonal communication and makes learning easier. It is mostly concerned with the thought process and effect of one's thinking on one's behavior and behavior of others [8].

The NLP teaches how to communicate internally and externally. The central theme of the NLP is sculpting excellent behavior. The Neurolinguistic Programming was originated in 1970, by Richard Bandler and John Grinder. Both of them came with the NLP approach as a mode of communication and personal development. It is used in the fields of education, marketing, management, counseling, medical, legal, sales and training. It is a system of psychology dealing with the self - development of human being and helps learners to overcome their fear, lack of confidence and anxiety over a new language [9].

7. BACKGROUND OF NLP AND ITS FOUNDING THEORIES

Neurolinguistic Programming (NLP) emerged as an individual development approach in 1970s and was initiated by Bandler and Grinder. Richard Bandler, was a scientist and Grinder, a linguist. They intended to analyze the mental processes and noticed that when "an individual remind about a frightening or crucial moment in a genuine way, the moment being difficult and unfavorable for the individual become smoothen by the positive attitude of a person itself" [10]. Therefore, Bandler brings out that the way of thinking about situation or something else makes all the dissimilarities. This finding was named by Neurolinguistic Programming which acts as a base for individual's excellency and transformation of behaviors and beliefs. Later, they insisted to describe the connection between neurology and linguistics and how that bonding can be used to program an individual's mind, body and behavior.

According to the founders, Neurolinguistic Programming emerged on its belief and universal potential [11]. The NLP insists to help people by guiding them to program their brain process. It offers variety of communication patterns to improve and change individuals by using self-hypnosis. Neurolinguistic Programming is purposefully designed to recognize how verbal and non-verbal communication affects the human brain. It brings out that the NLP not only claims a better opportunity to communicate with others, but also teaches how to take control over the functions of human brain. It has been popular as a self-program in a psychological way [12].

8. CHARACTERISTICS OF NEUROLINGUISTIC PROGRAMMING (NLP)

Neurolinguistic Programming (NLP) is a progress oriented approach. It indicates learning standards as a key for personal change and development. It is believed that people are naturally creative and are capable of a change. According to the capability of the people, it adapts a constructivist position and represents the world. The NLP has a strong attention on understanding the structure rather than the experience. It is deeply interested in construction of people's mind and also it implies that people designx their experiences through cognitive process and self- determination.

The NLP depends upon the human character and behavior in connection with the interaction of the surroundings and individuals. Interactions show various characters of humans in biological and reflexive ways. These types of reactions are unavoidable and it is essential during interrogation. It helps to extract the real personality through genuine interaction.

9. STRATEGIES AND TECHNIQUES IN NLP

Neurolinguistic Programming offers skills, strategies and techniques to overcome the mental difficulties in life and it helps to develop the personal learning. It studies the connection between language and human brain [13]. It finds a way from Psycholinguistics. This new form occurs due to the development of linguistics. Language area is mainly related to brain. Several techniques and approaches are implemented to the effectiveness of the NLP.

Neurolinguistic programming basically assists one to understand oneself. It also helps others to understand in a better way and promotes communication with others. The NLP is in essence a model more than a theory. It inspires people to realize the functioning of mind and prepares the mind according to particular target that needs to be reached. It includes many conceptual thoughts and techniques to attain this. They are Modelling, Mirroring, Meta model and Milton model are certain concepts, in the NLP. In addition to these concepts, there is a litancy of techniques that encourage the NLP practices.

The Neurolinguistic Programming techniques are strongly active in modifying the experience of the world. It helps to alter the entire life [14]. Important forms are anchoring and reframing. Anchoring technique takes place by recalling the memory. Swish technique helps to wipe out the negative stimulus and reframing technique tells about the fluctuating element of communication as an individual perception [15]. There are some particular NLP techniques with the impact of reality. With the help of those techniques learners develop their inner learning processes.

10. VISUALIZATION

Visualization is one of the eminent Neurolinguistic Programs that helps to find drastic changes in behavior. It is a powerful technique to regulate anxiety and manage panic attacks by calming the mind and body. Generally, visualization means the transformation that happens in conscious mind and intentionally activates the representational system. It brings out the best by using memories, fantasy or a combination of both.

11. BUILDING RAPPORT

Rapport is one of the most important and accessible strategies in the NLP. It is necessary to build rapport for powerful communication. The NLP handles techniques such as mirroring facial, postures

and body gestures. Teachers who utilize these techniques achieve a noticeable improvement in communication through this technique. It is important for the teachers to have good rapport with the student as that would develop a positive learning environment. This comfort the learning background of the students and effective communication takes place. A good rapport with the teacher moderates the anxiety of the learners and it helps in reducing a leading challenge in second language learning. Rapport can be concerned as the glue that encloses people together. The NLP analyzes rapport to be a skill that helps to enhance and develop by adapting a good communication and alter the use of language.

12. MODELLING

The Neurolinguistic concept was first promoted by Bandler and Grinder by learning the language and the behavioral form of successful people. They promote the NLP practitioners to follow the example of language, strategies and behavioral pattern of victorious people to achieve success."They strongly believe that by keeping a person as a role-model, it would eventually help the practitioner to become brilliant. Modelling is an effective tool for the second language learners" [16]. It can act as a mirror or the model of a confident English speaker and learners become confident in themselves for learning or speaking. It is a pragmatic approach to attain developments in language skills. It helps to boost up the confidence and motivation level of learners.

13. META-MODEL

The meta-model is a collection of indicating questions or language form work out to challenge the limits to a speaker's pattern of the world that is generalization, deletion and distortion. The NLP meta-model is based on the verbal patterning and it is easily proposed to detect the beliefs and thinking restrictions of the indicators [17]. The questions designed in the meta-model bring out clarity to the language pattern and hidden restrictive elements in learning. It also helps to elaborate the details of problems and its necessity.

14. ANCHORING

Anchoring is an important NLP technique which helps to train the mind to shape out a situation into a positive frame of mind or emotion before assigning a conversation. It is the process related to an internal reaction with some external trigger and it acts immediately over the situations. Human behavior and emotions are easily provoked by various situations. Hence, the technique of anchoring supports to recall the emotions in a positive or relaxing manner. These 'anchors' help the practitioners to change the mind to the mandatory state. Anchors are generally gestures, body movements or words. A language learner, who is hesitant, nervous or upset, can easily get into a relaxed or confident state of mind by using these anchors. It is a powerful and useful technique for second language learners.

15. REFRAMING

Reframing is one of the most effective NLP techniques. It means changing the meaning of a communication by changing the minds or adds different context or frame. The changing idea of the meaning depends on the user's point of view. The replacement in meaning paves way to the change in the behavioral responses of the persons. It helps the learners by reframing their learning disabilities.

16. SWISH PATTERN

Swish pattern is a Neurolinguistic Programming technique which is positioned with visualization and that helps the practitioners to relate positive emotions with a negative situation. By using this pattern, the NLP practitioners can change emotions like anxiety, nervousness and fear into positive ones. It is practically performed to command the brain to change negative emotions in a positive way and it helps to direct the brain and behavior in the same path. Mostly, English language learners are

nervous to speak because they are anxious about the language. This technique helps the learners from replacing their anxiety, fear with positive emotions like confidence and self-belief.

17. FUTURE PACING

Future pacing is a technique based on visualization. It is monitoring or imaging something to happen in the future. It helps to experience the future situation in a positive way through visualization. The visualized experience is aided as a model for the future situation. If it brings out the demanded effect, the theory will work. It also helps the practitioners to recognize any other areas that affects him and causes a negative situation. The mind accepts the visualization as the reality and it brings changes in situations.

18. STATE MANAGEMENT

State Management is an important Neurolinguistic Programming (NLP) technique. State management means control the state or situation. This technique actively controls over the emotional and mental status of an individual. It stands as a fusion of the mind and physiology of the body which forms a complete Neurolinguistic state of consciousness. Through the state management, training achieves full potential to run the brain and enhance it for learning. They simply find the state of mind and access it with effective NLP approach.

19. REFLECTION TECHNIQUE

The reflection method aims to copy the behavior of someone else's personality, in a sensible and pleasant way, through sign and body movements, like attitude, facial appearance, hand signals etc. The teachers always try to make eye contact with the students by lightly shaking their heads in order to express that they are conscious about the student's clarification. The main thing inside the classroom is that the teachers have to consider the students point of view through which the student's get positive energy to be attentive in class and try to make over them to attain a new personality.

An effective exercise helps to prompt the student to act as a mirror on their own learning process [18]. For example, if a student is not interested in learning something, the teacher can suggest him and talk about the complications in learning and make the learners learn in an enjoyable way. Through this reflection technique, it is probable to take any type of learning that seems unpleasant to the student can be changed into a motivating and positive atmosphere.

20. DATA ANALYSIS

This paper is a simple and straight forward numerical analysis of the data collected. It reveals interesting and surprising results which are informative and suggestive of the attitudinal aspects of the students in learning the language. After the survey among the college students it is proved that psychological factors definitely affect language learners in various aspects. To get the learners response, a survey is conducted using a questionnaire as a tool to find the response of college students who are asked to complete the personal data. Totally sixty students of a college have been taken for this analysis from two different departments.

The questionnaire is based on two criteria namely Anxiety and Motivation. For each criterion four questions are prescribed. The question was given to the student and the data is collected. The students are required to indicate the degree to which the statement is applied to them by ticking the boxes provided in the questionnaire as to whether they strongly agree, agree, neutral, disagree, strongly disagree.

Anxiety influences the fluency and accuracy of a learner in second language learning. It is widespread among the second language learners; learners experience negative feelings of apprehension during exams, presentations, and public speeches make them more anxious and lose their concentration when performing tasks. The Table 1 analyzes in depth the response of thirty first year students of English department towards anxiety. The first variable is intended to checkout the student's attitude

towards anxiety in second language learning. Out of thirty students, fifteen students strongly agree that anxiety affects the fluency and the accuracy of the learners and fourteen take the option agree, one student opts for neutral and none of the student is ready to opt either disagree and strongly disagree. The second variable is intended to checkout if the students get anxious when they are asked to speak in English. Nineteen have opted for strongly agreed, nine opt for agree, two take the option neutral and no one is ready to opt either disagree or strongly disagree. The third variable is intended to checkout the views of students about fear of making mistakes which lead them to be anxious before presentation. The highest numbers of fifteen students have opted for strongly agreement, whereas fourteen students stand along with the option agree, one student opts to be neutral and none of the students is ready to choose the option disagree or strongly disagree. The fourth variable is intended to checkout students' view about being less anxious in the classroom when they are not only the persons answering a question. Sixteen students strongly agree, ten students agree, three opt to be neutral and one student opt for disagreement.

Table 1. Response regarding anxiety in Language learning among the first year students of English department

Sl. No	Anxiety	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
1	Affects fluency and Accuracy	15	14	1	-	-	30
2	Anxious in speaking English	19	9	2	-	-	30
3	Fear of making mistakes	15	14	1	-	-	30
4	Less anxious in group	16	10	3	1	-	30
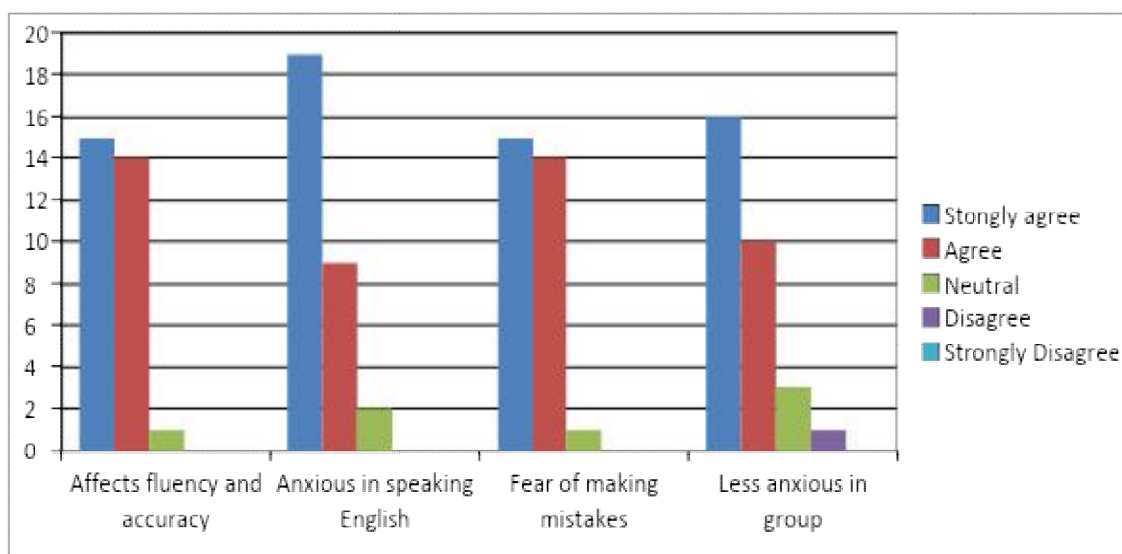
Fig. 1. Response regarding anxiety in language learning among the first year students of English department

Table 2. Response regarding motivation in language learning among the first year students of English department

Sl. No	Motivation	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
1	Important factor for learning	22	6	1	-	1	30
2	Oral performance	16	13	-	1	-	30
3	Motivated to speak	12	15	2	1	-	30
4	Negative attitude changed	11	12	7	-	-	30
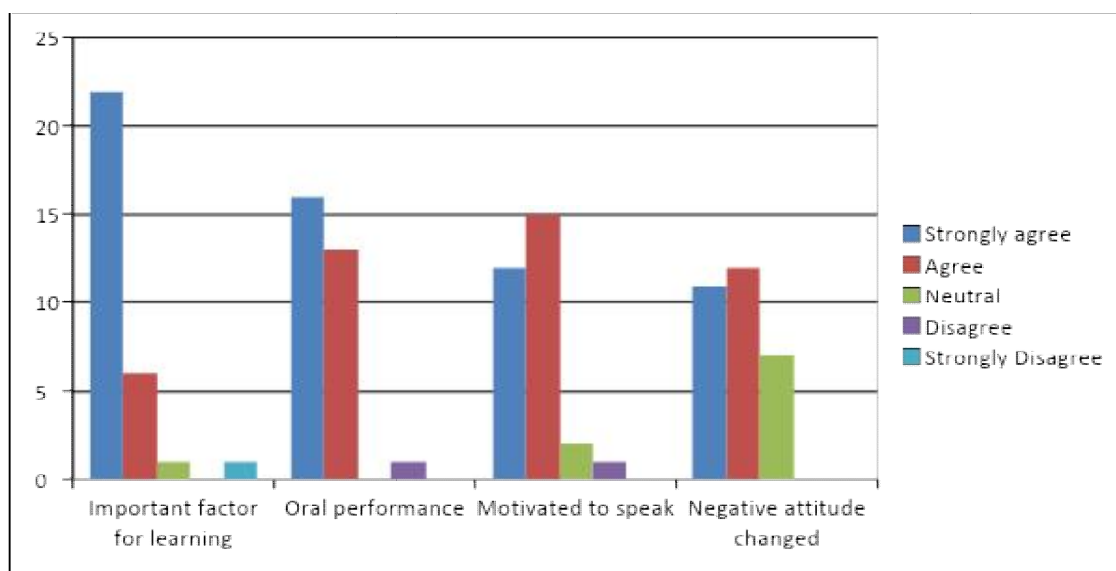
Fig. 2. Response regarding motivation in language learning among the first year students of English department

Motivation plays a prominent role in second language learning. Learners, who are highly motivated, engage actively and pay more concentration on learning process and, moreover it seems to be easy for them to learn. The Table 2 analyzes in depth the response of thirty, first year students of English department towards motivation. The first variable is intended to checkout student's attitude towards motivation in second language learning. Out of thirty students, twenty two students strongly agree that motivation plays an important factor in language learning and six take the option agree, one student opts to be neutral, no one disagrees and one student strongly disagrees. The second variable is intended to checkout if students' motivation helps them to increase their oral performance when they are asked to speak in English. Sixteen students strongly agree, thirteen agree, no one opts to be neutral and one takes option disagree and no one strongly disagrees. The third question is intended to checkout student's view about motivation if it leads a learner to be less anxious before presentation and they speak better. The highest number of twelve students strongly agrees, whereas fifteen students agree, two students opt for neutral and one student disagrees and nobody strongly disagrees. The fourth variable is intended to checkout views of students' about that learner's attitude towards learning which can be changed through motivation. Eleven students strongly agree, twelve students agree, seven opt to be neutral and no student opts to disagree or strongly disagree.

Positive mental status helps to improve learners in language learning. When the teachers know the learners psychological problems, they could contribute a suitable and delightful atmosphere by lowering anxiety, helping to develop self-esteem, and motivating them to learn. If the learners are psychologically motivated, they automatically will attain the self -confidence and find succeed in language learning.

21. POSSIBLE SOLUTIONS TO OVERCOME THE PSYCHOLOGICAL OVERTONES BY USING NLP

Neurolinguistic Programming (NLP) is acknowledged as a psychological medium for drastic changes in behavior that helps to improve learners learning skill, especially their communication skills. Psychological factors negatively affect the language learner's speaking performance in English. The NLP assumes a positive intention behind every attitude and helps to revive memory, uphold personal strength, maintain effective learning strategies, reframe educational beliefs and promote self-esteem [19]. It suggests solutions to overcome the classroom obstacles and contributes resources to focus attention on language learning. The NLP not only contributes to techniques, strategies and solutions

to the psychological challenges in teaching and learning, motivating and engaging students but also enables teachers to develop the flexibility of response to create their own changes [2].

 Reframing is the technique that the teacher can handle by relating to personal experiences and makes it tangible for the learners.
 Reframing can also be used to constitute artificial circumstances to be used in the classroom contributing to the students with an enormous collection of learning opportunities without the need of material support.
 Anchoring techniques that make contact between what one sees, hears and feels apart from emotional states.
 For teaching English, auditory anchors are the most suitable during normal classroom interaction and it is advisable to keep teaching since students have a wider range of sensory stimuli to link the language.
 Teachers need to create a good rapport with students in a variety of situations such as the beginning of a course, a lesson, of specific activities. Students, who are in rapport with a teacher, are more motivated and are able to learn more easily [20].
 It is also important for teachers to re-establish rapport or repair it during times when response of the students is lacking, when the class is tired or getting bored.
 The NLP can support learners to catch up the optimum levels of anxiety-free states with the help of some relaxation techniques. At the time of challenging situation, learners are asked to take a deep breath to reduce the impact of their negative emotions on the human body.

22. CONCLUSION

Learners are connected to the ability of teachers as well as parents and their influence carry out the learner's academic success. Teachers must have the ability to understand the hindered factor of a particular student and motivate them to acquire their willingness in learning. Teachers should also be given training for how to control the student's emotions in a positive way and not to discourage them. Then only, they can provide friendly and favorable atmosphere in the classroom. They must know about the strategies and activities to promote the speaking ability of a learner. Instead of teaching how to make a conversation in English, the teacher may interact with the students on day-to-day things and happenings in and around them. Then only, they can learn appropriate usage of language. When the students are talking, the teacher must listen and correct them in pronunciation and sentence formation. Teachers should teach the learner and they can assess the learners and make them engaged in active participation to build their confidence level in learning English language.

Positive parental engagement can bring momentous impact in student's achievement in language learning. Mostly, parents need their children to be fluent or have a vast knowledge in English language. Learners must have positive attitudes in approaching the second language learning, to its speakers and teachers. It brings out the flexibility in language learning because learners are confident in their abilities and they can progress in learning.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Dr Abilasha R, Dr. Ilankumaran M. English Language Teaching: Challenges and Strategies from the Indian Perspective. International Journal of Engineering and Technology (IJET) (Scopus Indexed). 2018;7(3.6):202-205.
ISSN: 2227-524X
2. Alizadeh Mitra. The Impact of Motivation on English Language Learning. International Journal of Research in English Education. 2016;1(1):111.
3. Alamdar Fatemah Sadat, Karbalaei. The Relationship Between Neurolinguistic Programmig and Anxiety and Self-Esteem among Iranian Intermediate EFL Learners. 2015;2(8):108-130.

4. Delbio A, Dr. Ilankumaran M. Theories, techniques, methods and approaches of second language acquisition: A Psychological Perspective. International Journal of Engineering and Technology (IJET) (Scopus Indexed). 2018;7(3.6):192-197.
   ISSN: 2227-524X
5. Hardara, Youssouf. Psychological factors affecting english speaking performance for the english learners in Indonesia. Journal of Educational Research. 2016;1501-1505.
6. Hashemi, Masoud. Language stress and anxiety among the english language learners. Procedia Social and Behavioral Science. 2012;3(66):1811-1816.
7. Gardner RC. Social psychology and second language learning: The role of attitudes and motivation. OUP; 1985.
8. Delbio Dr. M. Ilankumaran. Second language acquisition through neurolinguistic programing: A Psychoanalytic approach. International Journal of Engineering and Technology (IJET) (Scopus Indexed). 2018;7(4.36):624-629.
   ISSN: 2227-524X
9. Cheal, Melody. An investigation into how neurolinguistic programming can be a source of positive psychology interventions to increase self-esteem nd subjective well-being in psychologically healthy populations. Current Research in NLP. 2010;2.
10. Ghani, Mamuma. Effective communication and neurolinguistic programming. Pakistan Journal of Commerce and Social Science. 2012;6(1):216-222.
11. Garnham, Alan. Psycholinguistics. CUP; 1985.
12. Hussein, Amnah Al-Yaman. Review of factors affecting second language learning. International Journal of Education Learning and Development. 2016;4(2):26-34.
13. Clement, Richard, Zoltan Dornyei. Motivation, self- confidence and group discussion in the language classroom. Language Learning. 1994;44(3):417-448.
14. Metcalf, Denise, Damaris Njoroge. Neurolinguistic Programming. CUP; 2008.
15. Hurd S. Affect and strategy use in independent language learning. Language Learning in Independent Strategies, ed. 2008;3:218-236.
16. Cook, Vivian, Second Language Learning and Language Teaching. OUP; 1974.
17. Dr. Abilasha R, Dr. Ilankumaran M. Psychological Factors permeating global literature – An overview' International Journal of English Language and Literature in Humanities (IJELLH) with IF 5.7. 2018;6(12):8-16.
   ISSN-2321-7065 (Online)
18. Dr. Abilasha R, Dr. Ilankumaran M. Business english: The quintessence of the corporate world. International Journal of Engineering and Technology (IJET) (Scopus Indexed). 2018;7(4.36): 608-612.
   ISSN: 2227-524X
19. Keramida, Areti. Helping students to overcome foreign language anxiety in the english classroom. International Educational Studies. 2009;2(4):39-44.
20. Dorney. Motivation in Second and Foreign Language Learning, CUP; 1998.

Biography of author(s)

Ms. S. Sajna Beevi
Department of English, Noorul Islam College of Arts and Science, Thuckalay, Kumaracoil-629180, Tamil Nadu, India.

She completed her M.A, degree in Literature and M. Phil in English Language Teaching (ELT). She is currently working as a Assistant Professor in English at Noorul Islam College of Arts and Science (NICAS), Kumaracoil, Tamilnadu. She has published a research paper in Scopus Indexed Journal, two papers in Conference Proceedings She has also presented papers in National Conferences. She has participated in four national and international conferences conducted in various colleges.

Dr. R. Abilasha
Department of English, Holy Cross College (Autonomous), Nagercoil-629002, Tamil Nadu, India.

She has two decades of teaching experience in imparting English Grammar and language. She is currently teaching courses on General English Literature and Language to the UG and the PG students in Holy Cross College of Arts and Science (Autonomous), Nagercoil. Having completed Ph. D in ELT, she guides students and scholars in the areas of English Language Teaching and Comparative Literature. She is the Secretary of English Language Teachers' Association of India (ELTAI), Kanyakumari Chapter. She is the co-author of five books on English for Engineering Students I and Technical English for Engineering Students II, the prescribed textbooks with ISBN for first year BE/B.Tech students of Noorul Islam Centre for Higher Education. She is a committed language teacher who has ardent fervor in uplifting the communicative capacity of the students. She is the Women's Cell Coordinator in Holy Cross College and has taken up a Project funded by National Women's Commission, New Delhi. She has published 65 articles on ELT in Indexed, Refereed journals at National and International levels of which 7in Scopus Indexed Journals.

Dr. M. Ilankumaran
Department of English, Noorul Islam Centre for Higher Education, Thuckalay, Kumaracoil-629180, Tamil Nadu, India.

He has English Language Teaching (ELT) as specialization in his M.Phil and Ph.D. with an experience of three decades of teaching at various levels. At present he is working as a Professor and Research Programme Coordinator in English at Noorul Islam Centre for Higher Education (NICHE), Kumaracoil, Tamilnadu. With all earnestness, he conducts workshops for the English fraternity on Effective Communication Skills and organizes conferences regularly on English Language and Literature. He is a visiting faculty teaching 'Applied Linguistics' and 'English for Communication'. Enjoying 12 years of research experience, he guides scholars at M. Phil and Ph.D. level and produced many. He evaluates doctoral theses and conducts public viva voce examinations in different universities. He is the President of English Language Teachers' Association of India (ELTAI), Kanyakumari Chapter and the South Region Coordinator ELTAI. He is also a member of International Association of Teachers of English as a Foreign Language (IATEFL), UK. He is the main author of five books on English for Engineering Students I and Technical English for Engineering Students II, the prescribed textbooks with ISBN for first year BE/B.Tech students of NICHE. He is a member of Editorial Board of a Refereed International Journal. Besides being an able administrator, he, to his credit, has published more than 130 articles on ELT in Indexed, Refereed journals at National and International levels of which 25 in Scopus Indexed Journals.

_____

Contributions of Ivan Illich to Education in a Digital Society: Advanced Study

Sandro Serpa[1*], Ana Isabel Santos[2] and Carlos Miguel Ferreira[3]

ABSTRACT

Ivan Illich was a heavy critic of traditional schooling. His proposals were disregarded, perhaps too quickly, for various reasons. This paper, based on review research, aims to add to a current (re)reading of Illich, seeking to answer the following question: what is the relevance of Illich's proposal for a successful education in an increasingly digitalised society? The results of this research allow concluding, on the one hand, that Illich's proposal to replace strict schooling with (self)training networks in a society that is increasingly digitalised and linked by the internet may offer potential benefits, and it is worth, at least, of an in-depth analysis. On the other hand, provocative scholars that allow us to get out of any ideologically and socially delimited system have the merit of helping to provide instruments that enable a better understanding of the present and, consequently, a rationale for the options for the future. Ivan Illich is one of these scholars.

Keywords: Illich; deschooling; education; socio-educational intervention; digital society.

1. INTRODUCTION

The school institution, seen as a codified and socially accepted way of responding to social needs [1,2] in the form of legitimate massive schooling, is undergoing a crisis [3]. Contrary to what it may seem, the School is a constructed reality and, thus, it is not inevitable [4]. Furthermore, it has a specific culture, translated into ways of thinking and acting that are shared by a large number of people – the school culture [5,6,7].

In this sense, the School is one of the most relevant and influential institutions on social life [8]. Its effects are profound. Perrenoud [9] (p. 91), when reflecting on what the school does to families, and especially to the student, points out the following dimensions:

a. *"his/her self-image, insofar that he/she internalised both the school's rules and the legitimacy of a judgment made about his/her conduct or competences;*
b. *his/her reputation with teachers, peers, parents, with what it has to be rewarding or devaluing;*
c. *his/her daily life in the classroom and at home, given that school excellence ensures some tranquillity, less heavy work, easier relationships with teachers, parents and even with classmates;*
d. *in the long run, success at the end of the school term, school year or study cycle; and the development of the school path, how it is managed by selection and guidance procedures;*
e. *in the longer run, the type and level of basic school education, qualifications and opportunities arising in the professional field".*

[1]*Department of Sociology, Faculty of Social Sciences and Humanities, Interdisciplinary Centre of Social Sciences – CICS.UAc/CICS.NOVA.UAc, Interdisciplinary Centre for Childhood and Adolescence – NICA-UAc, University of the Azores, Portugal.*
[2]*Department of Education, University of the Azores, Faculty of Social Sciences and Humanities, Interdisciplinary Centre for Childhood and Adolescence – NICA-UAc, R. da Mãe de Deus, Ponta Delgada, The Azores, Portugal.*
[3]*Interdisciplinary Centre of Social Sciences – CICS, Estoril Higher Institute for Tourism and Hotel Studies, ISCTE - University Institute of Lisbon, Av. das Forças Armadas, Lisbon, Portugal.*
*Corresponding author: E-mail: sandro.nf.serpa@uac.pt;

In the 21st century, the socialisation that took place in the school context – and, consequently, the School as a meritocratic institution, with a formal dimension that fosters the necessary competences for the overall development of the individual and his/her social action – is, demonstrably, at stake [6].

We live in an increasingly digital society, in which technology is central [10,11], with the consequent shifts at the micro, meso and macrosocial levels [12].

In this context, the need emerges to learn and apprehend diverse competences to be implemented in context. These competences may be specific or more transversal, such as autonomy, responsibility, social interaction, personal and professional development, leadership, communication, problem-solving, teamwork and creativity competences [13] (p. 10). According to the authors, this process

> *"[…] entails the involvement of the various stakeholders, with a higher focus on students and teachers, in a process that has to be explained and participated, involving formal learning but also non-formal and informal learning, in an integral logic of attainment and development of competences".*

As early as 1971, Ivan Illich sustained that "Work, leisure, politics, city living, and even family life depend on schools for the habits and knowledge they presuppose, instead of becoming themselves the means of education. Simultaneously both schools and the other institutions which depend on them are priced out of the market" [14] (position 221). As Meyer and Rowan [15] (p. 99) state, to Illich,

> *"The nature of schooling is thus socially defined by reference to a set of standardized categories, the legitimacy of which is publicly shared. As the categories and credentials of schooling gain importance in allocation and membership processes, the public comes to expect that they will be controlled and standardized. The large-scale public bureaucracy created to achieve this standardization is now normatively constrained by the expectations of the schooling rule. To a large degree, then, education is coordinated by shared social understandings that define the roles, topics, and contents of educational organizations".*

However, if up to a certain extent – and as we will see later –, Ivan Illich offers several somewhat precursor aspects, he was, also and mainly, a heavy critic of traditional schooling. According to Enguita [16] (p. 129), "Illich's work was, indeed, an accrual of errors, but they were not these, but rather an awkward success in their midst, which condemned him to disappear in the limbo of the righteous".

Coming from an author who is (was) "forgotten", there are many reasons why his proposals were, perhaps, too quickly disregarded and/or misinterpreted, notwithstanding, more recently and in a limited way, the emergence of some interest in the works of this thinker [17,18]. Indeed, we agree that "The history of the twentieth century pedagogy is incomplete without mentioning Ivan Illich's *Deschooling Society*" [19] (p. 618).

This essay, based on bibliographical research, aims to add to a current (re)reading of Illich, seeking to answer the following question: what is the relevance of Illich's proposal for a successful education in an increasingly digitalised society?

To fulfil this aim, this paper puts forth the methods used, followed by a re-reading of Ivan Illich's proposal, and finishes with the conclusions and implications of this reflection.

2. METHODS

To answer the question that guides this research, a document collection and analysis was carried out at B-on [20], which allows Portuguese research and higher education institutions unlimited and permanent access to the full texts of many scientific journals, e-books, reports, master's and doctoral dissertations and other publications [20].

The selection of articles directly and explicitly related to the purpose of this review was based on a bibliographic collection that, in terms of articles, was carried out as follows: a search was made on B-

ON for the term "Illich", either in the title or in the abstract, from 9 to 12 August. 165 and 463 articles, respectively, were obtained. These articles were analysed by title and abstract, and articles that directly addressed our research topic – which are listed in the references – were selected.

Next section offers a critical exposition of the mobilisation of Ivan Illich's critical stance on the alternative to school as a formal educational institution.

3. A (RE)READING OF IVAN ILLICH

As a framework for the analysis that follows, it seems relevant to consider that

> *"When Illich approaches the study of contemporary society and its institutions, he makes a description from the outside, from a "naive" stance that helps him see the things that usually go unnoticed by habit and prejudice. His originality when studying the school institution, as when studying other contemporary institutions, stems from a descriptive-phenomenological approach that gives it acid and explosive innocence" [21] (p. 184).*

3.1 Illich's view of the Educational Institution

Ivan Illich (1926-2002) was a very well-known author, mainly in the 1970s, for his provocative publications, such as *Deschooling Society* (1971), where he proposed the eradication of the School as an institution [14]. This work, which caused, at the time it was published, deep waves of shock and criticism, but also a strangeness and, in some scientific and social swathes, even admiration [22,23], is again mobilised due to its potential according to some authors [24,25].

This review does not aim to develop Ivan Illich's biography or bibliography. For that purpose, the reading of the following authors is suggested: Zaldívar [19,25], Narodowski and Botta [24], Kahn and Kellner [26], Daniels [23], Inman [18], Samerski [27], Saurén and Määttä [28] and Pacheco [29].

The role of Catholicism is critical to understand Ivan Illich's proposals. The thinker himself has been a Catholic priest [17,21]:

> *"Toward the middle of the twentieth century, as the Church lost believers and the new faith in schooling became evident, the schools monopolized the possibilities of education in the same way that the Church had progressively come to dominate spiritual life in the Western world during the previous twenty centuries. His emphasis on this parallelism was such that he neglected the connections that schools and educational institutions have with their social, cultural, political, and economic contexts" [17] (p. 586).*

Through the School culture "as the shared way of being, thinking and acting in a collective of coordinated people with reciprocal expectations" [5] (p. 51), the educational institution is considered, by the authors who are close to the theory of reproduction, as having the key purpose of perpetuating social and cultural differences [8,30,31,32].

For Ivan Illich, in addition to reproducing social inequalities with the legitimation of inequalities, the School also functions as a "model of bureaucratic and class reproduction". The School justifies its own existence (the School) [8,16,21,25,32] through "formal rationalisation systems [that] have universal compulsive tendencies to reproduce at increasingly higher levels […], although this process is also influenced and reinforced by social class antagonisms, generated in a great diversity of social formations" [31] (p. 210).

In Deschooling Society [14], Ivan Illich greatly influenced Critical Pedagogy [8], by demonstrating (or, at least, trying to demonstrate) the ideological role of the School in this process of legitimate social reproduction [25,30,33]:

> *"The invisibility of the official learning centres or institutions allows them to remain immovable, and because of their nature as an institution that perpetuates hegemonic ideologies, they cannot*

be questioned (which does not mean that they cannot be transformed into certain historical situations). And that is indicated by Illich (1973), when he says that: 'The school has become untouchable because it is vital for the maintenance of the status quo'" [30] (p. 52).

In a synthesis, Ivan Illich proposes the need for a deschooling of society as a whole, valuing informal education. For Illich, the hidden curriculum is a critical element, also because it is not explicit or directly apprehended, about learning in a school context [34,35].

For Illich [14] (position 1859),

"A good educational system should have three purposes: it should provide all who want to learn with access to available resources at any time in their lives; empower all who want to share what they know to find those who want to learn it from them; and, finally, furnish all who want to present an issue to the public with the opportunity to make their challenge known." (2013, position 1361).
"But this would require that the educational revolution be guided by certain goals: 1. To liberate access to things by abolishing the control which persons and institutions now exercise over their educational values. 2. To liberate the sharing of skills by guaranteeing freedom to teach or exercise them on request.

3To liberate the critical and creative resources of people by returning to individual persons the ability to call and hold meetings - an ability now increasingly monopolized by institutions which claim to speak for the people. 4. To liberate the individual from the obligation to shape his expectations to the services offered by any established profession - by providing him with the opportunity to draw on the experience of his peers and to entrust himself to the teacher, guide, adviser, or healer of his choice. Inevitably the deschooling of society will blur the distinctions between economics, education, and politics on which the stability of the present world order and the stability of nations now rest".

However, for this transformation into a deschooling process to happen and be successful – "Illich's intention was to create an open, free, and independent learning circumstance, a learning environment without any discrimination or institutionalised restricted requirements in order to achieve inclusive education" [2] (p. 260) –, a profound reformulation in the process of schooling, technology and attitude on the part of teachers is necessary, but not sufficient [14,35].

However, what is the relevance of Illich's proposal for a successful education in contemporary society, an increasingly digitalised society [10,11]?

3.2 The Current (im)pertinence of the Deschooling Society

For Illich, the purpose of his proposal would be "education for all means education by all" [14] (position 471), in a logic "of a subject that is being through a construction process in common, with others, in the relationship with others" [21] (p. 87), in respect for the human being's capacity to (re)create culture [21,36]. In Ivan Illich's own words, in a long but enlightening quote,

"Educational resources are usually labelled according to educators' curricular goals. I propose to do the contrary, to label four different approaches which enable the student to gain access to any educational resource which may help him to define and achieve his own goals: 1. Reference Services to Educational Objects - which facilitate access to things or processes used for formal learning. Some of these things can be reserved for this purpose, stored in libraries, rental agencies, laboratories, and showrooms like museums and theatres; others can be in daily use in factories, airports, or on farms, but made available to students as apprentices or on off hours. 2. Skill Exchanges - which permit persons to list their skills, the conditions under which they are willing to serve as models for others who want to learn these skills, and the addresses at which they can be reached. 3. Peer-Matching - a communications network which permits persons to describe the learning activity in which they wish to engage, in the hope of finding a partner for the inquiry. 4. Reference Services to Educators-at-Large - who can be listed in a directory giving the

addresses and self-descriptions of professionals, paraprofessionals, and free-lancers, along with conditions of access to their services" [14] (position 1419).

Moreover, according to Narodowski and Botta [24] (p. 49),

"The goals of the new and de-school educational institutions offered by Illich are three: (1) to promote access to educational resources throughout life, and not only in a childhood phase, (2) facilitate the meeting of those who want to share what they know with those who want to learn, removing bureaucratic hierarchies about knowledge and its certifications, and (3) generate opportunities to present and debate their arguments publicly. These institutions should be unrestricted access channels (in social, cultural, age terms), arranged according to their specificity, so that everyone has access to them".

For Illich, the deinstitutionalisation of society concurrently implies transformations and other social institutions, not limiting to the School [8,17,18,29]. On Illich's proposal, Inman [18] (p. 41) states that

"[…] he [Illich] proposed a more autonomous and organic organization of the learning process. This organization would reflect a new relationship between humans and their environment. One of these suggestions included an 'opportunity web' that allowed one to take advantage of experiences encountered in life. This web consists of four networks, each providing the learner with access to any educational resource one might find necessary to achieve individual goals. These include reference services to educational objects, skill exchanges, peer-matching, and reference services to educators-at-large. These informal arrangements would provide learners with opportunities to draw on the experience of peers or to entrust themselves to a guide of choice. Either way, individual potential is realized outside institutional agendas".

For Varbelow and Griffith [8] (p. 13), in their excellent and unavoidable article, "Illich was truly a visionary because what he describes is the availability of immeasurable learning and sharing opportunities through the World Wide Web". According to the authors,

"Illich tells us that the ultimate goal and the means to its accomplishment is the respect humans must have for one another. This respect can only be realized if we allow people to be and to become, which includes to allow and to entrust them to make autonomous decisions. It is the only way we can live life with integrity. It is these basic ideas of the humanistic responsibility one human being should have for another that must be the foundation for curriculum theory in the globalness of the 21st century" [8] (p. 16).

However, the Internet also raises specific problems [2,10,11,22,37]: "At a time when there is free access to a multitude of information, the knowledge society entails the development and mobilisation of a set of competencies of selection and application of this knowledge in a reasoned and conscious way" [38] (pp. 90 and 91). Alienation is one of these problems [1]. As maintained by Soegiono et al. [2] (p. 267),

"The idea of deschooling would enable everyone to use the self-directed learning method as a tool for learning. […] These cognitive skills include the ability to gather and process information, as information overload is a common problem faced by self-directed learners. Thus, the challenge is to create a systematic design in the self-directed learning process which can accommodate 'weaker' people. In addition, digital learning has immense opportunities compared to conventional education in schools. However, it also has some major drawbacks in spite of its benefits. One of the greatest concerns regarding digital learning has always been a lack of social skills".

Ivan Illich's exposed stance is the subject of several criticisms, of which we highlight the one put forth by Enguita [16] (pp. 135 and 136), who argues that

"[…] a world without schools is, today, nothing more than an entelechy. Illich helped us open our eyes to the oppressive dynamics inherent in the school institution and the corporate interests of the profession, but without proposing any other answer than the impossible return to a non-

existent past. It was not a utopia, but an ucronía. The task of those who believe another education is possible is not to imagine an implausible un-institutionalised world, but to democratise from top to bottom some institutions that we would not know how to do without".

4. CONCLUSION

The schooling process is not necessarily equivalent to the development of literacy as the ability to process written information throughout an individual's life, in the most varied domains [38]. According to Gil and Paniagua [39] (p. 31),

"The school must be a place for the meeting and socialisation of ideas, where the generation of knowledge is prioritised without hierarchical purposes, but pleasurable pleasure and enjoyment, where it is not subject to strict dates and times, but that interest promotes continuous workdays, where the possibility of materialising real projects, necessary for a sustainable, aware and informed society and which is capable of making decisions, is shared and openly disseminated. Without regrets of what it is or yearning for what it could be, but rather building, participating, making inclusive and democratic decisions".

Ivan Illich, as one of the main authors of critical pedagogy, while ipsis verbis cannot be applied, provides very interesting instruments, both heuristic for understanding current schooling and society and for thinking and transforming this relationship [8,17,28,34,36]. Inman [18] (p. 26) sustains that

"Illich advocated not for the abolition of schools but rather for the end of their compulsion. Informal learning webs emerging from a free exchange of educational services were the preferred organization for learning within Illich's concept. It was the social organization of learning opportunities and the crushing mandates of an obligatory system to which Illich objected in the existing institutionalized version. He wanted each true being to have the ability to manifest itself".

It is concluded, on the one hand, that Illisch's proposal to replace strict schooling with (self)training networks in a society increasingly digitalised and connected by the internet is likely to offer potential benefits, and it is, at least, worth of an in-depth analysis. On the other hand, provocative thinkers who allow us to leave the ideological and socially delimited system, have the merit of helping to provide instruments that enable us to better understand the present and, consequently, the options for the future. Ivan Illich is one of these thinkers who, both in 1971 and currently, still makes us think for his proposals [23,25,32,34,40], causing "half of admiration, half of irritation" [23] (p. 80).

ACKNOWLEDGEMENT

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Serpa S. Alienation on social media. Studies in Media and Communication. 2019;7:17. Available:https://doi.org/10.11114/smc.v7i1.4286
2. Soegiono AN, Anis A, Maulida SR. Reconsider deschooling: Alternative towards more accessible and inclusive education. Masyarakat, Kebudayaan Dan Politik. 2018;31(3):256. Available:http://dx.doi.org/10.20473/mkp.V31I32018.256-269
3. Gil EC, Paniagua RL. Alternativas a la crisis de la institución escolar desde la pedagogía crítica (Alternatives to the crisis of the school institution from critical pedagogy). IE Revista de Investigación Educativa de la REDIECH. 2016;7(12):22-34.

4. Queiroz JM. L'école et ses sociologies (School and its sociologies). Nathan Université, Paris; 2001.

5. Serpa S. An overview of the concept of organisational culture. International Business Management. 2016;10(1):51-61.
    Available:https://medwelljournals.com/abstract/?doi=ibm.2016.51.61.

6. Serpa S. A reflection on Sociology of Education. International Journal of Social Science Studies. 2018;6(3):33-39.
    Available:https://doi.org/10.11114/ijsss.v6i3.3013

7. Vincent G. L'éducation prisonnière de la forme scolaire? (Education trapped in the school form?). Presses Universitaires de Lyon, Lyon; 1994.

8. Varbelow S, Griffith B. Deschooling society: Re-examining Ivan Illich's contributions to critical pedagogy for 21st century curriculum theory. ERIC Online. 2012;1-18.
    Available:https://files.eric.ed.gov/fulltext/ED532618.pdf

9. Perrenoud PO. que a escola faz às famílias (What school does to families), in: Montandon C. and Perrenoud P. Entre pais e professores, um diálogo impossível? Para uma análise sociológica das interacções entre a família e a escola [Between parents and teachers, an impossible dialogue? For a sociological analysis of the interactions between the family and the school]. Celta Editora, Oeiras. 2001;57-112.

10. Gladden ME. Who will be the members of Society 5.0? Towards an anthropology of technologically posthumanized future societies. Social Sciences. 2019;8(5):1-39.
    Available:https://doi.org/10.3390/socsci8050148.

11. Ferreira CM, Serpa S. Society 5.0 and social development: Contributions to a discussion. Management and Organizational Studies. 2018;5(4):26-31.
    Available:https://doi.org/10.5430/mos.v5n4p26

12. Serpa S, Ferreira CM. Micro, meso and macro levels of social analysis. International Journal of Social Science Studies. 2019;7(3):120.
    Available:https://doi.org/10.11114/ijsss.v7i3.4223

13. Sá MJ, Serpa S. Transversal competences: Their importance and learning processes by higher education students. Education Sciences. 2018;8(3):126.
    Available:https://doi.org/10.3390/educsci8030126

14. Illich I. Deschooling society (I grandi dell' educazione). KKIEN Publ. Int. Kindle Edition. 2013; 1970.

15. Meyer JW, Rowan B. The structure of educational organizations, in: Westoby A. Culture and power in educational organizations. Open University Press, Philadelphia. 1990;1976:87-112.

16. Enguita MF. Nombrar lo innombrable, o lo difícil que resulta criticar el poder profesional – desde la profesión (a propósito de Ivan Illich) (Name the unnameable, or how difficult it is to criticise professional power – From the profession (on Ivan Illich)). ETD – Educação Temática Digital. 2005;6(2):128-136.
    Available:https://doi.org/10.20396/etd.v6i2.778.

17. Bruno-Jofré R, Zaldívar JI. Ivan Illich's late critique of deschooling society: "I was largely barking up the wrong tree". Educational Theory. 2012;62(5):573-592.
    Available:https://doi.org/10.1111/j.1741-5446.2012.00464.x

18. Inman PL. An intellectual biography of Ivan Illich. Unpublished doctoral dissertation. Northern Illinois University; 1999.

19. Zaldívar JI. Revisiting the critiques of Ivan Illich's deschooling society. International Journal for Cross-Disciplinary Subjects in Education. 2011;1(Special 1):618-626.
    Available:https://doi.org/10.20533/ijcdse.2042.6364.2011.0087

20. Biblioteca do Conhecimento Online. What is b-on.
    Available:https://www.b-on.pt/en/what-is-b-on/.

21. Santos Gómez M. El soterrado cristianismo de Iván Ilich (The underground Christianity of Ivan Illich). Bajo Palabra. 2016;12:83-90.
    Available:http://dx.doi.org/10.15366/bp2016.12.006

22. Hart I. Deschooling and the web: Ivan Illich 30 years on. Educational Media International. 2001;38(2-3):69-76.
    Available:https://doi.org/10.1080/09523980110041449a

23. Daniels A. Ivan Illich, 1926-2002 (Notebook). New Criterion. 2003;21(5):78-80.

24. Narodowski M, Botta M. La mayor disrupción posible en la historia de la pedagogía moderna: Ivan Illich (The greatest possible disruption in the history of modern pedagogy: Ivan Illich). Pedagogía y Saberes. 2017;46.
Available:https://doi.org/10.17227/01212494.46pys45.54

25. Zaldívar JI. Deschooling for all? The thought of Ivan Illich in the era of education (and learning) for all. Foro de Educación. 2015;13(18).
Available:http://dx.doi.org/10.14516/fde.2015.013.018.005

26. Kahn R, Kellner D. Paulo freire and ivan illich: Technology, politics and the reconstruction of education. Policy Futures in Education. 2007;5(4):431-448.
Available:https://doi.org/10.2304/pfie.2007.5.4.431

27. Samerski S. Tools for degrowth? Ivan Illich's critique of technology revisited. Journal of Cleaner Production. 2018;197:1637-1646.
Available:https://doi.org/10.1016/j.jclepro.2016.10.039

28. Saurén KM, Määttä K. New educational society. The Illich's utophy. Pulso. 2011;34:29-42.
Available:https://jyx.jyu.fi/handle/123456789/45507?locale-attribute=en

29. Pacheco RMS. El pensamiento rebelde de Ivan Illich. Educación vs. escolarización (The rebel thought of Ivan Illich. Education vs. schooling). UIC. Foro Multidisciplinario. 2013;38-43.

30. Valenzuela-Aguilera A. Ivan Illich: True learning and the leisure pursuit of free people. Radical History Review. 2008;102:15-17.
Available:https://doi.org/10.1215/01636545-2008-004

31. Morrow RA, Torres AT. Teoria social e educação. Uma crítica das teorias da reprodução social e cultural (Social theory and education. A critique of social and cultural reproduction theories). Porto: Edições Afrontamento; 1997.

32. Santos Gómez M. Sociedad, utopía y educación en Iván Illich (Society, utopia and education in Ivan Illich). Psicologia USP. 2006;17(3):183-201.
Available:https://doi.org/10.1590/S0103-65642006000300012

33. Hardy T. De-schooling art and design: Illich redux. iJADE. 2012;31(2):153-165.

34. Zúñiga Chaves JF. Iván Illich: Hacia una desescolarización (Ivan Illich: Towards a deschooling). Revista Electrónica Educare. 2003;4:49-60.
Available:https://doi.org/10.15359/ree.2003-4.4

35. Topinka D, Dočekal V, Poslt J. The reproduction of social risks and social exclusion within the education system of the Czech Republic. Procedia – Social and Behavioral Sciences. 2013; 106:3062-3068.
Available:https://doi.org/10.1016/j.sbspro.2013.12.353

36. May A. Evaluating the use of "deschooled" methods in a postgraduate teaching assessment. Research in Post-Compulsory Education. 2015;20(4):434-444.
Available:https://doi.org/10.1080/13596748.2015.1081748

37. Marin L, Masschelein J, Simons M. Page, text and screen in the university: Revisiting the Illich hypothesis. Educational Philosophy and Theory. 2017;50(1):49-60.
Available:https://doi.org/10.1080/00131857.2017.1323624

38. Santos AI, Serpa S. The importance of promoting digital literacy in higher education. International Journal of Social Science Studies. 2017;5(6):90.
Available:https://doi.org/10.11114/ijsss.v5i6.2330

39. Gil EC, Paniagua RL. Alternativas a la crisis de la institución escolar desde la pedagogía crítica (Alternatives to the crisis of the school institution from critical pedagogy). IE Revista de Investigación Educativa de la REDIECH. 2016;7(12):22-34.

40. Aimino M. El humanismo de Illich, evaluación de tecnologías para una sociedad convivencial (Illich's humanism, evaluation of technologies for a convivial society). Tópicos. Revista de Filosofía de Santa Fe. 2018;30:1-18.
Available:https://doi.org/10.14409/topicos.v0i30.7714

Biography of author(s)

Sandro Serpa
Department of Sociology, Faculty of Social Sciences and Humanities, Interdisciplinary Centre of Social Sciences – CICS.UAc/CICS.NOVA.UAc, Interdisciplinary Centre for Childhood and Adolescence – NICA-UAc, University of the Azores, Portugal.

He has been a higher education faculty member since 2000. He is Assistant Professor in the Department of Sociology of the Faculty of Social Sciences and Humanities of the University of the Azores since 2013. He received his Master's in Sociology from the Faculty of Social Sciences and Humanities of the Nova University of Lisbon in 2004, and his PhD in Education, with the speciality in Sociology of Education, in 2013, from the University of the Azores. He is an integrated researcher at the Interdisciplinary Centre of Social Sciences – Campus of the University of Azores, CICS.NOVA.UAc. He has teaching experience in areas such as Research, Sociology of Education, Introduction to Sociology, General Sociology, Sociology of Organisations, Psycho-sociology of Educational Organisations and Human Resources, among others. He has more than 130 publications in international journals, books and other scientific outlets in Brazil, Canada, Germany, India, Italy, Pakistan, Portugal, Switzerland, Turkey, United Kingdom, and United States of America. His research interests are Teaching of Sociology in Higher Education; Sociology of Education; Sociology of Organisations; Organisational Culture of Educational Organisations; Scientific Communication.

Ana Isabel Santos
Department of Education, University of the Azores, Faculty of Social Sciences and Humanities, Interdisciplinary Centre for Childhood and Adolescence – NICA-UAc, R. da Mãe de Deus, Ponta Delgada, The Azores, Portugal.

She holds a Ph.D degree in Education, specialisation in Methodology of Portuguese Language Teaching, from the University of The Azores, a Master's in Educational Psychology from the Lisbon Higher Institute of Applied Psychology and a Degree in Preschool Education from the Metropolitan University of Caracas – Venezuela. She began her professional activity as a kindergarten teacher and, for the past 21 years, she has been linked to the initial and continuing training of kindergarten teachers and elementary school teachers at the University of The Azores. She is currently Assistant Professor of this University and Coordinator of the Department of Education of the Faculty of Social Sciences and Humanities, University of The Azores. She was Director of the Master's in Preschool Education and Teaching of the 1st Cycle of Basic Education. With several presentations and articles published within the scope of Childhood Education, her teaching activity is mainly geared towards the teaching of specific didactics and the supervision of curricular internships within the scope of the Degree in Basic Education and the Master's in Pre-School Education and Teaching of the 1st Cycle of Basic Education of the same University. She is an integrated founding member and is currently Director of NICA – Interdisciplinary Child and Adolescent Group, University of The Azores and collaborating member of ISPA – University Institute.

Carlos Miguel Ferreira
Interdisciplinary Centre of Social Sciences – CICS, Estoril Higher Institute for Tourism and Hotel Studies, ISCTE - University Institute of Lisbon, Av. das Forças Armadas, Lisbon, Portugal.

He holds a Ph.D. degree in Sociology from UNL – Nova University of Lisbon, which he concluded in 2008 and a Master's in Sociology from the same institution, which he concluded in 1997. He is an Invited Assistant Professor in the Department of Sociology of ISCTE – University Institute of Lisbon and an Invited Assistant Professor in the Estoril Higher Institute for Tourism and Hotel Studies. He is a member of the Interdisciplinary Centre of Social Sciences – CICS.NOVA. He is the founder of the Mediterranean Institute (1989), of FCSH-UNL; the founder of the Institute of Sociology and Ethnology of Religions (1989), of FCSH-UNL; and the founder of the Institute for Studies and Sociological Divulgation (1992), of FCSH-UNL. He carries out research in the following areas: sociology of health and illness, in particular, the medicalisation process; research methodology; sociology of organisations and general sociology. He is the author and co-author of several scientific publications and presentations on these topics.

The Effect of Parental Discipline Style on Mothers' Perceptions of Social Skills and Learning Motivation: Recent Study

Rachel Pasternak[1*] and Anat Guy[1]

ABSTRACT

The reported research is a quantitative study examining the effect of parental discipline style and its four dimensions—Demandingness, Enforcement, Punishment and Responsiveness—on mothers' perceptions of their children's social skills and learning motivation. The sample consisted of 99 mothers and 129 children aged 8–12 years. It was found that each of the four dimensions of parental discipline style was positively correlated with learning motivation and social skills after controlling for sociodemographic background variables. Learning motivation was the most strongly and positively correlated with Enforcement and most weakly correlated with Demandingness, whereas social skills were most strongly positively correlated with Responsiveness and most weakly correlated with Enforcement. Responsiveness was found to be the major predictor of learning motivation as well as social skills, and was strongly and positively correlated with both.

Keywords: Parenting styles; parental discipline style; demandingness; enforcement; punishing; responsiveness; social skills; motivation.

1. INTRODUCTION

Families exert a major influence over their children's education and socialization. Over the years, numerous studies have sought to examine the meaning of "family" as a factor affecting children's development. Family characteristics, such as structure (single-parent, two-parent, remarriage), functioning, parental relationships and demographics (education, income, origin, size, etc.), as well as personality characteristics, have been investigated. Approximately three decades ago, family research began focusing on a new concept, "parenting style", a construct that captures a wide range of parental behaviours directed at children, with significant weight given to the effect on the child of each respective behaviour. The majority of studies on parenting style have stressed Demandingness and Responsiveness [1,2,3] or, alternatively, similar dimensions such as Parental Control and Authoritativeness [4].

Different combinations of these factors have led to the formulation of four classic parenting styles: Authoritarian, Authoritative, Permissive and Neglecting. These styles, themselves based on various forms of the exercise of authority, differentially affect children's education and socialization. The Authoritative style, characterized by the controlled exercise of authority, has been found to be positively associated with academic and social achievement [1,5,6] whereas the Authoritarian style (excessive use of authority), the Permissive style (minimal use of authority) and the Neglecting style (disregard of the child and his or her needs) have been shown to be negatively associated with such achievement [1,6].

The current research focuses on one specific aspect of parenting style in an attempt to identify those parental behaviours that, although involving the exercise of authority, are meant to impose self-

[1]*School of Behavioral Sciences, College of Management Academic Studies, Yitzhak Rabin Avenue, Rishon Le Zion 75190, Israel.*
Corresponding author: E-mail: paster@colman.ac.il;

regulation on children. We therefore differentiate here between *authority*, considered parents' skills in dictating and shaping appropriate behaviour, and *self-regulation,* taken as the daily exercise of authority in diverse spheres of children's skills [7,8].

Discipline or self-regulation in practice involves the setting of boundaries and the formation of appropriate social behaviour patterns. Taking this as our conceptual framework, we propose a new concept, *Parental Discipline Style* (PDS), the behavioural patterns parents adopt when imposing discipline on their children. The type of discipline in question is the self-regulation that characterizes the child's behaviour. Self-Regulation is constructed of several components: The ability to exhibit normative behaviour toward others, to follow instructions and to set goals and persevere until they are reached, as well as the ability to practice and complete goal-oriented tasks even if they are considered unpleasant (e.g., math or grammar exercises); [9,10]. The main role of parents as primary socialization agents lies in the inculcation of such discipline. This leads to the question of how parents are to behave while imposing discipline and preparing their children to act in a disciplined or self-regulated manner. The beginnings of a response can be found in the differentiation between two analytic categories: Parenting style*,* which covers all parental behaviour toward the children, as opposed to PDS, which refers only to parents' discipline-oriented behaviours and how they go about inculcating discipline in their children.

PDS is a new construct; hence, there is little theoretical or empirical literature to support its construction. It does not appear as a separate concept although the term was mentioned in a similar format by Gallagher and Cartwright-Hatton [11], who nonetheless focused on comprehensive attempts to training discipline rather than on a distinctive and structured parental style.

This situation has complicated efforts to formulate the proposed construct. Hence, we turned to the research literature on related concepts, such as "parenting style", "authority" and "discipline". The new concept was therefore constructed on the basis of four dimensions that capture parental behaviour directed at imposing and inculcating self-regulation: Demandingness or *making demands*, Enforcement, Punishment and Responsiveness. These were examined on the basis of theory and research conducted separately on each dimension. Two dimensions, Demandingness and Responsiveness, had already been identified as elements of parenting style by Baumrind [1,2,3]. The innovation offered here is the linking of the four dimensions in one comprehensive construct. The specific components of PDS were selected from among the responses received on a specially devised, new questionnaire, the Parental Discipline Style Questionnaire (PDSQ). We next describe these factors and their relationship to discipline.

1.1 Making Demands

Such behaviour expresses the degree to which parents require that their children complete a variety of the daily tasks deemed necessary for proper socialization and learning. Making demands represents a key concept in the education field, although beyond its inclusion as a component of parenting style [1,3,4], it is usually examined as either a distinct variable or as an educational policy [12,13].

1.2 Enforcement

This relates to the degree to which parents effectively monitor fulfilment of the demands made. This component is especially important in the exercise of discipline because the making of demands is ineffective without it.

1.3 Punishment

A rich body of research has focused on the punishment meted out by teachers and its negative influence on academic achievement, especially in the form of corporal punishment [14,15]. We should note here that our subject is not corporal or physical punishment but educational punishment, which includes denial of rewards or gratifications [16].

1.4 Responsiveness to the Child's Requests

Responsiveness refers to the extent to which parents acquiesce to children's requests. Baumrind [1,3] includes Responsiveness in her model of parenting style while stressing sensitivity to the child and honouring his or her requests, characteristics that bear witness to parental warmth, support of the child's autonomy and reasoned communication. This particular behaviour, other than its inclusion as a component of parenting, is mentioned in the research literature. A wealth of research does exist in reference to a related but broader concept, warmth [17,18]. Responsiveness to a child's requests provides a measure of legitimation to parental demands at the same time that it helps impose discipline.

The combination of these four components, outgrowths of parental authority, as opposed to the behaviour associated with individual components, therefore encompasses what we have termed the Parental Discipline Style, a style quite different from the classic parental style described in the literature.

2. THE DIMENSIONS OF PARENTAL DISCIPLINE STYLE AND CHILDREN'S BEHAVIOUR

A critical review of the literature on these key concepts indicates several theoretical and empirical gaps. First, although a wealth of research has examined the effect of some components of control and support on children's behaviour, no empirical research to date has studied the effect of these components within the context of PDS. We therefore argue for the salience of examining each of these components within this behavioural framework. For example, parental punishment in an authoritarian environment may have a negative effect on children, whereas the same punishment delivered as part of an authoritative parental discipline style exhibiting high demands and enforcement but also responsiveness may have a positive effect [19,20].

Support for this argument can be found in research on the effect of punitive discipline on the child's sense of well-being conducted among mothers of fourth-grade children by Fletcher, Walls, Cook, Madison and Bridges [21]. These researchers found that when punishment was meted out in an atmosphere of warmth and support, the results were positive and not damaging, whereas punitive discipline, verging on coercion and imposed in an authoritarian atmosphere, had negative effects. In contrast, research conducted among mothers of 3-year-old children found that some level of behavioural problems was observed among children whose mothers adopted an authoritative parental discipline style. The authors of the latter research explained their results in terms of the young age of the children observed [22].

Second, from an empirical perspective, a wealth of research evidence has been collected on the various dimensions of control, such as punishment [23,24] and rejection [25]. However, little empirical research has been conducted on the specific dimensions of supportive parenting as a factor in PDS. Moreover, use of the respective concepts in this body of research has been inconsistent. For instance, in research where support was employed as a comprehensive concept, it was found to positively affect secure attachments and developmental outcomes [26]. In another study, a lack of support contributed to problematic behaviour [27]. Although this result might be expected, the analytic scope of the concept differed from that found in other research, making it difficult to create a tight theoretical link between the two behaviours.

Some argue that the source of disagreement lies in methodological errors. For instance, research among children of parents who adopted an authoritarian and punitive parenting style [28,29], as well as studies among children whose parents adopted a permissive but neglectful parenting style [30,31] both found antisocial behaviour to be quite prevalent.

Third, the use of precise concepts such as responsiveness is fairly rare. Although research such as that conducted by Landry, Smith and Swank [32] explored the specific effect of responsiveness and found that it exerts a positive influence on the raising of infants, here too, the study was conducted in isolation of any specific PDS.

Finally, we should mention the numerous studies that have investigated the effect of parental behaviour on children's emotional and social development [25,33-36]. However, we still lack research examining the influence of PDS on more circumscribed issues, such as social skills and motivation.

3. PARENTING AND SOCIAL SKILLS

Children require social skills in order to communicate with others in the social environment, to form relationships and to become part of a group. The inculcation of social skills is a valid objective recognized by those educators and parents who are aware of the impact of these skills on the child's self-image and social success. Education systems have officially equated the importance of social skills with that of learning achievements. Parents, the child's primary socializing agents, can actively or passively contribute to the development of social skills [37-40].

Parents can contribute to the social skills of children at risk [41], including children with emotional and behavioural disabilities [42-44] and those with physical disabilities [38]. A parent's impact on these skills is most clearly observed among autistic children [39]. Israel's Ministry of Education, in recognition of parents' contributions to their children's development of these skills, has established a series of workshops aimed at supporting parental efforts to achieve this objective [45].

In addition to social skills, the research also investigated, as stated, parents' contributions to learning motivation. Learning motivation is the desire to participate in learning processes such as doing homework and, like social skills, is stimulated most directly through parental modelling and socialization [46-49]. Learning motivation is the main factor for academic achievement, even beyond I.Q. When children are raised in a home that nurtures a sense of self-worth, competence and autonomy, they are more apt to accept the difficulties of learning [10].

The current research is meant to fill in some of the gaps in the literature by investigating the influence of each of the four dimensions listed above, considered inseparable parts of PDS. Their effect would be tested on two variables: Social skills and learning motivation. Based on the preceding literature review, we formulated two main hypotheses:

There is a relationship between a mother's discipline style and her child's learning:

1. Motivation and social skills.
2. Children of mothers with higher levels of PDS (Demandingness, Enforcement, Punishment and Responsiveness) are more likely to demonstrate higher learning motivation and social skills

4. METHODS

4.1 Participants

The convenience sample, achieved through snowballing, included 99 mothers of children aged 8–12 years; all of the mothers were Jewish and Israeli and their ages ranged from 30 to 50 years (*M*=39.5 years, *SD*=4.66 years). The majority of women were married (68%) and the remainder were divorced (32%); most had completed high school or college (approximately 84%), with most college-educated women holding at least a master's degree (83%). Almost all had average or above-average income (94%), with more than half being secular (57.6%) and of European or American origin (61.6%). Of their 129 offspring, the majority were boys (55.6%), 27.3% attended the fourth grade, 34.3% attended the fifth grade and 38.4% attended the sixth grade. The mothers were asked whether their child had been diagnosed with learning disabilities by a professional (a psychiatrist, neurologist or qualified clinical psychologist). All children reported on in this study were never diagnosed with learning disabilities. The mothers were asked to choose to report on one of their children aged 8–12. If there was more than one child in this specific age group, the mothers were asked to arbitrarily choose one of them.

According to Van Voorhis and Morgan [50], a good-enough sample size for regression analysis will include at least 50 participants. Some rules of thumb argue that the sample size should include 50,

plus a number of dependent variables; in this study, dependent variables included 10 items and thus the minimum sample size is 50 +10.

4.2 Procedure

The data were collected during 10 different meetings of a parenting workshop for mothers. Prior to the meetings, each participant in the research received a structured, anonymous self-completion questionnaire, to be returned upon its completion; the response rate was almost 90%. The questionnaire included items on parental authority in addition to items regarding their children's educational achievements, motivation regarding homework preparation and social behaviour. The mothers were given definitions of each of the questionnaire components. The behaviours were selected on the basis of a pilot study in which 15 mothers (other than those participating in the research) of children aged 8–12 years were asked to list 15 daily behaviours they considered subject to non-compliance. To prevent cultural bias, three mothers were chosen from each of five countries of origin: Israel, France, England, Canada and the United States. The mothers were randomly selected as part of a convenience sample based on indirect acquaintance. Ten behaviours were selected from the lists compiled for each dimension. The criterion for a behaviour's selection in the current research was its mention by mothers from at least three countries.

4.3 Research Variables and Measures

The research focused on two dependent variables: Learning motivation and social skills. Sociodemographic background data were collected in order to control for their influence on the dependent variables, thus enabling isolation of the effect of parenting style on learning motivation and social skills. The data were obtained by means of additional questions directed at the mother: The child's gender, mother's age, family status (married/divorced, etc.), education, average family income, religiosity, nationality and ethnicity. In addition to reporting her child's grades, we asked each mother whether her child had been diagnosed with learning disabilities (in Israel, the category "learning disabilities" covers a range of diagnoses such as ADHD, ADS, conduct disorder and other cognitive disorders); and if so, at what age the child began receiving treatment and whether he or she was still doing so. With the exception of age, which is a continuous variable, all the other responses were coded as dummy variables: Child's gender (1=male; 0=female), mother's marital status (1=married; 0=all others), education (1=academic; 0=non-academic) and religiosity (1=observant; 0=secular).

The questionnaire referred to major learning behaviours, such as doing homework and attitudes toward grades. Each item included six statements: "Interested in earning good grades", "Feels sad when his/her grades aren't good", "Is interested in obtaining grades above those of his/her friends", "Invests time in preparing homework", "Is conscientious about completing homework assignments" and "Prepares homework only when his/her parents demand it." The mothers were asked to rank each of these statements along a 5-point Likert scale (1=almost never; 5=always). The questionnaire's empirical validity was tested according to the Principle Components Test [see 51], which yielded one factor for learning motivation (Eigenvalue greater than 1); this factor explained 78% of the variation found. An internal reliability test yielded a coefficient of α=.93 for this factor within the framework of the research.

Social skills were measured by means of another questionnaire especially developed by Rachel Pasternak for this study's purposes. This questionnaire included four statements: "Classmates invite him/her to participate in activities", "Meets with friends after school", "Complains of confrontations with other children" and "Plans activities with friends." The mothers were asked to rank each of these statements along a 5-point Likert scale (1=very rarely; 5=very often). The questionnaire's empirical validity was tested with the Principle Components Test, which yielded one factor for social skills (Eigenvalue greater than 1); this factor explained 77% of the variation obtained. An internal reliability test yielded a reliability coefficient of α=.86.

The two main independent variables in the study were PDS and socio-demographic background. PDS was measured by means of a third questionnaire, also specially developed for the current research. This questionnaire contained 40 items aimed at identifying the parent's (in this case the mother's)

specific PDS through responses pertaining to the four behavioural dimensions: Demandingness, Enforcement, Punishment and Responsiveness to the Child's Requests. Ten items were assigned to each of those four dimensions, with each item describing a behaviour commonly performed by children aged 8-12on a daily basis: Brushing teeth, washing, watching television, playing on the computer, coming home on time, preparing homework at fixed hours, cleaning their room, clearing the table after meals, taking down laundry and being polite during conversations with parents (specifically, every mother reported, for about those 10 behaviours, her level of Demandingness, Enforcement, Punishment and Responsiveness to the Child's Requests).

The 99 mothers were asked to rank three of the four PDS dimensions on separate Likert scales: how often they made demands (1=never demanded; 5=always demanded), their level of enforcement (1=never enforced; 5=always enforced) and the level of didactic (not corporal) punishment meted out for noncompliance (1=never punished; 5=always punished).

Ten other items were provided to capture the fourth dimension, Responsiveness to the Child's Requests. At these ages, most of the children's requests concern buying things or spending money [see 52]: Buying clothes, buying shoes, buying toys, buying games, buying other expensive items, buying favourite foods, subscribing to a gym, trips abroad, family outings and release from chores. For each of these items, the mothers were again asked to describe their responses on a 5-point Likert scale (1=never; 5=always). Although fulfilling some of these requests can be quite expensive, the average or above-average incomes reported by the majority of the mothers in this study neutralized the potential bias.

The questionnaire's empirical validity was tested with the Principle Components Test. The results indicated that among the four dimensions, Responsiveness to the Child's Requests explained 72.4% of the variance, while Punishment explained 87.7%. An internal reliability test for each of the dimensions yielded high reliability coefficients, α=.95 for Responsiveness and α=.95 for each of the other three dimensions.

5. RESULTS

In order to test for the first hypothesis (a mother's discipline style is associated with her child's learning motivation and social skills), we first identified the different types of PDS [52]. Six styles were distinguished using a Likert scale: Authoritarian, Authoritative, Permissive, Neglecting, Progressive Authoritative and Punitive. These styles were differentiated by how they integrated the four parenting components: Demandingness, Enforcement, Punishment and Responsiveness to the Child's Requests. As shown in Table 1, a Punitive style contains low Demandingness, Enforcement and Responsiveness, but high Punishment; an Authoritative Progressive style contains low Punishment but high Demandingness, Enforcement and Responsiveness; a Neglecting style contains low Punishment, Demandingness, Enforcement and Responsiveness; a Permissive style contains low Demandingness, Enforcement and Punishment, but high Responsiveness; an Authoritative style contains high Demandingness, Enforcement, Punishment and Responsiveness; and an Authoritarian style contains high Demandingness, Enforcement and Punishment, but low Responsiveness. The scores on each parenting component were calculated as Z scores. A score less than zero was considered low, and above zero was considered high.

We next examined the differences in means (Z-score) obtained for the dependent variables for each of the six parenting styles identified. For this purpose we used the non-parametric Kruskal–Wallis test. The results appear as cross-tabulations between the six parenting styles and learning motivation as well as social skills (Table 2). This analysis indicated that significant differences appear among the six parenting styles with respect to the dependent variables: Learning motivation (χ^2 [5, 123] = 75.28, $P \leq .000$) and social skills (χ^2 [5, 123] = 69.24, $P \leq .000$). A Mann–Whitney U post-hoc test with a Bonferroni adjustment (α / 15 = .003) revealed that an Authoritative parenting style is significantly different from the parenting styles (excluding the Progressive Authoritative style) for both learning motivation and social skills. A Neglecting parenting style is significantly different from an Authoritarian, Authoritative or Progressive Authoritative parenting style for both learning motivation and social skills.

Finally, the Progressive Authoritative style is significantly different from the Permissive, Neglecting and Punitive parenting styles.

Table 2 indicates that the children of mothers adopting the Authoritative or Progressive Authoritative styles exhibited the greatest learning motivation (0.88 and 0.77, respectively) and the highest level of social skills (0.85 and 0.69, respectively) among all the children in the sample, whereas children of mothers adopting the Neglecting or Punitive styles exhibited the least learning motivation (−0.89 and −0.99, respectively) and the lowest level of social skills (−0.86 and −1.13, respectively). The levels for children of mothers adopting the Authoritarian style revolved around a mean of −0.13 for learning motivation and 0.00 for social skills. However, the standard deviation from the mean for this group was particularly high (1.02 for learning motivation and 1.06 for social skills). These findings confirm the first research hypothesis.

In order to map the six PDSs in reference to the two dependent variables, a two-step cluster analysis was performed. The results are shown in Table 3, which is further discussed later.

Fig. 1 shows that different PDSs have similar effects on children's learning motivation and social skills. The figure indicates that the Progressive Authoritative and Authoritative styles have a positive effect (0.75 and 0.74, respectively) on learning motivation and on social skills (0.78 and 0.79, respectively) relative to other discipline styles. The same figure indicates that the style having the most negative effect on learning motivation among the six is the Neglecting style (−0.94 for learning motivation and −1.1 for social skills).

Another interesting finding illustrated in Fig. 1 is that the Permissive and the Punitive discipline styles belong to the same group with respect to the quality of their influence on the dependent variables. This means that these two styles are related to the variance of a child's learning motivation and social skills in the same way as children of mothers exhibiting either a Permissive or a Punitive discipline style express similarly poorer learning motivation and social skills.

Table 1. Components of parental discipline style

Component	Punitive	Authoritative progressive	Neglecting	Permissive	Authoritative	Authoritarian
Demandingness	Low (-1.1)	High (.74)	Low (-1.2)	Low (-1.9)	High (.64)	High (.66)
Enforcement	Low (-1.1)	High (.51)	Low (-1.2)	Low (-.86)	High (.77)	High (.85)
Punishment	High (.66)	Low (-.46)	Low (-1.3)	Low (-1.4)	High (.66)	High (.85)
Responsiveness	Low (-1.3)	High (.88)	Low (-.73)	High (1.2)	High (.71)	Low (-.69)

Notes: High score = mean standard deviation and above (=0); Low score = standard deviation below the mean (<0). (z score)

Table 2. Means and standard deviations for learning motivation and social skills for six parental discipline styles (PDS)

PDS	Learning motivation		Social skills	
	M (SD)	Kruskal- Wallis test mean rank	M (SD)	Kruskal- Wallis test mean rank
Authoritarian(n=19)	-.13 (1.02)	59.26	.00 (1.06)	56.24
Authoritative(n=43)	.88 (.37)	88.13	.85 (.51)	86.78
Permissive(n=9)	-.98 (.53)	21.67	-.01 (.93)	59.83
Neglecting(n=23)	-.99 (.45)	27.35	-1.13 (.52)	22.57
Progressive authoritative (n=17)	.77 (.64)	89.09	.69 (.59)	86.91
Punitive(n=15)	-.89 (.61)	29.13	-.86 (.43)	31.37

Note: *The data appearing in this table were obtained after standardizing the variables comprising components of the Parental Discipline Style, learning motivation and social skills

Analysis of the data therefore confirmed the first research hypothesis in full, meaning that children of mothers adopting an Authoritative discipline style exhibit the greatest learning motivation and the

highest level of social skills relative to children of mothers adopting the other five styles. The analysis also showed that children of Neglecting mothers exhibit the poorest learning motivation and social skills relative to children of mothers adopting the remaining styles. In addition, the analysis indicated that the Progressive Authoritative and the Authoritative styles, as well as the Permissive and the Punitive styles, are very similar to the Authoritative style in their impact on the dependent variables.
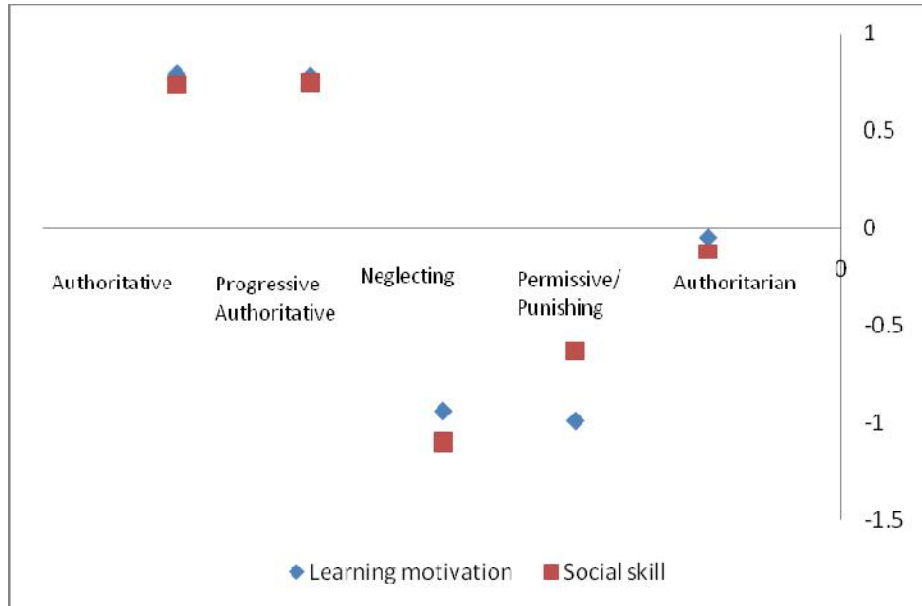
Fig. 1. Two-step cluster analysis for learning motivation and social skills
Note: Mean learning motivation=0.32; Mean social skills= 0.28

The second research hypothesis stated that the dimensions of PDS (Demandingness, Enforcement, Punishment and Responsiveness) are positively associated with learning motivation and social skills; the dimension having the strongest correlation with the two dependent variables is the mother's Responsiveness to her child's requests and the weakest association is Punishment. The hypothesis was investigated in two separate analyses. The first included calculation of a Pearson correlation coefficient between the four dimensions of PDS and learning motivation as well as social skills. For this purpose, a dummy variable was computed for each PDS. According to Long and Freese [53], in order to use a category-nominal variable as an independent variable in a regression model, a set of binary variables is computed. In this study, the category serves as the reference category.

The second analysis included performance of a hierarchical regression in order to estimate the quality of the association between the four dimensions and the dependent variables after controlling for the mothers' sociodemographic characteristics.

Table 3. Pearson correlations for parential discipline style components, learning motivation and social skills

PDS component	Learning motivation (n=129)	Social skills (n=129)
Demandingness	**.68	**.59
Enforcement	**.73	**.62
Punishment	**.44	**.32
Responsiveness	**.63	**.61

*p ≤0.05; **p ≤0.01

Table 3 indicates that all dimensions of PDS were highly correlated with learning motivation and social skills (coefficients ranging between .32 and .73). However, it appears that Punishment was weakly

correlated (r=.44) with learning motivation but even more weakly with social skills (r=.32). In contrast, Enforcement was very strongly correlated with learning motivation (r=.73) but somewhat less strongly with social skills (r=.62).

In order to estimate the strength of the correlation between the four dimensions of PDS and learning motivation and social skills while controlling for the mother's background variables, a hierarchical regression analysis was performed with two models. One model included only the sociodemographic background variables and the other model consisted of the sociodemographic background variables in addition to the four dimensions of PDS. The purpose of this analysis was twofold: First, to examine the contribution of the PDS dimensions to predicting a child's learning motivation and social skills beyond the contribution of sociodemographic variables, and second, to estimate the relative weight of each PDS comprising the model. We expected this analysis to reveal which components of PDS had the greatest influence on the dependent variables independently of the mother's sociodemographic characteristics. Table 4 shows the findings of these analyses.

The results of Model I, comprised solely of sociodemographic variables, explained 18% of the variance in learning motivation. The model's results indicate that only the mother's religiosity made a significant but negative contribution ($\beta=-.27$) to predicting the dependent variable. Hence, we can conclude that children of secular mothers tend to exhibit greater learning motivation in comparison to children of observant mothers. Although the other background variables made no significant contribution to predicting learning motivation, children of married mothers ($\beta=.16$) who were European–American in origin ($\beta=.16$) and had more education ($\beta=.18$) were more likely to develop high learning motivation.

Model II, which combined the mother's sociodemographic characteristics with the four dimensions of PDS, explained a greater percentage of the variance (about 74%) in learning motivation. Examination of the results indicated once more that among the sociodemographic variables, only the level of religiosity made a significant yet negative contribution ($\beta=-.17$) to the model, again indicating that children of secular mothers exhibit greater learning motivation in comparison with children of observant mothers. Among the four dimensions of PDS, Enforcement ($\beta=.50$) and Responsiveness ($\beta=.38$) made significant and sizeable contributions to predicting learning motivation. It thus appears that mothers who enforce discipline (but without punishing for infringements) and simultaneously respond to the child's needs tend to contribute to their child's learning motivation. Furthermore, Demandingness ($\beta=.01$) and Punishment ($\beta=.10$) made no significant contributions to the model's predictive power.

Model I's results with respect to social skills nonetheless diverged from the results obtained regarding learning motivation, although it predicted a similar amount of variance, about 16% regarding the level of social skills as opposed to 18% regarding learning motivation. Here as well, the mother's level of religiosity makes a significant and negative contribution to predicting the child's social skills, but so did the mother's family status ($\beta=-.25$). We can therefore conclude that children of secular mothers or married mothers are more likely to exhibit higher levels of social skills when compared to children of observant mothers or unmarried mothers (e.g., divorce or volitional single parenthood). The other sociodemographic background variables (ethnic origin, religiosity and child's gender) made no significant contribution to the model. However, the emerging trend indicated that children of European–American origin ($\beta=.12$) and children of educated mothers ($\beta=.07$) were more likely to develop good social skills.

Similarly, Model II explained about 64% of the variance in social skills as opposed to 75% of the variance in learning motivation. A review of the model's results indicated that the mother's sociodemographic characteristics made no significant contribution to the model's predictive power, and that Responsiveness ($\beta=.49$) was the sole PDS dimension making a meaningful and significant contribution to predicting social skills. In other words, social skills were well-explained by the model combining both sets of variables, although the only statistically significant variable was the mother's Responsiveness to the Child's Requests ($\beta=.49$). That is to say, social skills are affected more by how a mother responds to her child's requests but less by the other PDS dimensions (Enforcement, Demandingness and Punishment) or the mother's sociodemographic characteristics.

Table 4. Hierarchial regression analysis of predictors of learning motivation

Variables	Learning motivation		Social skills	
	Model I[a]	Model II[b]	Model I[a]	Model II[b]
Family status	.16	-.06	**.23	.03
Religiosity	*-.27	*-.17	**-.25	-.12
Ethnicity	.16	.09	.12	.02
Child's gender	.08	.02	.03	-.03
Education	.18	.01	.07	-.09
Demandingness		.01		.20
Enforcement		**.50		.14
Punishing		.10		.19
Responsiveness		**.38		**.49
F	*4.0	**28.7	*3.4	**17.8
% of variance explained	17.7	74.4	15.5	64.3
R^2 change	**.567		**.488	

Notes: [a]Model I includes only sociodemographic variables; [b]Model II includes sociodemographic variables and parenting style components, $*p \leq 0.05$, $**p \leq 0.01$

To summarize, these findings partially confirm the second research hypothesis. We found that all four dimensions of PDS were positively correlated with a child's learning motivation and social skills after taking the mother's sociodemographic characteristics into account. Enforcement exhibited the strongest correlation and Demandingness the weakest correlation with learning motivation; regarding social skills, the strongest correlation was with Responsiveness and the weakest was with Enforcement. Responsiveness, however, did make a significant contribution toward predicting the dependent variable and was strongly correlated with both independent variables. It was also found that of all the sociodemographic variables, only the mother's religiosity had a significant but negative effect on both dependent variables. That is, children of secular mothers tended to be more motivated to learn and exhibited higher levels of social skills.

6. DISCUSSION

The literature dealing with PDS and its relationship with a child's social skills and learning motivation is in its infancy. Moreover, the various studies already performed on parenting styles are inconsistent in their theoretical and operational definitions of core concepts such as "supportive parents" [26,27]. However, the empirical evidence does indicate a meaningful association between parenting styles and a wide range of behavioural, emotional [35,36] and social behaviours [33,25] exhibited by children. In this study, as well as in other studies in this field, many other variables can explain this relationship; however, the findings of the current research likewise indicated an association between PDS and children's social skills and learning motivation. The findings of this research indicate that two PDSs (Authoritative and Progressive Authoritative) were similar in their positive effect on learning motivation and social skills, whereas two other PDSs (Neglecting and Punitive) were weakest in their impact on these variables. We suggest that these findings stem from the research design, which compared each PDS with the others in terms of its effect on the dependent variables. Hence, whereas the effects of the Punitive and the Neglecting styles were greatest, they diminished when compared to the Authoritative or the Progressive Authoritative styles, for example.

The findings also indicate that each parenting style had a similar effect (i.e., in the same direction) on both variables (for example, the Authoritative style had a positive effect on learning motivation as well as on social skills). Nonetheless, the Permissive parenting style had a somewhat different effect. That is, children of permissive mothers exhibited average learning motivation (below that of children of Authoritative or Progressive Authoritative mothers, but above that of children of Neglecting or Punitive mothers). The importance of this finding should, however, be viewed with circumspection due to the sample's size (n=4 children). These findings are apparently related to the mix of dimensions in this PDS: Low levels of Demandingness, Enforcing and Punishing and a high level of Responsiveness to the Child's Requests.

As to social skills, an especially strong association was found with parental Responsiveness. We suggest that parents adopting this style (Permissive) are unable to encourage learning motivation because they do not make sufficient demands of their children and because they lack Enforcement and Punishment skills. In addition, due to the high level of Responsiveness characterizing this style, such parents are able to endow their children with higher levels of social skills when compared with other styles, such as the Punitive and the Neglecting.

Findings from other studies [see for example [33], together with the current study, indicate that children of mothers adopting an Authoritative or a Progressive Authoritative style (the two being similar) tend to be more socially skilled and motivated to learn. Alternatively, children of mothers exhibiting a Punitive or a Neglecting PDS tend to exhibit lower motivation and poorer social skills.

One explanation for these findings apparently lies with the second research hypothesis regarding the differential association between the dimensions of PDS (Demandingness, Enforcing, Punishment and Responsiveness) and the dependent variables. The current research revealed the presence of distinctive connections between the separate PDS dimensions and learning motivation as well as social skills. The main variable found that to predict learning motivation, other than selected sociodemographic characteristics, was Enforcement. In contrast, the most meaningful predictive variable with respect to social skills was Responsiveness. In two PDSs, Authoritative and Progressive Authoritative, the dimensions of Responsiveness and Enforcement dominated the results. However, even though these same components (Responsiveness and Enforcement) are present in the Authoritarian PDS, children of mothers applying this style exhibited average learning motivation and poor social skills in comparison to children of mothers applying the two previously mentioned styles. This finding is apparently rooted in the overall structure of the separate PDSs, especially the level of punishment that parents apply. In the two previous PDSs, punishment is rarely meted out, whereas in the third style, punishment is frequent. This finding has far-reaching theoretical and empirical implications because it indicates that when measured in isolation, any component of parenting, even if considered together with a child's developmental and behavioural characteristics, can provide only partial insights that may distort the finding's meanings.

Another interesting point raised by the current research is related to the great weight of parental Responsiveness to the Child's Requests in the development of social skills and learning motivation. This dimension was found to have high predictive power regarding the two dependent variables irrespective of the mother's sociodemographic characteristics or other components of PDS. Responsiveness relates to emotions, which strongly affect a child's development. In contrast to other components of parenting, Responsiveness can help the child develop assertiveness and avoid passivity. In other words, whereas Demandingness, Enforcement and Punishment express control, Responsiveness expresses support. Similar to the available literature [see for example [34], the current research indicates that children who grow up in responsive, supportive family environments tend to develop emotional and cognitive strengths that facilitate their development of high learning motivation (as expressed in high self-sufficiency and self-acceptance, for example), as well as good social skills (such as the capacity for empathy).

7. CONCLUSION

In conclusion, the control and support captured by the four dimensions of Demandingness, Enforcement, Punishment and Responsiveness provide the building blocks of PDS. In doing so, they also determine the outcomes of family education and socialization in general and the child's social skills and learning motivation in particular.

The results of this study should, however, be regarded with caution. The sampling was conducted in a non-probabilistic manner and the external validity of the findings is therefore limited. The mothers studied were fairly well-educated and had middle-to-high incomes, as well as high levels of academic achievement. Hence, the appropriateness of generalizing this study's results and conclusions to other populations or to other sociocultural contexts may be limited. It is possible that in lower-income neighbourhoods, some of the findings may not be replicated due to different lifestyles. Furthermore, the measure of social skills may not make sense in other sociocultural settings or for children of

different ages. Another limitation refers to the sample, which was drawn from specific geographic areas in Israel, particularly from large cities. Populations from the periphery were thus underrepresented while other cultural groups in Israel, such as Jews of Ethiopian origin, the Druse and Bedouins, were not included in the sample. Another limit of this study is the absence of fathers. The results therefore may not be valid for fathers, even from the same socioeconomic background. Moreover, in this study, mothers were asked to answer the questionnaire, rather than their children. Thus, the information streaming from the data reflects the mother's perception, not necessarily the child's perception. Future studies may analyse two sets of data: The parent's and the child's perceptions. Differences, if they exist, might be an interesting field of study. Finally, using a quantitative methodology to study adaptive adult images of young, childless adults in Israel may have led to overgeneralization and the loss of important and interesting personal differences. Quantitative methodologies do not provide us with participants' explanations as to why they choose certain traits. Therefore, the "cultural logic" (the reasons given by socializing agents to explain why they choose to reinforce in their children a specific value, trait or behaviour that they regard as adaptive) is provided here by the researchers, not the participants, and it is highly speculative. On the basis of these limitations, future research is recommended, such as studies combining quantitative and qualitative research methods. Further comparison of adaptive adult images between males and females in Jewish and Arabic groups, and between different ages and social classes, is likewise necessary. Finally, a longitudinal study of these groups may shed some light on the changes in adaptive adult images as these young adults become parents.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Baumrind D. The influence of parenting style on adolescent competence and substance abuse. Journal of Early Adolescence. 1991;11(1):56-95.
2. Baumrind D. The discipline controversy revisited. Family Relations. 1996;4(4):405-414.
3. Baumrind D. Patterns of parental authority and adolescent autonomy. New Directions for Child and Adolescent Development. 2005;108:61-69.
4. Steinberg L, Lamborn SD, Dornbusch SM, Darling N. Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement and encouragement to succeed. Child Development. 1992;63:1266-1281.
5. Chao RK. Extending research on the consequences of parenting style for Chinese Americans and European Americans. Child Development. 2001;72(6):1832-1843.
6. Dornbusch SM. The relation of parenting style to adolescent school performance. Child Development. 1987;58(5):1244-1257.
7. Gershoff ET, Grogan-Kaylor A, Lansford JE, Chang L, Zelli A, Deater-Deckard K, et al. Parent discipline practices in an international sample: Associations with child behaviors and moderation by perceived normativeness. Child Development. 2010;81(2):487-502.
8. McElroy EM, Rodringuez CM. Mothers of children with externalization behavior problems: Cognitive risk factors for abuse potential and discipline style and practices. Child Abuse & Neglect: The International Journal. 2008;32(8):774-784.
9. Gallagher B, Cartwright-Hatton S. The relationship between parenting factors and trait anxiety: Mediating role of cognitive errors and metacognition. Journal of Anxiety Disorders. 2008; 22(4):722-733.
10. Kissel A. Wasting away: Chicago's declining core. Academic Questions. 2009;22(3):298-313.
11. Reback R. Demand (and supply) in an inter-district public school, the Choce Program. Economics of Education Review. 2008;27(4):402-416.
12. Docan TN. Positive and negative incentives in the classroom: An analysis of grading systems and student motivation. Journal of Scholarship of Teaching and Learning. 2006;6(2):21-40.
13. Little SG, Akin-Little A. Psychology's contributions to classroom management. Psychology in Schools. 2008;45(3):227-234.
14. Meteyer KB, Perry-Jenkins M. Dyadic parenting and children's externalizing symptoms. Family Relation. 2009;58(3):289-302.

15. Shanahan L, McHale SM, Crouter AC, Osgood DW. Warmth with mothers and fathers from middle childhood to late adolescence: Within- and between-family comparisons. Developmental Psychology. 2007;43(3):551-563.

16. Deater-Deckard K, Ivy L, Petrill SA. Maternal warmth moderates the link between physical punishment and child externalizing problems: A parent-offspring behavior genetic analysis. Parenting. 2006;6:59-78.

17. McLoyd VC, Smith J. Physical discipline and behavior problems in African American, European American, and Hispanic children: Emotional support as a moderator. Journal of Marriage and Family. 2002;64:40-53.

18. Fletcher AC, Walls JK, Cook EC, Madison KJ, Bridges TH. Parenting style as a moderator of associations between maternal disciplinary strategies and child well-being. Journal of Family Issues. 2008;29:1724-1744.

19. Paulussen-Hoogeboom MC, Stams GJM, Hermanns JMA, Peetsma T, van den Wittenboer GLH. Parenting style as a mediator between children's negative emotionality and problematic behavior in early childhood. The Journal of Genetic Psychology. 2008;169(3):209-226.

20. Berns N, Schweingruber D, Cast AD. Childhood physical punishment and problem solving in marriage. Journal of Interpersonal Violence. 2006;21(2):244-261.

21. Leary CE, Kelley ML, Morrow J, Mikulka PJ. Parental use of physical punishment as related to family environment, psychological well-being, and personality in undergraduates. Published online, Springer Science; 2007.

22. Pereira AIF, Canavarro C, Cardoso MF, Mendonc D. Patterns of parental rearing styles and child behavior problems among Portuguese school-aged children, Journal of Child and Family Studies. 2009;18:454–464.

23. Coplan RJ, Hastings PD, Lagace-Seguin DG, Moulton CE. Authoritative and authoritarian mothers' parenting goals, attributions and emotions across different childrearing contexts. Parenting: Science and Practice. 2002;2:1-26.

24. Rothbaum F, Weisz JR. Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. Psychological Bulletin. 1994;116:55-74.

25. Grogan-Kaylor A. Corporal punishment and the growth trajectory of children's antisocial behavior. Child Maltreatment. 2005;10:283-292.

26. Verona E, Sachs-Ericsson N. The intergenerational transmission of externalizing behaviors in adult participants: The mediating role of childhood abuse. Journal of consulting and Clinical Psychology. 2005;73(6):1135-1145.

27. Beck JE, Shaw DS. The influence of perinatal complications and environmental adversity on boys' antisocial behavior. Journal of Child Psychology and Psychiatry. 2005;46(1):35-46.

28. Frick PJ. Developmental pathways to conduct disorder. Child and Adolescent Psychiatric Clinics of North America. 2006;15:311-331.

29. Landry SH, Smith KE, Swank PR. Responsive parenting: Establishing early foundations for social, communication and independent problem-solving skills. Developmental Psychology. 2006;42(4):627-642.

30. Casas JF, Weigel SM, Crick N, Ostrov JM, Woods KE, Jansen-Yeh EA, et al. Early parenting and children's relational and physical aggression in the preschool and home contexts. Applied Developmental Psychology. 2006;27:209–227.

31. Morris AS, Silk JS, Steinberg L, Myres SS, Robinson LR. The role of the family context in the development of emotion regulation. Social Development. 2007;16(2):361-388.

32. Schwartz JP, Thigpen EE, Montgomery JK. Examination of parenting styles of processing emotions and differentiation of self. The Family Journal. 2006;14(1):41-48.

33. Stack DM, Serbin LA, Enns LN, Ruttle PL, Barrieau L. Parental effects on children's emotional development over time and across generations. Infants and Young Children. 2010;23(1):52-69.

34. Bandura A. Social Learning Theory. New York: Prentice-Hall; 1977.

35. Bennett KS, Hay DA. The role of family in the development of social skills in children with physical disabilities. International Journal of Disability, Development and Education. 2007;54(4):381-397.

36. Laugeson EA, Frankel F, Mogil C, Dillon AR. Parent-assisted social skills training to improve friendships in teens with autism spectrum disorders. Journal of Autism and Developmental Disorders. 2009;39(4):596-606.

37. Richardson MJ, Caldarella P, Young BJ, Young EL, Young KR. Further validation of the systematic screening for behavior disorders in middle and junior high school. Psychology in the Schools. 2009;46(7):605-615.
38. Baker JK, Crnic KA. Thinking about feelings: Emotion focus in the parenting of children with early developmental risk. Journal of Intellectual Disability Research. 2009;53(5):450-462.
39. Elison S, Stinton C, Howlin P. Health and social outcomes in adults with Williams syndrome: Findings from cross-sectional and longitudinal cohorts. Research in Developmental Disabilities: A Multidisciplinary Journal. 2010;31(2):587-599.
40. Rutherford LE, Du Paul GJ, Jitendra AK. Examining the relationship between treatment outcomes for academic achievement and social skills in school-age children with attention-deficit hyperactivity disorder. Psychology in the Schools. 2008;45(2):145-157.
41. Solanto MV, Pope-Boyd SA, Tryon WW, Stepak B. Social functioning in predominantly inttentive and combined subtypes of children with ADHD. Journal of Attention Disorders. 2009; 13(1):27-35.
42. De Rosier ME, Gilliom M. Effectiveness of a parent training program for improving children's social behavior. Journal of Child and Family Studies. 2007;16(5):660-670.
43. Grolnick WS. The role of parents in facilitating autonomous self-regulation for education. Theory and Research in Education. 2009;7(2):164-173.
44. Katz I, Kaplan A, Buzukashvily T. The role of parents' motivation in students' autonomous motivation for doing homework. Learning and Individual Differences. 2011;21(4):376-386.
45. Klauda SL. The role of parents in adolescents' reading motivation and activity. Educational Psychology Review. 2009;21(4):325-363.
46. Miller WB, Sable MR, Beckmeyer JJ. Preconception motivation and pregnancy wantedness: Pathways to toddler attachment security. Journal of Marriage and Family. 2009;71(5):1174-1192.
47. VanVoorhis CRW, Morgan BL. Understanding power and rules of thumb for determining sample sizes. Tutorials in Quantitative Methods for Psychology. 2007;3(2):43-50.
48. Cronbach LJ, Meehl PE. Construct validity in psychological tests. Psychological bulletin. 1955;52(4):281.
49. Pasternak R. Parental Discipline and Parents' Desire for Children's School Success. Economic Stress and the Family, Contemporary Perspectives in Family Research. (Emerald Group Publishing Limited). 2012;6:123-146.
50. Long JS, Freese J. Regression models for categorical dependent variables using Stata. Stata press; 2006.
51. Schaffer M, Clark S, Jeglic EL. The role of empathy and parenting style in the development of antisocial behaviors. Crime & Delinquency. 2009;55(4):586-599.
52. De Kemp R, Overbee G, de Wied M, Engels R, Scholte R. Early adolescent empathy, parental support and antisocial behavior. Journal of Genetic Psychology. 2007;168(1):5-18.
53. Jolliffe D, Farrington DP. Examining the relationship between low empathy and self-reported offending. Legal and Criminological Psychology. 2007;12:265-286.

Biography of author(s)
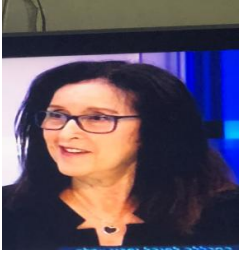
Rachel Pasternak Ph.D.
School of Behavioral Sciences, College of Management Academic Studies, Yitzhak Rabin Avenue, Rishon Le Zion75190, Israel.

She has been the Former dean of the School of Behavioral Science (2015-2017), COMAS. She has 35 years of Teaching and writing experience in COMAS and Levinsky Teacher's College in Israel. Her research areas are Sociology of Education and Sociology of the Family. She has published 7 books and 20 papers.

Dr. Anat Guy, Ph.D
Department of Behavioral Sciences, College of Management Academic Studies, Yitzhak Rabin Avenue, Rishon Le Zion75190, Israel.

She has a Ph.D. degree in Social Work from the Hebrew University of Jerusalem. She is a Senior Lecturer at the School of Behavioral Science, College of Management Academic Studies, Israel, where she is chair of the M.A program of Family Studies. She has written several chapters and articles on topics in gender, parenting and changes in personal values. Her current research projects include gender entrepreneur and intersectionality (Het Foundation), and ultra-orthodox women in Israel (College of Management Research Foundation). Outside of academia, she is a family therapist and a member of family therapy institute "Reut" in Jerusalem.

Exploring the Relevance of Work-study Programme in Tertiary Institutions in Nigeria

Dare Ojo Omonijo[1,2*], Michael Chibuzor Anyaegbunam[3] and Chukwuemeka Arinzechukwu Felix Okoye[3]

ABSTRACT

This study explored the usefulness of work-study programme to students in tertiary institutions in Nigeria intending to inculcate dignity of labour in them, bearing in mind the seeming belief of many youths on the application of Machiavellian Principle on wealth creation in contemporary times. It also illustrates the usefulness of the scheme to indigent students, using data from a secondary source and content analysis as a methodology. In its concluding remarks, the study argues that the programme if introduced and properly implemented could restore the traditional belief of people in work, success and life.

Keywords: Relevance; work-study; programme; tertiary institutions.

1. INTRODUCTION

In the 21st century, studies have shown that human desire to acquire education is one of the greatest steps to a successful life [1]. Such studies show that most unsuccessful people who engage in poor jobs are uneducated and lack certificates that are required for better placements in work organisations [1]. Hence, works that attract good conditions of service to live a better life require certificates which can only be obtained through education. The nature of such works, mostly in science and engineering is technical and delicate, and they require training in educational institutions for proficiency.

Previously, education was taking place in classrooms, but with the advent of science and technology, the enrolment of people on education has assumed a new dimension, as it enables people to obtain degrees online [2]. It has also been granting people an opportunity of acquiring education via distant learning programmes, Bof [3]. The new phase of education has also resulted in a work-study scheme. Since the 21st century has witnessed a revolution in science and technology, it has become easy to engage in these programmes for personal development across the world. Specifically, it has influenced the introduction of such programmes in developing countries, such as Nigeria.

In private tertiary institutions in Nigeria, the directorate of Student Affairs has been greatly transformed to accommodate a work-study programme that was not in existence in the past [4]. This paper intends to illustrate the usefulness of the programme to indigent students and the youth population in general as it relates to work, success and life in the present that the attention of most of them is focused on acquiring wealth irrespective of its source.

The paper discusses the concept of work, study, work-study itself and its usefulness to the Nigerian students.

[1]Department of Student Industrial Work Experience Scheme, Covenant University, Nigeria.
[2]Department of Sociology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
[3]Department of Psychology, Nnamdi Azikiwe University, Awka, Nigeria.
*Corresponding author: E-mail: omonijoojo@yahoo.com;

2. LITERATURE REVIEW

2.1 The Concept of Work

The concept of work is viewed differently among scholars Morin [5], but it could be simply perceived as a bundle of activities or assignments or duties carried out regularly for different purposes. Such include to earn income to perform social [6]; economic Afuberon & Okoye, [7]; cultural, Doucet, [8] and political obligations in the society [6]. It could also be perceived as activities carried out on humanitarian grounds. These include the propagation of the gospel among Christians [9]. Such persons are not interested in remunerations but the advancement of the kingdom of God. Non-governmental Organisations aiming at ameliorating the plight of the needy in the society Omofonmwam & Odia, [10] are also in this category. In most cases, persons serving on this platform are wealthy and not interested in money but the transformation of the suffering masses and they are largely found in developed nations, where the concern for the needy is often considered a priority [11].

However, it could be deduced that work is very essential in human society, but it requires meeting certain conditions, most especially, works that are related to sciences and engineering. The most important aspect of these requirements is the qualification and the necessary skills to match with. According to Zojceska [12], Job requirements are an essential part of both job description and posting. For high skilled works, qualification demands to study for knowledge from the elementary school to the higher citadel of learning, which usually takes a couple of years. Within this period, the learner must endure several things and subject himself to circumstances surrounding learning as indicated in the next section of this work.

2.2 The Concept of Study

Work-study is the application of the intellectual aptitudes to the attainment of knowledge either in a formal or an informal setting [13]. In formal settings, it involves people subjecting to classroom teaching, reading and attending lectures from an elementary school to higher citadels of learning for years while in the informal system it involves practical training via a strong partnership between industries and academic. However, some authors have argued that the successful combination of theoretical knowledge with practical training guarantees competency of students at work after graduation Bradley, (2012).

According to Ravitharan [14], studying is regarded as a skill which can be very difficult to master, but other studies have shown that it can be mastered through several means [15]. These include the engagement of note-taking, Jollivet, [16]; verbal encoding and auditory approach [17], companion system [18], visual approach Jollivet, [16]. Others include the use of print materials [19]; listening to music Goguen, [20]; exercising Godman, [21]; relaxation [22]; change of scenery [23] and thwart the Curve of Forgetting [24] etc.

The purpose of engaging the best strategy for the study is to enable students to acquire the best results to secure the best jobs after studentship. This is because employers of labour are interested in students with excellent academic records for job placement [25]. Hence, students who fail to obtain outstanding academic records may find job placement difficult in a competitive job market.

As education is becoming costly, responsible governments in developed nations and the Management of some private universities in developing countries, such as Nigeria, decided to introduce a work-study programme to help indigent students. The programme is hereby discussed briefly below:

2.3 Work-study Programme

The concept of work-study means temporary jobs given to students who are currently undergoing academic pursuit in the higher education system to accomplish a degree. Unlike other forms of employment, this scheme was specially designed to enable students to accomplish their academic

pursuit in the face of financial hardship. It involves studying and working at the same time but with a different time frame [26].

Studies have shown that work-study is prominent in developed nations such as North America and Western Europe [26]. In the US for instance, it is regarded as Federal Work-Study and a form of monetary assistance granted to students who show an element of financial need and also meet certain requirements to participate in the scheme. As illustrated by Orszag & Orszag, [27], 65% of undergraduate students at Columbia University participated in the scheme between 1920 and 1930. In the view of Authors such as Miller, Danner & Staten [28], as students began to experience financial need, increase in the cost of education and unemployment after graduation, work-study become essential for them in developed nations. Apart from that, it is evident that international students could benefit from the programme via HTIR Work-Study, Inc. that was established in1996 [29].

Two types of work-study exist in the US. The first is called the Federal Work-Study Scheme and it was designed to meet the need of indigent students while the second is called Non-Federal Work-Study Scheme, which applies to students on part-time programmes Chin-Fah & Shan-Hua, [30], which is not meant for meeting students financial needs. Another major difference between the two is that students who engage in the latter work on campus while those who engage in the second work off-campus, in different private organisations. Work-study inspires jobs in community service and other areas related to students' course of study with the minimum federal wage. However, the amount could be different based on the location of the employment and the work being carried out. Nevertheless, students' remuneration is not allowed to exceed their total Federal Work-Study and when they are about to be assigned for work, employers of labour usually consider their class schedule and limit before fixing time and it should not be more than 10 to 15 hours per week.

The programme began to gain the attention of the management of tertiary institutions in Africa, most especially in South Africa with the revolution in Student Affairs Administration. As higher education systems in South African began to collaborate with higher institutions in developed nations, Student Affairs Administration began to take a new shape in South Africa. Thus, various programmes in Student Affairs Administration that was not in existence before came on board.

However, it could be observed that Student Affairs Administration is yet to experience transformation in many higher education systems in West Africa. This may not be divorced from the poor level of development in the region that has greatly affected education. In Nigeria, work-study exists in some public [31] and private universities, but its functionality is seemed to be restricted to some private universities. It is unfortunate to realise that the management of the public institutions that ought to have championed the scheme is showing indifferent posture to its application and it shows their high level of irresponsibilies in raising students worthy in character and learning. The usefulness of the scheme and how it could impact virtue of them is hereby discussed below, briefly.

2.4 The Relevance of Work-Study

Just as full employment is very essential to the survival of mankind, the work-study programme could also be very essential to a section of the populace (students) in a poverty-ridden country like Nigeria [32]. Its usefulness could be hinged on the recent belief of the Nigerian youth on the application of Machiavellian principle-the end justifies the means, as the major strategy of achieving wealth which some authors have linked with the high-level corruption ruining Nigeria's development [33]. This means the value which Africans placed on dignity in labour for achieving wealth for a successful life prior to colonialism is no longer valid in the present-day Nigeria. Therefore, the introduction of work-study to students irrespective of the socioeconomic background of each of them, could inculcate dignity of labour in them and thereby restore the lost value placed on integrity for achieving a successful life and national development (See Table 1).

Besides, work-study could grant indigent students (orphans and single-parent children) access to higher education where their potentials could be transformed for the betterment of the society. In addition, the scheme could serve as a means of preparing students for the world of work, in terms of work-related experiences. The programme could equally be used to curb riots and cultism on campus.

The tendency for students to engage in criminal activities when idle goes to corroborate the dictum which says an idle hand is the devil's workshop [34]. Thus, it could be very difficult for students who are learning and working at the same time to have time for such nefarious activities.

Table 1. Beliefs on work, success and life, Yorubaland, South-West, Nigeria

SN	Beliefs	Meanings
1	Isenioogunise	Work is the cure for lack and want
2	Murasiiseoremi	Be serious with your work my friend
2	Iselafindenigiga	Work elevates people and makes them prominent in life
3	Apalara, ijikaniyekan	Hands are peoples relatives, shoulders are their families
4	Biakobarenifeyinti, atepamoisearaeni	If one does not have helpers, he or she should be hardworking
5	Ohuntiabafiarasesefunlonpelowoeni	Whatever we properly work for, use to last in human hands

Source: Researchers Compilation, (2020)

3. CONCLUDING REMARKS

This study examined the usefulness of work-study scheme in Nigerian higher education systems as it relates to the belief of the youth population on work, life and success. Among other things, the work argued that its introduction and proper implementation could restore the lost dignity that goes with work, life and success among the youth population. Since tertiary intuitions are created to raise persons worthy in character and learning, the application of work-study could be used to achieve the focus perfectly, most especially in the present that the focus of youth is on how to acquire wealth irrespective of its source [10].

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Gerou TD. Student failure - Illiteracy - Learning Difficulties: Dyslexia. Athens: Vivliogonia; 1991 (in greek).
2. Liyanagunawardena TR, Aboshady OA. Massive open online courses: A resource for health education in developing countries. Global Health Promotion. 2018;25(3):74–76.
3. Bof AM. Distance learning for teaching training in Brazil. International Review of Research in Open and Distance Learning. 2004;5(1).
   [Retrieved June 1, 2007]
   Available:http://www.irrodl.org/index.php/irrodl/article/view/172/387
4. Covenant University. Work-Study Information Bulletin. Ota. Dominion Printing Press; 2013.
5. Morin T. Defining the World of Work; 2020.
   Available:https://workfeelsgood.com/world-of-work/definition/
6. Oloko T. Wither Nigeria; 20 Unresolved Problems about Nigeria. Lagos: Daily Times; 1982.
7. Afuberon IR, Okoye GA. The effect of tax compliance on economic growth and development in Nigeria, West-Africa. British Journal of Arts and Social Sciences. 2014;11(2):233-25.
8. Doucet J. Nigerian Burial Traditions; 2018.
   Available:https://classroom.synonym.com/burial-traditions-cherokee-indians-6872.html
9. Katongole E. Prospects of ecclesia in Africa in the twenty-first century. Logos: A Journal of Catholic thought and Culture. 2001;4(1):178-195.
10. Odia L, Omofonmwan SI. Educational system in Nigeria problems and prospects. Journal of Social Sciences. 2007;14: 86-85.
11. Habiba A. Ibrahim. NGOs and development work in developing countries: A critical review American Journal of Innovative Research and Applied Sciences. 2017;5(1):1-6.

12. Zojceska A. Job requirements: The how, why and what; 2018.
Available:https://www.talentlyft.com/en/blog/article/165/job-requirements-the-how-why-and-what>

13. Merriam-Webster Online Dictionary. Definition of study; 1828.
Available:https://www.merriam-webster.com/dictionary/study.

14. Ravitharan S. Study tactics to help you succeed this exam season; 2018.
Available:https://www.hercampus.com/school/queens-u/study-tactics-help-you-succeed-exam-season.

15. Bradford JW. A case study examining the reading and study habits of gifted readers in the context of deep reading. Dissertations, Theses and Capstone Projects. Paper 510; 2017.

16. Jollivet S. 5 Different studying methods; 2017.
Available:https://www.hercampus.com/school/waterloo/5-different- studying-methods

17. Syofyan R, Menik KS. The impact of visual, auditory, and kinesthetic learning styles on economics education teaching. Advances in Economics, Business and Management Research, volume 57. 1st International Conference on Economics Education, Economics, Business and Management, Accounting and Entrepreneurship (PICEEBA 2018). 2018;642-649.

18. Demiris G, Thompson HJ, Lazar A, Lin SY. Evaluation of a digital companion for older adults with mild cognitive impairment. AMIA. Annual Symposium proceedings. AMIA. Symposium. 2017;496–503.

19. Singer LM, Alexander PA. Reading on paper and digitally: What the past decades of empirical research reveal. Review of Educational Research. 2017;87(6):1007–1041.
Available:https://doi.org/10.3102/0034654317722961

20. Goguen B. 3 reasons you should try studying while listening to music; 2020.
Available:http://blog.online.colostate.edu/blog/online-education/3-reasons-you-should-try-studying-while-

21. Godman H. Regular exercise changes the brain to improve memory, thinking skills; 2018.
Available:https://www.health.harvard.edu/blog/regular-exercise-changes-brain-improve-memory-thinking-skills-201404097110>

22. Mcgaugh J, Roozendaal B. Role of adrenal stress hormones in forming lasting memories in the brain. Current Opinion in Neurobiology. 2002;12(2):205-10.
DOI: 10.1016/S0959-4388(02)00306-9

23. Asari D. Needed a change of scenery? 9 Ways to adjust when transferring to a new college; 2018.
Available:https://www.honorsociety.org/articles/needed-change-scenery-9-ways-adjust-when-transferring-new- college

24. Murre JM, Dros J. Replication and analysis of Ebbinghaus' forgetting curve. PloS One. 2015; 10(7):e0120644.
Available:https://doi.org/10.1371/journal.pone.0120644

25. Velasco M. More than just good grades: Candidates' perceptions about the skills and attributes employers seek in new graduates. Journal of Business Economics and Management. 2012;13: 499-517.

26. Oludayo OA, Omonijo DO, Uche OOC, Rotimi AO. Evaluation of students work-study programme: The case of a private (Faith-Based) higher education institution, South-West, Nigeria. British Journal of Education, Society & Behavioural Science. 2014;4(6):784-809.

27. Orszag JM, Orszag PR. Whitmore DM. Learning and earning: Working in college; 2001.
Available:http://www.Brockport.edu/career01/upromise.htm>

28. Miller K, Danner F, Staten R. Relationship of work hours with selected health behaviours and academic progress among a college student cohort. Journal of American College Health. 2008;56(6):675-679.

29. International Students. HTIR Work-Study in the USA, INC; 2020.
Available:https://www.internationalstudent.com/work-study/htir/

30. Chin-Fah W, Shan-Hua C. Weighing the benefits of part-time employment in college: Perspectives from indigenous undergraduates. International Education Studies. 2013;1(6):104-110.

31. Adewale TO, Ajayi NA. Student librarian work-study programmes in academic libraries: An appraisal. Library Philosophy and Practice, March Issue; 2010.

32. Omoniyi BB. An examination of the causes of poverty on economic growth in Nigeria. Africa's Public Service Delivery and Performance Review. 2018;6(1):175.
Available:https://doi.org/10.4102/apsdpr.v6i1.175

33. Ochulor CL, Metuonu IC. Machiavellian philosophy of wealth acquisitionin contemporary Nigeria: A critique. Canadian Social Science. 2013;9(2):56-61.

34. Kolade O. An idle hand is the devil's workshop- evaluating the impact of entrepreneurship education in conflict-ridden Northern Nigeria; 2016.
DOI: 10.13140/RG.2.2.26741.47843.

Biography of author(s)

Dare Ojo Omonijo
Department of Student Industrial Work Experience Scheme, Covenant University, Nigeria and Department of Sociology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.

He is a Senior Assistant Registrar at Covenant University and a doctoral researcher at Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria. His research interests extend to Sociology of Development, Social Change, Gender and Student Affairs Issues. His articles, over seventy, have appeared in reputable peer-reviewed journals and Ten (10) international conference proceedings, some of which are indexed in the Web of Science Core Collections, Scopus and Google Scholar. Presently, he has 264 citations, 9 h-index and 9 i10-index in Google Scholars, 34 citations and 3 h-index in Scopus. He is serving as a reviewer to Scopus indexed International Journals such as Bulleting of Geography: Socio-economic Series, Sage Open, British Journal of Education, Society & Behavioural Science and Conferences, which include International Business Information Management Conference (IBIMA), IBIMA Publishing LLC 630 Freedom Business Center Drive, 3rd Floor King of Prussia, PA 19406, USA; International Conference on Science and Sustainable Development, Covenant University, Ota, Ogun-State, Southwest Nigeria, etc. He is a member of the International Association of Student Affairs and Services and American Sociological Association. Lastly, he is currently serving as an Associate Editorial Board Member, EAS Journal of Humanities and Cultural Studies.

Dr. Michael Chibuzor Anyaegbunam
Department of Psychology, Nnamdi Azikiwe University, Awka, Nigeria.

He is a Social Psychologist and Lecturer in the Department of Psychology, NnamdiAzikiwe University, Awka, Anambra State, Nigeria. A member of the Nigerian Psychological Association (NPA) and the Nigerian Association of Social Psychologists (NASP) with research interest is in Social Psychology and Cyber-Psychology. He is cited and published in local and international peer-reviewed journals and conference proceedings with a high impact factor in Scopus and Google Scholar.

Chukwuemeka Arinzechukwu Felix Okoye
Department of Psychology, Nnamdi Azikiwe University, Awka, Nigeria.

He is a Clinical Psychologist and Senior lecturer at Nnamdi Azikiwe University, Awka. He is a member of several professional organization including the Nigerian Psychological Association, Nigerian Association of Clinical Psychologist, Nigerian Association of Psychosocial Researchers, among others.

Racial Discourse in Bluest Eye and God Help the Child: An Overview

R. Jinu[1] and Chitra Soman[1*]

ABSTRACT

Racism is a practice evolved from a myth that physical traits of one race is superior to another. The basic myth of racism is that white skin colour brings with it superiority that the white is more intelligent, more virtuous where is black its Foil Carry all the opposite traits of white. Afro American race is more prone to the practice of racism as they have been uprooted from the native soil to unknown terrain of another race.

Afro American literary span can easily be marked as apartheid and post-Apartheid period. The Apartheid Period has literary contributions on how Afro American community subjected to racism in the hand of other races. Whereas Post-apartheid period has a different story in which the Racism is not mere external but internalized.

Being an Afro American writer Toni Morrison confronts racism as the African American's primary obstacle. And Morrison always find solutions inside community not outside. In 1970 Toni Morrison made her debut as a novelist with the Bluest Eye. Unlike other writers who speaks on racial conflicts as an issue from outside. Morrison analysis racism can be removed if it's not internalized. For that Morrison believes that the concept of physical beauty as a virtue is one of the most pernicious and destructive has to be lifted Morrison's first work and recent work God Help the Child discussed on the same theme but the crucial difference is the change in societal approach on the racial ideologies of black and white community.

Keywords: Race; Afro American; dominant race; and hegemony.

1. INTRODUCTION

The practice of racism is evolved from the belief that particular race is superior than all other human races [1,2]. They have been gifted with the human traits in its excellent forms. So naturally it has given them power to dominate other races. Afro American race is the most vulnerable race to the social evil called racism. Toni Morrison as a writer championed for up liftment of the black race underlies the fact that racism is the evil force that uproots the black race [3,4]. She also believes that any evil force that is oppressive in nature can be eliminated through the cultural values, if it is operated from external.

2. DISCUSSION

In1970 Morrison`s pioneer work the *Bluest eye* and in 2015 *God help the child* [5]. Meditates on the issues of racism. Unlike other Afro American writers Morrison concentrates on internalized racism. The three major themes of the novels are Racial prejudice, Racial superior, Self-perception. Afro American community creates a racial distinction among themselves as they tend to prefer light skinned among them. Toni Morrison calls this syndrome as "racial self-loathing" This is often due to the values internalized through the mediums dominated by superior race. When people on race are constantly told that they are not as good as people of another race, they start believing it. They begin to hate their racial features and even their culture.

[1]*Department of English, Noorul Islam Centre for Higher Education, Kanyakumari, India.*
Corresponding author: E-mail: chitrahkrishna@gmail.com;

Many times they feel ugly and worthless. Family and romantic relations suffer" (A Study guide to Toni Morrison 60) Most often the resultant victims of these internalized hegemonic concepts are children. It is because the physical traits of the children born in this particular race will make them a pariah for the community. Toni Morrison emphasis how racially self-inflicted society devastates the image of African family in general and female child in particular in the works Bluest *eye* and *God help the child*. Breed loves in *Bluesteye* and Sweet family in *God help the child* are victims to their failure to transcend the imposing definitions of hegemonic concepts. They are merely reduced to a state of objectness remains frozen in a world of being for the other and it results are a life of self-destruction and self-negation.

An Afro American family is culturally and racially saved by the mothers. Here in *Bluest eye* and *God help the child* the cultural adulteration has been germinated by so called mothers. Mother Pauline and Mother Sweet are alike in nature for this cause though the time period of *Bluest Eye* in 1970 and *God Help the Child* [5]. Both Mothers welcome the destructive idea of equating physical beauty with virtue into their families.

Motherhood is the most blessed period in a woman`s life. But Pauline and Sweeties first moment with their child is filled with hatred and despair on seeing their babies" physical features that have no White connection. "She looked so different from what I thought Reckon I talked to it so much I conjure da mind`s eye view of it" *(Bluest Eye* 99)

"It is not my fault so you cannot blame me I didn`t do it and I have no idea how it happened it did not take morethan hour after they pulled her out from between my legs to realize something was wrong. Really wrong. She was so black she scared me" [5].

Moreover, labour experience of the Black mothers is undesirable, irrelevant and unimportant Their self-perception begins to change after their labour.Just because these mothers have been subjected to degradation from the doctors and their husbands. Pauline learns from the labour room that her blackness renders her undesirable and the baby Pauline holds in her arms is ugly. She is so black in colour while sweeties labour experience is similar to Pauline. She too rejected by husband and also be blamed for adultery as she and her husband is light skinned. in comparison to the dark baby born for them.

The degradation coupled with their desperate delivery of black coloured babies reflect their future bond with their babies.

Afro American communities adopt three way practise to bring their children. They are preservation, nurturance and cultural bearing. Through three ways mothers unfolds beautiful and most precious bond with their children. In these the most required and unique bond is nurturance. It feeds the soul and body of child. Pauline and Sweet can"t create an emotional bond with their child. The loss of nurturance denies these children an opportunity to create a self-claimed identity. To quoted the words of walker "children become adult and carry with them a trauma imprinted on body and memory" [6].

Pecola Breed love belongs to the time period of 1970 in South America. During these times racism is in its peak. It denies Afro American community the right to freedom for a life. Though it is an historical period after emancipation Black community is inflicted with a self-perceived ideas of racism. Societies search for a pariah ends in Pecola for her dark tone of skin. She has been infused with the frustrations born out of racial complexities in the society. Young Pecola"s identity is evolved out through the perception of others. Her self-image is what she sees reflected in the eyes of others, the image of ugliness. She would see only what there was to see, the eyes of other people.

The internalized assumptions regarding the meaning of acceptance and love influence her notions of family and community. Therefore, she seeks the pathetic and futile power for earning physical beauty fulfilling white standards "what did love feel like?... How do grown up act when the love each other...?" (*Bluest Eye* 57).

Pecola`s self-abnegation is further intensified with parental in difference. The home which is conventionally associated with the security and nurturance is absent in Pecola`s life. The Breedlove house hold does not breed the warmth of love but of inadequacies and frustration. Mrs Breedlove never mothers their children. Her son Sam is aggressive and desperately seeking attempts toinflict pain on others. While Pecola hides away and absorbsphysical injuries humiliation" and degradation within herself. Mrs Breedlove finds herself as a dutiful mother only in the presence of white family where she works as a maid.The beauty of white children and the order of white home satisfies Pauline"sinternalisation ofphysical virtues. A black child is a gift born out of the effort of the black family and the graciousness of black community as well. "The black woman need to grow up fast, by passing a leisurely childhood emanates from harsh environmental conditions" [7].

The word bluest eye is contaminated with PedoPhiles-and incest Rape from her father disintegrate Pecola into insanity. Pecola's childhood is not nurtured and protected by those who are responsible for it.Her mother can be called as the prime suspect in offering Pecola a worst childhood.

Meanwhile in *God help the child*, Lula Ann is the modern version of 1970`s Pecola. Lula Ann is too rejected by her mother. Assoonas she has been given birth into this world. Her life also devoid of motherly nurturance. Lula Ann`s mother is refused to touch her even believing. she is the ugliest daughter and the reason for deserting herby husband in the amidst of comfortable family life. Unlike Pecola Lula Ann has less social oppression it's because change in time has made liberalism possible in the thought process of both the Races. Ann's faced internalizes racism from her comparatively light skinned parents." ... nursing her was likehaving a sucking my treat. I went to bottle tending soon as I got hone (*God help the child*, 5)

Her witness in Sofia Huxley's case has asserted her identity as a girl. The surplus education followed by a job at SylvInac, starts own brand called„ "YOU GIRL". By the support of Jeri Lula Ann could brand her skin tone once rejected by her mother.

To enhance her Liquorice skin colour Lula Ann starts wearing white and white all the time "A panther in snow just you girl" (*God help the child*, 15).Her deprived childhood has shaped her and provided with weakness and strength. Later she has become a confident lady.

Enough to solve the crisis of her boyfriend and being a care taker of Rain.

Lula Ann is rejected and degraded child. Though her mother Sweetness refuses all the two motherly functions, she has maintained preservation for Lula Ann. Her identity has some deformities due to the absence of motherly boosted Confidence through nurturance. But She tries to evolve out of herself from the social experience she has been acquired in the hands of other people in her life. Gradually she has become groomed as a global and confident in nickname Bride.

3. CONCLUSION

Afro American mother should know how to maintain a strong authenticity so that they may nurture same in their daughters. To quote the words of Adrienne rich. "The nurturance of daughter calls for a strong sense of the nurture in mother" (27).

Both Pauline and Sweet are vulnerable to the dominant white supremacist ideology which results in their own self-hatred and guilt spoils the experience of black daughters born to them causes in their self-effacement and disparagement.

Women who have been denied the Cultural Bearing or Mother Line Mothering affirms the controlling image put forward by dominant culture and disallow women to develop strong and authentic selfhood as a Black woman. To conclude with Morrison's asserts "...all those people were me. I was everybody". (Interview given to Gloria Naylor, 1995).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Crayton Lisa A. A students guide to tonimorrison. USAEn Slow Publishers Inc; 2006.
2. Ruddick Sara. Maternal thinking: Towards of politics of peace. USA, Beacon Press; 1995. Print.
3. Morison Toni. The bluest eye. London Vintage; 1998.
4. Rich Adrienne. Of woman born: Motherhood as experience and institution. Norton; 1986.
5. God help the child. London. Vintage; 2015.
6. Walker Alice. In Search of Mother Gardens. New York. Harcourt; 1983.Print
7. Burger Mary. Images of self and race in the autobiographies of black women. Sturdy Black Bridges Visions of Black women in literature. Ed. Roseann P. Bell et al. Gardencity. Anchor; 1979.

Biography of author(s)

Chitra Soman
Department of English, Noorul Islam Centre for Higher Education, Kanyakumari, India.

Research and Academic Experience: Six years academic experience and five years research experience.

Research Area: Black motherhood.

Number of Published papers: 15 papers published.

Special Award (If any): Honoured by Rotary International for the Contribution in Academic Field.

Any other remarkable point(s): Served as the Head of the Department of Languages in NSM, Cherthala, Affiliated to Kerala University.

_____

A Critical Study on How Non-Native English Writers Indicate the Research Gap in Research Article Introductions

Ina Suryani[1*], Norkhairi Ahmad[2], Azlan Abdul Aziz[3] and Badrul Hisham Ahmad[4]

ABSTRACT

Writing research article to a peer reviewed publication is a complex process and involves daunting communication with the referees, co-authors and editors. Publication writing is more challenging than the usual communicative expression yet; prolific writers often pass through the processes without too much difficulty. Prolific writers draw on many writing strategies and one of the strategies is by highlighting the research gap. Most of the time, the research gaps highlighted are those related to the intended research niche and the intended study. While the strategy has been used and taught in many research writing instances, the strategy has been reported to be unpopular amongst the non-native English research writers. Although many non-native English writers are aware of the importance of the research gap, not much is known on how this strategy is being practiced. In view of the underutilization of this strategy and limited studies on the strategy in non-native context, this paper investigates the use of this strategy in 150 research articles introductions in Computer Science disciplines written by academicians in Malaysian Universities. The finding of this study confirmed that indicating research gap as a strategy is underutilized by the research articles written in the corpus. In addition, this paper also described four various ways on how this strategy is commonly used by the non-native writers. The confirmation and authentic examples may be useful in the teaching and learning of research article writing.

Keywords: English second language; research article; writing; computer science; non – native writers.

1. INTRODUCTION

In order to increase the quality and quantity of research articles, researchers have to overcome many challenges and some of the ordeals listed are English language barrier [1,2], time constraint [3,4] and cultural issues [5,6]. The problem related to language use in research writings, particularly in the developing nations continues to be discussed by many researchers [5,6,7]. Writing research article for publication is more challenging than the usual communicative writing [1,8] yet; prolific research writers often pass through the processes without too much difficulty. Prolific research writers draw on many writing strategies and one of the strategies is by highlighting the research gap. Studies have shown [9,10,11,12] that this strategy is gaining recognition in Computer Science global research writing, however not much is known on how this strategy is being utilized by the Computer Science non-native English writers. While the strategy has been used and taught in many research writings classes, the strategy has been reported to be unpopular amongst the non-native English research writers [5,6,13] investigated on the similarities of research articles in Indonesia [5,13], Thai [6] and whereas [14] looked at the research articles introductions written by the Arabs writers while [15] studied the phenomena in the context of Brazilian Portuguese. While these studies have reported on the practice amongst the non-native writers, the practice amongst the Malaysian writers is yet to be investigated. In view of the fact reported by the researchers that the characteristics and problems in research

[1]Centre for Liberal Sciences, Universiti Malaysia Perlis, Malaysia.
[2]Universiti Kuala Lumpur Malaysia France Institute, Malaysia.
[3]Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Melaka, Malaysia.
[4]Academy of Language Studies, Universiti Teknologi MARA, Perlis, Malaysia.
*Corresponding author: E-mail: inasuryani@unimap.edu.my;

writing can be uniquely related to the nativity of the writer [16], this study intends to focus in the use of this strategy into the research article introductions written by the academicians in Malaysian universities.

1.1 The Strategy of Indicating the Research Gap

Indicating the research gap entails the writer to recount the research area and point out the research space which exists in the body of the research. The writer tries to convince the audience that the research space requires further investigation and is worth studying. Initially, the research area is described in general and then, the research is elaborated further with growing specificity that delves into the research niche. While giving the account on the research niche, the research gap is identified after which, the research space is created and the necessity for the intended study is specified. The research gaps highlighted are particularly related to the intended research niche and study. The act of indicating the gap is described as "builds up a "demand" for "current contribution" [12:p6]. The strategy of "Indicating a research gap" has been identified as one of the steps that contributes to the move on indicating the research niche in Create-A-Research-Space model (CARS) [17]. The CARS model [17] suggested a few rhetorical moves and steps that can be utilized in writing research article introduction. While the analysis for this study used all the strategies suggested in the CARS model [17], this paper reports only on one of the rhetorical strategies which is "Indicating a research gap". The focal point of this paper is on this particular rhetorical strategy and such focus is determined to ensure that deeper explanation on the finding can be made.

1.2 Previous Studies

Swales [17] has elaborated on the use of move analysis to identify the strategies in research article introductions and proposed that the strategy of "Indicating a research gap" is not an obligatory strategy in writing the introductions. Even though this strategy is suggested as non-obligatory [17], many studies found that this strategy is utilized by most of the researchers in Computer Science discipline [9,10,18]. [18] found that "Indicating a gap" is the most preferred strategy in highlighting that the intended research. [18:143) puts it "indicating a gap appears as the preferred means of presenting the need for the work". Anthony [10] who studied the introduction section of the best papers in Software Engineering found 91.7% of the researchers in the study practiced this strategy. [9] found 95% of the research article introduction in Computer Science discipline also utilized this strategy. In other words, studies on research article introductions have shown that the strategy of "Indicating a research gap" is highly used amongst Computer Science research article writers. While the strategy is being used by the Computer Science research writers at the global scale, it is unclear how this strategy is being used by the non native writers. Unlike the mentioned studies [9,10,18] which did not put emphasis on the nativity of the writer, this study intends to explore further on how this strategy is being utilized by the non native writers particularly the academicians in Malaysian universities.

2. METHODS

Studies on research article writing have reported that researchers in different disciplines used different rhetorical strategies in writing [16]. Taking heed from the reports on the significance of disciplinary variations on how writers write the research articles, this study focuses on the research article in Computer Science discipline. This study used two methods which are corpus analysis and interview.

2.1 The Corpus

Malaysian Universities Computer Science Scopus Articles Corpus is created for this study and the corpus includes 150 Computer Science research articles written by academicians in Malaysian universities. The analysis was conducted on the Introduction sections which comprises 98,597 words. Following Bowker and Pearson [in 12] Table 1 gives the profile of the Malaysian Universities Computer Science Scopus Articles Corpus.

Table 1. Profile of the corpus

Aspects	: 98, 597 words
Size	: 150 research articles
Number of texts	: Computer Science
Text type	: Introduction section of the Scopus indexed research articles
Authorship	: Written by academicians in Malaysian Universities
Language	: English

The corpus is available both in the electronic and printed versions. Even though the records of the texts are registered using manual process, having the electronic version made the information retrieval faster [19]. [20] suggested that rather than looking at the sheer size, it is more important to have a balanced mix group which has the potential to give results that are true indicators of the typical behavior, show central aspects of the language which can give enough samples of occurrences to establish reliable results. In line with the suggestion [20], the research articles in this study were chosen based on the Malaysian university groups as having a mix group would generate results which would be more typical to the target group.

2.2 Selection of the Research Articles

The universities in Malaysia can be categorized into 5 groups which are APEX University, research universities, comprehensive universities, focus universities, and Private universities. Each group allocates different amount of resources for researches which echoes to having different emphasis on the research writing. Table 2 tabulates the number of research articles affiliated with the respective university groups in Malaysia. The italicized fonts are details for the sampling from Research university group. The calculation was done based on the totals from each university group. However, many of the articles were co-written by authors from more than one university. To avoid confusion, the research articles were counted in only one of the university affiliations.

Table 2. Number of research articles by the university groups

University group	Number of research articles	Total counted
APEX	20	17
Research universities	94	77
Comprehensive	18	16
Focus	23	20
Private	21	20
Total	158	150

The 'total counted' column refers to where the article is being counted for the statistical analysis. For example, the total of research articles from each research universities is 94. However, because many of the articles overlapped in affiliation, the number of research articles titles is only 77 as the extra has been counted in for the other affiliation.

In the text selection process, the titles of the research articles are derived from the Scopus database. The keywords used for the database filters are affiliation, year 2010, research article, and Computer Science area. Filter function is also used to exclude Multidisciplinary articles and other document types. The orders of appearance for the titles are according to the highest citation on top. The highest cited papers are chosen because highly cited paper represents readership, impact and usefulness to the Computer Science area.

This qualitative study is further developed by performing move analysis on the selected Computer science research article introductions. The move analysis is employed using the rhetorical strategies proposed in CARS model [17] as the construct. As mentioned earlier, CARS model suggested a few strategies however this paper reports on only one of the strategies which is "Indicating a research gap". In conducting the move analysis, each word, phrase and sentence in the paragraph is read carefully to identify any cue that relates to the construct

3. RESULTS

The move analysis found that 73% of the research articles in the study have utilized the strategy of "Indicating a research gap". The percentages of the occurrences according to the university groups are tabulated in Table 3.

Table 3. Percentage of realization for "Indicating a research gap"

University group	Move 2 Step 1A
Apex University	70
Comprehensive University	38
Research University	82
Focus University	75
Private University	70
Total	73

This study also investigates on how this strategy has been realized by the Malaysian writers. The move analysis of this study found that the strategy of "Indicating a gap" is fulfilled using a few other ways than criticizing the work of other researchers. The academicians in the Malaysian universities preferred to portray the research gap using the following four techniques. The four techniques used to realize the step of "indicating a research gap" can be classified mainly by:

1. Indicating limitation in the research area
2. Suggesting a problem that needs to be solved
3. Conveying the suggestions of research by previous researchers
4. Extending the works of others.

3.1 Technique 1: Indicating Limitation in the Research Area

In this first technique, the strategy of "Indicating a gap" is realized by indicating the limited research done in the research area. The technique of indicating the limited research to highlight the research gap is accomplished either by using adversative conjunction, by using various applications of the conjunction "however", by giving direct statement on lack of study, or by giving a critical view on the previous works.

In the first example (UM4), the writer has used the Adversative conjunction 'While' and then proceed to indicate the limitation of the research done in the area hence accomplishing the step on Indicating a gap by stating 'little information is available regarding...' (lines 5-6). The Adversative conjunction is used at the beginning of the sentence which expressed the fact that the area has been studied, followed by the claim that not enough has been done. Here is how the technique has been applied in the excerpt (UM4)

> While effects of the cigarette smoke on proteins expressed in   1
> the bronchoalveolar lavage (36–38), nasal lavage fluid (39),   2
> urine (40), lung tissue (41), bronchial airway epithelium and   3
> pooled exhaled breath condensate samples (42) have been   4
> analyzed, little information is available regarding the effects of   5
> smoking on the whole saliva proteome.   6
>   (UM4)   7

In this excerpt (UM4), the writer listed out the citations which showed that the area that has been studied however at the same time the message on the limited information in the intended research area was clearly stated. The use of the Adversative conjunction coupled with the phrase of "little information is available." has highlighted the limited information in the intended research area hence the strategy of "Indicating a gap" is realized.

The next excerpt (F19 UMT4 Pertanika2P3) also illustrated how the strategy of "Indicating a gap" is realized by using the first technique which is Indicating limitation in the research area. In this excerpt, the realization on the use of Adversative conjunction is coupled with a direct statement on lack of study in the intended research.

> From historical times, carrageen and alginates from seaweeds   1
> are used for medicinal purposes. <u>In spite of their usefulness,</u>   2
> <u>unfortunately only a little work has been done on</u> the   3
> incorporation of seaweed in formulated feeds of freshwater   4
> cultivable fishes.   5
>
> (F19 UMT4 Pertanika2P3)

In the first sentence of this excerpt (F19 UMT Pertanika2P3) the writer has initiated niche idea which is the 'seaweeds' by stating that seaweeds have been used for medicinal purposes. After pointing out that the work in this area has been in practice, the writer proceeded to indicate the limitation in the research area thus, accomplishing the step on Indicating a gap. In this excerpt the writer used the Adversative conjunction 'In spite of' to shift the strategy from initiating the niche area to indicate the limitation in the research gap. And then the writer completed the step by stating 'a little work has been done' (lines 3-4).

Another example on how "Indicating limitation in the research area" is used to accomplish the step on "Indicating a gap" is in the following excerpt (UM4).

> While effects of the cigarette smoke on proteins expressed in the   1
> bronchoalveolar lavage (36–38), nasal lavage fluid (39),   urine   2
> lung tissue (41), bronchial airway epithelium and   pooled exhaled   3
> breath   condensate   samples   (42) have   been   analyzed, <u>little</u>   4
> <u>is available regarding the effects of   smoking on   the   whole   saliva</u>   5
> <u>proteome.</u>   6
>
> (UM4)

In this example (UM4) the writer has used the Adversative conjunction 'While' and then proceeded to indicate the limitation of the research done in the area hence accomplishing the step on Indicating a gap by stating 'little information is available regarding...' (lines 4-6). Similarly, the following excerpt (UM4) also highlighted the research gap by suggesting the limitation in the research area as in "there had been no reported studies that" (lines 1-2). The full sentence on this step is as follows.

> "To the best of our knowledge, there had been <u>no reported studies that</u>   1
> <u>specifically compared the expression of proteins</u> in   the   saliva of   2
> smokers and non-smokers".   (UM4)   3

In the following examples, the writers indicated the limitation in the research area by giving a critical view on the previous works.

> Saif & Guan (13) aggregated the faults and disturbances to form a   1
> New fault' vector and used a linear unknown input observer to   2
> reconstruct the   new 'fault' vector. Although this   successfully   3
> decouples the disturbances from the fault   reconstruction, it requires   4
> very stringent conditions to be fulfilled, and is conservative because   5
> the   disturbance   does   not   need   to   be reconstructed, only   6
> rejected/decoupled.   IIUM8   7

In this excerpt (IIUM8) the writer acknowledged the works done in the area by stating "...this successfully decouples the disturbances from the fault reconstruction..." (lines 3-4) and then proceeded to point out the problems concerning the works that have been done by the previous researchers as in "it requires very stringent conditions to be fulfilled, and is conservative because the disturbance does not need to be reconstructed, only rejected/decoupled" (lines 4-7). Again the use of adversative conjunction which in this case is "Although" has highlighted the contrast between the two

ideas in the sentence. The act of pointing out the unresolved problems despite the previous research done has effectively signified the research gap.

In the following excerpt (F13UniMAP), similar pattern of using adversative conjunction has been made in revealing the research gap.

> Many codes have been proposed for OCDMA such as Optical   1
> Orthogonal Codes (OOCs) (1), prime codes, and Modified Frequency 2
> Hopping (MFH) codes (8). However, these codes suffer from various 3
> limitations one way or another. The codes' constructions are either 4
> complicated (e.g., OOC and MFH codes), the cross-correlation are not 5
> ideal (e.g., Hadamard and Prime codes), or the code length is too long 6
> (e.g., OOC and Prime code).   (F13 UniMAP2)   7

Similar to example (IIUM8), the writers of (F13UniMAP2) acknowledged the works that have been done in the area by stating "...Many codes have been proposed for OCDMA such as Optical Orthogonal Codes (OOCs) (1), prime codes, and Modified Frequency Hopping (MFH) codes (8)" (lines 1-2) and then proceeded to point out the problems concerning the works that have been done by the previous researchers as in "complicated" (line 6), "not ideal" (line 7) and "code length is too long" (line 9). The use of adversative conjunction "However" (line 4) has signified the limitations that still exist in the research area. On top of this, the writers of (F13UniMAP2) have attempted on giving a critical view on the previous work by stating "However, these codes suffer from various limitations one way or another" (lines 3-4).

The examples (F19UMTPertanika2P3, UM4, IIUM8, F13UniMAP) indicated an emerging pattern on how Move 2 Establishing a niche using step 1A Indicating a gap has been accomplished by the Computer Science research article writers. The emerging pattern is by indicating the limitation in the research area by posing two opposite ideas and using adversative conjunction to highlight the research gap.

The word "However" has also been found to be used regularly in realizing this step in this corpus. Some of the examples are quoted below

> By basing on the description of the traffic patterns, the control system is made adaptive, resulting in adjustment in the hall call assignment strategy. However, these approaches were heavily dependent on the accuracy and correctness of traffic pattern predictions. (UM7)

> DPR has been widely studied in various fields (4–18). However, current DPR design flows and implementations are not capable to provide a set of programs to establish communication between the FPGA and host computer. (F2 UTHM2)
> "However, it can also be necessary to recognize the handwritten authorship without signature, such as in case of threatening let-ter, (sic) authorship determination of an old or historical manuscript." (F6 UTEM2)

> "...they are potentially good in finding high-quality solutions. However, they can be quite inefficient too in the use of computational resources." (UM7)

The examples above show the usage of "however" in accomplishing the move of indicating a gap. Most of the time, the position of the word is at the beginning of the sentence. The prior sentence usually states the existence of the current research in the area and the word "however" highlights on the limitation of the existing research.

In short, the first identified technique on how to realize indicating a gap in the research article introductions of this study is by Indicating limitation in the research area. To highlight the research gap, this technique was found realized by using adversative conjunction, by using various applications of the conjunction "however", by giving direct statement on lack of study, and by giving a critical view on the previous works.

3.2 Suggesting a Problem that Needs to be Solved

In indicating a research gap, apart from addressing the limitation in the research area as explained in the previous sub section, a second technique was also identified. The technique is by suggesting a problem that needs to be solved. The research gap can be signified by suggesting the problem that needs to be solved. The need for difficulty or challenge to be resolved or improved is conveyed and then the advantage of resolving the problem or the disadvantage of not solving the problem is presented. The following quotes illustrate on the way the step is realized in some of the articles using this method.

> Therefore, there is <u>a need for a technique</u> in data clustering to improve the accuracy and computational complexity (F1 UTHM1)

In this excerpt (F1 UTHM1) the writers have suggested "a need for a technique" next; the writers proceeded to suggest the advantage of meeting the need which is "to improve the accuracy and computational complexity". The pattern of highlighting the problem that needs to be solved is usually followed by an indicative solution or advantage. This pattern also prevailed in the following examples (F2UTHM2) and (F1UTHM1)

> <u>Time and massive amount of data to be processed have resulted in vast challenges</u> from a hardware implementation point of view. In order to address these issues, FPGAs with an efficient reconfigurability mechanism should be deployed to meet the requirements in terms of speed, area (size), power consumption and throughput. (F2UTHM2)

In the example above (F2UTHM2), similar pattern of highlighting the problem that needs to be solved followed by a suggestion on the solution or advantage has emerged. The problem highlighted was "Time and massive amount of data to be processed have resulted in vast challenges" and then the suggested solution of "FPGAs with an efficient reconfigurability mechanism" was made.

However, in the following example (F1UTHM1) only part of the pattern materialized. Nevertheless, the act of 'suggesting a problem that need to be solved' still managed to make the effect of "Indicating a gap".

> It has been shown in Section 4.1 that TR and MMR have the same result in selecting clustering attribute. With this technique, <u>the complexity is however still an issue</u> due to all attributes are considered to obtain the clustering attribute. (F1 UTHM1)

In this example (F1 UTHM1), the writer suggested the problem that needs to be solved as in "the complexity is however still an issue". Unlike the example prior to this (F2UTHM2), the writer did not proceed to suggest any solution for the problem or suggest any advantage for solving the problem highlighted; nevertheless the suggestion on the problem alone was meaningful enough to indicate the research gap.

3.3 Conveying the Suggestions of Research by the Previous Researchers

Conveying the suggestions by previous researchers has also been identified as one of the ways for the writers to establish the research gap. Limitations in the past studies are used to specify on the particular research space. The writers do not directly point out the inadequacy but rather, use citation on previous work to do so. The following quotes illustrate on how Move 2 is accomplished using this way.

> Clearly, these <u>limitations</u> have contributed to the failure of DW projects (3,20). (UUM1)

In the example above (UUM1), the inadequacy of the past studies was used to specify on the particular research gap as in the citation of "(3,20)". The writers did not directly point out the limitation of the research but rather, used citation on previous work to highlight on the research gap. In a way, the research gap is conveyed tactfully as suggestion by the previous researchers.

Some established soft computing techniques applied by <u>previous works to suggest</u> the <u>optimal cutting conditions for machining cutting problems are,</u> for example, the genetic algorithm (GA), simulated annealing (SA), Tabu search (TS), ant colony optimization (ACO), and particle swarm optimization (PSO) (Aggarwal & Singh, 2005; Mukherjee & Ray, 2006). (UTM2)

In example (UTM2), the writers used the citation on the previous work to highlight the problems of "optimal cutting condition for machining cutting". The works of "Aggarwal & Singh, and Mukherjee & Ray" were cited to support the problems being highlighted.

3.4 Extending the Works of Others

Usually the works of others are mentioned first and then, the inadequacy in relation to the work is mentioned. Mentioning the inadequacy in the previous study creates a research space that is likely to be fulfilled.

<u>Existing works in</u> WI concentrate on feature extraction and classification task in order to identify the handwritten authorship. <u>However, additional steps need to be performed in order to have a better</u> <u>representation</u> of input prior to the classification task. (F6 UTEM2)

In the above example (F6 UTEM2) usually the works of others are brought up first as in "Existing works in WI concentrate on", and then, the inadequacy in relation to the work is mentioned as in "However, additional steps need to be performed in order to have a better representation". Mentioning the inadequacy in the previous study creates a research space that is likely to be fulfilled.

<u>Huang (4) and Kim et al. (9) work in</u> the area of applying fuzzy sets in clustering categorical data. <u>However,</u> <u>these algorithms require multiple runs to establish the stability needed</u> to obtain a satisfactory value for one parameter used to control the membership fuzziness (10). (F1 UTHM1)

In this example (F1 UTHM1) previous work as in "Huang (4) and Kim et al. (9) work in the area of"(line 1), and then, the shortcoming in relation to the work is mentioned as in "However, these algorithms require multiple runs to establish the stability needed" (lines 2-3). Mentioning the insufficiency in the previous study creates a research gap which comes in form of extending the works of others.

4. DISCUSSION

The analysis indicated that 73% of the corpus in this study has realized in this step and the Research University group has the largest percentage of realization. The popularity of using this step amongst the Research University group writers is attributed to the competitive research environment which called for more publication. The interviewee suggested that limitation and problem of the study can be highlighted to indicate a research gap.

The utilization of this strategy by the writers in this study which is at 73% is lower compared to the previous studies on research article introductions in Computer science discipline Anthony [10] who studied the introduction section of the best papers in Software Engineering found 91.7% of the researchers in the study put this strategy in practice. Shehzad [9] found 95% of the research article introduction in Computer Science discipline utilized this strategy. In short, the occurrence at only 73% is lesser than those practiced by the Computer Science global writers.

The interpretation of the finding also indicates that in writing research article introductions, the Computer science academicians in the Malaysian universities utilized "Indicating a research gap" as an optional strategy. In interpreting the finding of this study, the occurrence scales proposed by [21: 241] is used. The scale stated that a strategy that has occurrence of 90% and above is considered as obligatory strategy whereas a strategy that has occurrence of bellow 90% is considered as an optional strategy. The interpretation using the scales indicated shows that with the occurrence of 73%, the Computer science writers in the Malaysian universities were used as an optional strategy

whereas with occurrence of above 90%, the global Computer science writers treated the strategy as an obligatory strategy.

While the practice of this strategy is lower and appears to be underutilized when compared to the findings in studies on research articles written by Computer science writers in general [8,9] the practice which is at 73% is considerably better when compared to the findings of other studies that focused on non native writing. [22,21] who have conducted similar studies on non-native English writers also indicated that the research gaps wee non-prevalence in the research articles written by the non-natives. The percentages of realizations found in the study were at 66.66% for the Thais [23] and under 35% by Spanish writers [21]. Compared to the native English writers, the non-native English writers showed "a weaker version" in using this strategy hence rendering the introduction section to appear "flat". [21:p245], [24] also found the similar shortcoming in the study on research articles written in Malay language. In this study, [24] reported that it was typical for the writers of the Malay research article to dismiss this strategy or simply avoid using it. In short, the realization of this step in this study is higher compared to the findings of the previous studies on non-native research article introductions [21,23].

The researchers attributed the underutilization of this strategy to the small size of the research community [21,22,23,24,25]. In writing English research articles by the Spanish writers, [21] reasoned that the Spanish writers "resist criticizing previous studies" because of the small research community size where the writers were "very likely to know the key members of the community". The small research community size is also given as the reason for the Thai writers to avoid this strategy (25: 83). It was justified further as to "save face" and to respect the "system of seniority" making it "inappropriate to criticize the works of their colleagues" instead the Thai writers are said to "prefer to elaborate the problem" letting the audience "evaluate and make their own decision" [25:p83].

However, in relation to this study, the explanation of small research community size given in the studies [21,23,25] does not seem to fit. For one reason, the research articles were published in Scopus indexed journal so the audience and readership is more global [19]. The writers have the choice to comment the works of other researchers beyond the local research community [26]. Some writers [27,28] preserve the culture of "saving face" by avoiding the local key research member. Instead, the writers [29,30] examine the works of other researchers in the other part of the world.

The analysis of the corpus showed that in realizing the step on indicating a gap, four techniques were used. The four techniques used are by indicating limitation in the research area, by suggesting a problem that needs to be solved, by conveying the suggestions of research by previous researchers and by extending the works of others. The first technique which is "indicating limitation in the research area" has also been reported in the corpus of the study by [23:275] who describes the strategy as "...draw(ing) scientist attention to weakness in the existing literature" and asserts that the weakness 'requires an answer'. On the second technique which is "suggesting a problem that needs to be solved" confirms the studies that suggest non-native English writer avoid giving critical review [14,15, 23]. Instead of giving a critical view on the previous study, the writers prefer to suggest a problem that needs to be solved. The analysis of the corpus in this study also showed the various use of the word "however". The finding is not farfetched from the report by [18] on the frequent use of expressing limitation in the research articles studied and pointed out the word "however" is used most repeatedly in accomplishing this step.

The findings of this study also confirm the suggestion by [12,31] that in indicating the research gap, the writers realized this step by "Extending the works of others". In this technique the works of others are mentioned first and then, the inadequacy in relation to the work is mentioned. Mentioning the inadequacy in the previous study creates a research space that is likely to be fulfilled. This technique has been described as "the extension of the author's previous work" [12:p34]. The final technique which is "Conveying the suggestions of research by the previous researchers" also appears in the corpus of study by [12]. In this technique, the "...weaknesses and shortcomings found by previous research..." is used to "serve as a background" for the intended work [12:p33].

5. CONCLUSION

In short, this study found that the rhetorical step of "Indicating a research gap" is underutilized by the writers of the research articles in the corpus. The rhetorical step has been realized by using four techniques which has also been reported in other similar studies. However, this study is limited to Computer Science research articles only and therefore, a more comprehensive study in other discipline will give a clearer picture on how this step is realized.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1.   Kanestion A, Singh MK, Shamsudin S. Developing a framework for writing skill: A corpus-based analysis of the written argumentative essays. Sains Humanika. 2017;30(9):4-2.
2.   Ankomah C, Afful JB. Establishing A. Niche in research: Rhetorical strategies in undergraduate and postgraduate writings in the Department Of English, University of Cape Coast.
3.   Parnawati TA, Basthomi Y, Ruslan S. Rhetorical moves in the introductions of islam-related research articles. Journal Pendidikan Humaniora. 2017;5(4):169-74.
4.   Samad IA, Usman B, Rizkanisa N, Fitriani SS. Non-native speakers' rhetorical commonalities in writing script introduction section. Lingua Cultura. 2018;12(2):141-7.
5.   Samanhudi U. Introduction of research articles in applied linguistics by Indonesian and english academics. IRJE (Indonesian Research Journal in Education). 2017;58-71.
6.   Yotimart D, Abd Aziz NH. Authorial identity and linguistic features of native English and Thai writers in research articles. Pertanika Journal of Social Sciences and Humanities. 2017;25(3): 1319-34.
7.   Suryani I, Noorkhairi A, Faharol Zubir, Norlizawati Ghazali, Eunice M. Aclan. Peer-reviewed Rhetorical strategies in research articles introduction section by academics in Malaysian private universities. Journal of Human Development and Communication (JoHDEC). 2018;7:1-8.
8.   Ismail Nor Hanani Binti. Validity measurement of WAQF related research in scopus indexed Journals: A Rabbani Approach Analysis." The Journal of Social Sciences Research. 2018;376-381.
9.   Shehzad W. Introduction of computer science research paper: Divergence from CARS. Kashmir Journal of Language Research. 2012;15(2):19.
10.   Anthony L. Writing research article introductions in software engineering: How accurate is a standard model? Professional communication. IEEE Transactions. 1999;42(1):38-46.
11.   Shehzad W. Corpus based genre analysis: Computer science research article introductions (PhD Dissertation). Islamabad, National University of Modern Languages, Pakistan; 2005.
12.   Shehzad W. Move two: Establishing a niche. Ibérica: Revista de la Asociación Europea de Lenguas para Fines Específicos (AELFE). 2008;15:25-50.
13.   Azizah UA, Budiman A. Challenges in writing academic papers for international publication among Indonesian graduates students. JEELS (Journal of English Education and Linguistics Studies). 2018;4(2):175-98.
14.   Fakhri A. Rhetorical properties of Arabic research article introductions. Journal of Pragmatics. 2004;36(6):1119-1138.
      Available:http://dx.doi.org/10.1016/j. pragma.2003.11.002
15.   Hirano E. Research article introductions in English for specific purposes: A comparison between Brazilian Portuguese and English. English for Specific Purpose. 2009;28(4):240-250.
16.   Ina Suryani Yaacob A, Hashima N. Introduction sections of research articles with high and low citation indices. Pertanika Journal Social Science & Humanities. 2015;23(4):1137-1150.
17.   Swales JM. Research genres: Explorations and applications. New York: Cambridge University Press; 2004.
18.   Posteguillo S. The schematic structure of computer science research articles. English for Specific Purposes. 1999;18(2):139-160.

19. Ina Suryani, Kamaruddin H, Hashima N, Yaacob A, Rashid SA, Desa H. Rhetorical structures in academic research writing by non native writers. International Journal of Higher Education. 2013;3(1):9-33.
Available:http://dx.doi.org/10.5430/ijhe.v3n1p29

20. Shehzad W. Announcement of principle findings and value addition in Computer Science research papers in IBERICA. 2010;19:97-118.

21. Sheldon E. Rhetorical differences in RA introductions written by English L1 and L2 and Castilian Spanish L1 writers. Journal of English for Academic Purposes. 2011;10(4):238-251.
Available:http://dx.doi.org/10.1016/j. jeap.2011.08.004

22. Brionnes RRY. Move analysis of philosophy research article introductions published in the University of Santo Tomas. Philippines ESL Journal. 2012;9:56-75.

23. Kanoksilapatham B. Writing scientific research articles in Thai and English: Similarities and differences. Silpakorn University International Journal. 2007;7:172-203.

24. Ahmad UK. Scientific research articles in Malay: A situated discourse analysis (Unpublished PhD thesis dissertation). University of Michigan, USA; 1997.

25. Jogthong C. Research article introductions in Thai: Genre analysis of academic writing (Unpublished PhD thesis dissertation). West Virginia University; 2001.

26. Ina Suryani, Fatimah Petra D, Rodziah W, Hamidun N. Challenges in research article writing among the southeast Asian Writers in Proceedings of Symposium of International Languages and Knowledge. Thailand. 2015;123-125.
Available:http://dx.doi.org/10.13140/RG.2.1.4400.2647

27. Rizon M, Hazry D, Karthigayan M, Nagarajan R, Alajlan N, Sazali Y, Azmi JN, Suryani RI. Personalized human emotion classification using genetic algorithm. In2009 Second International Conference in Visualisation. IEEE. 2009;224-228.

28. Hussain T, Faiz Ahmed S, Hazry D. Tracking and replication of hand movements by teleguided intelligent manipulator robot. Robotica Journal. 2014;1-16.
Available:http://dx.doi.org/10.1017/S0263574714000083. Cambridge University Press.

29. Ahmed SF, Azim Ch. F, Desa H, Hussain A. Model predictive controller (MPC) based single phase pulse width modulation (PWM) Inverter for UPS Systems. Acta Polytechnica Hungarica Journal of Applied Science. 2014;11(6):23-38.

30. Muhammad Hassan T, Hazry D, Syed Faiz A, Muhammad Kamran J, Faizan AW, Zuradzman MR, Wan Khairunizam WA, Abadal-Salam TH. Development of graphical user interface (GUI) for dead reckoning system of a non-Holonomic mobile robot. Australian Journal of Basic and Applied Sciences. 2014;8(4):369-372.

31. Suryani I, Yaacob A, Hashima N, Rashid SA. Comparison on the rhetorical promotional strategies used in the performing art and visual art research articles. proceeding for 2nd International Colloquium of Art & Design Education Research, Malaysia; 2015.

Biography of author(s)

Ina Suryani, Ph.D
Centre for Liberal Sciences, Universiti Malaysia Perlis, Malaysia.

Research and Academic Experience: Dr. Ina Suryani is a Senior Lecturer teaching in English for Special Purpose, particularly in technical writing. Her research is specialized in Genre Analysis, Text Analysis, Technical Writing, and Teaching Methods. She completed her PhD with a focus on Technical Writing. Her basics in B.Ed TESL and M.Sc. Computing prepares her for a more critical and unique conception of technical writing and ELT pedagogy. She is also experienced in editing research articles and proposals; and developing content writing for engineering discipline.

Research Area: Genre Analysis, Text Analysis, Technical Writing

Number of Published papers: 40

Special Award (If any): Gold Award at International Symposium on Innovation and Creativity

Any other remarkable point(s): Excellent Service Award Recipient 2018, 2012

Norkhairi Ahmad, Ph.D
Universiti Kuala Lumpur Malaysia France Institute, Malaysia.

Research and Academic Experience: Norkhairi has an English teaching career spanning over 22 years, disseminating knowledge to diverse groups of learners like underprivileged rural schools students, pre-university students, overseas degree preparatory students and working adults. He has held various significant academic posts as the Head Of English Panel, Head of Languages Department(Secondary School level), Coordinator for Matriculation English (Ministry of Education), Head of English Curriculum Development(UniKL), Head of Quality Assurance, Head of International Partnership and presently serving Head of Industrial Linkages (UniKL MFI level) . He obtained his PhD from MARA University of Technology in Applied Language Studies, specifically ESP language testing. As a certified trainer under Human Resource Development Fund(HRDF), he has conducted various English language and communication training to personnel from the corporate and government sectors.

Research Area: Assessment Literacy, ESP, Language Testing

Number of Published Papers: 9 academic articles, 2 book chapters and 13 magazine articles

Special Award: Best Paper-3rd International Education Postgraduate Seminar 2016 UTM
Gold Medal- The 4th International Conference on Issues In Language Teaching and Learning Amongst Non-Native Speakers (ILLANS) UiTM 2018
Gold Medal- My_CaSELTUiTM 2019 Conference

Recognition: Excellence Service Awards (2002, 2004, Ministry of Education) Top Performer Award (2018, UniKL).

Azlan Abdul Aziz, Ph.D
Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, Melaka, Malaysia.

Research and Academic Experience: A senior lecturer with the Computer Science Department at the Faculty of Computer and Mathematical Sciences, UiTM Melaka. He joined the established institution in 2001 in Selangor before moving to Melaka in 2015. From 2005 to date, he has served as Internal Auditor, Fellow and Head of Division, a committee in the VC Special Project, an innovation and competition judge, reviewer and editor. He has contributed in several researches, and innovation competitions both national and internationally and has published a few papers focusing on e-Learning, Educational Technology, Adult Learner and Distance Education, Computer Science Education, Multimedia and Blended Learning. Much of his work has been on investigating, understanding and improving the support of technology in learners' learning experience and academic performance.

Research Area: Educational Technology, e-Learning, Multimedia

Number of Published papers: 22

Special Award (If any): Bronze Award at Melaka International Intellectual Exposition 2019, Gold Award at International Invention, Innovation & Design 2018, 2 Gold and 1 Silver Medals at Jasin Multimedia Computer Science Invention Innovation

Exhibition 2018, Platinum Award (Best Group), Diamond Award (Professional Category) and Gold Medal at Melaka International Intellectual Exposition MIIEx (2017).

Any other remarkable point(s): Excellent Service Award Recipient

Badrul Hisham Ahmad
Academy of Language Studies, Universiti Teknologi MARA, Perlis, Malaysia.

Research and Academic Experience: A senior lecturer at the Academy of Language Studies, UITM Perlis. Since joining the established institution In 2008, he has contributed in several researches and innovation competitions both national and internationally. He has published a few paper focussing on Code-switching and Blended Learning investigating learners' learning experience as well as some innovation competition highlighting learners' roles in improving their employability through student volunteering.

Research Area: Sociolinguistics, Blended Learning, Creative Teaching and Learning

Number of Published papers: 5

Special Award (If any): Silver Award at International Symposium on Innovation and Creativity 2017.
Bronze Award at 7th Symposium on Innovation and Creativity 2019

_____

An Evaluation of the Implementation of the Dual Language Programme (DLP) among Science and Mathematics Teachers: Current Study

Norazilawati Abdullah[1,2*], Kung-Teck Wong[1,2], Noraini Mohamed Noh[2], Mahizer Hamzah[2] and Nor Hasnida Che Md Ghazali[2]

ABSTRACT

The Dual Language Programme (DLP) is a programme introduced under the foundation of *Memartabatkan Bahasa Malaysia Memperkukuh Bahasa Inggeris* (MBMMBI). The DLP was first implemented in 2016 at selected schools. As such, researchers had conducted a study to evaluate the implementation of the DLP for science and mathematics which has been used in secondary school based on the CIPP model from the aspect of context, input, process and product. The first objective of this research is to identify the level of context, input, process and product dimensions of the DLP. The second objective is to identify the relationship among the level of context, input, process and product dimensions during the implementation of the DLP with the teachers' teaching experience. The third objective is to identify the advantages, weaknesses, challenges and suggestions by science and mathematics teachers in realising the DLP. This research had involved 210 teachers who taught science and mathematics in secondary school in Zone Keramat, Kuala Lumpur. This research was conducted using the survey form and interview questions as the research instruments. The data gathered from the research has been analysed using descriptive and inferential statistics by getting the value of the mean score and percentage and also the analysis of Pearson correlation. The data collected from interview were transcribed and analysed using N vivo software. The result showed that the level of context, input and product dimensions were average while the level of process dimension was high. The research hypothesis was accepted where there was no relationship between context, process and product dimensions with the teachers' teaching experience. From the interview, we found that the DLP has its advantages and also disadvantages, but the essential steps have been proposed in this research. In conclusion, this research has given a new contribution to science and mathematics teachers in Malaysia to evaluate and improve the implementation of the DLP as whole.

Keywords: Dual Language Programme (DLP); evaluation; science; mathematics.

1. INTRODUCTION

The objective of the DLP is to provide the opportunity for students in improving their access and exposure to various types of knowledge in order to compete globally and also to improve students' career marketability. This programme can help and attract students who plan to further their studies in Science, Technology, Engineering and Mathematics (STEM) at the tertiary level [1]. Aligned with the PPPM's aspiration for students to conquer multi-language skills, the DLP provides the opportunity for students to practise the English language through Mathematics, Science, Information Technology and Communication subjects as well as in Design and Technology. In 2016, 300 schools out of 10154 primary and secondary schools had implemented the DLP. It is predicted that in the future, many more schools will apply for the DLP programme [2]. If we compare the DLP to the English For Teaching Mathematics and Science (ETeMS) programme, the implementation of the DLP is subject to the schools' request [3]. However, to ensure that schools practise the DLP, 4 conditions are required

[1]National Child Development Research Centre, Sultan Idris Education University, Malaysia.
[2]Faculty of Human Development, Sultan Idris Education University, Malaysia.
*Corresponding author: E-mail: nora@fpm.upsi.edu.my;

which must be fulfilled by the schools. Firstly, the school must have enough source. Secondly, the DLP can be implemented with the agreement from the schools and teachers. Thirdly, support is requested from parents for schools to implement the DLP programme. Lastly, the schools need to ensure that their performance in the Malay Language subject at the SPM level is equivalent or much better than the national cumulative grade.

2. RESEARCH OBJECTIVE

1. To identify the level of context dimension (the relevance of the DLP to the National Education Principle, the attitude and the level of readiness of the science and mathematics teachers) in implementing the DLP.
2. To identify the level of input dimension (knowledge, skill and confidence of science and mathematics teachers in practising the DLP, instruments, laboratories, flexibility, schedule, exercise and school principal's support) in implementing the DLP.
3. To identify the level of process dimension (the teaching and learning strategy and the way science and mathematics teachers utilise the DLP to evaluate the students' work product) in implementing the DLP.
4. To identify level of product dimension (difference in students' achievement and attitude toward the science and mathematics lessons).
5. To identify the relationship between the level of the dimensions of context, input, process and product in implementing the DLP with teacher's teaching experience.
6. To identify the advantages, disadvantages, challenges and suggestions from science and mathematics teachers towards the DLP.

3. RESEARCH HYPOTHESIS

Ho1: There is no relationship between the level of the context, input, process and product dimensions in implementing the DLP with the teacher's teaching experience.

4. RESEARCH METHODOLOGY

This research was conducted using the survey method in the quantitative and the qualitative form. The sample involved 210 science and mathematics secondary school teachers in the Keramat Zone, Kuala Lumpur. For the interview, five respondents had been selected to answer the given questionnaire. The instruments used in this research were the questionnaire and structural interview questions adapted from Norazilawati (2016) [4,5]. The pilot test had been conducted involving 25 science and mathematics teachers in the Pudu Zone, Kuala Lumpur. The alpha cronbach reliability value was 0. 879. The data gathered was analysed using the SPSS software for descriptive and inferential analysis (quantitative) while Nvivo was used to analyse interview transcript (qualitative).

5. RESULTS

Tables 1, 2 and 3 showed the results of this research.

Table 1. Results of objective 1, 2, 3 and 4 for descriptive analysis

Dimension	Mean	Level
Context(the relevance of the DLP to National Education Principle, attitude and the level of science and mathematics teachers' readiness)	3.31	Moderate
Input (knowledge, skill and confidence of science and mathematics teachers who were practising the DLP, instruments, laboratories, flexibility, schedule, exercise and school principal's support)	3.52	Moderate
Process (teaching and learning strategy and the way science and mathematics teachers who were practising DLP to evaluate students' work product)	3.81	High
Product (difference in students' achievement and attitude toward the science and mathematics lessons).	3.20	Moderate

Table 2. Results of objective 5 for inferential analysis. The hypothesis is accepted

Dimension	Correlation value	Relationship
Context(the relevance of the DLP to the National Education Principle, attitude and the level of science and mathematics teachers readiness)	[r = -0.070, p = 0.461 > 0.05].	No relationship
Input (knowledge, skill and confidence of science and mathematics teachers in practising the DLP, instruments, laboratories, looseness, schedule, exercise and school principle's support)	[r = -0.040, p = 0.673 > 0.05].	No relationship
Process (teaching and learning strategy and the way science and mathematics teachers who were practising the DLP evaluated students' work product)	[r = -0.003 , p = 0.973> 0.05]	No relationship
Product (difference in students' achievement and attitude towards science and mathematics lesson).	[r = -0.027, p = 0.779 >0.05].	No relationship

Table 3. Result for objective 6

Element	
Goodness	The DLP was able to capture the students' interest to pursue study in Science, Technology, Engineering and Mathematics field (STEM). It increased the period of time students were exposed to the English language which indirectly can improve their English. It also helped in terms of students' readiness in the future. This is because they won't get nervous to cope with a higher level of education and career because the knowledge of the English language is given atop priority in job selection nowadays.
Weakness/ challenge	The DLP and ETeMS both neglected the foundation of National language. PPSMI had been abolished because it clearly failed to strengthen national education. It showed a bad effect when applied to two subject lessons and the results would be much worse if it was applied to the others. The respondents said that it was so inappropriate for the government to keep investing money into a programme that would only repeat the failure that had been caused by the ETeMS. The respondents also said that the foundation of the DLP would never overcome students' weakness in mastering English language because the main problem was the English language itself. The worst effect caused by ETeMS during the implementation from 2003-2015 was the decrease of number of students that managed to further their studies in Science stream in Form 4 and 5 in all schools in Malaysia. This showed a very clear sign towards the students' mastery and interest in Science specifically. In conclusion, the implementation of the DLP was irrational to be implemented as it was done in a rush without detailed evaluation and without taking into account many factors.
Suggestion	The respondents suggested a few ways to improve the effectiveness of the DLP implementation i.e the KPM/ LPM/ JPN/ PPD need to give high commitment in implementing the DLP so the quality will be guaranteed. The authorities are advised to ensure that all information about the DLP is directly disseminated to the teachers. There is also a need for training, courses, monitoring and continuous support from the aspect of planning or implementing process.

6. CONCLUSION

In conclusion, the results from this study showed that the levels of context, input and product dimensions were moderate while the level of process dimension was high. The research hypothesis was accepted where the analysis of Pearson correlation showed that there was no significant relationship between the levels of context, input, process and product dimension in the implementation of the DLP with the science and mathematics teachers' teaching experience. Generally, the majority of interview respondents said there were many advantages of the DLP such as it managed to help and attract students' interest to further study in STEM, increased the period of students' exposure to English language and prepared them for future careers. However, the disadvantages in the DLP cannot be overcome by all the advantages. It has been predicted that the DLP would fail, following in the steps of ETeMS. It is suggested that KPM must take a step forward by introducing other solutions such as providing training, courses, monitoring and continuous support to all teachers and students in empowering the DLP and we need to improve our English without forgetting our mother tongue. We have to bear in mind that the Malay Language is the nation's soul.

ACKNOWLEDGEMENT

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1.   Jabatan Pendidikan Negeri Melaka; 2015.
2.   Menon S. 841 schools expected to implement DLP. The Star. Retrieved from Chew Fong Peng (2008). Pengajaran Sains dan Matematk Dalam Bahasa Inggeris (PPSMI): Penerimaan dan Kesannya Terhadap Status Bahasa Melayu; 2016.
      Available:www.myjournal.my/filebank/published_article/14562/Art_4.PDF
3.   Guncheng Anak Banter. Persepsi Guru-guru Sekolah Rendah Terhadap Pengajaran dan Pembelajaran Sains dan Matematik Dalam Bahasa Inggeris di Daerah Serian, Sarawak. UUM; 2010.
4.   Norazilawati Abbdulah, Noraini Mohd Noh, Mahizer Hamzah, Nik Azmah Nik Yusuf, Rumaizah Omar. Kesediaan Guru Sains dan Matematik Dalam Pelaksanaan Kurikulum Standard Sekolah Rendah. Journal Pendidikan Sains dan Matematik Malaysia; 2014.
5.   Norazilawati binti Abdullah. Developing and validating instrument of alignment understanding with school assessment practice","International Journal of Advanced and Applied Sciences. Institute of Advanced Science Extension (IASE); 2016.

Biography of author(s)

Dr. Norazilawati Abdullah
National Child Development Research Centre, Sultan Idris Education University, Malaysia and Faculty of Human Development, Sultan Idris Education University, Malaysia.

She is n Associate Professor with specialization in Science Education. She is a presentable, self motivated and confident lecturer with extensive knowledge on education, possessing excellent counselling, listening and general communication skills,

along with the ability to communicate to students in simple ways on matters regarding teaching and learning. She is having the exceptional multi-tasking and organisational skills, all of which are imperative when working closely with colleagues. She has an already successful academic track record, now looking to accomplish further success in the area of teaching, supervising, research, publication and consultation with a progressive employer such us Sultan Idris Education University (UPSI). She is the Deputy Director and Fellow of the National Child Development Research Centre (NCDRC), Malaysia.

Kung-Teck Wong
National Child Development Research Centre, Sultan Idris Education University, Malaysia and Faculty of Human Development, Sultan Idris Education University, Malaysia.

He is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI). He also a Fellow of the National Child Development Research Centre (NCDRC), Malaysia. E-mail: thomas@fpm.upsi.edu.my

Noraini Mohamed Noh
Faculty of Human Development, Sultan Idris Education University, Malaysia.

She is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia. E-mail: noraini.mn@fpm.upsi.edu.my

Mahizer Hamzah
Faculty of Human Development, Sultan Idris Education University, Malaysia.

He is an Assoc. Prof at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia. E-mail: mahizer@fpm.upsi.edu.my

Nor Hasnida Che Md Ghazali
Faculty of Human Development, Sultan Idris Education University, Malaysia.

She is an Senior Lecturer at Faculty of Education and Human Development, Sultan Idris Education University (UPSI), Malaysia.
Email:hasnida@fpm.upsi.edu.my

_____

Brief Overview of Translating Literary Prose: Problems and Solutions

Md. Ziaul Haque[1*]

ABSTRACT

This article deals with the problems in translating literary prose and reveals some pertinent solutions and also concentrates on the need to expand the perimeters of Translation Studies. The translation courses offered at many universities in Bangladesh and overseas treat the subject mostly as an outcome of Applied Linguistics. Presently, the teachers and students of translation are confused at the mounting impenetrability of the books and articles that flood the market. Unfortunately, the translators lay more emphasis on the translation of poetry; there should be more research regarding the particular problems of translating literary prose. One explanation of this could be the fact that the status of poetry is considered higher, but it is more possibly due to the notable flawed notion that the novels, essays, fiction etc. possess a simple structure compared to that of a poem and is thus easier to translate. However, many debates have been organised over when to translate, when to apply the close local equivalent, when to invent a new word by translating clearly, and when to copy. Simultaneously, the "untranslatable" cultural- bound words and phrases have been continuously fascinating the prose-translators and translation theorists. The plea made in this article is to admit the fact that there is a lot to be learnt from shaping the criteria for undertaking a prose-translation and we should appreciate the hard work, difficulties, or frustration of the 'translators' (go-betweens) in the creation of good sense of the texts.

Keywords: Translation; prose; problems; solutions; distant-author; prosaic-ideas; go-between.

1. INTRODUCTION

Evidently, 'prose-translation' is the translation of novels, essays, fiction, short stories, comedy, folk tale, hagiography, works of criticism, science fiction etc. It is a type of literary creativeness where the written-work of one language is re-created in another. It is an inherent idea that the translation of poetry is very problematic, yet we have to agree that the translators also have to face lots of difficulties when it comes to translating prose. For example, the *Wycliffe Bible* (ca. 1382) was the original grand English translation and it illustrated the flaws of an English prose that was weak in nature. The great epoch of English prose translation started at the closing stages of the 15th century with Thomas Malory's *Le Morted'Arthur*, which was an adaptation of Arthurian romances and we can scarcely call it a proper translation. Accordingly, the earliest great Tudor renditions were the *TyndaleNew Testament* (1525), which impacted the *Authorized Version* (1611), and Lord Berners' version of JeanFroissart's *Chronicles* (1523–25).

However, when the source and target languages belong to different cultural groups, the first problem faced by the prose- translator is finding terms in his or her own language that express the highest level of faithfulness possible to the meaning of certain words. For example, there are some words that are related to typical fabrics, cookery specialties, or jobs; they also represent specific culture and the translators should be very careful in translating such words. They also find it difficult to render ambiguous puns. Similarly, the titles of stories and novels provide many examples of such ambiguities, which are hard or even impossible to translate.

[1]*Department of English, University of Creative Technology Chittagong, Bahaddarhat, Chattogram, Bangladesh.*
Corresponding author: E-mail: mdziaulhaque708@gmail.com;

Many people think that the translation of literary works is one of the highest forms of rendition because it is more than simply the translation of text. A literary translator must also be skilled enough to translate feelings, cultural nuances, humour and other delicate elements of a piece of work. In fact, the translators do not translate meanings but the messages. That is why, the text must be considered in its totality. Alternatively, Peter Newmark (1988) delineates translation as "rendering the meaning of a text into another language in the way that the *authorintended* the text" (p. 5). A further point is that there are examples in which the source text contains 'facets' that are advocated in an apt manner by Lawrence Venuti [1]: "…discursive variations, experimenting with archaism, slang, literary allusion and convention" (p. 310). Additionally, it is no less than potentially contradictory that the translator should be "visible" and make use of "foreignising" attributes simultaneously, as foreignising attributes, at any rate in the Schleiermacher tradition, were chiefly initiated into the *Target Text* (T.T) from the *Source Text* (S.T), not by the translator's innovation.

Language has more than a communicative, or societal and connective purpose in literary-prose translation. The word works as the 'key ingredient' of literature, i.e. it has an arty function. A tricky course of action emerges between the start and the conclusion of an innovative work of translation, the 'trans-expression' of the life incarcerated in the framework of imagery of the work being translated. Hence, the problems in 'prose-translation' are within the area of art and they depend on its particular laws.

2. THE ESSENCE OF 'TRANSLATION' GUIDING TOWARDS THE 'TRANSLATION OF LITERARY PROSE'

Plainly, the word "*translation* derives from the Latin *translatio* (which itself comes from *trans-* and *fero*, the supine form of which is *latum*, together meaning 'to carry across' or 'to bring across')" [2]. It "began only after the appearance of written literature" [3]. It is the "communication of the meaning of a source- language text by means of an equivalent target-language text" [4]. In brief, to translate is to pour meaning from one vessel to another one that is equivalent to the first. Whereas, *prose* represents ordinary speech or writing, without metrical structure. It indicates "words in their best order" [5]. In other words, "Everything that is not verse is prose" ("Le Bourgeois Gentilhomme", 2010). So, concerning the mentioned definition, we can say that "thinking is translating 'prosaic-ideas' without accessories" since ideas (in brain) do not follow any metrical composition.

The subject, Translation Studies, was not given much importance earlier. Now, people's mentality seems to be changing; Octavio Paz [6] abridges the case for Translation Studies saying that all texts are 'translations of translation of translations' as they are element of a literary system that not only slid down from other systems but also are connected with them. His view moderately echoes the notion of Terry Eagleton [7] who supposes that "every text is a set of determinate transformations of other…" (p. 72). According to Paz,

> Every text is unique and, at the same time, it is the translation of another text. No text is entirely original because language itself, in its essence, is already a translation: firstly, of the non-verbal world and secondly, since every sign and every phrase is the translation of another sign and another phrase. However, this argument can be turned around without losing any of its validity: all texts are original because every translation is distinctive. Every translation, up to a certain point, is an invention and as such it constitutes a unique text. (p. 9)

The translation of literary prose is different from literary creativity because its existence depends on the existence of an object of translation, a work to be translated. However, it is not always possible to sketch a separate border line in the real literary procedure between prose-translation and all creative literature. In some examples, a work may not be a translation in the common sense, but it may not be possible to express it absolutely as a work of literary creativeness. Several labels that are used to designate these works include- "open translation", "faux", "a work on the themes of", and "founded on". The particular meanings of these designations rely on the language and the eon.

Walter Benjamin (1996) presents the idea that a translation does not indicate an original text, it has no relationship with communication, its purpose is not to carry meaning, etc. The work of writing does not

merely imitate or copy, but rather strives to extract and convey the essence of the previous text. But, it is not the message that is passed along in the good translation, Benjamin will say, for "what does a literary work 'say'? […] it 'tells' very little" (p. 253). He shows the relationship between the supposed original and translation by using the symbol of a *tangent*: translation is like a straight line or curve, which touches the circle (i.e. the original) in one single point and follows its own way later:
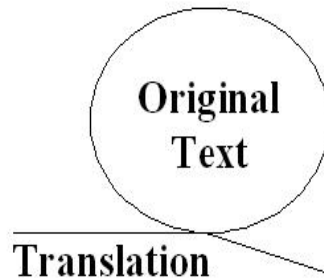

Fig. 1. The relationship between the original text and the translated version

At the very beginning, the translator keeps both the *Source Language* (S.L) and *Target Language* (T.L) in mind and tries to translate carefully. But, it becomes very difficult for a translator to decode the whole textbook literally; therefore, he takes the help of his own view and endeavours to translate accordingly. So, translation can be 'servitude' and 'freedom' [8]. It is broadly accepted that 'the original text', 'the translated version', 'the language of the original' and 'the language of the translation' are constantly transformed in space and time. As the Brazilian translators consider

> translator as cannibal, devouring the source text in a ritual that results in the creation of something completely new [9].

Likewise, let us compare the role of a translator to that of a 'sati' particularly from the perspective of 'position'. "Spivak talks about the race and power dynamics involved in the prohibition of sati in "Can the Subaltern Speak?" ([10] Chapter 6). She often focuses on the *cultural texts* of the 'marginalized' by 'dominant western culture': the new immigrant; the working class; women; and other positions of the 'subaltern' [11]; "... *subaltern* is not just a classy word for 'oppressed'" [12]. We never hear from the *sati-performing women* themselves. Similarly, a question can be raised- 'Can the translator speak?' Sometimes, the translator can talk especially when the *go-between* (translator) becomes a *get-between* through the act of paraphrasing. If a translator's "'thinking' is writing without accessories" [13], then it will not be irrational to state that he speaks constantly through his pen, pencil and keyboard!

Nonetheless, numerous publishers, reviewers and readers accept a translated text if it is fluently readable, if it reflects the foreign author's individuality or purpose or the fundamental sense of the foreign book - that the translation is not a translation in reality, but the original. Incidentally, the prose-translators can learn many things from JhumpaLahiri. She, her parents being Bengali, was born in London, grew up in America and became an American inhabitant at age 18. She admits that she is not really a *bilingual* and has written fiction not only about Indians in America but also some stories about Indians who are still living in India. Many people criticise her by saying that she, in her stories, has portrayed India in unclear, untrue and faulty manner. But, it is really painful for any writer living far away in a new state, leaving his/her own homeland behind; the motherland, the environment, people, culture etc. constantly echo in the writer's (and of course anybody else's) mind. So, the manner of trying to imagine and describe about the motherland and its people deserves esteem. I think that we should coin a new term, i.e. "distant-author" and add it to Lahiri's name since she, being a part of another country, has taken the help of 'imagination' and depicted *her* India the way she has wanted to; the writer must have every possible right to paint the world the way he/she thinks appropriate. However, Lahiri [14] sounds extremely polite in saying that

I am the first person to admit that my knowledge of India is limited, the way in which all translations are. (p. 118)

Let us ponder over the *translation-equivalence-concept* now. The idea swings between literal and free, faithful and beautiful, exact and natural translation, depending on whether the bias was to be in favour of the author or the reader, the source or target language of the text [15]. However, the "dynamic *equivalent* translation" is very important and the translators (particularly prose-translators) should have a lucid idea about this phenomenon. The translation theorists view dynamic equivalence as a translation code; according to this very code, a translator looks for rendering the meaning of the original in such a way that the T.L readers will definitely enjoy the text as is done usually by the source text readers. Both Eugene A. Nida and C. Taber [16] argue that

> Frequently, the form of the original text is changed; but as long as the change follows the rules of back transformation in the source language, of contextual consistency in the transfer, and of transformation in the receptor language, the message is preserved and the translation is faithful. (p. 200).

It is evidently mentioned by them that the dynamic equivalence in translation is far more than mere correct communication of information. Nida says that the definition of a dynamic *equivalent* translation is to describe it as "the *closest natural* equivalent to the source-language message". This definition includes three essential terms, namely

1. *Equivalent*, which refers to the source-language message,
2. *Natural,* which refers to the receptor language, and
3. *Closest*, which "binds the two orientations together on the basis of the highest degree of speculation".

Natural indicates three areas of the communication process: a natural description should fit the total receptorlanguage and culture, the context of the specific message, and the receptor-language audience. Therefore, the translation should bear no clear trace of a foreign origin. The following diagram shows that the translator is both recipient and emitter:

Writer – Book – Recipient – = Translator – Book – Recipient

Fig. 2. The distinct role of the translator

However, Homi K. Bhabha's belief about translation is quite different and complicated as compared to the view of Nida. For instance, Bhabha [17] begins with an epigraph from Walter Benjamin's classic essay on translation, "Translation passes through continua of transformation, not abstract ideas of identity and similarity" (p. 212). Jacques Derrida (1985) mentions "in this context, Benjamin still says "communication" or "enunciation" (*Mitteilung, Aussage*), it is not about the act but about the content that he visibly speaks: "But what does a literary work [*Dichtung*] 'say'? What does it communicate?" (p. 181). "Gasche suggests… that language communicates communicability itself" [18]. According to Bhabha [17], "translation is the performative nature of cultural communication" (p. 228). Now, Jacques Derrida [19] suggests that "the question 'what is translation' implies, as if synonymously, 'what should the best possible translation be'" (p. 430). Here, a 'simile' deriving from Seneca (and Horace), deserves to be mentioned since it "compares the relationship between a 'new' text and its antecedent to the relationship between honey and the flowers from which it is produced" [20].

In other words, we translate texts, sentences etc. and this process helps us to communicate with other people having different cultural roots. "The sign of translation frequently tells, or 'tolls' the different times and spaces between cultural authority and its performative practices" [21]. The 'time' of translation consists in that *movement* of meaning, the principle and practice of a communication that, in the words of P. de Man [22] 'puts the original in motion to decanonise it giving it the movement of fragmentation, a wandering of errance, a kind of permanent exile' (p. 92). There is nothing problematic in this view. But, we cannot entirely support Gasche's [23] view that translation is

"language *in actu* (*enunciation*, positionality) rather than language *in situ* (*enonce,* or propositionality)" (p. 92). The 'enonce' indicates 'what is said' and the 'enunciation' refers to 'the act or process of saying it'. Conceivably, in my opinion, translation is language *in actu* as well as *insitu* because it (translation) includes not only the 'process' of saying something but also the 'said' or 'presented'text or texts.

In his article, "On Linguistic Aspects of Translation", Roman Jakobson directly indicates the innermost difficulty in every category. He is of the view that there is normally no full equivalence through translation while messages may possibly serve as satisfactory analyses of code units or messages. The French theorist, Georges Mounin agrees with Jakobson. The former

> perceives translation as a series of operations of which the starting point and the end product are 'significations' and function within a given culture. (Cited in Susan Bassnett, 1980: 15)

3. PROBLEMS IN TRANSLATING LITERARY PROSE

Translation is a challenging activity and there are few difficulties that emerge throughout the translation process since every language portrays the world in diverse way and has its own grammar structure, grammar rules and syntax variance. For example, Greek has separate words for 'light blue' and 'dark blue', while other languages, such as Welsh and Japanese, have words that can denote 'blue' or 'green', or something in between. In the title of Nicole Brossard's book (*L'Amèr, ou le chapitreeffrité*), "l'amèr" is a multifaceted pun, which contains at least three French words: "mère" (mother), "mer" (sea), and "amer" (bitter)" (Cited in Dimitriu, [13]). As Zhongde (1991) says:

> The difficulty in translation just lies in the fact that both the content and the style are already existent in the original and as a result, you will have to do your best to reproduce them as they are in quite a different language (p. 7).

The most particular problems that the translators face include- illegible text, missing references, several constructions of grammar, dialect terms and neologisms, irrationally vague terminology, inexplicable acronyms and abbreviations, untranslatability, intentional misnaming, particular cultural references etc. Nonetheless, there are some theorists who think that 'literal translation' is not possible. They present three main reasons supporting their stance:

1. Because a particular word in one language often contains meanings that involve several words in another language. For example, the English word 'wall' might be rendered into German as *Wand* (inside wall) or as *Mauer*(exterior wall),
2. Because grammatical particles (verb tenses, singular/dual/plural, case markers etc.) are not available in every language, and
3. Because idioms of one language and culture may be utterly perplexing to speakers from another language and culture.

"Language is in the nature of man" [24] and "provides the very definition of man" [25]. Edward Sapir claims that human beings are at the mercy of the language that has become the medium of expression for their society and culture; language habits of the group of people determine experience generally and every disjointed structure signifies a separate authenticity. The translators encounter the complexities of differences between cultures; the subject of 'cultural difference' is very problematic and Walter Benjamin [26] has described it as "the irresolution, or liminality, of 'translation', the *element of resistance* in the process of transformation, 'that element in a translation which does not lend itself to translation'" (p. 75). Sapir [27] utters:

> No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached (p. 69).

Conversely, 'equivalence' consists of many countenances; for instance, it is an essential condition for translation, an obstruction to advancement in Translation Studies, or helpful category for analysing

translations. Sometimes, it is 'damaging' [28] or 'irrelevant' ([29] Chapter 5). The domain of equivalence covers linguistic units such as morphemes, words, phrases, clauses, idioms and proverbs. "Most translators are used to it (equivalence) rather than because it has any theoretical status" [30]. Catford [31] opines that

> the central problem of translation practice is that of finding T.L (target language) equivalents. A central task of translation theory is therefore that of defining the nature and conditions of translation equivalence (p. 21).

The translators, through using equivalence approaches, also endeavour to influence their readers by the 'standard translation'. Yet, the notion of equivalence creates several problems since we can interpret it in miscellaneous manners. Both the words as well as context are considered in equivalence. In this connection, Catford [31] simply puts forward that translation is the "substitution or replacement of textual materials in one language by equivalent textual material in another language" (p. 20). But, his linguistic theory of translation was not (and is not) accepted liberally by many. Snell-Hornby [29] argues that Catford's definition of textual equivalence is 'circular', his hypothesis' dependence on bilingual informants 'hopelessly inadequate', and his model sentences 'isolated and even absurdly simplistic' (pp. 19-20). She reckons that the perception of equivalence in translation is nothing but a 'delusion'.

Let us extend the question of 'semiotic transformation' by considering the translation of a simple noun, *butter*. Weedon [32] explains that Saussure's theory of the sign includes the following ideas, "each sign is made up of a 'signifier' (*significant* sound or written image) and a 'signified' (*signifie* meaning)" (p. 23). The structural relationship between the signified (*signifie*) or concept of butter and the signifier (*significant*) or the sound image made by the word *butter* shapes the linguistic sign *butter*. Susan Bassnett [9] claims that "when translating *butter* into Italian, there is a straightforward word-for-word substitution: butter-*burro*" (p. 19). However, wecannot say that both *butter* and *burro* are the same because these possess different cultural frameworks. Normally, *burro* has a light colour and it is not salted; people use it in Italy mainly for cooking purpose; obviously, it hasnothing to do with high status. Alternatively, *butter* is most often bright, yellow and salted in Britain and people use it by spreading on bread and in food preparation.

Some theorists may think that the common idiom *bread and butter*is faulty because the product used may even be 'margarine'. However, we cannot totally agree with this matter since the cited idiom is genuine and, thus, is an essential part of the native speakers' English. Nevertheless, it would be rather logical to say that this particular idiom is 'ambiguous'. Actually, the mentioned idiom is widely accepted since *butter* holds a lofty position. "So, there is a distinction both between the *objects* signified by *butter* and *burro* and between the *function and value* of those objects in their cultural context. The problem of equivalence here involves the utilization and perception of the object in a given context. The *butter-burro* translation, whilst perfectly adequate on one level, also serves as a reminder of the validity of Sapir's statement that each language represents a separate reality. The word *butter* describes a specifically identifiable product, but in the case of the word with a wider range of S.Lmeanings, the problems increase" (p. 19). There are some signifiers, such as *truth*, that we seem unable to do without. However, if we are to think differently, we must question the received meaning of such signifiers. Thus, we may choose to write *sous rature*, which Gayatri Spivak [33] translates "as 'under erasure'. This is to write a word, cross it out, and then print both word and deletion. (Since the word is inaccurate, it is crossed out. Since it is necessary, it remains legible.)" (p. xiv). However, Boris Uspensky [34] states that

> symbolic description 'must be double'; for, 'the wise artist probably spends his greatest effort to keep his images, which have become symbols, from slipping from their pedestals of esthetic isolation and mixing with life, like elements which are homogeneous with it' (p. 139).

Nida's [35] diagrammatic drawing of the semantic structure of *spirit* (p. 107) shows a more intricate set of semantic relationships; it indicates that we can use a word in witticism and banter. Then, the translator must be careful about the particular use of *spirit* in the sentence itself, in the sentence in its structural relation to other sentences, and in the general textual and cultural situations of the

sentence. Otherwise, there will be mistranslation and the readers will become confused. So, for example, *The spirit of the dead child rose from thegrave* points to 7 and not to any other of Nida's categories, while *The spirit of the house lived on* might designate5 or 7 or, if we think from the standpoint of symbol, 6 or 8. Obviously, the correct translation depends on the 'context'.
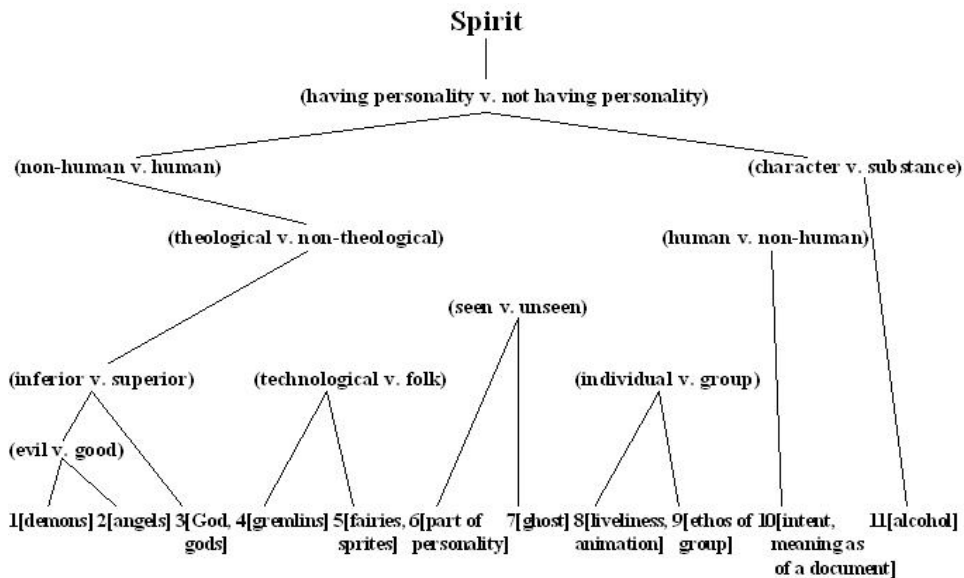
Fig. 3. The semantic structure of 'Spirit'

Unfortunately, many prose-translators fail to understand that a literary text is a combination of a complex set of systems that exist in a dialectical relationship with other sets outside its boundaries; this kind of failure has regularly led them to concentrate on particular parts of a text at the cost of others. It seems to be easier for the (careless) prose-translator to consider *content* as *separable* from *form*. In this connection, a suitable example shows what may happen when a translator emphasises content at the expense of the entire *structure*. The first chapter, titled "Arrival", of Thomas Mann's [36] *The Magic Mountain* begins in the following manner:

> An unassuming young man was travelling in midsummer, from his native city of Hamburg to Davos-Platz in the Canton of Grisons, on a three weeks' visit.

> From Hamburg to Davos is a long journey – too long, indeed, for so brief a stay. It crosses all sorts of country; goes up hill and down dale, descends from the plateaus of Southern Germany to the shores of Lake Constance, over its bounding waves and on across marshes once thought to be bottomless (p. 1).

Of course, this is a very dynamic, lively passage. It consists of three sentences with four verbs of action and movement; the reader is dragged straight into the narrative by the passage. Briefly, the opening is strong and descriptive and has an influential authorial existence; besides, the depiction of the world has got the touch of realism in it. But, the problem with this translation emerges especially when we compare it to the original German text. Mann's [37] novel starts in the following way:

> Ein einfacher junger Mensch reiste im Hochsommer von Hamburg, seiner Vaterstadt, nach Davos-Platz im Graubundischen. Er fuhr auf Besuch fur dreiWochen.

> Von Hamburg bis dorthinauf, das ist aber eine weite Reise; zu weit eigentlich im Verhaltnis zu einem so kurzen Aufenthalt. Es geht durch mehrerer Herren Lander, bergauf and bergab, von der suddeutsshen Hochebene hinunter zum Gestade des Schwabischen Meeres und zu

> Schiff uber seine springende Wellen hin, dahin uber Schlunde, die fruher fur unergrundlich galten. (p. 1)

In this opening passage, we can find a number of hints; the novel is set in a sanatorium where the characters are 'on holiday'. They are not worried about the struggle for survival. Hence, the voyage portrayed in the first few sentences is working as- the young man's real voyage; the figurative voyage across a country; a symbol for the journey that we (the readers) are about to start.

Moreover, there are decisive devices. For example, Mann uses the traditional expression 'Gestade' for 'shore' in describing the journey and this fact reminds us of the eighteenth- century styles. It seems to us that he has done so with a view to bringing the *lyrical* and the *prosaic* stylistic modes together. The English translator (H.T. Lowe- Porter) has made Mann's sentence-structures compact. Thus, she has reduced the number of levels on which the reader can approach the text. Perhaps, she has done so only to create a sense of fast movement. So, the second sentence has been integrated with the first one to shape a solitary unit and the fourth sentence has been reduced by intentional omissions, e.g. 'zu Schiff' (by boat). The translator has translated the word, 'einfacher' (ordinary) as 'unassuming' and this action of the English translator has surely introduced an influential part of characterization and changed the readers' outlook. Moreover, the translator has not laid much emphasis on the novel and this fact is proved with the visible mistranslation of the word, 'Schlunde', (meaning 'abysses') translated as 'marshes'. Incidentally, Wolfgang Iser [38] indicates that

> the intentional correlatives disclose subtle connections which individually are less concrete than the statements, claims and observations, even though these only take on their real meaningfulness through the interaction of their correlatives. (p. 277)

Actually, the sentence does not consist only of a statement but aims at something beyond what it actually says. Within a literary text, sentences always indicate something that is to come and their particular content foreshadows the structure. There may be a loss of element if the translator handles sentences for their definite content only. I think that the English translation of the above stated text has lost its acceptability because the translator has overlooked the section units in a complex general structure. The English editions show some types of *negative shift* relating

1. mistranslation of information,
2. *subinterpretation* of the original text,
3. superficial interpretation of connections between intentional correlatives.

Some readers may not support the act of putting so much importance on the cases of negative shift that come out from the opening few sentences of *The Magic Mountain*. We must agree with the fact that the analysis of the narrative has had vast influence ever since Shlovsky's early hypothesis of prose. Each key text is a combination of a series of interconnected schemes and has a determinable role concerning the whole piece. The translator of Mann has not considered the function of the description of both the young man and the journey; consequently, she has failed to understand the reasons for Mann's selection of language; evidently, mistranslation has taken place.

Let us consider another significant example; the prose-translators find it very difficult to translate proper names. "'Babel': first a proper name, granted. But when we say "Babel" today, do we know what we are naming? Do we know whom? If we consider the survival of a text that is a legacy, the narrative or the myth of the tower of Babel, it does not constitute just one figure among others… It would not be the only structure hollowing itself out like that, but it would do so in its own way (itself *almost* untranslatable, like a proper name), and its idiom would have to be saved" [39]. Voltaire showed his astonishment at the *Babel* article in his *Dictionnaire philosophique*, "I do not know why it is said in *Genesis* that Babel signifies confusion, for *Ba* signifies father in the oriental tongues, and *Bel* signifies God…" [39]. Voltaire's irony suggests that "Babel means: it is not only a proper name, the reference to a pure signifier to a single being – and for this reason untranslatable" [39].

Likewise, Russian proper names generate misunderstanding in Russian texts. In this connection, a paragraph from Cathy Porter's translated version of Alexandra Kollontai's [40] *Love of Worker Bees* is worth mentioning:

> Russians have a first ('Christian') name, a patronymic and a surname. The customary mode of address is first name plus patronymic, thus, Vasilisa Dementevna, Maria Semenovna. There are more intimate abbreviations of first names which have subtly affectionate, patronizing or friendly overtones. So for instance Vasilisa becomes Vasya, Vasyuk, and Vladimir becomes Volodya, Volodka, Volodechka, Volya. (p. 226)

Here, we can clearly observe that the translator explains the naming system of Russia. The "transvaluation of the symbolic structure of the cultural sign is absolutely necessary so that in the renaming of modernity there may ensue that process of the active agency of translation – the moment of 'making a name for oneself' that emerges through 'the undecidability … [at work] in a struggle for the proper name within a scene of genealogical indebtedness'" [39]. But, Cathy Porter has maintained the variations of name in the T.L version and this matter will surely create problems for an English reader because the latter is not exactly accustomed to the fact that the same character may have plethora of names on a single page. Briefly, we can say that a kind of transportation of S.L system into the T.L system is at work here. But, this process leads the readers towards confusion and they will gradually lose interest in reading the text more. By the way, Susan Bassnett [9] mentions:

> It is of little use for the English reader to be given multiple variants of a name if he is not made aware of the function of those variants, and since the English naming system is completely different, the translator must take this into account and follow Belloc's dictum to render 'idiom by idiom'. (p. 119)

It is only one instance whereby the translators face problems to translate S.L system into a T.L, which is devoid of any equivalent system. Boris Uspensky [34] believes that the use of names in Russian can denote shifts in 'point of view' [9]. In contrast, Robert M. Adams [41] lays more emphasis on the regional linguistic devices that are associated with a particular area or category in the S.L:

> Paris cannot be London or New York, it must be Paris; our hero must be Pierre, not Peter; he must drink an aperitif, not a cocktail; smoke Gauloises, not Kents; and walk down the rue du Bac, not Black Street. On the other hand, when he is introduced to a lady, he'll sound silly if he says, 'I am enchanted, Madame'. (p. 12)

In this regard, let us talk about another vital example. "The fundamentalist charge has not focused on the misinterpretation of the Koran, as much as on the offence of the 'misnaming' of Islam… It is the *formal* complaints of the fundamentalists that the transposition of these sacred names into profane names… is not simply sacrilegious, but destructive of the very cement of community" [17] what Alisdair Macintrye [42], has described as 'naming *for*: the institutions of naming as the expression and embodiment of the shared standpoint of the community, its tradition of belief and enquiry' (p. 378). "British/India, Nostromo, ouboum – each cultural naming represents the impossibility of cross-cultural identity or symbolic synapses; each time there repeats the incompletion of translation" [17].

However, the prose-translator has the right to differ organically, to be independent, if that independence is followed for the benefit of the original in order to reproduce it as a living work. Let us shed light on a very different, interesting and important aspect of translation itself to realise the depth and exact value of translation.

Chinua Achebe's [43] early work of fiction should express this point:

> Mr. Smith said to his interpreter: *Tell them to go away from here. This is the house ofGod and I will not live to see it desecrated.*

> Okeke interpreted wisely to the spirits of Umuofia: *The white man says he is happy you have come tohim with your grievances like friends. He will be happy if you leave the matter in his hands.* (p. 134)

Surely, this is a planned mistranslation. At this point, the *translator figure* has told a lie; though he has lied to avoid a quarrel, he is not only cheating himself but also has turned into a *traitor* or *cheat* in the readers' eyes. Now, this example is enough to emphasise the need to change the idea of translation; the translator should not distort the meanings of the content that he is translating; he should be honest. Hillaire Belloc [44] sums up the problem of *status*:

> …it (translation) has never been granted the dignity of original work and has suffered too much in the general judgment of letters. This natural underestimation of its value has had the bad practical effect of lowering the standard demanded, and in some periods has almost destroyed the art altogether. (Cited in Susan Bassnett, [9]).

4. SOLUTIONS FOR THE TRANSLATORS OF LITERARY PROSE

Initially, the translation of literary works - novels, short stories, plays, poems, etc. - is considered a literary recreation in its own right. However, as far as the solutions are concerned, the prose-translators should start with the careful adherence to the following principles:

1. a great understanding of the language, written and verbal, from which he is translating i.e. *the sourcelanguage*;
2. an excellent control of the language into which he is translating i.e. *the target language*;
3. awareness of the subject matter of the book being translated;
4. a deep knowledge of the etymological and idiomatic correlates between the two languages; and
5. a delicate common sense of when to *metaphrase* or 'translate literally' and when to *paraphrase*, in order to guarantee exact rather than fake *equivalents* between the source- and target-language texts.

Moreover, the prose-translators can unite some of the following methods to deal with the translation problems efficiently.

1. Back Translation: "Comparison of a back-translation with the original text is sometimes used as a check onthe accuracy of the original translation…" [45]. It is one of the most familiar practices used to search for equivalents through:
   a. The translation of items from the source language to the target language.
   b. Free translation of these back into the source language.
2. Conference with Other People: Discussions about the use and meaning of words with bilingual people around a table to make decisions about the best terms to use.
3. Interviews or Questionnaires or Any Kind of Tests: These are used to remove translation-related difficulties.

Besides, the translators should keep the *translation shifts* in mind. J.C. Catford [31] describes them as "departures from formal correspondence in the process of going from the S.L to the T.L" (p. 73). He believes that there are two major kinds of translation shifts, i.e. *level shifts,* where the S.L item at one linguistic level, e.g. grammar, has a T.L equivalent at a different level, e.g. lexis, and *category shifts* that have been categorised into four kinds:

1. *Structure-shifts* involving a grammatical alteration between the structure of the *Source Text* and that of the *Target Text*;
2. *Class-shifts,* when a *Source Language* item is translated with a *Target Language* item belonging to a diversegrammatical group, i.e. a verb may be translated with a noun;
3. *Unit-shifts* involving alterations in position;
4. *Intra-system shifts,* which occur when "S.L and T.L possess systems which approximately correspond formallyas to their constitution, but when translation involves selection of a non-corresponding term in the T.L system" [31]. For example, when the S.L singular becomes a T.L plural.

According to Nico Wiersema [46], cultures are getting closer and closer and this is something that the translators need to take into account. Now, the problems in translating literary prose can be solved

much if the prose-translator is both *bilingual* and *bicultural*. Thierry [47] states that 'perfect bilingual' (p. 145) implies two things:

1. One speaks both the languages consistently well.
2. One has two mother tongues.

Wiersema's view is very much similar to the philosophy of Nida who believes that translation tries to connect a wide cultural gap and it is not possible for the prose-translators to remove all the marks of the foreign setting. According to him, it is normal that the source and receptor languages may possibly represent very different cultures that may include many basic themes and descriptions, which we cannot 'naturalise' by the process of translating. By entering the S.L cultural elements:

1. the text will be more 'fluently-readable' (no stops),
2. the text continues to be more foreign, more distant,
3. the translator comes nearer to the source culture, and
4. a more authentic picture of the source culture appears before the reader of the target texts [46].

Correspondingly, a natural translation must also be in reference to the situation of the specific message, which could include not only the grammatical and lexical elements but also detailed matters such as intonation and sentence rhythm. However, Harris and Sherwood [48] are of the view that a natural translator has to go through the following stages:

1. 'Pre-translation', where the translator typically uses single words,
2. 'Auto-translation', whereby the translator translates to others what he has said or written himself,
3. 'Transduction' whereby the translator works as a mediator between two other people. (pp.165-166).

As indicated by Nida, naturalness of expression in the receptor language is mainly a problem of co-suitability.According to his model, the usual process of translation looks like the following:
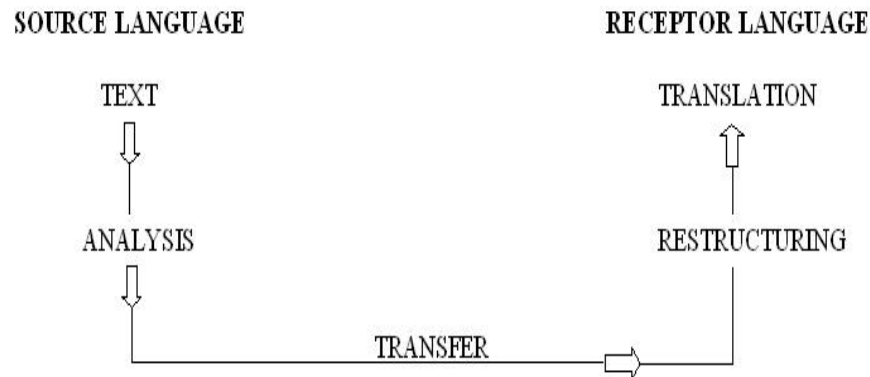
Fig. 4. The process of translation

Therefore, the principles, managed by the translator, go further than the exclusively linguistic, and decoding as well as recoding processes take place. Ultimately, it all depends on what the translator, or more often, the publisher wants to achieve with a certain translation.

In translation, the study of equivalence demonstrates the way the translators correctly render the text in translation from S.L into T.L or vice versa. "Equivalence, for example, while discredited in the 1980s yet tends to be reintroduced by scholars…" [29]. As the goal of translation is to establish a relationship of *equivalence* between the source and the target texts, a successful translation can be judged by two criteria:

1. Faithfulness or Fidelity (accurate translation of the meaning of the source text, without adding to it or subtracting from it), and
2. Transparency (maintaining the grammatical, syntactic and idiomatic conventions of the target language).

A translation meeting the first criterion is called "faithful translation"; a translation meeting the second principle is known as "idiomatic translation". According to Halverson [49], "Equivalence is defined as a relationship existing between two entities and the relationship is described as one of likeness/ sameness/ similarity/ equality in terms of any of a number of potential qualities" (p. 207). As said by Dorothy Kenny [50], "Unfortunately, a few attempts have been made to define equivalence in translation in a way that avoids this circularity" (pp. 77-80). "Since the ideal could not be realized, there arose a practical necessity for compromises, which paved the way to countless debates over exactly how 'faithful' faithfulness should be and just how 'equivalent' is the equivalent" [51]. Yet, Pym Anthony [52] states that

> ...equivalence is supposed to define translation, and translation, in turn, defines equivalence. (p. 37)

Moreover, Mona Baker's *In other words: A Coursebook on Translation* is a very informative book that is full of scholarly discussions on 'equivalence'. She investigates the idea of equivalence at diverse stages concerning the process of translation, together with all the varied features of translation. She categorises equivalence in the following manners:

1. *Word Level and above Word Level Equivalence* means that the translator should pay attention to a number offactors when considering a single word, such as number, gender and tense [52].
2. *Grammatical Equivalence*, when indicating the variety of grammatical classes (number, tense and aspects, voice,person and gender) across languages.
3. *Textual Equivalence*, when indicating the equivalence between S.L text and T.L text concerning information andconsistency. Three main factors will guide the translator's decision, i.e. 'the text type', 'the purpose of the translation', and 'the target audience'.
4. *Pragmatic Equivalence*, when indicating implicatures and policies of evasion all through the translationprocedure. "Implicature signifies what is *suggested* in an utterance." [53]. The role of the translator is to re-establish the author's purpose in another culture in such a way that facilitates the 'target culture (T.C) readers' to comprehend it clearly.

Vinay and Darbelnet [54] view equivalence-oriented translation as a process that "replicates the same situation as in the original, whilst using completely different wording" (p. 342). According to them, equivalence is the perfect technique when the translator is dealing with idioms, proverbs, clichés, nominal or adjectival phrases and the onomatopoeia of animal sounds. Again, Vinay and Darbelnet assert that the equivalent expressions between language pairs can be granted only if we get them as a list in a bilingual thesaurus as 'full equivalents' (p. 255). They conclude by declaring that

> the need for creating equivalences arises from the situation, and it is in the situation of the S.L text that translators have to look for a solution. (p. 255)

Certainly, they argue that it is not enough to quote (in a dictionary or a glossary) the semantic equivalent of an expression in the S.L text, and it does not ensure that the translation will be a successful one. They give numerous instances supporting their theory, and the following expression appears in their list: "*Take one* is a fixed expression which would have as an equivalent French translation *Prenez-en un*. However, if the expression appeared as a notice next to a basket of free samples in a large store, the translator would have to look for an equivalent term in a similar situation and use the expression *Échantillon gratuity*" (p. 256).

Roman Jakobson [55] states that there is a very important alternative for the translators, who can complete the task from the standpoint of *creative transposition*. Jakobson's study of equivalence gave new momentum to the speculative study of translation since he initiated the notion of 'equivalence in

difference'. He believes that 'there is no *signatum* without *signum*' (p. 232) and recommends three types of translation on account of his semiotic approach to language:

1. *Intralingual Transposition*: (within one language, i.e. restatement or paraphrase) from one lyrical shape intoanother,
2. *Interlingual Transposition*: (between two languages) from one language into another, and
3. *Intersemiotic Transposition*: (between sign systems) one system of signs into another, e.g. from verbal art intomusic, dance, cinema or painting.

In the case of interlingual translation, Jakobson maintains that the translator uses synonyms to get the meaning of the S.T. This indicates that the complete equivalence is absent between code units in interlingual translations. According to his theory, "translation involves two equivalent messages in two different codes" (p. 233). He acknowledges that "whenever there is deficiency, terminology may be qualified and amplified by loanwords or loan-translations, neologisms or semantic shifts, and finally, by circumlocutions" (p. 234). Notably, Vinay and Darbelnet's 'hypothesis' of translation processes matches Jakobson's one. The "translators have *all the rights* as long as their game is played upfront" [56]. Additionally, the prose-translators should follow the six principles presented by Hillaire Belloc [44]:

1. The translator must regard the work as an integral unit and translate in sections.
2. The translator must decode 'idiom by idiom'.
3. The translator ought to translate 'intention by intention' hinting the heaviness a particular term might contain in a meticulous situation in the S.L that would be asymmetrical if translated exactly into the T.L.
4. Belloc warns against *les faux amis,* those words or formations that may possibly come out to match up in both S.L and T.L but actually do not. For example, 'demander- to ask', translated incorrectly as to 'demand'.
5. The translator is supposed to 'alter courageously'.
6. The translator must never overstate.

Through these six principles, Belloc suggests the translator to view the prose text as a structured 'whole'; if the translator thinks in this manner, then it will be easier for him to translate and the translated text will be a good one. Besides, the translator must not forget the stylistic and syntactical requirements of the T.L. Many theorists believe that the translator has the right to change the text much in the translation procedure. In fact, the translator has the liberty to do it intentionally because, while translating, he has to keep the T.L stylistic and idiomatic norms in mind. If he does so, then the T.L readers will be able to enjoy the text more. Likewise, Susan Bassnett believes that the shift of emphasis from the original to translation is reflected in discussions on the 'visibility' of the translator. Whereas, Lawrence Venuti supports a 'translator-centred' translation.

Belloc's first point suggests the translator to *block out* his work. However, there is a problem related to this fact-it will be difficult to form *translation units*. We must not forget that the text is the main part. Nevertheless, the poet translator's task is much easier; he can break the main text down into translatable parts, e.g. lines, verses, stanzas. Alternatively, the prose-translator's task is more difficult. Surely, we can break down many novels into chapters or sections, but the structuring of a prose text is not, by any means, as linear as the chapter divisions might signify. However, there is a risk of the occurrence of mistranslation if the translator takes each sentence or paragraph as a minimum unit and translates it without connecting it with the general work.

The prose-translators must not think that any bilingual individual is able to produce satisfactory or even high-quality document translations simply because he is a fluent speaker of a second language. The ability, skill and even the basic mental processes required for bilingualism are mostly different from those required for translation. Primarily, the prose-translators must be able to read, understand and cling to somebody else's thoughts, then translate them accurately, completely and without omission. If they are able to do so, the readers will get the original meaning. Normally, the translators think that the best translations are produced by persons who are translating from their second

language into their native language, because it is unusual for someone who has learned a second language to have total fluency in that language.

However, the prose-translators should not worry much about the 'loss of meaning', which may occur if the text describes a situation, which has elements that are unusual to the natural environment, institutions and culture of its language area, since the transference to the translator's language can only be estimated. As Derrida [19] opines, "…perhaps a translation is devoted to ruin, to that form of memory or commemoration that is called ruin; ruin is perhaps its vocation and destiny that it accepts from the very outset" (p. 429). Even the most sacred and timeless original of them all "can undergo a maturing process" [57] in translation, may unravel, open up and change, and it is precisely due to this change in the 'original', that "the translation will truly be a moment in the growth of the original, which will complete itself in enlarging itself" [39]. Nevertheless, we must value the translator's work particularly because the 'go-between' (translator) perpetually works as a 'get-between'. However, it is generally thought that we constantly lose something in translation; conversely, we can also gain something from it. As Susan Bassnett [9] mentions:

> It is again an indication of the low status of translation that so much time should have been spent on discussing what is lost in the transfer of a text from S.L to T.L whilst ignoring what can also be gained, for the translator can at times enrich or clarify the S.L text as a direct result of the translation process. Moreover, what is often seen as 'lost' from the S.L context may be replaced in the T.L context. (p. 30)

5. CONCLUSION

In the end, since translation is simultaneously a theory and a practice, the translators, beside dealing with the difficulties inherent to the translation of prose, must think about the artistic features of the text, its exquisiteness and approach, as well as its marks (lexical, grammatical, or phonological) . They should not forget that the stylistic marks of one language can be immensely different from another. "As far as the whole text is concerned, it is simply impossible to transfer all the message of the original text into the target text" [58]. However, the translators can try to find equivalence in translation and show the cautious nature of their assertions accordingly and request the readers to join and select which translation renders the thoughts, notions and words of the original text correctly.

The imperative suggestion is that the meaning of the translation is supposed to be the same in both the languages and the safety of the worthiness of the contents ought to be assured collectively. "Even when translation is indeed an 'absolute copy', it already 'summons the word by its name, wrenches it destructively from its context, but precisely thereby calls it back to its origin'" [59]. Nonetheless, despite the fact that translation brings cultures nearer, in each translation, there will be a definite deformation between cultures. As Spivak [60] comments, "The translator is not only part of her community of readers: she also comes into contact with another community, negotiating with it, taking part in it… One of the ways to get around the confines of one's 'identity' as one produces expository prose is to work at someone else's title, as one works with a language that belongs to many others" (p. 179). Yet, the translators should take the help from Silviano Santiago's [61] term, 'double plagiarism' and take "properties from both the original literature and the receiving literature" and the translated text will be a "*locus* of encounter of two traditions, authorships and authorities" [62]. Consequently, the prose-translators must not be anxious because it is feasible now to keep the S.L components in the target texts. According to Lahiri [14], "Almost all of my characters are translators, insofar as they must make sense of the foreign to survive" (p. 120). However, the translators will have to defend the choices they make. Fortunately, there is an alternative now for including more 'foreign' words in certain prose. As Derrida [39] appropriately utters:

> To redeem in his own tongue that pure language exiled in the foreign tongue, to liberate by transposing this pure language captive in the work, such is the task of the translator. (p. 188)

COMPETING INTERESTS

The author has declared that no competing interests exist.

REFERENCES

1. Venuti L. The Translator's Invisibility. A History of Translation. London and New York: Routledge; 1995
2. Kasparek C. The Translator's Endless Toil. The Polish Review. 1983;28(2).
3. Cohen JM. Translation. Encyclopedia Americana. 1986;27.
4. Bhatia N. (Ed.). The Oxford Companion to the English Language. Oxford: Oxford University Press; 1992.
5. Webster N. "Webster's Unabridged Dictionary". University of Chicago reconstruction; 1913. Retrieved 2010-01-31
6. Paz O. Traduccion: Literatura y literalidad. Barcelona: Tusquets Editor; 1971.
7. Eagleton T. Translation and Transformation. Stand. 1977;19(3).
8. Vieira ERP. Liberating Calibans: Readings of Anthropofagia and Haroldo de Campos' Poetics ofTranscreation.In S. Bassnett& H. Trivedi (Eds.), Post-colonial Translation. London/New York: Routledge; 1999.
9. Bassnett S. Translation Studies. London: Methuen & Co. Ltd; 1980.
10. Sharp J. Can the Subaltern Speak?.In Geographies of Postcolonialism. Thousand Oaks, CA: SAGE Publications; 2008.
11. Spivak GC. The Post-Colonial Critic - Interviews, Strategies, Dialogues. New York: Routledge; 1990.
12. De Kock L. Interview with Gayatri Chakravorty Spivak: New Nation Writers Conference in South Africa. ARIEL: A Review of International English Literature. 1992;23(3). Available: http://ariel.synergiesprairies.ca/ariel/index.php/ariel/article/viewFile/2505/2458
13. Dimitriu R. Theories and Practice of Translation. Iaşi: Institutul European; 2002.
14. Lahiri J. My Intimate Alien. Outlook (New Delhi), special annual issue on "Stree" [Woman]; 2000.
15. Newmark P. A Textbook of Translation. New York & London: Prentice Hall; 1988.
16. Nida EA, Taber CR. The Theory and Practice of Translation. Leiden: E.J. Brill; 1982.
17. Bhabha HK. The Location of Culture. London: Routledge; 1994.
18. Rendall S. Translation, Quotation, Iterability.TTR: Traduction, terminologie, redaction. 1997; 10(2).
19. Derrida J. What is a 'Relevant' Translation. In L. Venuti (Ed.), The Translation Studies Reader (L. Venuti, Trans.). New York: Routledge; 2004.
20. Petrarch F. Letters on Familiar Matters (Fam. XXIII, 19) vol. 3, books XVII-XXIV (A. S. Bernardo, Trans.).New York: State University of New York Press; 1985.
21. Lloyd D. Nationalism and Minor Literature. Berkeley and London: University of California Press; 1987.
22. Man P. de. The Resistance to Theory. Minneapolis: Minnesota University Press; 1986.
23. Gasche R. The Saturnine Vision and the Question of Difference. Reflections on Walter Benjamin's Theory of Language. In R. Nagele (Ed.), Benjamin's Ground: New Readings of Walter Benjamin. Detroit: Wayne State U.P; 1988
24. Benveniste E. Problems in General Linguistics (M. E. Meek, Trans.).University of Miami Press, Coral Gables, Florida; 1971.
25. Adams H, Searle L. (Eds.). Critical Theory since 1965. Tallahassee: UP of Florida; 1986.
26. Benjamin W. Illuminations (H. Zohn, Trans). New York: Shocken Books; 1968.
27. Sapir E. Culture, Language and Personality. Berkeley, Los Angeles: University of California Press; 1956.
28. Gentzler ME. Contemporary Translation Theories. New York: Routledge; 1993.
29. Snell-Hornby M. Translation Studies: An Integrated Approach. Amsterdam: John Benjamin; 1988.
30. Baker M. In other words: A Coursebook on Translation. New York: Routledge; 1992.
31. Catford JC. A Linguistic Theory of Translation. London: Oxford University Press; 1965.

32. Weedon C. Feminist practice and poststructuralist theory. Cambridge, MA: Basil Blackwell; 1987.

33. Spivak GC. Translator's preface. In J. Derrida, Of Grammatology (G. C. Spivak, Trans.). Baltimore: Johns Hopkins University Press; 1974.

34. Uspensky BA. A Poetics of Composition: The Structure of the Artistic Text and Typology of a Compositional Form (V. Zavarin& S. Wittig, Trans.). Berkeley: University of California Press; 1973.

35. Nida EA. Towards a Science of Translating. With Special Reference to Principles and Procedures Involved in Bible Translating. Leiden: E. J. Brill; 1964.

36. Mann T. The Magic Mountain (H.T. Lowe-Porter, Trans.). New York: Vintage Books; 1984.

37. Mann T. Der Zauberberg. Location: Bange C. Gmbh; 2011.

38. Iser W. The Implied Reader. Baltimore and London: The Johns Hopkins Press; 1974.

39. Derrida J. Des Tours de Babel. In J. F. Graham (Ed.), Difference in Translation. Ithaca: Cornell University Press; 1985.

40. Kollontai A. Love of Worker Bees (C. Porter, Trans.). London: Virago; 1977.

41. Adams RM. Proteus, His Lies, His Truth. New York: W.W. Norton; 1973.

42. Macintrye A. Whose Justice? Which Rationality?. London: Duckworth; 1988.

43. Achebe C. Things Fall Apart. London: Heinemann; 1958.

44. Belloc H. On Translation. Oxford: The Clarendon Press; 1931.

45. Crystal, Scott. Back Translation: Same questions – different continent. In Communicate. London: Association of Translation Companies; 2004.

46. Wiersema N. Globalisation and Translation. Translation Journal. 2004;8(1).
    Avilable: http://translationjournal.net/journal//27liter.htm

47. Thierry C. True Bilingualism and Second Language Learning.In D. Gerver& H. Sinaiko (Eds.), Language, Interpretation and Communication.New York: Plenum Press; 1978.

48. Harris B, Sherwood B. Translating as an Innate Skill. In D. Gerver& H. Sinaiko (Eds.), Language, Interpretation and Communication. New York. Plenum Press; 1978.

49. Halverson S. The Concept of Equivalence in Translation Studies.Target1-2(1997); 1997.

50. Kenny D. Equivalence.In M. Baker (Ed.), Routledge Encyclopaedia of Translation Studies. London and New York: Routledge; 1998.

51. Bassnett S, Lefevere A. Constructing Cultures: Essays on Literary Translation. Clevedon: Multilingual Matters; 1998.

52. Pym A. Natural and Directional Equivalence in Theories of Translation; 1992.

53. Blackburn S. "implicature," The Oxford Dictionary of Philosophy. Oxford: Oxford University Press; 1996.

54. Vinay JP, Darbelnet J. Comparative Stylistics of French and English: A Methodology for Translation(J. C. Sager & M. J. Hamel, Trans.). Amsterdam/Philadelphia: John Benjamins; 1995.

55. Jakobson R. On Linguistic Aspects of Translation. In R. A. Brower (Ed.), On Translation. Cambridge, MA: Harvard University Press; 1959.

56. Berman A. Pour une critique des traductions: John Donne. Paris: Gallimard; 1995.

57. Benjamin W. Selected Writings: Vol. 1.The Task of the Translator (H. Zohn, Trans.). Cambridge, MA: Harvard University press [1923]; 2004.

58. Yinhua X. Equivalence in Translation: Features and Necessity. International Journal of Humanities and Social Science. 2011;1(10).

59. Benjamin W. Karl Kraus. In Reflections (E. Jephcott, Trans.). New York: Harcourt Brace [1931]; 1978.

60. Spivak GC. The Politics of Translation. In Outside in the Teaching Machine. New York and London: Routledge; 1993.

61. Santiago S. Uma literatura en ostropicos. Ensaios sobre dependencia cultural. Sao Paolo: Editora Perspectiva; 1978.

62. Daly M, Vieira ERP. (Eds.). 'The White Wall': Pre-facing Silviano Santiago. In Silviano Santiagoin Conversation. Zoilus Press: London; 1999.

Biography of author(s)

Md. Ziaul Haque
Department of English, University of Creative Technology Chittagong, Bahaddarhat, Chattogram, Bangladesh.

He is originally from Zakiganj, Sylhet, Bangladesh. He is an award-winning poet, writer, songwriter, actor, and researcher. He earned his B.A [Hon's] and Master's degrees in English Language and Literature from Shah Jalal University of Science & Technology, Sylhet. Currently, he is pursuing an M.Phil. degree from the same academia. His pen name is King of Words. His 37 books were published at home and abroad including America, England, and Germany. He published 9 research papers in international journals. His research article was added to the syllabuses of the private and public universities abroad including Italy, Spain, and the Philippines. He has been working as an Editor in some American international journals. In 2019, he was invited to receive an honorary doctorate degree of the Commonwealth University. He received a literary award called 'Gronthagar Literary Award' in 2016. His book "Give Me a Sky to Fly" is considered as the beginning of Post-postmodernism in literature. He was nominated for the Tällberg/Eliasson Global Leadership Prize 2019, Sweden. The well-known Al Cole from CBS Radio, America interviewed him and it was aired in numerous networks in November 2019. He invented many words, literary and poetic forms: "Poetenry" [Poems of Ten Lines], "Kurine" [Poems of Twenty Lines], "Poestory" [Poetry + Story] [A new genre of writing in literature created by blending two words i.e. poetry + story. It is a type of writing where a story has both the qualities of poetry and prose], "Fiverse" [Poems of Five Lines], "Tennet" [Poems of Ten Lines], "Haqueian Verse" etc. His pastime activities include- playing chess, listening to good music, angling, acting, and theatre directing. He is a dreamer and an optimistic person. He dreams of making films! Now, he is an Assistant Professor of English Language and Literature at the University of Creative Technology, Chittagong, Bangladesh. Email: mdziaulhaque708@gmail.com

_____

Pre-service Teachers' Perceptions of the Usefulness of Mathematics

Msizi Mkhize[1*]

ABSTRACT

Accounting students perform a variety of calculations in accounting courses, making mathematics integral to the successful study of accounting. The purpose of the study was to determine pre-service accounting teachers' perceptions of the usefulness of mathematics in Bachelor of Education Accounting courses at the higher education institution This study included a convenience sample of 255 pre-service accounting teachers from the University of KwaZulu-Natal in South Africa, and a purposive sample of 18 students was drawn. Data collection was through Fennema-Sherman Mathematics Attitude (F-SMAS), Usefulness of Mathematics Scale and an interview schedule designed by the researcher. A sequential explanatory design and sampling were employed. Data were analysed using SPSS for quantitative data and were transcribed and analysed qualitatively for interviews. A significant difference was found between Mathematics and Mathematical Literacy students on the usefulness of mathematics ($p < 0.05$). Integrating accounting and mathematics methods modules in an accounting method class will equip students with a repertoire of problem-solving skills and mathematical ways of thinking.

Keywords: Accounting; mathematics; transdisciplinary mathematics and accounting; accounting calculations.

1. INTRODUCTION

There is a limited understanding of the nature of the relationship between mathematics and accounting and the extent to which mathematics influences the teaching and learning of accounting. Accounting students perform a variety of calculations in accounting courses. This makes mathematics integral to the successful study of accounting. Accounting is defined as a "process of collecting, measuring, analysing and communicating information to and decision making within the business and other organisations" University of Glasgow [1], whereas mathematics is defined as an "area of investigation which logically analyses ordering, operational, and structural relationships" [2]. The majority of accounting definitions assert that accounting requires numerical and analytical skills, which are also integral elements of mathematics [3,4,5]. Academics around the world report a lack of adequate mathematical knowledge and computational skills in beginning students. The experiences of students at tertiary level, particularly during the first year, are significantly informed by student's experiences at school level [6]. The dismal mathematical competence of South African high school learners is reflected in the World Economic Forum *Global Competitiveness Report2012/2013* that ranks South Africa last out of 148 countries in mathematics and science education [7]. In South Africa, Mathematics is compulsory in General Education and Training [8], Grades R – 9, but in Further Education and Training (FET). Grades 10–12, learners enrol for Mathematics or Mathematical Literacy. Either Mathematics or Mathematical Literacy is an entry requirement for a Bachelor of Education (BEd) Accounting degree at the University of KwaZulu-Natal that is the setting for this study. The entry requirement into a BEd Accounting degree in the School of Education at this higher education institution is Grade 12 Mathematics or Mathematical Literacy and Grade 12 Accounting [9]. Chantyl Mulder, a senior executive – professional development, transformation and growth of the

[1]*University of KwaZulu-Natal, South Africa.*
Corresponding author: E-mail: Mkhizem4@ukzn.ac.za;

South African Institute of Chartered Accountants, Mathematics is a gateway to all key professions such as accounting, engineering, commerce and science, therefore, we need to encourage and support our learners to study mathematics and aim for good results [10]. This study was driven by the need to investigate pre-service accounting teachers' perceptions of the usefulness of mathematics in Bachelor of Education Accounting courses at the higher education institution, with the aim of informing higher education pedagogy as it relates to teaching and learning in accounting. The research questions of this study were formulated as follows: What are the pre-service accounting teachers' perceptions of the usefulness of mathematics in BEd Accounting courses? This question is answered in two ways: firstly, by looking at the usefulness of the mathematics domain and reviewing questions in the interview instrument, and secondly, by looking at groupings and determining if we can draw some differences in the perceptions of students across demographic variables as they relate to mathematics usefulness.

2. LITERATURE REVIEW

2.1 Mathematics Usefulness

A study by Curtis [11] on improving student attitudes as an aspect of mathematics curriculum innovation, found that students enjoyed the mathematics class, anxiety was reduced as students became more familiar with the instructional strategies, and students recognised the value of mathematics for job skills and personal business. Wilkins & Ma [12] reported that students who intended to pursue tertiary careers in mathematics and mathematics-related disciplines showed a positive attitude towards mathematics and expressed positive beliefs in the usefulness of mathematics in society; study participants who showed high self-efficacy in relation to mathematics were able to approach difficulties with confidence.

Farooq & Shah [13], investigating high school students' attitudes towards mathematics, found that female students showed a low preference for mathematics at higher levels because they perceived mathematics and professions requiring a high level of mathematics, as predominantly male domains. The authors also found no significant difference between male and female students in relation to perceptions of the usefulness of mathematics as an influencing factor of attitudes towards mathematics at secondary level ($p>0.05$). In contrast, Frazier-Kouassi [14] found a significant difference between high-achieving and low-achieving students in mathematics ($t=-2.26$; $p=.026$). High-achieving students agreed more strongly with the statement, "I regard mathematics as useful in my life" than did low-achieving students. However, a study in Malawi by Chamdimba [15] on students' attitudes towards mathematics found that mathematics intervention contributed in assisting both boys and girls to perceive science, mathematics and technology (SMT) subjects as interesting; although the interventions did not assist in removing fear of SMT in boys, they did boost confidence in girls. The improved girls' confidence possibly resulted from friendly behaviours on the part of teachers, and teachers reported that they valued reflection meetings because they increased mutual trust between students and teachers.

2.2 Pure Mathematics or Mathematical Literacy

Mathematics is an "area of investigation which logically analyses ordering, operational, and structural relationships" [2], while Mathematical Literacy is a subject driven by life-related application of mathematics Walton [16]. Stainbank [17] research about the impact of National Senior Certificate (NSC) Mathematics on the performance of first-year commerce students, BCom Accounting or general BCom, found that performance in each university subject Accounting I, Economics I, Information systems and technology I, Management I, Quantitative methods I was most strongly related with school mathematics performance. She concluded her study by suggesting that the entrance requirement should be raised to Mathematics level 5 for all commerce students. If the mathematics remains at level 4, then the university needed provide academic support. She also noted that Mathematical Literacy was not accepted for BCom degrees. Walton [16] stressed that If mathematical literacy accepted, then students will need support in some areas of mathematics, especially algebra. Selesho [18] agreed that arithmetic or mathematics play an important role in learning accounting, and disclosed that even though mathematics was not a prerequisite for

Accounting Education I at the Technikon, one had to have an insight into arithmetic in order to face the challenges of the subject.

2.3 Integration of Mathematics in Accounting Learning

Integrated study is described as study in which learners broadly explore knowledge in various subjects related to certain aspects of their environment [19]. An interdisciplinary integrated approach is when teachers integrate the subdisciplines within a subject area.

Mathematics is an intrinsic component of accounting, as codified by the Italian mathematician Luca Pacioli in his book introducing the concept of double-entry bookkeeping [20]. Warsono et al. [21], in a study on using mathematics to teach accounting principles, reported that many crucial topics relating to accounting principles can be explained mathematically and that students can understand them easily. Dorier (2014) reported that in most cases mathematics teachers do not want to get involved in applications that are too specialised. As a result, learners are used to seeing mathematics and other subjects as disconnected. In addition, Serai [22] points out that mathematics and accounting both involve critical thinking, but are very different fields in different departments. At the tertiary level, accounting degrees are found under the management or commerce discipline, while mathematics degrees are found under the science discipline.

3. METHODOLOGY

3.1 Research Design and Sampling

A pragmatic, sequential explanatory mixed methods research design and sampling were adopted for this study, and included a sequential collection of both quantitative and qualitative data to provide answers to the research questions. Quantitative research attempts the precise measurement of behaviour, knowledge, opinions, or attitudes [23], while qualitative research methods produce a wealth of detailed information, thereby increasing the depth of understanding and reducing generalisability [24]. I used convenience sampling for the first phase, quantitative, because the pre-service accounting teachers are based at the HEI and easy to reach and easy to contact.

For the second phase, a purposeful choice sample for interviews was selected from the quantitative sample. Purposive sampling is a type of non-probability sampling, which is based on the knowledge a researcher has of the population and its elements (Babbie and Mouton 2007). This sampling method was relevant for the study since I wanted pre-service accounting teachers to elaborate on their quantitative responses. The sample size consisted of 18 pre-service accounting teachers [25].

3.2 Data Collection and Analysis

The two data collection methods used to source the information were questionnaires and interviews.

Two sources of data were obtained for the perceived usefulness of the mathematics domain of the Fennema-Sherman Mathematics Attitude Scale (F-SMAS): The perceived usefulness of the mathematics instrument, and questions in the interview instrument.

In the first phase, I first collected and analysed the quantitative data of mathematics usefulness, with 255 responses received from 143 first-year, 77 second-year, and 35 third-year students, which yielded only numbers in the form of percentages, averages, etc.

The usefulness of the mathematics instrument, with established reliability and validity, consisted of 12 statements, which attempted to measure students' beliefs about the usefulness of mathematics currently and in relation to their future education, vocation or other activities [26]. The first six statements measure positive attitudes, and six measure negative attitudes, with the following possible responses: strongly agree, agree, not sure, disagree, and strongly disagree. Each of the Likert responses was given a value of 5 to 1, respectively, for the positively stated questions, and 1 to 5, respectively, for the negatively stated questions. A minimum possible score was 12 and the maximum

possible score was 60. A higher score indicates a more positive attitude towards the usefulness of mathematics and a lower score indicates a more negative attitude towards the usefulness of mathematics. The usefulness of mathematics composite statement: I regard mathematics as useful in my life Haladyna, Shaughnessy, and Shaughnessy [27].

The 12 items in combination tested agreement with the construct, "I regard mathematics as useful in my life". The reliability of this test was confirmed by determining the Cronbach's Alpha for the scale. The current study Cronbach's Alpha is .893 (the reported Cronbach's Alpha is .88). The data analysis for the quantitative component was undertaken by means of the Statistical Package for Social Sciences [28] version 21. Reliability of the instrument using Cronbach Alpha recorded a reliability coefficient of r=0.893 for the usefulness of the mathematics scale. The F-SMAS Cronbach Alpha usefulness of mathematics reported was 0.88.

Table 1. Usefulness of mathematics subscale

Statement	Mathematics
Statement 1	I'll need maths for my career.
Statement 2	I study maths because I know how useful it is.
Statement 3	Knowing maths will help me earn a living.
Statement 4	Maths is an important and useful subject.
Statement 5	I need to master maths for my future work.
Statement 6	I will use maths in many ways as an adult.
Statement 7	*Maths is not important in my life.*
Statement 8	*Maths will not be important in my life's work.*
Statement 9	*I see maths as a subject that I won't use very much in daily life as an adult.*
Statement 10	*Taking maths is a waste of time.*
Statement 11	*It's not important for me to do well in maths as an adult.*
Statement 12	*I expect to have little use for maths when I get out of university.*

Self-generated

The researcher personally conducted individual face-to-face open-ended interviews with 18 pre-service accounting teachers. Maree [29] describes open-ended interviews as taking the form of a conversation in which the researcher's intention is to explore with the participant his or her views, ideas, beliefs, and attitudes about certain events or phenomena. Participants may propose solutions or provide insight into events, but the focus is mainly on their own perceptions of the event or phenomenon being studied. The 18 participants were asked to indicate their perceptions of mathematics in Bachelor of Education accounting courses at the higher education institution. Some of the interview questions were as follows: Teacher explained which sections of mathematics would help me in accounting, Mathematics is important for my future accounting teaching job. Do you agree with these statements? The 5-point Likert scale was used and students were required to explain. Open-ended questions were asked so that participants could express their views (Questions 1 and 2).

Question 1: Example of a Likert-scale question used in a survey via interview

Teacher explained which sections of mathematics would help me in accounting.

Do you agree with the statement?

Not applicable	Strongly agree	Agree	Undecided	Disagree	Strongly disagree

If Agree, who? _____ Explain: _____

If Disagree, why not? _____

Question 2: Example of a Likert-scale question used in a survey via interview

Mathematics is important for my future accounting teaching job.

Do you agree with the statement?

Not applicable	Strongly agree	Agree	Undecided	Disagree	Strongly disagree

Explain: _____

The interviewer pre-tested the survey via interviews to two pre-service accounting teachers at the HEI School of Education to check if the interviewees understood the questions. The interviews were taped and the researcher took notes. Permission was obtained from participants before beginning to record. The interview data were transcribed to produce a written document. Data were qualitatively analysed.

3.3 Ethical Considerations

The study targeted all pre-service accounting teachers at the HEI who were requested to participate in the study and were informed verbally and in writing that their participation in this study was completely voluntary. The research complied with ethical considerations for dealing with human subjects. Ethical clearance was obtained from Human Research Ethics Committee of the Higher Education Institution.

4. RESULTS

4.1 Mathematics Usefulness

Table 2 depicts pre-service teachers' perceptions of mathematics usefulness showing the number of respondents in relation to their level of perception as identified by the Likert scale. Analysis of results in the table showed overall that the mean score for all 255 respondents was 47.35 (SD = 9.313), which represents moderate agreement with the composite statement, "I regard mathematics as useful in my life", a positive perception of mathematics usefulness.

Table 2. Students' perceptions on usefulness of mathematics

Statement	Usefulness of mathematics N = 255	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
		n	n	n	n	n
1	I'll need maths for my career.	115	81	20	25	14
2	I study maths because I know how useful it is.	87	104	27	30	7
3	Knowing maths will help me earn a living.	97	81	35	33	9
4	Maths is an important and useful object.	120	101	21	11	2
5	I need to master maths for my future work.	90	73	42	38	12
6	I will use maths in many ways as an adult.	91	99	35	21	9
7	*Maths is not important in my life.*	17	14	36	85	103
8	*Maths will not be important in my life's work.*	12	16	32	82	113
9	*I see maths as a subject that I won't use very much in daily life as an adult.*	16	37	28	78	96
10	*Taking maths is a waste of time.*	8	9	20	83	135
11	*It's not important for me to do well in maths as an adult.*	10	23	30	75	117
12	*I expect to have little use for maths when I get out of university*	28	56	28	61	82

Self-generated

Table 3 shows the disaggregated data by gender, age, race, mother tongue, mathematics schooling background, year of study, and location of schooling. An independent sample t-test and analysis of variance (ANOVA) were conducted to compare the mean scores of mathematical usefulness for demographic variables. A more positive attitude towards the usefulness of mathematics came from Mathematics students (M=48.78) than from Mathematical Literacy students (M=45.43), who found mathematics less interesting. A significant difference was found between Mathematics and Mathematical Literacy students on the usefulness of mathematics ($p < 0.050$).

Table 3. Comparison: Usefulness of mathematics with variables using means, T-test & ANOVA

| Variables	Sub-groups	N	Mean	t-test			ANOVA	
				t	**Df**	**p**	**f**	**p**
Gender	Male	105	47.32	-.036	253	.971		
	Female	150	47.37					
Age (Kaiserr-Messmer)	18 – 20 years	165	47.30	-.107	253	.915		
	21 years and above	90	47.33					
Race group	African	225	47.21	-.657	253	.512		
	Indian	30	48.40					
Grade 12 mathematics	Mathematics	146	48.78	2.882	253	.004*		
	Mathematical Literacy	109	45.43					
Accounting module	First-year	143	47.85				.474	.623
	Second-year	77	46.81					
	Third-year	35	46.51					
Areas/location of school	Rural area	134	47.49				.723	.486
	Township area	72	46.38					
	Suburban area	49	48.41					

*Self-generated; *p<0.05*

4.2 Backing up the Quantitative Findings with Data from Student Interviews

The students were asked whether the link between mathematics and accounting was ever explicitly stated.

4.2.1 Teacher explained which sections of mathematics would help them in accounting

The results below reflect the responses of participants to question 1 (Fig. 1).
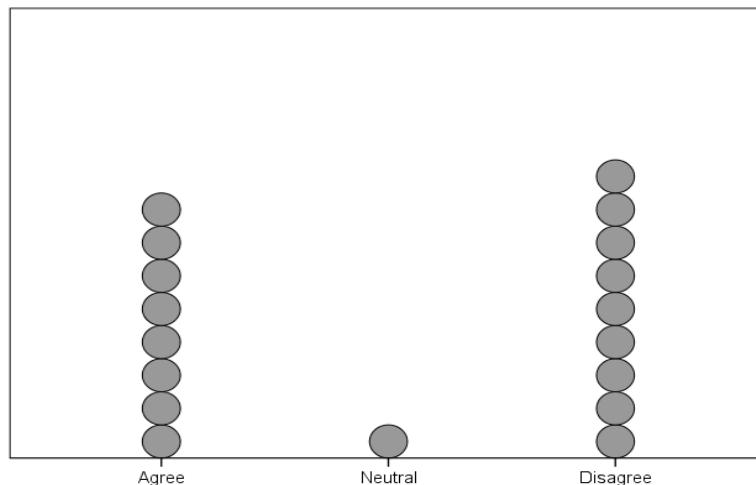
Fig. 1. Teacher explained which sections of mathematics would help me in accounting
Self-generated

The results indicate that eight participants agreed that teacher explained which sections of mathematics would help them in accounting; one participant indicated neutral and nine participants disagreed with the statement.

Reasons for their responses given by the students were, for example, as follows:

> *Accounting teacher, he used formulas and sometimes introduced variables such as y to solve an adjustment* (Sibo).

> *Accounting teacher used ratios, calculated profit, expenses, income, interest rates, calculated unknowns, formed equations* (Wise).

The responses show that teachers infused mathematics into accounting tasks. When mathematics was interlinked with accounting, students explored connections between mathematics and saw the relevance of mathematics in accounting, confirming the significance of mathematics for the accounting discipline.

However, in other cases the mathematics or accounting teacher apparently believed that his or her teaching role was confined to the subject being taught. When teaching mathematics or accounting the teacher must unpack the mathematics aspects embedded in the learning of accounting. This integrated approach will assist in alleviating tensions or anxieties that learners may face when performing mathematical accounting calculations.

> *Both the accounting and mathematics teachers taught their subjects in isolation, they never told us of links between the two subjects* (Sisi).

> *Mathematics or accounting teachers did not show us the link. We looked at maths as maths and accounting as accounting* (Phindi)

4.2.2 Mathematics module should be compulsory for all first-year BEd Accounting students

The results shown in Fig. 2 reflect the responses of participants to question 2, which was included to probe their views on whether mathematics should be a compulsory module for BEd Accounting students.
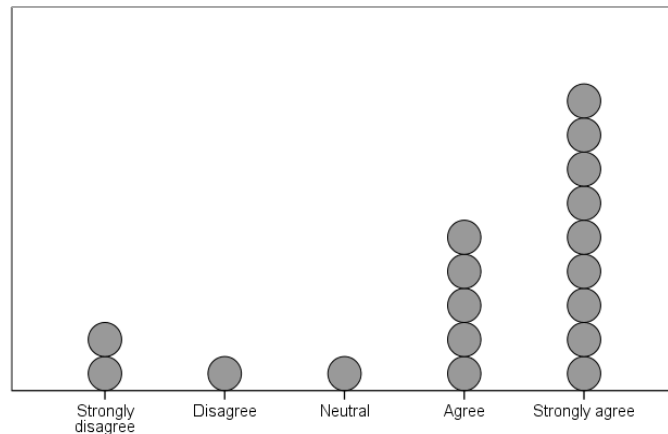
Fig. 2. Responses: Mathematics should be a compulsory module for all first-year BEd Accounting education students at the tertiary level
Self-generated

The results indicate that a majority of participants [30] agreed or strongly agreed with the statement that mathematics should be a compulsory module for all first-year accounting education students at

the tertiary level. Only one participant was undecided on the statement, and 4 participants disagreed or strongly disagreed with the statement.

Some of the reasons given by participants:

> *Yes, it should be compulsory to all first-year accounting students because if students have basis for mathematics will go on further use in accounting to assist learners* (Narri).

The response shows that participants held positive beliefs about learning mathematics. Participants saw value in doing the mathematics module because it would build confidence, reasoning skills and problem-solving skills required to teach accounting calculations at school level.

> *Definitely this module could work in assisting especially those students who didn't do pure mathematics and those who did not get good mathematics results* (Buthu).

The response shows that students with insufficient mathematics exposure would benefit from attending the module by acquiring the necessary mathematics skills.

4.2.3 Mathematics is important for my future accounting teaching job

The results indicated in Fig. 3 reflect the responses of participants to question 3, which was intended to probe their views on whether mathematics is important for an accounting teaching job.
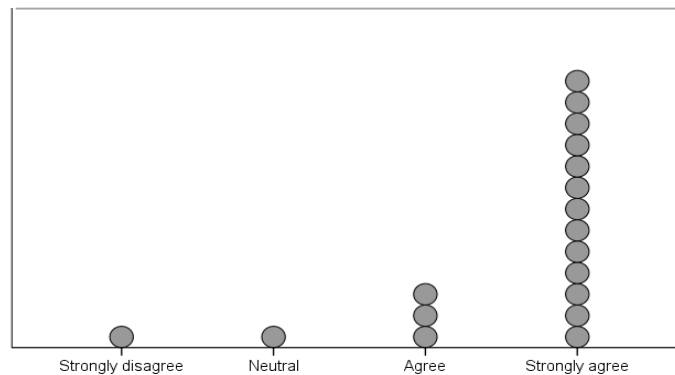
Fig. 3. Mathematics is important for my future accounting teaching job
Self-generated

The results indicated that a majority of participants (Hill) strongly agreed and three agreed with the statement, "Mathematics is important for my future accounting teaching job". Only one participant was neutral regarding the statement, and only one participant disagreed with the statement.

Overwhelmingly, participants believed that it was important to do mathematics given that it related to their major subject, Accounting, and their future accounting teaching job. This belief is reflected in responses by participants:

> *Yes, it gives me a better understanding when doing accounting calculations as well as when you teaching it, if you have a better understanding your learners will also understand* (Bima).

The understanding expressed here is that mathematical knowledge assists with conceptual clarity in accounting and enables students to better understand the mathematics embedded in accounting, and that ability to do analysis and disaggregation of calculations made students able to transfer the knowledge to the learners they will be teaching and improve learning by making it easier.

> *It is important since some of the topics done in mathematics, for example, financial mathematics are done in accounting. Mathematics also shows you different ways to tackle a problem which can be applied in accounting* (Sisi).

The perception here is that a student who is strong or competent in mathematics will develop mathematical thinking not merely in a linear way but in multiple and different ways to reach a solution, as compared to a student who does not know mathematics.

> *Yes, it will help but I don't think you need pure mathematics to do accounting but it will help. Mathematical Literacy is fine, there is not much mathematics in accounting* (Mara).

In believing that Mathematical Literacy was sufficient to cope with the mathematics required in accounting and that you did not have to be a master of mathematics, Mara's perception is based on her own experiences.

> *Yes, mathematics contributes a major part in accounting. Mathematics teaches you about formulas, equations etc. and you can apply that in accounting. It is the stuff that accounting teachers will not focus on. It helps with understanding of mathematical accounting calculations. Once formulas are learnt in mathematics it can also be used in accounting* (Vender).

Vender sees mathematics as an integral aspect that contributes to success in accounting. This participant is able to identify particular aspects applied in accounting, reflecting on his own school experience that accounting teachers do not traditionally teach mathematics associated with accounting concepts, an approach that is likely to compound difficulties students struggling in mathematics are likely to experience if concepts are not consolidated in accounting class.

> *Of course, Mathematics is a vital subject for any accounting teacher. I sometimes find myself using my mathematical knowledge to perform some of the calculations in accounting. Mathematics will allow accounting teachers to manipulate any accounting calculation* (Narri).

When students have meta-cognitive awareness, they reflect on their own learning (e.g. "I have learnt so that I can learn better") and on how mathematics influences learning of accounting, which increases a student's ability to do better in accounting.

> *Yes, I think it is important for one to do mathematics if one is preparing to be an accounting teacher. Teaching methods for mathematical calculations should be incorporated in any accounting education method module so that student teachers will expose their children to many different methods of coming with a same answer. This will ensure that every learner is accommodated* (Kazi).

Kazi is suggesting that mathematics should be integrated formally into the teaching method module, specifically in the "accounting education method module". This integration would equip pre-service accounting teachers with a repertoire of skills and a mathematical way of thinking. When learners learn multiple ways to address the issue, they can come up with their own solution. Teachers accommodate learners who think differently.

5. DISCUSSION OF RESEARCH RESULTS

Accounting students agree that mathematics is useful in accounting, but nine participants did not agree that teacher explained sections of mathematics that would help in accounting, as opposed to eight who did agree. Participants felt that the teaching roles of their teachers of mathematics and of accounting were confined to their subjects that they taught. No connections were made between mathematics and accounting. The participants who agreed indicated that their teachers explained sections of mathematics that would help in accounting, that they integrated mathematics in accounting tasks, which helped the students in exploring the connection between mathematics and accounting and made them see the relevance of mathematics in accounting. This finding is consistent with Ellerman's [20] finding that mathematics is an intrinsic component of accounting, and with the point made by Warsono et al. [21] who agreed that vital topics related to accounting principles can be explained mathematically and that students can then understand easily. In the study of accounting,

the integration of mathematics is a powerful technique for alleviating tensions or anxieties that students face when performing mathematical accounting calculations.

The results show that 191 respondents agreed with the statement, 'I study maths because I know how useful it is'. Likewise, the majority of interview participants (14) agreed with the statement, 'Mathematics should be compulsory module for all first-year BEd Accounting students at tertiary institutions'. The qualitative data disclosed that participants held positive beliefs about learning mathematics. Participants saw value in doing the mathematics module because they believed that it would build confidence, reasoning skills and problem-solving skills.

The majority (163) of the respondents believed that they needed to master mathematics for their future work. Further, 196 trusted that they would need maths for their teaching career, and 191 were in agreement with the statement that 'I study mathematics because I know how useful it is'. Likewise, a more positive attitude towards the usefulness of mathematics came from Mathematics students (M=48.78) than from Mathematical Literacy students (M=45.43), who find mathematics less interesting. A significant difference was found between Mathematics and Mathematical Literacy students on the usefulness of mathematics (p < 0.050). Students who perceive the usefulness or importance of mathematics perform better in mathematics. One participant recommended that mathematics should be part of the accounting method module as this will equip pre-service accounting teachers with a repertoire of skills and a mathematical way of thinking. This finding is consistent with Serai [22] who found that mathematics and accounting comprise critical thinking but are very different fields in different departments, and with Tahir and Abubakar [31] who found that learning mathematics through accounting, finance, marketing, and business in general, not only strengthens students' ability to think analytically but also develops skills of reasoning and problem solving. Another participant reflected on his own school experience and that accounting teachers traditionally do not teach mathematics associated with accounting concepts and this could compound difficulties that students struggling with mathematics are likely to experience if they are not consolidated in an accounting class. This finding is supported by Dorier (2014) who found that learners are used to seeing mathematics and other subjects such as accounting as disconnected.

6. CONCLUSIONS AND IMPLICATIONS FOR HIGHER EDUCATION

A more positive attitude to the usefulness of the mathematics subscale was reported by students who did General Education and Training and Further Education and Training (FET) Mathematics at school level. This is relevant in light of the finding that 191 of the students were in agreement that "I study mathematics because I know how useful it is".

Participants were of the opinion that, for their teaching job, mathematical knowledge would give them a better understanding of the mathematics embedded in accounting and make them better able to transfer knowledge to the learners they teach. Good mathematical knowledge will make them more capable of developing a diversity of mathematical ways to arrive at a solution.

Fifty per cent of the students reported that some of the teachers do not integrate mathematics with accounting. In- and pre-service accounting and mathematics teachers' workshops should be conducted for them to integrate accounting calculations in classrooms.

For higher education and accounting education and mathematics education, academic support programmes for BEd accounting students regarding mathematics should be organised in areas essential for the connection between mathematics and accounting. Accounting involves mathematics. Therefore, integrating accounting and mathematics methods modules in an accounting method class might be an approach or technique to improve accounting education. This move will equip students with a repertoire of problem-solving skills and mathematical ways of thinking. The institution will then be promoting the constructivist or hands-on minds-on learning approach.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. University of Glasgow. Undergraduate degree programmes: Accounting and mathematics; 2014.
Available: http://www.gla.ac.uk/undergraduate/degrees/accountingmathematics/
2. Gilfeather M, delRegato J. Mathematics Experience-Based Approach (MEBA). Pentathlon Institute, Inc., 1-3; 1999.
3. Fedoryshyn MW, O'Brien E, Hintz A, Bosner K. Arithmetical reasoning skills as a predictor of success in principles of accounting. Academy of Educational Leadership Journal. 2010;14.
4. Heck A, van Gastel L. Mathematics on the threshold. International of Mathematics Education in Science and Technology. 2006;1-24.
5. Shaftel J, Shaftel T. The influence of effective teaching in accounting on student attitudes, behaviour, and performance. Issues in Accounting Education. 2005;20(3):231-246.
6. Jacobs MS. A description of entry level tertiary students' mathematical achievement. (Doctor of Philosophy), University of Western Cape, Cape Town; 2006.
7. Schwab K, Sala-i-Martin X, Brende B. The Global Competitiveness Report. Retrieved from Geneva; 2013.
8. Dweck DC, Leggett EL. A social-cognitive approach to motivation and personality. Psychological Review. 1988;95(2):256-273.
9. HEI. College of Humanities Handbook. KwaZulu-Natal: University of KwaZulu-Natal; 2013.
10. Mulder C. SAICA pleased at the improvement in maths results. News and Press Archives – SAICA. 2013;1.
11. Curtis KM. Imrpoving student attitiudes: A study of a mathematics curriculum innovation. (Doctor of Philosophy), Kansas State University, Manhattan, Kansas; 2006.
12. Wilkins LMJ, Ma X. Modeling change in student attitude towards and beliefs about mathematics. The Journal of Educational Research. 2003;97(1):52-63.
13. Farooq MS, Shah SZU. Students' attitude towards mathematics. Pakistan Economic and Social Review. 2008;46(1):75-83.
14. Frazier-Kouassi S. A Psychological Study of Mathematics Attitudes and Achievement among Female Ivorian Students; 1999.
Retrieved from Michigan: http://gencen.isp.msu.edu/documents/Working_Papers/WP268.pdf
15. Chamdimba PC. Students' attitude towards mathematics in Malawi: Can they be improved? University of Malawi. Malawi; 2011.
16. Walton M. Mathematical requirements for first-year B Com students at NMMU. (Doctor of Philosophy), Nelson Mandela Metropolitan University, Port Elizabeth; 2009.
17. Stainbank L. The Impact of NSC Mathematics on the Performance of First Year Commerce Students. Alternation Special Edition. 2013;8:107-121.
18. Selesho JM. An investigation into factors that influence the results of accounting (education I at the Technikon Free State. (Magister Technologiae Education), Port Elizabeth Technikon, Port Elizabeth; 2000.
19. Humphreys A, Post T, Ellis A. Interdisciplinary methods: A thematic approach. Santa Monica, CA: Goodyear Publishing Company; 1981.
20. Ellerman D. Double -Entry Accounting: The mathematical formulation and generalization. FSR Forum. 2007;17-22.
21. Warsono S, Darmawan A, Ridha MA. Using Mathematics to Teach Accounting Principles. Social Science Research Network. 2009;1-25.
22. Serai Y. Degrees in Accounting and Mathematics; 2014.
Available: http://ehow.com/info_7976898_degrees-accounting-mathematics=similarities,html
23. Cooper DR, Schindler PS. Business Research Methods. New York: McGraw-Hill International edition; 2008.
24. Patton MQ. Qualitative Research and Evaluation Methods. Thousand Oaks, California, US: Sage Publications; 2002.
25. Hassan N, Kong Yek C, Hamizah NN. Gifted Students' Affinity towards Mathematics. Advances in Natural & Applied Sciences. 2012;6(8):1219-1222.
26. Fennema E, Sherman JA. Fennema-Sherman mathematics attitude scales, instruments designed to measure attitudes toward the learning of mathematics by males and females. JSAS catalog of selected documents in Psychology. 1976;6(1):31-54.

27. Haladyna T, Shaughnessy J, Shaughnessy M. A causal analysis of attitude toward mathematics. Journal for Research in Mathematics Education. 1983;14(1):19-29.
28. Mohd N, Mahmood TFPT, Ismail MN. Factors that influence students in mathematics achievement. International Journal of Academic Research. 2011;3(3):49-54.
29. Maree K. First Steps in research (1st ed.). Pretoria: Van Schaik; 2007.
30. Rosenberg MJ, Hovland CI. Cognitive, Affective, and Behavioural components of attitudes. Retrieved from New Haven, CT; 1960.
31. Tahir IM, AbuBakar NM. Business students' beliefs in learning mathematics. Journal Kemanusiaan bil. 2007;10:90-103.

Biography of author(s)

Professor Msizi Mkhize
[1]University of KwaZulu-Natal, South Africa.

He is an academic, researcher, maths activist, and teaching and learning specialist. He is the Academic Leader: Teaching and Learning (Acting) in the School of Accounting, Economics and Finance (SAEF) at University of KwaZulu-Natal (UKZN). He holds a Master of Commerce (MCom) and Doctor of Philosophy (PhD) from the UKZN. He is the recipient of UKZN's Distinguished teacher award (2019). He is also the recipient of national excellence in teaching commendation award, jointly awarded by the Council on Higher Education (CHE) and Higher Education Learning and Teaching Association of Southern Africa (HELTASA) in 2019. His areas of interest are teaching and learning of accounting and mathematics, with a particular focus on exploring the effect of attitudes towards mathematics on learning accounting with the aim of informing higher education pedagogy as it relates to teaching and learning in accounting. He has conducted research on the effects of attitudes towards mathematics on learning accounting and investigated the transdisciplinary relationship between mathematics and accounting in a Bachelor of Education (BEd) curriculum at the higher education institution (HEI). His research has provided an excellent platform to improve his accounting teaching.

London   Tarakeswar