

SABATIKAL

UNIVERSITY TEACHING STAFF'S ENGLISH LANGUAGE PROFICIENCY

DISEDIAKAN OLEH

**MEGAWATI OMAR
AKADEMI PENGAJIAN BAHASA
UiTM SHAH ALAM**

1 May 2013



Rujukan Kami : 600-BPD(PKH.1/2/3283)
Tarikh : 28 September 2012

Prof. Madya Dr. Megawati Binti Omar
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Puan

**MEMORANDUM TAWARAN CUTI SABATIKAL :
PROF. MADYA DR. MEGAWATI BINTI OMAR (NO. PEKERJA: 117168)**

Merujuk kepada surat kelulusan JPbSM bertarikh 10 Ogos 2012 Bil 600-BPD(PKH.1/2/3283) sukacita dimaklumkan bahawa Memorandum Tawaran Cuti Sabatikal adalah dengan syarat-syarat berikut:

1. Tempoh:

Enam (06) bulan mulai 01 November 2012 hingga 30 April 2013.

i. Universiti Teknologi MARA (Akademi Pengajian Bahasa).

2. Tempat:

Dalam Negara : Universiti Teknologi MARA (Akademi Pengajian Bahasa)
40450 Shah Alam, Selangor.

3. Program:

Menjalankan penyelidikan bertajuk " *Modelling The Barrier to The University Teaching Staff's English Language Proficiency.* "

4. Penerbitan

Puan adalah diminta menghasilkan sekurang-kurangnya dua (02) kertas kerja dalam jurnal berindeks. (Sila kemukakan salinan kertas kerja tersebut ke JPbSM).

5. Gaji:

Dalam tempoh Cuti Sabatikal ini puan akan dibayar gaji penuh.

6. **Kemudahan Elaun:**

Dalam tempoh Cuti Sabatikal ini puan akan dibayar elaun berikut:

(i) Cuti Sabatikal Dalam Negara selama enam (06) bulan

- a. Elaun Sara Hidup sebanyak RM500.00 sebulan;
- b. Kemudahan rawatan perubatan mengikut Skim Perkhidmatan Perubatan Kakitangan Universiti. Sekiranya tiada perkhidmatan doktor pada Universiti di tempat berkenaan hendaklah mendapatkan rawatan di hospital atau klinik kerajaan. Universiti tidak akan menanggung kos rawatan dan perubatan dari hospital atau klinik swasta.

7. **Perjanjian**

Puan adalah dikehendaki menandatangani surat perjanjian mengakujaji berkhidmat dengan Universiti ini bagi tempoh selama SATU (1) TAHUN setelah tamat Cuti Sabatikal atau membayar bayaran gantirugi sebanyak RM15,000.00 sekiranya melanggar perjanjian.

8. **Pekerjaan Lain**

Semasa dalam Cuti Sabatikal, puan adalah dilarang menjalankan sebarang pekerjaan atau apa-apa jua aktiviti lain sama ada secara sambilan atau sepenuh masa tanpa terlebih dahulu mendapat kebenaran bertulis dari Universiti ini.

9. **Kawalan, Tatatertib dan Pengawasan**

Semasa tempoh Cuti Sabatikal ini, puan adalah sentiasa tertakluk di bawah kawalan dan pengawasan Universiti serta peraturan tatatertib kakitangan yang berkuatkuasa di Universiti, Perlembagaan Statut Cuti Sabatikal, Akta Universiti dan Peraturan-Peraturan Universiti. Puan juga hendaklah berkelakuan selaras dengan tanggungjawab terhadap Universiti dan Kerajaan Malaysia.

10. **Tugas dan Tanggungjawab**

Semasa menjalankan program Cuti Sabatikal ini, puan mestilah memastikan bahawa program pengajian/penyelidikan yang diluluskan terlaksana sepenuhnya.

11. Pertukaran Tempat / Program Cuti Sabatikal

Puan adalah dilarang dari menukar program Cuti Sabatikal ataupun tempat Cuti Sabatikal itu dijalankan tanpa terlebih dahulu mendapat kebenaran bertulis dari Universiti ini. Puan adalah dilarang kembali lebih awal dari tarikh tamat Cuti Sabatikal puan terlebih dahulu tanpa mendapat kebenaran bertulis dari Universiti ini.

Universiti berhak menamatkan Cuti Sabatikal puan pada bila-bila masa tanpa notis sekiranya puan tidak mematuhi arahan tersebut.

PERINGATAN:

1. Puan dikehendaki memaklumkan Dekan / Ketua Jabatan / Rektor sebelum memulakan Cuti Sabatikal.
2. Sekiranya program Cuti Sabatikal puan terpaksa dipinda, puan dikehendaki mengemukakan surat permohonan kepada Timbalan Naib Canselor (Akademik dan Antarabangsa) melalui Dekan / Ketua Jabatan.

12. Cuti Rehat

Seorang pegawai yang mengikuti sesuatu kursus yang melebihi 12 bulan, akan dianggap sebagai telah menghabiskan semua cuti rehat yang ia telah berkecualan mendapat sebelum berkursus.

Tempoh cuti selepas berkursus dihadkan sehingga tujuh hari jika pegawai masih mempunyai baki Cuti Rehat sebelum pergi berkursus.

13. Laporan Cuti Sabatikal

- a) Puan hendaklah melaporkan kemajuan kerja program Cuti Sabatikal yang dijalani secara bertulis kepada Dekan / Ketua Jabatan dan salinan kepada Timbalan Naib Canselor (Akademik dan Antarabangsa) sekurang-kurangnya tiga (3) bulan sekali mengikut format Borang Laporan siri JPbSM/CS.3/2001.

- b) Puan hendaklah mengemukakan dua (2) salinan Laporan Cuti Sabatikal yang lengkap di atas Borang Laporan siri **JPbSM/CS.2/2001** dan dua (2) salinan Hasil Cuti Sabatikal. Satu (1) salinan Laporan dan Hasil Cuti Sabatikal hendaklah disimpan oleh Dekan / Ketua Jabatan yang berkenaan. Laporan dan Hasil Cuti Sabatikal mestilah **DITAIP** dan dikemukakan ke Bahagian ini melalui Ketua Jabatan dan Dekan berkenaan, dalam tempoh tidak lewat daripada **satu (1) bulan** selepas puan balik daripada Cuti Sabatikal itu.

Kegagalan puan untuk menghantar laporan berkenaan mengikut jadual yang ditetapkan boleh menyebabkan Cuti Sabatikal puan ditamatkan dan puan tidak akan diberi pertimbangan untuk mendapat cuti sabatikal di masa hadapan.

14. Denda kerana gagal menyiapkan program Cuti Sabatikal

Jika puan gagal menyiapkan program yang diluluskan untuk Cuti Sabatikal ini maka puan akan dikenakan tindakan penalti sebanyak **RM15,000.00**.

NOTA:

"Gagal" ertinya Jawatankuasa Penilaian Senat atau mana-mana Jawatankuasa yang diberi kuasa oleh Universiti, setelah memberi peluang kepada staf untuk mempertahankan kerja-kerjanya, telah mencapai kesimpulan bahawa kualiti atau kuantiti penyelidikan atau penulisan buku ilmiah staf itu tidak memuaskan.

15. Melaporkan Diri

Puan adalah diminta untuk **melapor diri** di Jabatan ini pada **01/05/2013** atau pada hari berikutnya jika pada tarikh yang dinyatakan jatuh pada hari Cuti Umum/Kelepasan Am dan bekerja semula dengan segera di UiTM setelah tamat tempoh cuti sabatikal.

16. Hak Universiti

Walau apapun peraturan-peraturan dan perbekalan dalam surat tawaran Cuti Sabatikal ini, Universiti berhak meminda syarat-syarat Cuti Sabatikal ini dari masa ke semasa tanpa memberi notis dan apa-apa keputusan Universiti sedemikian itu adalah muktamad.

- 17.** Sehubungan dengan itu, memorandum tawaran cuti sabatikal ini adalah dibaca sekali dengan surat kelulusan JPbSM Bil 600-BPD(PKH.1/2/5485) bertarikh 10 Ogos 2012 dan Dokumen Perjanjian Cuti Sabatikal bertarikh TIGA PULUH haribulan OGOS Dua Ribu Dua Belas (2012) DI ANTARA MEGAWATI BINTI OMAR.

Rujukan Kami : 600-BPD(PKH.1/2/3283)
Tarikh : 28 September 2012

5/5

Sekian, terima kasih.

Yang benar

DR. HAJAH ZAHRAH MOKHTAR

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Disertakan.

Memo Cuti Sabatikal PM Dr Megawati Omar JKLP 255 28/07/2012

REPORT

This research was conducted in a period of six months which was between 1 November 2012 and 30 April 2013. The aim was to investigate the academic writing proficiency of the academics in the English language. The research was supervised by Associate Professor Dr Rasimah Arifin, the Faculty of Computer and Mathematical Sciences, UiTM, Shah Alam.

INTRODUCTION

The public's expectation of a university's teaching staff is the highest possible standards of proficiency of the language used by the community of knowledge and science, of which 'in most parts of the world is English' (Coughlan, 2012). Universities in Asia, Holland, and South Africa state clearly that one of the requirements for their teaching or academic staff is to have good written and spoken English skills. So do universities in Malaysia.

But the writer's 3-year observation on writing proficiency in English of the UiTM novice researchers while seconded at the Research Management Institute showed that these lecturers' academic papers contained grammar errors, parts similar to the internet sources, punctuations mistakes, points not well presented and discussion lacking debate (Research Management Institute, 2012). These flaws were found via one of the writer's official assignments that were to analyse UiTM lecturers' (approximately) 500 journal articles and proposals. The present writer then re-wrote articles from these journals for local and international research news magazines, and websites; or edited them for the journals published by the institute. Besides, the writer also read (approximately)

1,000 abstracts and proposals for grant applications purposes, and found similar flaws in them.

The aforementioned flaws appear to reflect language standards below than what is expected of a university's teaching staff. A strong relationship between good communication and professional success' (Wood, 2012) is needed. In the case of a university's teaching staff, professional success means rendering fluent lectures, writing academic papers and designing curriculum well in the English language. In a 'selective attention' situation (Pearson, Nelson, Titsworth and Harton, 2011), students may select to respect a more fluent lecturer and pay more attention to his teaching more than to that of the less fluent ones.

The required English proficiency of a university lecturer would be that they must be able to lecture and explain contents to students for two hours (3 hours in the case of Master's courses), write error-free academic papers for journals of a good impact factor, and present their research to an international audience, all in good English.

In informative speaking (Wood, 2012), like presenting in conferences, a proficient use of the language is vital. Secondly, the importance of mastery of a language is that 'language can influence thoughts' (Hoegg and Alba, 2007), of which in this case, if the English, the language of knowledge, is used proficiently, will command the respect of the students, which in turn will influence their thoughts. Academics are also required to design the curriculum or syllabus, creates any supporting resources, effectively delivering the training a clear and concise manner; all of which requires competent use of language.

However, the Ministry of Higher Education, in its study in 2006/2007, reported that generally, lecturers below age 45 in eleven Malaysian public

universities, are less competent in English than their counterparts older than 45 years (Ministry of Higher Education, 2007). Zuraidah Mohd Dom, Pillai and Megawati Omar, remarked that questions are raised in the command of English of the Malaysian public universities lecturers: UiTM, MU, UIA, UNIMAS, UPSI, UPM, UKM, USM, UTM, UMS and UUM. As most studies were conducted on students thus this study was the first of its kind, studying the universities teaching staff's command of English. But this study did not report the details of these academics' lack of proficiency.

Therefore, the aim of this analysis was to detect the contrasts between the papers written by novice writers and those of written by expert writers

STATEMENT OF PROBLEM

University Teknologi MARA (UiTM) employs 5,767 lecturers (2,448 in the Klang Valley campuses and 3,319 in the state campuses) (Research Management Institute, 2012), who are 45 years and younger, which form 65% of the teaching force. Many lecturers younger than 45 years of age, who have been a lecturer for UiTM 6 years, still make errors such as, '*Are you prefer...*'.

Below are three lecturers, one of them made the above error, are willing to share their English language proficiency and background.

- a) Puan Salina Alias, age 33 years said that her English is very weak.

She attended primary school Sekolah Kebangsaan Jenalik, Sauk Kuala Kangsar, Perak and secondary school Ma'had Al-tarbiyyah Al-Islamiah, Beseri perlis (Forms 1-3) and Sek. Keb. Dato' Ahmad Lenggong Perak (Forms 4 - 5). University attended was University Sains Malaysia

(Bachelors and Master's Degrees and had a thesis written in Malay (both theses. Her language or dialect spoken at home is Malay, has lectured for UiTM 7 years and subjects taught are Fluid Mechanics, Hydraulic, Solid Mechanic, Environmental Engineering, Building Services (calculation-based subjects. When teaching and conducting meetings, she mixes English and Malay (90% Malay).

b) Puan Nor Azliza Akbar, 32 years old, states that her English is very weak. She attended primary school Sekolah Kebangsaan Bayan Lepas, Pulau Pinang, Secondary school Sekolah Menengah Agama Al-Irshad, Pokok Sena Kepala Batas, Penang. Her universities were UiTM Shah Alam and University Teknologi Malaysia and had her thesis written in English. Language or dialect spoken at home is Malay and she has been lecturing for UiTM 6 years. The subjects she teaches are Basic Hydraulics, Fluid Mechanics, Hydraulics & Water Quality Lab, Environmental Lab, When teaching, she mixes English and Malay.

c) Puan Noorsuhada Md Noor, aged 34 years, who chose to describe her English as not so good. Her primary school was Sekolah Rendah Seri Timbul and secondary school Sekolah Menengah Tunku Mahmood Iskandar, while university was UiTM. She wrote her thesis in English. Her language or dialect spoken at home is Malay and has worked for UiTM since 2002 as a contract lecturer and confirmed in 2005. The subject she is teaching is Structural Engineering and said that when teaching she mixes English and Malay, where the explanation is in English, the discussion mixed. She conducts meetings fully in Malay.

It is baffling that these academics, who had gone through 20 years of exposure to English texts and reference books at schools and universities, are still unable to achieve the required mastery of the English language as expected of a lecturer. Their 20 years of exposure to English can be split into 6 years of primary school, 5 of secondary school, 5-7 university. Most of them even had written theses in English. Therefore, its cause should be studied.

Secondly, Stanovich, West, and Harrison, (1995) (cited in Harley, 2001, p. 210) noted that being exposed to prints is a better influence to gain a larger vocabulary than having a strong working memory or educational level. But in this case, these lecturers, who, in the course of profession, are rightly and justifiably more exposed to prints more than do the others, are still unable to capture vocabulary, large or good enough to write a good academic journal or to speak fluently in conferences and lectures.

Therefore, it is hypothesized that the "affective filter," (Krashen, 1982) could be the barrier to Malaysian learners of English as a second language. The notion of reasoning is that they could be suffering from anxiety, under motivation or lack of self-esteem, which increase their affective filter, that in turn caused difficulty to speak or write. It is also conjectured that this inability could be due to 'culture limiting effect' (Baran, 2012), which may be caused by the 'dominant culture' (ibid, p. 11), in this case the Malay culture, that may make one not willing to speak in English with his fellow counterparts.

As Malaysian universities are trying to be a higher education hub and to produce experts who can compete effectively an international level, high standards of English of the lecturers is essential (Ministry of Higher Education, 2007). Hence again, the traits of their limited proficiency should be identified which can be helpful for remedy.

METHODOLOGY

Forty scholarly papers were selected from a Malaysian conference website for analysis using an impressionist method. The writers of the papers are from Malaysia, Iran, Japan, Singapore, Sri Lanka, Thailand and India who have gained no citation, which was verified via Google Scholar. Their papers were compared to those published by Elsevier, a renown publishing company.

FINDINGS

The main finding is that the analysed papers showed that the writers' writing skills have not reached the standards of reputable publication at international level. Below are the details of their writing, shown in a form of contrast between theirs and the papers written by expert writers. The expert writers were measured by their number of citations identified on Google Scholar.

Table 1: Contrasts between the Novice Writers and Expert Writers

Section of Papers	Features	Novice Writers	Expert Writers
Names of authors	The designation and titles of authors written such as Professor, Associate Professor, and Dr	Designation and titles of authors written in Papers 4 and 8	Designation and titles of authors not written
	Title is Confusing – e.g. <i>Teaching Methods for Islamic Education Post Graduate Diploma in Teaching Primary School in Malaysia</i>	Paper 9	Brief and clear
	Containing abbreviation	Paper 5	No abbreviation used
	Capitalization error –e.g. ‘the’ should be not capitalized	Papers 2, 3, 6, 12 and 31	No error as Elsevier standardizes that only the first word is capitalized
	Wrong use of preposition ‘among’ – should be ‘of’	Papers 7 and 8	Preposition appropriately used
ABSTRACT	Containing a full stop	Papers 28, 29 and 31	
	Too short (30 words)	Paper 2	
	Too long (301 words)	Paper 7	
	Objective not mentioned	Papers 1, 3, 7, 15, 16, 17, 24, 33, 34, 35, 36 and 37	
	Containing grammatical errors	Papers 1, 2, 3, 4, 7, 11, 12, 16, 17, 31 and 38	
	Methodology not mentioned/mentioned but not clear	Papers 1, 2, 3, 10, 12, 16, 18, 19, 21, 24, 33 and 40	
	Problem statement not clearly mentioned	Papers 1, 3, 6, 15, 17, 19, 31, 33, 34, 36, 37, 39, 40	
	Research gap not mentioned	Papers 1, 3, 6, 7, 8, 10, 12, 15, 17, 18, 19, 31, 33, 39, 34, 37 and 40	
	Results not mentioned	Papers 3, 4, 15, 18, 19, 24 and 39	
	Citation in the abstract	Paper 20	
	A total ramble of sentences but not mentioning objective, gap of research, methodology, results and conclusion, and not making sense as an abstract	Papers 3, 9, 11, 14, 15, 19, 21, 22, 25, 27 and 40	
	Unsuitable choice of word. E.g. Paper 17’s ‘represents’. E.g. 2 Paper 39 – ‘Methodology entailed site study with observations’	Papers 17, 28 and 39	
OBJECTIVE	Different objectives mentioned in two/various sections	Papers 4 and 24	
	Objective of research not mentioned	Papers 1, 3, 6, 14, 17, 20, 21, 25, 28, 33, 34, 35, 36 and 38	
INTRODUCTION	Non-academic words used e.g. ‘got’, ‘come in come out’	Papers 1, 6 and 38	
	The significance of research not mentioned	Paper 1, 3, 6, 17, 27 and 39	
	Research gap not mentioned	Papers 1, 3, 4, 7, 9, 14, 17, 20, 21, 34 and 22	
	Parts of methodology mentioned in the introduction section	Papers 14, 27 and 36	
LITERATURE REVIEW	All citations author-focus	Papers 14	
	Parts of writing 100% similar with	Papers 3, 8, 9, 16 and 34	

	sources on the Internet)		
METHODOLOGY	Use of wrong tenses, particularly use of the present tenses	Papers 3, 4, 8, 11, 15, 16, 17, 21, 25, 35, 38 and 40	
	Paper 3, 4 and 34 used future tenses		
	Some parts of Methodology mentioned in the Results section	Paper 11	
	Sample not explained in detail	Papers 13 and 38	
	Methodology did not specifically mention what was conducted in the experiment	Papers 16, 21, 35, 38 and 40	
RESULTS	Results are not clearly mentioned. It looks more like an explanation what done to get the result	Papers 4 and 11	
	For example, Paper 11's first paragraph of the result section still does not mention the result		
	Overzealous claim – e.g. <i>These results provided a proof to confirm, e.g. literature having undeniable positive effect on quality of life... (Paper 19)</i>	Papers 19 (in the abstract) and 24	
CONCLUSION	Did not state what mentioned in the objective	Papers 3, 4, 5, 11, 12, 13, 14, 15, 17, 21, 22, 24, 28, 33, 34, 35, 37 and 40	
	Did not state if research had achieved its objective		
	Did not state problems faced during the experiment		
	Did not state issues that affected the course of the research or ways in which the research process turned		
	Did not state how results affect the writer's current views		
	Did not put the findings in the greater context.		
	Did not show how results relate to issues in the field		
	Did not state if data help the issues		
	Did not state how to help solve issue, if they do		
	Did not state the results to the real world		
Did not state what have been learnt			
Did not state if the results of research suggest a particular course of action that specific people should take			
REFERENCE	References not recent (only 0-3 published in 2011 and 2010) the rest published in and before year 2009	Papers 2, 3, 4, 6, 8, 9, 11, 13, 14, 17, 19, 21, 24, 33, 34, 37, 38 and 40	
	Small number of references	Papers 3 and 21 (11 references only)	
		Paper 12 (6 references only)	
		Paper 15 (5 references only)	
		Paper 16 (9 references only)	
		Paper 35 (10 references only)	
Year of listed reference not mentioned	Paper 37 (6 references only)		
	Paper 40 (14 references only)		
	Year of listed reference not mentioned	Papers 22 and 40	
OTHERS	Grammatical errors	Papers 2, 3, 4, 6, 7, 8, 11, 12, 13, 15, 16, 17, 20, 22, 24, 25,	

		27, 31, 33 and 40	
	Typing errors and language not academic	Papers 21, 33 and 34	
	Punctuation error	Papers 34 and 39	

OTHERS	Grammatical errors	Papers 2, 3, 4, 6, 7, 8, 11, 12, 13, 15, 16, 17, 20, 22, 24, 25, 27, 31, 33 and 40	
	Typing errors and language not academic	Papers 21, 33 and 34	
	Punctuation error	Papers 34 and 39	

PAPERS WRITTEN

Below are the two papers written for publication as required by JPbSM, UiTM.

Paper 1

ABSTRACT - This paper examined forty papers published in online conference proceedings by novice academic writers in Asia. The analysis focused on the essential elements of an academic paper and compared to the scholarly papers published by experienced writers in academic journals. It was found there were marked differences between the Malaysian writers and the papers published in recognised academic journals. There are serious implications for the ability of Malaysian and other Asian academic writers to publish their work at the level required for an academic career.

INTRODUCTION

A nation's scientific development is directly related to its rate of scholarly research and publication; and scientific communities' the number of citation gained. Citation analysis is one of the criteria used to determine an academic's scholarly performance which influences elevation at workplace. Following, in doing so, Asian universities have used subject categories and impact factor to identify the good journals, and whether the academics' scholarly work has been published in these journals, most of which are in English language and published in the West (Huang and Li, 2010). Thus this has resulted in increasing pressure on fledgling researchers in all disciplines to publish.

Publishing requires quality writing (Huang, 2010). However, as the present writer has reviewed papers written over the past five years by

inexperienced lecturers and researchers in the social science field, it was observed that there were many negative elements such as grammatical errors in their writing, something not found in the scholarly papers published by experienced writers in internationally recognised journals. According to Ädel and Erman (2012), for example, writing by non-native English speaker researchers does not contain the language used by researchers whose mother tongue is English.

In the same vein, the Malaysian Ministry of Higher Education, in a study in 2006/2007, reported that lecturers below the age of about 45 in eleven Malaysian public universities, were usually less competent in English than those who were older than 45 years (Ministry of Higher Education, 2007). Zuraidah Mohd Dom et al (2007) also remarked that questions were raised about the command of English of their sample of Malaysian university lecturers.

The present researcher, therefore, intends to examine the quality of 40 proceedings published on a Malaysian national level conference website and it was anticipated that this analysis will assist new researchers intending to publish. The acquisition of writing skills involves long-term commitment, use of appropriate materials, and a serious undertaking by learners, especially non-native speakers. If ESL academics respond to short academic writing courses for publishing, this may mean that all was well and the only thing they needed was a short writing course to comply with initial requirement to publish. However, scientists must consider more than just short-term measures in writing for publication. In the course of research, scientists need take into consideration data, literature review, samples, methodology and so on. They must also consider the challenge of writing appropriately.

This means that academic writers would be unwise if they ignore the requirements of good writing. They need to consider the issues relevant to academic writing. English for Specific Purposes instructors know that instruction in academic writing may help in publishing papers. But there is more to science writing than the acquisition of linguistic skills. For scientists to publish at the appropriate international level, the training must offer the appropriate framework and a potential habitable environment. The development of online publication has in some ways made publication easier but the quality

of some writing is not always satisfactory. This situation is examined in the present study.

OBJECTIVES

The objectives of the study are to analyse open-access papers published on a Malaysian humanities, science and engineering conference website with no discipline specificity, and to compare these papers with papers published by expert writers.

The study was motivated by two research questions that were to determine significant errors and flaws academic papers published by Malaysian novice writers and to compare these papers with those by expert academic writers.

LITERATURE REVIEW

The publication of papers in peer-reviewed academic journals has become a central focus for academic staff around the world. Publishing is a significant stepping stone in their career. For example, Chinese researchers and academics are strongly encouraged by their government to publish (Cargill and O'Connor, 2006). However, most journals in which this research is published are in English (Ammon, 2001; Swales, 1990). It is of concern to the scientific community that much research conducted in Asia, particularly in China, is not accessible (Gibbs, 1995). Hence it is suggested that the core goals of teaching English should include not only general competence but also English for scientific publication (Megawati Omar, 2006; Megawati Omar and Nadarajah, 2012; Cargill, O'Connor and Li, 2012).

Writing about research is complex and difficult (Megawati Omar, 2006; Whitea and Bruning, 2005) for those who do not an appropriate command of the language. In order to be competent writers, they have to “become students of writing” and learn to develop a variety of skills (Martínez, Floyd and Erichsen, 2011). Writing in the sciences has its own character, noted by Halliday and Martin (1993), and is shaped by various syntactic formulae and linguistic forms to indicate the relationships among entities observed in scientific experiments.

Writing about scholarly research, has become one of the measures that mark academic success, the yardstick for promotion, tenure, and

salary. In the same vein, successful publishing in indexed journals is required of every academic or graduate student as one of the quality indicator in the rankings of universities (Lukman, Krajnc, & Glavič, 2010). In short, universities place competence in scientific writing as one of their many individual and societal criteria in their elevation and advancement.

As publishing becomes a necessary component of research a concern with the publishing of research has taken root in universities. In nations where English is a second language, academic writing in English is writing in a second language which is different from that of a mother tongue. In particular, in the world of demanding academic schedules (Frey, & Rost, 2010; Hurst, 2010), and pressure to produce as many papers as possible, hurried writing, especially in a second language, leads to reduced quality.

Quality also is compromised by those who have limited writing ability in English. Because of the need to publish, writers may sidestep the actual purpose of writing by gaming the system such as relying on the work of students or research assistants (which the researcher examines later). Evaluating the quality of social sciences academic papers is difficult as there is no standard procedure to assess journal quality (Kangethe, Franic, Huang, Huston, and Williams, 2012).

Newman (2012) mentioned that “new and original results or methods, reviews or summaries of particular subject, manuscripts that advance the knowledge and understanding in a certain scientific field be published”. At the same time he recommended not publishing “reports of no scientific interest, out of date work, duplications of previously published work and incorrect/unacceptable conclusions”, and claimed that manuscripts receive extremely stringent quality examinations by publishers so that the presence of six grammatical errors would earn a rejection.

Weiss and Newman (2011) noted that research energy scientists faced challenges in reporting research one of which was insufficient training in writing at tertiary level. Hence, younger academics feel more pressure to produce academic papers (Ortinou, 2011). Seventy per cent of UiTM’s 9000 academic staff, the biggest university in Malaysia, are 38 and below.

Likewise, cited by Li and Flowerdew (2007), Curry and Lillis (2004, p. 678) mentioned a quote by a Hungarian psychologist - ‘‘if the style or the form of the paper is not native or not current, reviewers think that ‘this is a stupid man, this is not acceptable material’. They’re [sic] [The papers are] not accepted for regional accent, for regional style, absolutely [sic] refusal, this is their [reviewers’] attitude.’’

This attitude places non-native English speaker scientists at a disadvantage in publishing their scientific findings. As most academics are trained in their scientific fields but not in writing their research, teaching the conventions of writing is crucial to promote effective communication (Weiss and Newman, 2011). The inherited culture of academic writing lies in its specific format and expectation of flawless language. But as scientific journal are usually published in English, non-native writers may have difficulty reaching the standards required by journal editors (Pecorari, 2003). Culture influences language education (Kumaravadivelu, 2008). Hence for knowledge to prosper, it requires the collaboration of disciplines of knowledge such as collaboration of writing and science disciplines. The knowledge of what is required to write a competent paper is vital (White and Bruning, 2005).

METHODOLOGY

The sample of this study was forty academic papers published online. For sake of reputation of those involved, the names of the conference, authors and their origin are not indicated. The papers were analysed for format, language and the general features of a scholarly paper. They were compared with scholarly papers that were published in high impact journals.

RESULTS AND DISCUSSIONS

A number of contrasts were found between the papers written by novice writers and those written by expert writers. These included the titles, names of authors, format of abstracts, Introduction, literature review, methodology, results and discussions; and overall nature of the papers, which can be summarised into nine. They are reported below.

Table 1: Contrasts between the Novice writers and Expert Writers

Section of papers	Features	Novice Writers	Expert Writers
Names of authors	The designation and titles of authors written such as Professor, Associate Professor, Dr. etc.	Designation and titles of authors in Papers 4 and 8	not found
TITLE	More than 16 words	Paper 1	Between 14-16 words (except specific terms)
	Confusing – e.g. <i>Teaching Methods for Islamic Education Post Graduate Diploma in Teaching Primary School in Malaysia</i>	Paper 9	Brief and clear
	Containing abbreviation	Paper 5	No abbreviation used
	Punctuation errors –e.g. ‘the’ should be not capitalized	Paper 2, 3, 6, 12, 28, 29	No error as Elsevier standardizes that only the first word is capitalized
	preposition errors e.g. ‘among’ – should be ‘of’	Paper 7, 8,	
ABSTRACT	Too short (30 words)	Paper 2	
	Too long (301 words)	Paper 7	
	Objective not mentioned	Paper 3, 7, 15, 16, 17, 24, 33, 34, 35, 36, 37, 41	
	Containing grammatical errors	1, 2, 3, 4, 7, 11, 12, 16, 17, 31, 38, 41	
	Methodology not mentioned/mention but not clear	1, 2, 3, 10, 12, 16, 18, 19, 21, 24, 33, 40	
	Problem statement not clearly mentioned	Papers 3, 6, 15, 17, 19, 31, 33, 34, 36, 37, 39, 40, 41	
	Research gap not mentioned	Papers 3, 6, 7, 8, 10, 12, 15, 17, 18, 19, 31, 33, 39, 34, 37, 40, 41	
	Results not mentioned	Papers 3, 4, 15, 18, 19, 24, 39	
	Citation in the abstract	Paper 20	

	Overzealous claim - <i>These results provided a proof to confirm</i>	Paper 1	
	Repetition of abbreviation - intention to use digital library (IUDL) by Malaysian postgraduate students who are in Malaysian research intensive universities. The result shows there is evidence of a significant difference in meanscore intention to use digital library (IUDL) between Malay and Chinese and between Chinese and Other races. However, there is no evidence of a significant difference in meanscore intention to use digital library (IUDL)	Paper 1	
	Contain grammatically correct sentences but not mentioning objective, gap of research, methodology, results and conclusion, and not making sense as an abstract	Papers 3, 9, 11, 14, 15, 19, 27	
	Unsuitable choice of word. E.g. Paper 17's 'represents'	Papers 17, 28	
OBJECTIVE	Objectives mentioned in the abstract different from the objectives mentioned in other sections.	Paper 4	
	Objective of the research not mentioned	Paper 3, 6, 14, 17, 28	
INTRODUCTION	Non-academic word used e.g. 'got'	Paper 6	
	significance of research not mentioned	Paper 3, 6, 17, 27	
	Research gap not mentioned	Papers 3, 4, 7, 9, 14, 17	
	Parts of Methodology mentioned in the Introduction	Paper 14, 27	

LITERATURE REVIEW	All citations author-focus	Paper 14	
	Plagiarised (parts 100% similar with sources on the Internet)	Papers 3, 8, 9, 16	
METHODOLOGY	Use of wrong tenses, particularly use of the present tenses Paper 3 and Paper 4 used future tenses!	Papers 3, 4, 8, 11, 15, 16, 17	
	Some parts of Methodology mentioned in the Results section	Paper 11	
	Sample not explained in detail	Paper 13	
	Methodology did not specifically mention what was conducted in the experiment	Paper 16	
RESULTS	Results are not clearly mentioned. Instead, what explained are the steps to obtain the result	Paper 4, 11	
	For example, Paper 11's first paragraph of the result section still does not mention the result		
	Overzealous claim – e.g. <i>These results provided a proof to confirm, e.g. literature having undeniable positive effect on quality of life... (Paper 19)</i>	Papers 19 and 24	
CONCLUSION	Does not state what mentioned in the objective example	Paper 5	
	Did not state if research had achieved its objective	Papers 3, 4, 5, 11, 12, 13, 14, 15, 17, 28	
	Did not state problems faced during the experiment Did not state issues that affected the course of the		

	<p>research or ways in which the research process turned</p> <p>Did not state how results affect the writer's current views</p> <p>Did not put the findings in the greater context.</p> <p>Did not show how results relate to issues in the field.</p> <p>Did not state if data help the issues</p> <p>Did not state how to help solve issue, if they do.</p> <p>Did not state the results to the real world</p> <p>Did not state what have been learnt</p> <p>Did not state if the results of research suggest a particular course of action that specific people should take</p>		
REFEREN CE	References not recent (only 0-3 published in 2011 and 2010) the rest published in and before year 2009	Papers 2, 3, 4, 6, 8, 9, 11, 13, 14, 17	
	Very small number of references	<p>Paper 3 (11 references only)</p> <p>Paper 12 (6 references only)</p> <p>Paper 15 (5 references only)</p> <p>Paper 16 (9 references only)</p>	
OVERALL	Grammatical errors found in paper	Papers 2, 3, 4, 6, 7, 8, 11, 12, 13, 15, 16, 17, 27	

Designation and titles of authors

It was found that the designation and titles of authors such as Professor, Associate Professor and Dr were written before the names of authors in Papers 4 and 8 whereas all scholarly papers on www.sciencedirect.com do not have designations before the authors' names. Neither nor the papers in other journals published in Europe and the US did.

Titles

Some of the titles contained capitalization errors, for example 'on', which should not be capitalized (Papers 1 and 6). On the other hand, there are titles having words supposed to be capitalized but were not (Paper 2).

Capitalization in the titles of scholarly papers varies to style guides such as *Associated Press Stylebook (AP)*, *Chicago Manual of Style*, and *MLA*. These three styles offer different rules to capitalize titles, but there is a universal practice in capitalization of titles. It is to capitalize the nouns, adjectives, verbs, adverbs, pronouns and subordinating conjunction. Meanwhile, generally, articles are not capitalized, coordinating conjunctions and prepositions fewer than five letters. While the US government printing office rules that the following words are not capitalized: *a, an, the, at, by, for, in, of, on, to, up, and, as, but, it, or, and nor*.

Thirdly on titles, a title also should be brief and the best number of word is between 14-15. The title of Paper 2 contains more than 25 words, which is unnecessary. For example, *Considering Race, Mode of Study, University and Academic Structure Differences on Behavioural Intention to Use Information Systems Does it matter in Malaysian Digital Library Environment?*

Abstracts Structure of Abstracts

Errors found in the abstract were such as abstracts not having the requirements of an abstract such as what found in Papers 3, 9, 11, 14, 15. Paper 3's abstract is shown in Figure 1.

Abstract - Literally, the application of corundum as an agent of hardness to glaze surface are determined to the hardness of the glaze properties itself. Corundum reacts as a coating agent that allowing surface roughness rating increase. Alumina is a compound with melting point of about 2,000 °C and sp. gr. About 4.0 is making the glaze component become more durable which solidify corundum foundation. As a result; it increases 50% slip resistant rating and reducing 50% of corundum usages as well as enhancing the image printing of 20-40% of grayscale tonality.

Papers 9, 11, 14, 15, like the one shown in Figure 2 , do not refer to the objectives of the study, research gap, problem statement or methodology. It is not clear if the results mentioned are the results of an experiment or derived from the prior literature.

Other errors found in the abstracts were grammatical errors and failure to include objectives, research gap or methodology. Some abstracts were also found to contain excessive claims, for example, 'these results provided a proof to confirm'. It was also found that some abstracts had recurring structural flaws and some had ambiguous wording.

The abstracts also contained punctuation errors, for example, *Keywords- Mode of study; University; Academic structure; Intention to use digital library; Malaysia;*

Another defect found was that abstracts repeated the insertion of the abbreviation, for example, "intention to use digital library (IUDL) by Malaysian postgraduate students who are in Malaysian research intensive universities. The result shows there is evidence of a significant difference in meanscore intention to use digital library (IUDL) between Malay and Chinese and between Chinese and Other races. However, there is no evidence of a significant difference in meanscore intention to use digital library (IUDL)." indicate paper

Research Gap and Objectives

To the present writer, good research often fills the gaps in previous research. However, papers 3, 4, 7, 9, 14, 17 do not mention any research gap, while Papers 3, 6, 14, and 17 do not mention any objectives. The Introduction Section of an academic writing indicates the importance of research and attempts to resolve or reduce the debatable issues and fill identified gaps.

On the contrary all of the papers by expert writers mention these issues and research gaps clearly. Their Introduction Sections generally begin with a topic generalisation which *is then* followed by reference to a research question *and by evidence and references*. *Research questions are discussed at length to show the justification for the research. There is sometimes a problem statement. Following the problem statement, Introduction Sections by expert writers will narrow in to the specific intention of the problem, which is addressed by the current research. This is the research gap. Then it may include a likely general solution which can resolve the problem or fill the gap.*

In short, the Introduction Section requires a convincing and persuasive line of reasoning to build a strong case for the study. *However, most of papers by the novice writers in this study did not mention the importance of the topic or expected difficulties, define terms or outline the reporting.*

Citation

The literature review section's main dissimilarity found in the analysed papers was the lack of citations. For example, Paper 2's literature review contains only three citations. On contrary, Elsevier papers cite in the range of 25 and 55 references.

Other errors found in the Literature Review sections were that some papers used author-focused citations. A literature review preferably begins with accepted facts hence citations are preferably fact-focused. A generally accepted fact should be cited with author's name at the end of the sentence. But most of their citations in Papers 8 and Paper 14 papers by novice writers are author-focused.

Inappropriate Use of Verb Forms

In the methodology, flaws included grammatical errors especially the use of simple present tense to describe the steps in the experiments. For example, Paper 3 used future to explain the early part of Methodology. Another type of error found in the Methodology was that the experiment was not fully explained such as in Paper 3 where the Oil-Wet Ramp Test Method was used but it was not explained.

Another error is incorrectly defining variables for example “variables of measurement are intention to use digital library, race, mode of study, university and academic structure differences. The ‘intention to use digital library’ is defined as ‘wishing to use the library’. The question here is, is ‘race’ intention? Is ‘mode of study’ intention? The other error is defining obvious terms such as gender which in Paper is defined as “sexual categories of the digital library users which are either male or female”.

The Results and Discussion Sections

It was found that the conclusion section was the most poorly written by novice writers. All writers reported the result but did not discuss its implications, or the resolution of problems mentioned in the Introduction. The papers also did not report the objectives had been achieved and failed to mention procedures and problems. Nor did they mention how the results would affect future research, mention the success or failure of the project or put the findings in the greater context. In short the sample papers failed to show how their results relate to issues in the real world.

They also failed to suggest recommendations based on what was learned, suggest a particular course of action, suggest further research to broaden collective understanding of the research topic, suggest a sense of what the future could in terms of the research topic or present ideas about future research.

Paper 2’s conclusion was found to be too short, which contained only 30 words while Paper 5 does not state if paper has discussed what mentioned in the objective.

References

Most sample lacked recent references published three years before the papers were written (in 2011 and 2010). An average of three references cited was published in 2010, a year before this particular conference (publishing the samples), was organised. The range number of references in www.Sciencedirect.com is 22-35.

For example, Paper 2 which was written in 2011 produced only one reference published in 2012. The rest were: two published in 2006, two 2005, and others the 1990s. Paper 6's latest reference was published in 2006 (5 years before the present paper). Other errors found in the references were missing punctuation, especially full stops at the end of each reference.

Grammatical errors

Overall, 37 out of 40 analysed papers contained many grammatical errors. For example, if these papers were sent to Elsevier, they will be rejected as Elsevier policy is that manuscripts containing more than 6 grammatical errors will be returned to the writer without further consideration for publication (Newman, 2012). Newman (ibid) noted that the publishing house he was serving rejects 40-90-% of the manuscripts sent for publication of which one of the reasons of rejection is grammatical errors found in the manuscript.

In this study, examples of grammatical errors include - "*shows there are mix results and non-consistent results on this matters.*" and "have high intention to use digital library, about 10-15% have moderate intention to use digital library and less than 10% have low intention to use digital library."

Another grammatical error is run-on-sentences, which were found in Paper 8. The third is spelling errors – e.g. "*The Bees Algorithm (BA) is one of the newer optimization techniques [1] arre developed upon bees foraging behaviour*". Other examples of grammatical errors are shown in Table 2.

Table 2: Examples of Grammatical Errors Found in Paper 7

	Grammatical Errors
Wrong choice of word	the word 'according' was wrongly used- ' <i>According to table IV,</i> '
Run-on structure – a sentence below Table 1	Overweight and obesity are the significant major epidemic public health concerns not only in western countries but also in Asian countries due to the increasing prevalence and the associated morbidity and mortality at an alarming rate [6, 7].
Unnecessary phrase used in the abstract (in colour)	Nevertheless, the unhealthy eating practice is still common which were indicated by the fact that the students reported eating fried food, snacks, fast food and soft drinks hence associated to overweight and obesity.
Awkward repetition	use of 'reported' in the results and discussion section
Awkward use	'sincere student' in the acknowledgements

In some papers there was also no clear objective stated. In others, there were many confusing statements which requires more clarity of expression, for example, in Paper 2, '*Further research on adaptive digital library should be conducted and implemented in order to minimize the differences among users.*'

There were also sentences the meaning of which was unclear. For example, shown in Paper 2, Paragraph 1, Line 6 - 'Thus, it has provided us with the ease to access digital information resources such as from the digital libraries environment.' Paper 2 also has a sentence mentioning a hypothesis – "The hypotheses to be proven in relation to this are ...", but the paper did not indicate any hypothesis. Another error was found in Paper 8. The following abbreviation is different from the introduced one : " influenced by the working capital management practices (WCMP) adopted by the firm (Smith 1980; Bilderbeek et.al., 1999; Shin and Soenen 2000; Shamser et.al., 2001; and Havoutis 2003). WCM is more important from the perspective."

In Paper 8 some sentences were repeated. This Paper also does not mention the origin of the models discussed several times in the paper. The model did not explain whether they were produced by the research or adapted.

Paper 9 was unclear in several respects such as portraying whether certain facts were derived from a universal theory, or belief, or a datum from specific research. The first citation to show a fact should place name of the author placed at the end of the sentence.

We also found that the conclusions in these papers were short of which one of them containing thirty words. Some of these writers did not mention if their research had succeeded or failed. Instead, these conclusions only mentioned the variables indicated in the methodology. It was not stated if the research had achieved its objective, and nor did problems faced, issues that affected the course of the research or the research process. Nor did they mention how results have affected the writer's current views, if the findings fit in the greater context, or showing how results relate to issues in the greater world. They also did not mention if data had helped the issues and help solve issue, the results affect the real problem. Lastly, neither nor these papers state what had been learnt or if the results of research suggested a particular course of action.

Paper 4's objective was "*to discuss the importance of publishing crime-images in newspapers*" but the paper does not do so. Instead, the paper informed the readers of its intention to run the research and the proposed methodology. Paper 4 also described the use of its results but not the actual results.

Lastly, there were papers which were not clearly written, for example, Paper 11.

CONCLUSIONS

To conclude, this study analysed the quality of academic papers published by novice researchers. Forty papers were extracted from the Malaysian website. The study indicates that there are several contrasts between papers by novice writers and those by expert writers in international publications.

It was found that 35 of the 40 papers had grammatical errors, 13 had inadequate abstracts where parts that are required to be in the abstracts were absent. Six papers were found to make no mention of a research gap, four did not have any reference to objective of research, seven used incorrect verb forms in the methodology, eight had no discussion either as a distinct section or as part of the results section, 11 had old references and lastly four had a very small number of references, that is less than eleven

Our main finding is that these academics have not reached the standards of reputable publication at international level. The findings show that the standards of science publication in Malaysia experiencing a decline are real. These data may help universities to be aware that expecting its academic staff having an inherited disposition in academic writing is mistaken.

To tackle the declining standards of English in Malaysia, these finds of writing inadequacies suggest to those in universities who are aware of their colleagues' inadequacy in writing and have been sweeping the problem under the carpet, in an effort to save face of fellow workers, should instead encourage them be coached how to write their discovery.

Further research to be undertaken to broaden our understanding of academic writing to publish is vital. The specific flaws discovered in this study may suggest ideas for the improvement. It is then suggested that each of these problem areas be further examined. One possibility is analysing data from other regions. This can also be compared to other academic genres.

Finally, it is summarised that problems found in this analysis could be a guide to improve science writing generally. We suggest that academic authorities practise more stringent quality control of academic papers for publication. Assistance can be offered via collaboration with English language specialists, learning writing in a genre-based setting and corpus linguistics (Megawati Omar, 2006, Cargill, O'Connor and Li, 2012). This particular form of cooperation may reduce weaknesses such as those found in this study, which have, to a certain extent, been restraining the respect for the science publication by non-native English speakers.

The results also imply that there is a disconnection between the teaching of writing and science. Hence a suggestion here is that universities formally place their researchers in program for writing skills and that

faculties impose an official scientific publication requirement for undergraduates and postgraduates. In this subject undergraduates might be required to conduct a real research project and write to publish in a selected journal. The class might be run by two experts, a scientist and a science publication specialist. The two specialists should consider local constraints. Hence in universities, whose students from rural areas who experience disproportionately limited English exposure at home or schools, be taught academic corpus linguistics.

In conclusion, as teaching scientific publication skills early will improve academic writing and scientific publication it is our hope that this study will contribute to the improvement of writing and publishing skills for better scholarship and research.

References

- Hurst, K. M. (2010). Experiences of new physiotherapy lecturers making the shift from clinical practice into academia. *Physiotherapy, Volume 96, Issue 3, September 2010, 240-247.*
- Frey, B. S. & Rost, K. (2010). Do rankings reflect research quality? *Journal of Applied Economics, Volume 13, Issue 1, May 2010, 1-3.*
- Kangethe, A., Franic, D. M., Huang, M. Yi., Huston, S. & Williams, C. (2012). U.S. publication trends in social and administrative pharmacy: Implications for promotion and tenure. *Research in Social and Administrative Pharmacy, 8, 5, 408-419.*
- Halliday, M. A. K. (1993). On the language of physical science. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 54–68). Pittsburgh: University of Pittsburgh Press.
- Halliday, M. A. K., & Martin, J. R. (1993). *Writing science: Literacy and discursive power*. Pittsburgh: University of Pittsburgh Press.
- IEEE. (2011). whatis.techtarget.com/definition/IEEE-Institute-of... - Cached. Accessed on 19 March 2013.
- Kumaravadivelu, B. (2008). *Cultural globalization and language education*. New Haven: Yale University Press.

- Kennedy, M. L. & Smith, H. M. (2012). *Reading and writing in the academic community 4th ed.* New Jersey: Prentice Hall.
- Li, Y. and Flowerdew, J. (2007). Shaping Chinese novice scientists' manuscripts for publication. *Journal of Second Language Writing, 16*, 2, 100-117.
- Lukman, R., Krajnc, D. & Glavič, P. (2010). University ranking using research, educational and environmental indicators. *Journal of Cleaner Production, Volume 18, Issue 7, May 2010*, 619-62.
- National Center for Education Statistics, the United States. (2012). Retrieved on 31 January 2012.
http://nces.ed.gov/programs/digest/d10/tables/dt10_405.as.
- Martínez, R.S. Floyd, R. G. & Erichse, N. L.W. (2011). Strategies and attributes of highly productive scholars and contributors to the school psychology literature: Recommendations for increasing scholarly productivity. *Journal of School Psychology, 49*, (6), 691-720.
- Megawati Omar & Nadarajah, D. (2012). Adjunct Language Instruction and Schema Theory. In *ieeexplore 2010. International Conference on Science and Social Research (CSSR 2010) ICCAIE 2010/CSSR2010/ICOS2010 CSSR 2010 5 - 7 December, 2010 Kuala Lumpur, Malaysia*.
- Megawati Omar. (2006). *Adjunct language instruction for ESL engineering students in the writing of physics laboratory reports*. Doctoral thesis. Universiti Putra Malaysia.
- Newman, A. (2012). How to Write Great Papers from Title to References from Submission to Acceptance - A talk given at University Teknologi MARA, November 2012. Amsterdam: Elsevier Publisher.
- Ortinou, D. J. (2011). Writing and publishing important scientific articles: A reviewer's perspective. *Journal of Business Research, 64*, (2), 150-156.
- Pecorari, D. (2003). Good and original: Plagiarism and patchwriting in academic second-language writing. *Journal of Second*

Language Writing, 12 (4), 317-345.

Postequillo, S. (1999). The schematic structure of computer science research articles. In *English for Specific Purposes*, 18 (2) 139-160.

Wright, L. J. (2008). Writing science and objectification: Selecting, organizing, and decontextualizing knowledge. *Linguistics and Education*. 19, 265–293.

Weiss, M. & Newman, A. M. (2011). A guide to writing articles in energy science. *Applied Energy*. 88, (1), 3941–3948.

Weissberg, R. & Buker, S. (2005). *Writing up research: Experimental research report writing for students of English*. Pearson Malaysia: Shah Alam.

White, M, J. & Bruning, R. (2005). Implicit writing beliefs and their relation to writing quality. *Contemporary Educational Psychology* .30, 166–189.

Zuraidah Mohd Dom, Hawa Rohany, Pillay, J. (2007). The English language test for academic staff. in enhancing the quality of higher education through research: Shaping future policy. *Ministry of Higher Education, Malaysia*. 9-39.

which is similar to that of experienced by other NNSE meant by Sauto-Manning when publishing.

In the same vein, Arkoudis (2005) mentioned four research that highlighted Australia's immigrant ESL students experiencing difficulty in writing their academic pursuits. Then Megawati Omar (2013) identified twelve shortcomings found in the online-published papers by researchers in Asia. While Bitchener and Knoch (2010), in their study on the effectiveness of written correction feedback on advanced L2 writers in managing their targeted linguistic errors, listed the corrective measures.

Henceforth unfortunately, the above-mentioned conditions, the pressure to publish and lack of writing skills is thought to have created inappropriate cases of copying and patchworking of text which is also termed as plagiarising. The parts of the online published scholarly paper in common with sources on the Internet found by the present writer are shown in Table 1.

Table 2: One Hundred Per cent of Words in Common with Source

Phrases in Papers 100% in Common with Those of in Source	Source
Paper 3 – ‘HSE’s <u>current preference is for the use of the pendulum or the ramp based test methods for assessment of pedestrian floor surfaces or flooring materials, with additional information from surface roughness measurement where applicable</u> ’	www.dorsetwoolliscroft.com/wp-content/themes/dorset/pdf/... ‘ <u>current preference is for the use of the pendulum or the ramp based test methods for assessment of pedestrian floor surfaces or flooring materials, with additional</u>
Paper 3 - <u>Whilst it is generally accepted that the use of textured or profiled floor.</u> ’	www.dorsetwoolliscroft.com/wp-content/...floor-tiles.pdf – ‘ <u>Whilst it is generally accepted that the use of textured or profiled floor...</u> ’
Paper 8 - four sentences Paper 8 - ‘2 cash conversion efficiency, debt ratio, days of working capital, days receivable and days inventory. The findings reveal that inventory has negative relationship with ROA but has no statistical evidence on ROE improvement’ -- Paper 8 - ‘3 value (Howorth and Westhead, 2003; Deloof, 2003; Afza and Nazir, 2007). Paper 8 - ‘Rafuse (1996) argues that attempt to improve WC by delaying payments to creditors is an inefficient and ultimately damaging practice, both to its practitioner and	Similar to those found in Pinches (1990)’s sentence fully similar to what found in www.bsu.edu . Sentences similar to those in www.globalresearch.com . Sentences similar to those in www.cluteinstitute.com .

<p>the economy as a whole’.</p>	<p>Sentences similar to those in a paper submitted to Colorado University.</p>
<p>Paper 9 - <u>The objective of this research study was to refine the very broad discussion of religion and religious liberties in public schools to the narrow subject of how teaching about religion is viewed in the public schools. Furthermore, given the current world's conflict with members of the Islamic faith and the increasing Muslim population in the United States, the study about Islam is a fundamental subject of inquiry for today's students who require a more global outlook. Primary to the study of whether teaching about religion is constitutional, which it is, an examination of how teachers, administrators, and school board members approach the subject, implement the policy, and prepare teachers for the task, was the focus of this research. Using a mixed methods methodology, she collected and analyzed quantitative and qualitative data from a sample total of 1,054 Florida social studies teachers. Overall, the results of the findings were that the surveyed teachers were open to teaching about all religions. However, their training and level of understanding of the content material required to accomplish the tasks were deficient. Recommendations included the designing of appropriate pre-service and in-service training programs for teachers who have responsibilities for teaching about various religions.</u></p>	<p>Ramona Hussein, Teaching about religion: A mixed methods study of teachers' attitudes, knowledge, and preparation, with a focus on Islam and Muslims - ProQuest Dissertations and Theses, 2009, available on udini.proquest.com/view/teaching-about-religion-a-mixed.</p> <p><u>The objective of this research study was to refine the very broad discussion of religion and religious liberties in public schools to the narrow subject of how teaching about religion is viewed in the public schools. Furthermore, given the current world's conflict with members of the Islamic faith and the increasing Muslim population in the United States, the study about Islam is a fundamental subject of inquiry for today's students who require a more global outlook. Primary to the study of whether teaching about religion is constitutional, which it is, an examination of how teachers, administrators, and school board members approach the subject, implement the policy, and prepare teachers for the task, was the focus of this research. Using a mixed methods methodology, I collected and analyzed quantitative and qualitative data from a sample total of 1,054 Florida social studies teachers. Overall, the results of the findings were that the surveyed teachers were open to teaching about all religions. However, their training and level of understanding of the content material required to accomplish the tasks were deficient. Recommendations included the designing of appropriate pre-service and in-service training programs for teachers who have responsibilities for teaching about various religions.</u></p>
<p>Paper 16 - two sentences of four lines in the second paragraph of the Introduction section ‘...Pinch Technology concept represents a very important tool for optimizing energy consumption in existing industrial plants thereby reducing the consumption of both hot and cold utilities Reducing utilities consumption not only decreases burning of fossil fuels, but also cuts carbon the dioxide emissions which are a primary cause of greenhouse effect’</p>	<p>www.enpromer2005.eq.ufri.br/nukleo/pdfs/1210_trabalho...</p> <p>‘...Pinch Technology concept represents a very important tool for optimizing energy consumption in existing industrial plants thereby reducing the consumption of both hot and cold utilities Reducing utilities consumption not only decreases burning of fossil fuels, but also cuts carbon the dioxide emissions which are a primary cause of greenhouse effect’</p>
<p>Paper 34 - Flow Properties of Cu/CNTs Feedstocks for Powder Injection Molding published by CHUSER 2011, IEEE Colloquium on Humanities, Science and Engineering Research, 5-6 Dec.2011, Penang, Malaysia</p>	<p>The same paper Flow Behavior of Cu/CNTs Feedstocks for Powder Injection Molding published in International Journal of Applied Physics and Mathematics, Vol. 1, No 3, November 2011</p>

<p>Paper 36 - Learning with computer-generated visualizations has become a topic of major interest in recent years.</p>	<p>Sentence similar to those on www.scribd.com/doc/83273088/CAN-DIFFERENT-TYPES-OF... - Cached</p> <p><u>Learning with computer-generated visualizations has become a topic of major interest in recent years.</u></p>
<p>Paper 41 - For various reasons the prior art systems do not adequately detect plastics, ceramics, explosives, illicit drugs, and other non-metallic objects.</p>	<p>Sentence similar to those on www.google.se/patents/US5181234 - Cached</p> <p><u>For various reasons the prior art systems do not adequately detect plastics, ceramics, explosives, illicit drugs, and other non-metallic objects.</u></p>
<p>Paper 41 - One reason in particular is that these materials share the same property of a relatively low atomic number (low Z). low Z material present a special problem in personnel inspection because of difficulty in distinguishing the low Z object from the background of the subject's body which also has low Z.</p>	<p>Sentences in common in source www.freepatentsonline.com/6094472.html - Cached</p> <p><u>One reason in particular is that these materials share the property of a relatively low atomic number ... special problem in personnel inspection because of the difficulty in distinguishing the low Z object from the background of the subject's body which also has low ...</u></p>
<p>Paper 41 - Non-metallic objects are commonly composed of low atomic number elements similar to human tissue,ie.</p> <p>Paper 41 - Hydrogen, carbon, nitrogen, and oxygen. In prior art systems, especially of the transmission type an operator is required to identify very low contrast objects in the presence of image clutter resulting from the imaging of internal human anatomy. The difficulty of this task results in poor detection capability for a wide range of dangerous objects composed of low atomic</p>	<p>Sentences in common in source www.freepatentsonline.com/5181234.html - Cached</p> <p><u>Non-metallic objects are commonly composed of low atomic number elements similar to human ...</u></p> <p>Sentences in common in source www.google.se/patents/US5181234 - Cached</p> <p><u>nitrogen, and oxygen. In prior art systems, especially of the transmission type, an operator is required to identify to identify very low contrast objects in the presence of image clutter resulting from the imaging of internal human anatomy. of carbon, nitrogen and oxygen, ...</u> The difficulty of this task results in poor detection capability for a wide range of dangerous objects composed of low atomic ... range results in</p>

It is believed that these paper parts are similar with the Internet sources are due to the writers' lack of writing and English language skills. Hence the objective of this paper is to discuss the reasons of the occurrence of plagiarism, effect of plagiarism to academic standards, manner of its eradication, and factors to be considered in the selection of methods to teach scholarly writing to future scientists.

COPYING AND PASTING OF TEXT IN SCHOLARLY WRITING

The electronic technology makes copying and pasting of text an easy task but in the academic world, 'copying and pasting of text verbatim' is also called plagiarism, which is seen heinous. According to Thielke, Hammond , and Helbig (2007) who studied exam copying by medical students, users of electronic medical recording reported that another user had copied the text they had written and considered this as plagiarism of their work. Thielke, Hammond , and Helbig (2007) also discovered 1,366 instances of copying in 1,364 notes in exams, of which at least 40 words copied verbatim.

According to the Longman dictionary (p.1247, plagiarism means '*when someone uses another person's work, ideas, or work and pretends they are their own, or 'an idea, phrase, or story that has been copied from another person's work, without stating where it came from'*'. The Longman dictionary also states that plagiarism, in Latin, it means, 'to kidnap'.

'To kidnap', carrying a notion of crime which could also be said as stealing others' work, is a dishonesty that will destroy the quality of education. Innovation, which is commonly gained through education, is a mandate condition to meet the needs of the mass and in turn assist to improve the standard of living of each nation. Hence it must not be tainted with fraud and duplicity. However, Elsevier Editorial (2009) mentioned that there is a decline of honesty in science.

REASONS OF PLAGIARISM

Science must be run on truth. However, this notion is being tainted as the rat race seems to have seeped into academic institutions where academics intensely vie the prestige of publishing (wATSON's dna book). A good publication requires a good research, strong funding and appearing many times in prestigious journals. Thus those who lack research and writing skills may take the path of least effort by plagiarising. According to Pascual-Ezama, Prelec, and Dunfield (2013), prestige could induce dishonest behavior. Hence plagiarism is not just executed by students, but also academics and politicians. German Defense Minister, Guttenberg,

had to resign after he was found to have large parts of his PhD thesis similar to other researcher's work.

Pascual-Ezama, Prelec, and Dunfield (2013) also found that incentives influenced cheating, for example, declaring work finished when it was in fact not. Similarly, in academic those who publish more will earn huge incentive such as a promotion, hence they cheat. Other than incentives, Gino and Pierce (2009), in their test, said that unethical behaviour can emerge out of provoked feelings of envy towards the others who are wealthy. In this case, numeration of academics is awarded in line with their position in the university which in part is due to the number of publication produced. For this reason, due to envy that colleagues earn more salary, some would cheat. Gino and Perce (2009) summarized five research saying that reward systems, norms and culture, codes of conduct, might induce people to behave unethically. Hence again in this case again, apart from remuneration, the norms and culture of university is that the high number of publication earns them respect and reverence, so again, some choose to cheat.

Although plagiarism has much been discussed and forbidden by academic authorities it evidence constantly appears in scholarly writing (Megawati Omar, 2013; Thielke, Hammond, and Helbig, 2007; Pecori, 2003). To eliminate it the teaching of scholarly writing should also include a strict avoidance of plagiarism. Pecori (2003) suggested proactive teaching should be used to prevent plagiarism instead of post facto punishment.

The prevalent increase of plagiarism is due to the new culture of the Internet where there writers are able to have their writing published on the Internet at will. Traditionally, editors of the journal act as gatekeepers of plagiarism are strongly present in the process of publishing. On the contrary, as many groups appear to manage online publishing it is found difficult to curb plagiarism in online publication. Academic communities are aware that plagiarism is negatively affecting the integrity of the academic system and science development and failing to stop it will be detrimental to academic.

Questions are raised why the dishonesty of plagiarising is continuously risked. Hence the other reason of plagiarism may lie in the behaviour of risk-taking for success. In studies of risk taking and achievement, Wilson and Mccarthy (2011) studied if there is a link between those having sub-clinical psychopathic traits with pursuing success in commerce and business. Following, questions are raised if there is a presence of similar traits that induce academics, regardless of damage, to undertake risk-taking act of plagiarising, in order to succeed. According to Hare (2009), greedy risk-taking, deception and impulsivity are a few behaviours of

subclinical psychopathy. As 'risk-taking in sport has been associated with personality and self-efficacy' (Merritt and Tharp, 2013). Accordingly, Wilson and McCarthy (2011), in the midst of fierce academic ambition, suggest studies be conducted to find if there are links between status-driven and risk taking behaviour in fields such as science.

Individuals see academic achievement as key to success in life. Neumann, Olitsky, and Robbins, (2009) noted that educational achievement and general academic ability are key to determine salary attainment. Hence in the course of satisfying specific interests of self-promotion, university rankings and indicators compliance, some academics risk academics race to publish.

A scholarly paper written out of one's research deserves the right of intellectual property and copyright, hence it is forbidden for others copying it without acknowledgement or permission. Intellectual property can be exported for a price of billions of dollars therefore the researcher and writer deserves the right to protect his or her intellectual property (Wagner, 1998).

Secondly, cutting and pasting occur due to one's sub-standard ability of the language (e.g. English). The advent of digital technology and the Internet, help the work of copying and patchwriting spread rapidly. The temptation to cut and paste text is extremely tempting.

ERADICATING PLAGIARISM

Eradicating plagiarism requires a collaboration of education authorities, academics and students, and standards and rules to penalise the plagiarisers. In eradicating it, first there must be a standard form of penalty on plagiarisers. At present, in Asia, although it is accepted that plagiarism has to be eradicated before it becomes an accepted norm penalty for plagiarism is not clear. The usual practice of academic authorities on plagiarisers is either being given a warning, fail grade, or expulsion from the organisation.

Secondly there must be strict gatekeepers. The role of delivering and researching science and knowledge is an academic's responsibility hence he or she is required to be the gatekeepers of plagiarism. Other than imparting and expanding knowledge, academics must also shape students' thinking and build ethical character to preserve the quality of scholarly assignments. Plagiarism cannot be eradicated if academics are lackadaisical on patchwork (Thielke, Hammond, and Helbig (2007). This turning- of - blind eye happens could be due to the lack of effort to

check plagiarism or lack mastery of language (used in the scholarly work).

Thirdly, apart from having drive to eliminate plagiarism, universities must be equipped to conduct the checking. Checking plagiarism is dull and time-consuming which will spend a teacher's time, who are already laden with academic and administration duties. In some Asian universities, each academic are required to handle more than 200 students, apart from having to conduct supervision, research and administrative work.

Fourthly, academics must command excellent language of used in scholarly assignments. At present the language of knowledge is English, thus without software, a supervisor, professor or a teacher is expected to be skilful in the English language to trace plagiarism. Lacking mastery of the language poses difficulty to differentiate between the real language of a student and the patched parts in the assignment. In contrast, the mastery enables the teacher to identify or 'feel' the difference between the students' own language and the plagiarized parts. In NNSE universities, in cases where students having better command of English than do their teachers, tracing plagiarism without software is harder.

Fifthly, there must be bodies to administer the checking on plagiarism. They must set clear guidelines and penalty for researchers academics and students. Li and Flowerdew (2007) believe that novice writers should be assisted by editorial bodies when writing for science publication.

It is also suggested that to eradicate plagiarism, the notion of anti-plagiarism should be initiated at school. It is important to instil avoidance of any form of academic dishonesty at school to prevent future unethical behaviours as adults. The pupils must be instilled that patchwork from the Internet is wrong if it is conducted without duly acknowledging the writer. Teachers are to be well verse with anti-plagiarism to instil anti-plagiarism among the pupils. They also must be equipped with software to trace plagiarism.

The present trend of online publication offers easy and huge avenue for scientists to publish but it is often conducted with unsatisfactory writing. Research data show the papers lack strong research questions, statement of gap of research, and debate of results. In essence, for success of scientific publishing there needs to be a meaningful change in the curriculum of teaching English as second language. The teaching of linguistic accuracy should be shifted to hands-on, analytic, and multi-discipline education. The curriculum should also be a catalyst of knowledge-building. In doing so, endorsing the manner of reasoning,

practice and interaction practised by the community concerned, and offering a learning setting in a practical curriculum is necessary. In the same vein, in an effort to produce quality scholarly paper, plagiarism, which is a crime, should be entirely avoided.

Science is for the better mankind but publishing by copying defeats the noble intention of science. Upholding the integrity of teaching, experiments, research and data production, requires a collective effort to prevent plagiarism. Irresponsible handling of plagiarism will destroy knowledge, thus science. Thus the academic community need to cooperate to liberate publication of science from this misconduct.

In a nutshell, what has been learnt from this analysis is that universities and research organisations are to think of many factors to publish with quality. It must be conducted with intense training and integrity.

PREPARING FUTURE SCIENTISTS TO WRITE

Writing may not be an inherent aptitude of scientists thus to succeed in publishing, equipping themselves with writing skills is vital. For this reason universities are encouraged to provide training for scientists to write. Practices and trials in writing improve quality of writing (Kobayashi and Rinnert, 2013). The basis of its training involves when making decisions to select methods to teach writing is equally challenging and demanding as providing sensitivity for the learners' needs.

Preparing future scientists of knowledge to publish and inform them insight about publishing environments is vital to avoid patchwork of text. Effort to prepare science writers in the NNSE nations to publish well can be assisted in practical ways. There is also a necessity to explore a better method to instruct future researchers reporting, writing and publishing skills.

In preparing scientists and science undergraduates to write Huang (2006) believed that requirements, and other specific ones, may perhaps be given in a content-based instruction (CBI). The sub-standard text written by some Malaysian scientists in Malaysian universities, other than due to the change medium of instruction in schools from English to Bahasa Malaysia in the 1970's, was also due to the results of the use of non-content based materials in English language classrooms at tertiary level.

Another requirement for a good writing course for future scientists is provision of appropriate vocabulary. Adel and Erman (2012), in their study on lexical bundles, found that 'non-native speakers exhibited restrictions in word combinations than native speakers despite their

highly advanced English'. Hence, in this context, teachers should introduce a range of lexical variation and different usage patterns to express the sections in academic writing to NNSE learners.

Next is offering science students to learn how to adapt their writing to the style of writing and format of the journal they aspire to publish. Newman (2012) noted strongly that scientists must know the 'personality' of the journal they intend to publish. The basic subjects of future scientists in universities are science subjects which require academic writing. Their courses and academic activities usually do not require general essay writing. In this vein, ESL syllabi in universities to teach English to undergraduates should simulate the real situation of a scientist. It is by employing the science and imposing exercises to execute the type of writing required in publishing the scientific findings.

CONSIDERATION FOR CONTEXT IN WRITING COURSES FOR FUTURE SCIENTISTS

The courses should also conform to the science students' contextual and future needs by covering the academic writing obligatory in the early semesters. The general essay writing instead can be taught as a catalyst to critical thinking for science faculties. The next contextual elements required by science learners can be in the form of teachers' use of comprehensible language when explaining the knowledge content. Comprehension is vital for them to 'to make relevant connections, formulate appropriate arguments' (Zilora & Hermsen, 2007 cited in Cillier, 2012) in the writing. Information conveyed in the language detached from a learner's comprehension is valueless to him or her. Hence learners need courses that offer input and lessons which learners are able to understand. Constable *et al* (2004), in their study on the effect of sentence complexity on brain, said that a brain's capacity does respond to the type of language used and summarised that the input modality does play a role in the analyses of language processing.

Context can also be gained in a shared knowledge, which can be obtained from interaction, background knowledge, experience and atmosphere that language users' practice. Rytivaara and Kershner (2012) suggested that shared knowledge aids learning. An example of a shared knowledge of science undergraduates may be the practice and insights gained in their content subjects classroom, experiments conducted in laboratories, materials provided in class, books, and verbal or written classroom tasks. For instance, vocabulary found when reading about 'brain balancing index' (Noor Ashikin Zulkurnaini *et al.* 2012) may be able to augment a learner's familiarity for his or her lab experiment of brainwaves.

Barbot, *et al.* (2012) suggest the use of visual-literacy-based instruction to improve children's writing and we propose this approach be experimented to improve future scientist's academic writing. Visual-literary-based instruction deploys mental imagery and verbal activities such as looking and reading, and drawing and writing, which are practical for scientists as it involves a flow of activities. Scientists practice drawing or having symbolic systems of expression which can be exploited to improve their reporting. The mental imagery allows writers to create a mental representation of what takes place in the methodology of an experiment to facilitate written description.

Serano *et al.* (2011) deliberate the importance of context in learning language. The various subjects as input in classroom are a rich context for learners to know that some vocabulary possess multiple. For example, the word 'blood', which to a medicine scholar is just one of the common items he uses in his lesson but for a literature student, it may be something fearful which he or she will use to describe a frightening incident. Hence it is essential for curriculum and teaching material builders to study the learners' needs and context in language instruction.

Complementing Halliday's idea of context, Huang (2006) thinks that context may perhaps sit in situational environments. Context can be obtained from the technical and academic reports (Silyn-Roberts, 2013). Hence following the expectation of the curriculum and workplace and requirements, science undergraduates need to acquire the vocabulary and phrases of publishing in peer-reviewed journals.

To provide context, teaching may adopt an Adjunct Language Instruction (ALI) to future scientists. The nature of texts used in an ALI English class is the balance between language and content of the learners where the teaching materials are selected specifically to suit the requirement of students (Megawati Omar and Nadarajah, 2010). It closely associates the teaching of language with subject curriculum of the ESL learners. 'The adjunct model officially pairs an ESL course with a university content course' (Arkoudis, 2005). Hence in this type of class, the context for future researchers' writing skills, is clearly provided by, for example, the supply of the content-based materials and content-related expressions in English classroom. Previous Content-based Instruction (CBI) research had indicated that the use of materials in the content course are able to develop a learner's studying (Arkoudis, 2005; Huang, 2011).

The context can be created by the effort of those participating in speaking (or writing) and maintaining to deliver appropriate substance and knowledge. So, an ALI material arises from synchronizing content subject and English language, such as any science subjects for reporting,

feed the register that provides the shared aims to write for a journal. The teamwork of individuals concerned in the two subjects offers a resourceful situation for these future academic writers. Halliday and Hassan (1984) discussed field, tenor and mode to identify a text's register. In the case of preparing scientists to write, the field is the teaching of academic reporting, tenor is the future researchers intending to report their science discovery in the select language. Lastly, the mode is their research.

In producing materials for academic writing instruction in classroom, it is useful to select the register in relation to what is going to be written. A substantial familiarity with the writing theme fosters the characteristic of its reporting (Megawati Omar, 2006, Cilliers, 2012) while Gardner (2012) mentioned that knowing the background, writers will be able to use applicable vocabulary. For example, chemistry researchers will make use of the chemistry terminology without difficulty if the subject involves chemistry. For instance, a title, '*Sphingobacterium spiritovorum* and *Corynebacterium urealyticum* for the Degradation of Benzo(a)pyrene' (Salina Alias, NorHana Hussin, Megawati Omar and Suhaimi Abdul Taib, 2012), may direct a chemistry researcher to clarify that the two strains of bacteria, *Sphingobacterium spiritovorum* and *Corynebacterium urealyticum* can in fact free contaminated soils from PAHs. The writer possibly will employ vocabulary such as a 'remediation strategy', 'inoculated into artificially sterilized contaminated sand', 'batch experiment', 'degradation half-life' (ibid) and much more. Then again, a literature writer possibly will explain the bacteria with many other words such as 'resulting' 'clean-up', 'hazardous', 'heterogeneous', 'extractable', and more others. Here, in many aspects, using vocabulary of a content subject in a content-based methodology may enhance a future researcher's writing ability.

In the academic writing class for future researchers, the learning aim is to obtain the linguistic characteristics used in publishing and hence, the socio-function of text is less important. Register is the most suitable concept to signify the text context relationship (Halliday, 1978). In this context, critique that register disregards socio-functional features is irrelevant this discussion deliberates the writing requirement of future researchers' particular aim. An English language class generally necessitates the learner to absorb a particular type of English. Hence in this context, the objective of acquiring specific vocabulary; phrases and structure is the objective to enrich one's competence to write. Thus in classroom, the structure of specific situational aspects and contextualization dominating the register (Halliday, 1978) offsets these weaknesses. In class, socio-functional characteristics may not play any

role on the success of English language teaching, mainly in specific tutoring, such as academic writing.

General English is taught in most syllabi in Asian higher learning institutions. Nevertheless, merely coaching grammar and writing course is insufficient to make scientists skilful to publish scientific works. Academic production has to be shifted beyond teaching. It should be brought into the particular practice of situated learning. In this case it is situating the researchers in the higher education research community where publishing and writing science is a national R&D agenda.

Nations and governments rely on collaborations of science, scientists, politicians and educationists to flourish (Rametsteiner, Pülzl, Alkan-Olsson and Frederiksen, 2013) to flourish. Consequently, education organisations may be able to grow students' proficiency in scientific publication by making them participate in publishing early as a practical exercise of the publishing requirements. This will prepare them for publishing as they conduct own research.

Kimmerle (2013) states that tradition, attitude and a common hostility or rejection (of others) that unite or diverse members of a community. Thus in this case, writing with the real intent to publish in journals will provide a collaborative learning encounter. Doing so, the undergraduates are exposed to the members of a science publishing community, sharing the common practice of its writing. Similarly, by writing alongside the skilled community members, is a practise of transferring an expert perspective to the insider perspective. This transfer can be given by a mentor, where a learner turns to be an insider in the tradition, knowledge and standards of the publishing group. New learners, in this situation the undergraduates, are less proficient people of the science writer community and thus need to acquire the writing with guidance. They will continue the practice until they cultivate the knowledge of their mentor and gain self-assurance to be the skilled writers. This precise task provides a level of close commitment with the science individuals that offer authentic exposure to the mechanisms of the scientist community. To be so, undergraduates should be allowed to conduct the real practices of the scientist community such as conducting research and writing it, and that the writing assignments undertaken also ought to be for real publication.

Practising writing scholarly papers early will produce a better chance to create better research writers in the publication of science. In this context, as the concentration is on hands-on training, textbook learning style is replaced with practices in research, academic discourses with scholarly writing responsibilities, undergraduates will be more drawn into real research and the real task of writing the real papers to publish.

Actual research and practical assignments, advised by professors and other field expert, ought to be inserted in the curriculum, which in turn will assist the generation of skilful scientist writers. As they are assisted by experts in English who understand English for academic purposes and conscious of the significance use of the appropriate genre, will be able to offer useful vocabulary and phrases to make the writing more effective. To avoid plagiarism, the language expert will guide on paraphrasing, summarising, citation and quoting.

CONCLUSION

This paper has discussed the reasons of copying and patchwriting in scholarly writing, the pressure faced by NNSE researchers to publish, the importance of eradicating plagiarism and the teaching of academic writing to future researchers to eliminate plagiarism.

The discomfoting discoveries of copying and patchwork of text in online scholarly publication have raised doubts about academic ethics. Therefore, other than drawing attention to them, there is a need to comprehend these existences in order to stop them. Copying not only hurts the publishers but also causes embarrassment to the university, destroys the region's reputation and reduces the quality of science on the whole.

This paper sees that the chain or reason of plagiarism in universities employing NNSE researchers begins with the rush to publish as many as possible by the academics. The rush is induced by two elements: the workplaces' yearly quota to publish; and promotional and remuneration criteria. This is compounded by the researchers' lack English and writing skills.

In line with the suppositions that plagiarism is only conducted by undergraduates, this discovery has changed the present writer's current opinion to a new view that plagiarism is also executed by academics. In greater context, as business and political fraudulent behaviours are reported regularly in the media, questions raised if plagiarism has joined the global societal phenomenon of fraud with regards to academic.

Cut-and-paste activities can be considered as an adaptive reaction to pressures to publish. In other perspective, copying shows the negative manner of a researcher, who is also a teacher, and students coping with the pressure of shouldering a large amount of work in a university. Although disastrous, cutting and pasting was a choice as means to save time.

In greater context, the discussion showed that academic authorities such as universities should not assume that all academics practise integrity in their writing. This then can help authorities to be more aware of plagiarism, create more effective measures to eradicate, punish those involved, or provide assistance such as conducted in China 'where novice scholars in China seek help from editorial assistance' (Li and Flowerdew (2007). Authorities should acknowledge suspicion of academics' copying, which has often been swept under the carpet.

The suggestion of teaching and instructing not to plagiarise is to instil an honest behaviour among researchers. This is hoped to sustain good science in serving the community. Integrity is important to promote a good body of knowledge to progress the community. It is important that those involved in the engine of knowledge: universities', colleges and schools, journals, editors, publishers and citation bodies, ought to be aware and pose convincing efforts to eradicate this unethical act.

Despite the native notion of plagiarism, its prevalence remains in the writing of university staff and students. This raised questions if universities having NNSE academics and students are unable to comprehend that their staff lack writing skills. In addition, questions are also raised if NNSE academic and students understand the effect of plagiarism on the development of science.

What also have been learnt is that the effect of plagiarism is still not fully understood by NNSE researchers who executed patchwork in their reporting. The perceived atrocious of plagiarism does not seem to have affected those who are caught plagiarizing. Authorities in universities who discovered plagiarism revealed that a complex state of affairs would take place to penalize plagiarizers. Thus although many believe in the penalty for plagiarism, plagiarizers are left only with a warning, which will not affect his standing. Hence to avoid it, education and science ministries should form bodies to address plagiarism. It can be done by means of characterising it and passing legislation on plagiarism. If plagiarism is characterised as a crime, preventing and eradicating it will be less complicated. Also there should be effort to draw a global legislation to characterise plagiarism, penalty and bodies of gatekeepers.

In circumstances that writing well in English is instrumental for publishing and career elevation, it is important to emphasize the teaching of science writing earlier, such as in schools. In the culture of Internet, as school children are referring to for their projects, it is important that they be taught about paraphrasing and acknowledging other writers' work in projects. Tackling the problem at school level may be able to eradicate at the future university level. There are universities having guidelines on

copying and pasting but its prevalence sustains. As the present advice to regulate copying is ineffective to change the behaviour, the effort for regulation should be formed legislatively. Secondly, early training should be given to future researchers to instil awareness that plagiarism is prohibited in academic writing. A world body should work with every nation to pass legislation on plagiarism.

In sum, the world's academic publishing is fast changing, of which in some regions NNSE researchers having more role. Thus in an increasingly NNSE-led research world, but papers written by some of them already have shown many occurrences of plagiarism, effort to eradicate plagiarism to ensure quality participation in global science ought to be increased. Virtually with no legislation, there appears to be no way out of this looming academic misfortune. The governments, for want of quality science, have to want a total eradication of plagiarism for there to be no plagiarism. Academic writing ought to be placed by education authority equal to others like science, business, education, mathematics, etc. Lastly, mentoring, which has potential as a mode of professional development, should be wisdom of universities for their fledgling researchers.

For future study, it is suggested that the psychology of plagiarisers, if motivation goal orientation has influenced them, be investigated. Exploration should also be conducted in the processes of researcher mentoring, in particular the elements that signify a mentor's knowledge and the effectiveness of the guidance.

REFERENCES

- Arkoudis, S. (2005). Fusing pedagogic horizons: Language and content teaching in the mainstream. *Linguistics and Education*, 16/2, Summer 2005, 173-187.
- Ädel, A. and Erman, B. (2012). Recurrent word combinations in academic writing by native and non-native speakers of English: A lexical bundles approach. *English for Specific Purposes*, 31 /2, April 2012, 81-92.
- Barbot, B., Randi, J., Tan, M., Levenson, C., Friedlaender, L., Grigorenko, E. L. (2013). From perception to creative writing: A multi-method pilot study of a visual literacy instructional approach. *Learning and Individual Differences*, *In Press, Corrected Proof*, Available online 14 September 2012.

- Bitchener, J. and Knoch, U. (2010). Raising the linguistic accuracy level of advanced L2 writers with written corrective feedback. *Journal of Second Language Writing*, 19/4, December 2010, 207-217.
- Cilliers, C. B. (2012). Student perception of academic writing skills activities in a traditional programming course. *Computers & Education*, 58 (2012), 1028–1041.
- Constable, R. T., Pugh, K. R. Ella Berroya, W.Einar Mencl, Michael Westerveld, Weijia Ni, Donald Shankweiler. (2004). Sentence complexity and input modality effects in sentence comprehension: an fMRI study. *NeuroImage*, 22/1, May 2004, 11-21.
- Eckert, P. (2006). Communities of practice. *Encyclopedia of Language & Linguistics (Second Edition)*, 2006, 683-685.
- Elsevier Editorial (2009). Are you an honest scientist? Truthfulness in science should be an iron law, not a vague aspiration. *Medical Hypotheses*, 73, 633–635.
- Farnese, M. L., Tramontano, C. Fida, R. and Paciello, M . (2011). Cheating Behaviors in Academic Context: Does Academic Moral Disengagement Matter? *Procedia - Social and Behavioral Sciences* 29 (2011), 356 – 365.
- Gardner, S. (2012). Genres and registers of student report writing: An SFL perspective on texts and practices. *Journal of English for Academic Purposes*, 11/1, March 2012, 52-63.
- Gino, F. and Pierce, L. (2009). The abundance effect: Unethical behavior in the presence of wealth. *Organizational Behavior and Human Decision Processes*, Volume 109, Issue 2, July 2009, 142-155.
- Halliday, M. A. K. (1978). *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
- Halliday, M. A. K. and Hassan, R. (1984). *Cohesion in English*. London.
- Hare, R. D. (2009). *Behaviors of the psychopath*. World Press, Ocean County Corporation.
- Walter M. Haney, Michael J. Clarke (2007). 11 - Cheating on Tests: Prevalence, Detection, and Implications for Online Testing. *Psychology of Academic Cheating*, 2007, 255-287.

- Huang, J. C. (2010). Publishing and learning writing for publication in English: Perspectives of NNES PhD students in science. *Journal of English for Academic Purposes*, 9/ 1, pp. 33-44.
- Huang, K. M. (2011). Motivating lessons: A classroom-oriented investigation of the effects of content-based instruction on EFL young learners' motivated behaviours and classroom verbal interaction. *System*, 39/2, June 2011, 186-201.
- Huang, S. C. (2006). Reading English for academic purposes – What situational factors may motivate learners to read? *System*, 34/3, September 2006, 371-383.
- Kimmerle, J., Thiel, A., Gerbing, K., Bientzle, M., Halatchliyski, I and Cress, U. (2013). Knowledge construction in an outsider community: Extending the communities of practice concept. *Computers in Human Behavior*, Volume 29, Issue 3, May 2013, 1078-1090.
- Kobayashi, H. and Rinnert, C. (2013). L1/L2/L3 writing development: Longitudinal case study of a Japanese multicompetent writer. *Journal of Second Language Writing*, Volume 22, Issue 1, March 2013, 4-33.
- Li and Flowerdew. (2007). Shaping Chinese novice scientists' manuscripts for publication. *Journal of Second language writing*, 16 (2007), 100-117.
- MacIntyre, P. D. and Blackie, R. A. (2012). Action control, motivated strategies, and integrative motivation as predictors of language learning affect and the intention to continue learning French. *System*, 40/4, December 2012, 533-543.
- Maton, K. (2013). Making semantic waves: A key to cumulative knowledge-building. *Linguistics and Education*, 24/1, April 2013, 8-22.
- Megawati Omar. (2013). Evaluation of Online Scholarly written by NNSE. JPbSM, UiTM. Malaysia.
- Megawati Omar and Nadarajah, D. (2010). Adjunct Language Instruction and Schema Theory. *CSSR 2010 - 2010 International Conference on Science and Social Research* , art. no. 5773790 , 314-319.

- Megawati Omar. (2006). Adjunct Language Instruction for ESL Engineering Students in the Writing of Physics Laboratory Reports. Unpublished doctoral thesis. UPM. Serdang, Malaysia.
- Merritt, C. J. and Tharp, I. J. (2013). Personality, Self-Efficacy and Risk-Taking in Parkour (Free-running). *Psychology of Sport and Exercise*, *In Press, Accepted Manuscript*, Available online 26 March 2013.
- Michalsky, T. and Schechter, C. (2013). Preservice teachers' capacity to teach self-regulated learning: Integrating learning from problems and learning from successes. *Teaching and Teacher Education*, Volume 30, February 2013, pp. 60-73.
- Neumann, G.; Olitsky, N. and Robbins, S. (2009). Job congruence, academic achievement, and earnings. *Labor Economics*. 16 (2009), 503-509.
- Noor Ashikin Zulkurnaini, Ros Shilawani S. Abdul Kadir, Zunairah Hj Murat, Roshakimah Mohd Isa. (2012). The Comparison between Listening to Al-Quran and Listening to Classical Music on the Brainwave Signal for the Alpha Band. Conference: International Conference on Intelligent Systems, Modelling and Simulation - ISMS , 2012.
- Pecorari, D. (2003). Good and original: Plagiarism and patchwriting in academic second-language writing. *Journal of Second Language Writing* 12 (2003), 317-345.
- Polio, C. (2012). The relevance of second language acquisition theory to the written error correction debate . *Journal of Second Language Writing*, 21/ 4, December 2012, 375-389.
- Rametsteiner, E., Pülzl, H., Alkan-Olsson, J. and Frederiksen, P. (2013). Sustainability indicator development - Science or political negotiation? *Ecological Indicators*, 11/1, January 2011, 61-70.
- Rytivaara, A. and Kershner, R. (2012). Co-teaching as a context for teachers' professional learning and joint knowledge construction. *Teaching and Teacher Education*, 28/7, October 2012, 999-1008.
- Salina Alias, Noor-Hana Hussain, Megawati Omar and Suhaimi Abdul-Talib. (2012). Biodegradation of High-Molecular-weight Polycyclic Aromatic Hydrocarbon in Contaminated Sand by *Sphingobacterium*

spiritovororum and *Corynebacterium urealyticum*. *International Journal of Engineering and Physical Sciences*, Vol 6, pp. 369-376.

Serano, R., Llanes, A. and Tragant, E. (2011). Analyzing the effect of context of second language learning: Domestic intensive and semi-intensive courses vs. study abroad in Europe. *System*, 39/2, 133-143.

Sayed Younis Abdel Ghany, Muhammad M. Abdel Latif. (2012). English language preparation of tourism and hospitality undergraduates in Egypt: Does it meet their future workplace requirements? *Journal of Hospitality, Leisure, Sport & Tourism Education*, Volume 11, Issue 2, July 2012, 93-100.

Silyn-Roberts, H. (2013). 16 - Conventions Used in Scientific and Technical Writing. *Writing for Science and Engineering (2nd Ed)*, 2013, 191-198.

Souto-Manning, M. (2013). Competence as linguistic alignment: Linguistic diversities, affinity groups, and the politics of educational success. *Linguistics and Education*, *In Press, Corrected Proof*, Available online 14 February 2013.

Pan, L. and Block, D. (2011). English as a “global language” in China: An investigation into learners’ and teachers’ language beliefs. *System*, Volume 39, Issue 3, September 2011, 391-402.

Pascual-Ezama, D., Prelec, D. and Dunfield, D. (2013). Motivation, money, prestige and cheats . *Journal of Economic Behavior & Organization*, *In Press, Corrected Proof*, Available online 18 March 2013.

Thielke, S, Hammond, K and Helbig, S. (2007). Copying and pasting of examinations within the electronic medical record. *International Journal of Medical Informatics*. Volume 76, Supplement 1, June 2007, S122–S128.

Wagner, K. I. (1998). Intellectual Property: Copyright Implications for Higher Education. *The Journal of Academic Librarianship*. Volume 24, Issue 1, 11-19.

Watson, J. D. (2003). *The Secret of Life*. New York: Alfred A. Knopf Random House Inc.

Wilson, M. S. and McCarthy, K. (2011). Greed is good? Student disciplinary choice and self-reported psychopathy. *Personality and individual differences*. 51/7, 573-876.

Conclusion of Report

We would like to conclude that knowing the fundamental reasons its lecturers not proficient in English may open the administration to plan new policy, training and human development. Knowledge of details of the 'mis-writing' may contribute new ways to teach English as a second language. The results of this report can be used in the curriculum design especially to consider the context of science learners when teaching writing.

List of Works Analysed

Paper 1 - The X-ray BSF Measurement Influenced by the Field Size

Paper 2 - Considering Race, Mode of Study, University and Academic Structure Differences on Behavioural Intention to Use Information Systems Does it matter in Malaysian Digital Library Environment?

Paper 3 - A Study On Porcelain Anti Slip Tile Design

Paper 4 - The Conceptual Framework of the Crime Image Impact from Primetime Malay Newspaper to the Public

Paper 5 - Developing Electronic Medical Records (EMR) Framework for Malaysia's Public Hospitals

Paper 6 - Solving Engineering Optimization Problems Using The Bees Algorithm

Paper 7 - Eating Habits and Body Weight Profiles Among Undergraduate Students in UiTM Puncak Alam, Selangor, Malaysia

Paper 8- Working Capital Management Performance in Firms listed in Bursa Malaysia

Paper 9- Teaching Methods for Islamic Education Post Graduate Diploma in Teaching Primary School in Malaysia

Paper 10 - Traffic Simulation of an Urban Network System Using Agent-based Modeling

Paper 11- Use of Fuzzy Systems and Bat Algorithm for Exergy Modeling in a Gas Turbine Generator-

Paper 12- Engineering Economic Analysis for Waste Heat Boilers: a Case of an Integrated Petrochemical Complex in Malaysia

Paper 13 - Anthropometric Study of Malaysian Youths - A Case Study in Universiti Teknologi Mara

Paper 14 - Reliability Analysis of Premature Failed 11/0.433kV Hermetically Sealed Distribution Transformers

Paper 15 - Centralised Smart Home Control System via XBee Transceivers

Paper 16 - Retrofit Design of Heat Exchanger on Synthesis and Purification Unit of Methanol Plant

Paper 17 - Temperature Effect on I-V Characteristics of Si Nanowire Transistor

Paper 18 - Optimization Design and Economic Analysis of Solar Power System with Sea Water Desalination for Remote Areas

Paper 19 - A Study on the Effects of Literature on Improving the Quality of Life from Cultural, Leisure and Environmental Perspectives

Paper 20 - Measuring Usability of Educational Computer Games Based on The User Success Rate

Paper 21 - Analysis of Virtual Honeynet and VLAN-Based Virtual Networks

Paper 22 - Dynamic Causal Modelling for Schizophrenia

Paper 23 - KMS Innovation Diffusion at Company X

Paper 24 - Solving Flexible Manufacturing System Distributed Scheduling Problem Subject to Maintenance Using Harmony Search Algorithm

Paper 25 - Opposition Based Particle Swarm Optimization with Student T Mutation (OSTPSO)

Paper 26 - Fuzzy Rule-Based for Predicting Machining Performance for SNTR Carbide in Milling Titanium Alloy (Ti-6Al-4v)

Paper 27 - Meaningless to Meaningful Web Log Data for Generation of Web Pre-caching Decision Rules Using Rough Set

Paper 28 - A Critical Assessment of the Challenges of Developing the Malaysian Construction Workforce Through Training

Paper 29 - Body Composition of Malaysian Male Futsal Players Based on Playing Position

Paper 30 - ISSUES ON CALCULUS EDUCATION: ATTITUDES – PERCEPTIONS – SUGGESTIONS

Paper 31- The Non-Muslims Response Towards Ar-Rahnu (Islamic Pawn Broking) Services: An Empirical Study on the Ar Rahnu Clients of Klang Valley, Malaysia

Paper 32 - Improving the Livelihood of Single Mothers through Microcredit Facilities

Paper 33 - Factors Affecting Construction Equipment Acquisition Methods In Malaysia

Paper 34 - Flow Properties of Cu/CNTs Feedstocks for Powder Injection Molding

Paper 35 - Optimization of Partially Shaded PV Array using Fuzzy MPPT

Paper 36 - Dynamic versus Static Visuals: A Case Study on Undergraduate Students in Computer Science

Paper 37- Thermodynamic Properties and Moisture Sorption Isotherms Four Types of Natural Rubber

Paper 38 - Surveillance of Human-Computer Interactions: A Way Forward to Detection of Users' Psychological Distress

Paper 39 - Assessing Tourists' Attitude towards Responsible Cultural Heritage Tourism in Melaka: Development and Validation of Responsible Heritage Tourism Scale

Paper 40 - Low Cost Infant Monitoring and Communication System

Note

The initial proposal was to find the barriers to the limited proficiency of lecturers younger than 45 years of age and the methodology selected was a survey. However, the supervisor of this research, Associate Professor Dr Rasimah Arifin, of the Faculty of Computer and Mathematical Sciences, advised that survey is insufficient to find the reasons as the respondents may not be telling the truth about their proficiency. Dr Rasimah instead advised the methodology be converted to a text analysis, instead of a survey for modelling. This advice was also mentioned by Academy of Language Studies during the presentation of the proposal. Hence the initial title Modelling the Barriers to Teaching Staff's English Language Proficiency, which was mentioned in the research proposal, was required to be changed to UNIVERSITY TEACHING STAFF'S ENGLISH LANGUAGE PROFICIENCY.

SAMPLE OF WORK/PAPER ANALYSED

The X-ray BSF Measurement Influenced by the Field Size

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Abstract -Backscatter systems are very good in imaging organic material. Ceramic was chosen to be studied to see whether true or not the backscatter systems not good for inorganic materials. Ceramics are used in the manufacture of knives. The blade of a ceramic knife will stay sharp for much longer than that of a steel knife, although it is more brittle and can be snapped by dropping it on a hard surface. Only backscatter system that can detect the ceramic very well. In this study, the ratio of dose rate on ceramic and on free air was taken with different factors. The results give a pattern which shows that ceramic BSF having the same pattern with the organic materials. The detection of dose rate on ceramic are easy to get and the reading give no doubt. The BSF information of ceramic can be used by others in developing the application of BSF system or the ceramic.

Keywords-Backscatter Factor (BSF); ceramic; field size.

I. Introduction

For various reasons the prior art systems do not adequately detect plastics, ceramics, explosives, illicit drugs, and other non-metallic objects. One reason in particular is that these materials share the same property of a relatively low atomic number (low Z). low Z material present a special problem in personnel inspection because of difficulty in distinguishing the low Z object from the background of the subject's body which also has low Z. [3]

Non-metallic objects are commonly composed of low atomic number elements similar to human tissue, ie. Hydrogen, carbon, nitrogen, and oxygen. In prior art systems, especially of the transmission type an operator is required to identify very low contrast objects in the presence of image clutter resulting from the imaging of internal human anatomy. The difficulty of this task results in poor detection capability for a wide range of dangerous objects composed of low atomic number elements such as plastics and ceramics.[5,6]

II. Literature Review

A. X-ray Backscatter Factor (BSF)

The quantity that characterizes the contribution of backscattered radiation to the surface dose or kerma is called the BSF. The measurement of dose at the surface of the

Sponsored by Excellence Fund, RMI, UiTM.

object is the current recommended method for calculating X-ray dosimetry for various X-ray energies. For accurate calculation, the BSF of the X-ray beam is required. the technique of backscatter imaging relies upon the direct detection of photons which have been Compton scattered. An image is created that is separate and independent of any transmission image that may be produced at the same time. Since the photoelectric absorption cross section is small for organic material, they interact almost entirely through Compton scattering, producing relatively large scatter signatures. Metals, on the other hand, interact almost exclusively by photoelectric absorption, so their scatter image directly reveals organic materials such as drugs or explosives. [16]

B. Ceramic

A ceramic is an inorganic, nonmetallic solid prepared by the action of heat and subsequent cooling. Ceramic materials may have a crystalline or partly crystalline structure, or may be amorphous (e.g., a glass). Because most common ceramics are crystalline, the definition of ceramic is often restricted to inorganic crystalline materials, as opposed to the non-crystalline glasses. Ceramics now include domestic, industrial and building products and art objects. In the 20th century, new ceramic materials were developed for use in advanced ceramic engineering; for example, in semiconductors. Nowadays ceramic also used to make knives. The metal scanner will not detect the ceramic knives. By using the backscatter system scanner, ceramic knives will be detected. [13,14]

C. The Application of Backscatter System

The materials and typical geometries found in commercial and military aircraft are well suited to x-ray backscatter imaging techniques. The requirement for reduced weight in aircraft design results in the preponderance of low Z materials such as aluminum and carbon fiber reinforced plastics. This weight restriction results in the relative scarcity of thick cross section, high density materials. The recent development of mobile x-ray backscatter based imaging systems capable of imaging large areas has enabled the use of the technique on in-service aircraft.[9]

Backscatter scanner used at airport widely. Human body build up with lower atomic number that gives lower contrast to common scanner. The backscatter system were found to be

the best scanner for lower Z material. Since most of the weapons and dangerous material was made up by lower Z material, the backscatter really helps in producing good image. The used of backscatter system were argued with the reason that it may harm human body with the radiation. To solve this lower energy were using in the scanner. Eventhough the scanner need higher costing. [5]

In factory, the backscatter imaging used to image all the lorry comes in and out. This to make sure that they are not carrying crime goods. The image of the whole lorry can be seen clearly with everything inside. This give an advantages to the factory safety. [6]

The new finding in backscatter system application is on non-destructive evaluation (NDE). Since backscatter x-ray radiography is a single-sided it can be used for various security and aerospace applications. This system was also chosen to inspect the external tank because is it a single-sided NDE technique where the x-ray source and detector are both on the same side of the object of interest, as opposed to traditional through-transmission x-ray (TTX) technique, where the source and the detector are on opposite sides of the object of interest. [13]

III. Apparatus and Method

A Bucky DIAGNOST PHILIPS diagnostic x-ray machine with a target angle of 90° and a focus size of 1 mm x 1mm is used for the investigations. KV, mA and time of exposure of the machine are microprocessor controlled, giving highly stable output. It was already established that the % standard deviation is of the order of 0.1 % for exposure times of 4s and 2 % for exposure times of 8ms. A light beam diaphragm was attached to the x-ray tube and the total inherent filtration was estimated as 2.9 mm Al.

BSF-s were determined using (20x20) cm² area with different thickness which is 0.5 cm each of ceramic. An Ionization chamber model 9010, Radcal Corporation was used to detect the dose rate in this experiment (). The dose rate detected was in R/min. At first dose rate for free air were taken and recorded based on the various parameter mentioned before. The peak kilovoltage that were used are (40, 50, 60, 70, 80 and 100) kVp. Then the experiment started with 0.5 cm ceramic till completing all the six ceramic. These two dose rate were substituted in the formula to find the backscatter factor. The original equation was came from the paper by .

Backscatter measurements of ceramic:

- a) Air measurements: in air measurements were carried out at a distance of 77 cm and 57 cm from the surface of the light beam diaphragm of the diagnostic machine. This distance corresponds to approximately 1 m and 0.5 m from the x-ray tube target. Exposure measurements were carried out for

field sizes of 5 cm x 5 cm, 10 cm x 10 cm and 20 cm x 20 cm at the chamber. Measurements were taken for 40, 50, 60, 70, 80, 90, and 100 kVs. A light beam diaphragm was always present during the measurements. The 10 cm x10 cm field measurements were taken for comparing the data with other published data to check the method we adopted to derive the BSFs.

- b) Ceramic measurements: there are six ceramic which having 0.5 cm thickness each was used to get the BSF value from these material. The experiment started by increasing the thickness of the Ceramic to see how it changed the value of BSF. Besides the field sizes also varied for three set of sizes which are 5 cm x 5 cm, 10 cm x 10 cm and 20 cm x 20 cm. Then the experiment started with 0.5 cm ceramic till completing all the six pieces of ceramic.
- c) B.S.F calculations:
initially the B.S.Fs were calculated using the equation below :

$$B.S.F = \frac{X_2 \cdot (\mu_{en}/\rho)_{ICRU,air,E} \times (C.F. \text{ of Radcal})_g \times kt}{X_{1,air} \times (\mu_{en}/\rho)_{ICRU,air,E} \times (C.F. \text{ of Radcal})_g} \quad (1)$$

$(\mu_{en}/\rho)_{ICRU,air,E}$ and $(\mu_{en}/\rho)_{ICRU,air,E'}$ are the mass energy transfer coefficients of ICRU tissue to air at effective incident energy E and effective energy of primary and B.S. components E'. at the energies considered here, $(\mu_{en}/\rho) = (\mu_{k}/\rho)$ and the values of (μ_{en}/ρ) are used. [10]

B.S.F. is defined here as the ratio of kerma to small mass of ICRU tissue on the surface of the phantom to the kerma to a small mass of tissue in air. [10]

After doing some modification, then we decided to use simpler equation since the values of the correction are too small. The equation that was used for the calculation of the B.S.F as below:

$$B.S.F = \frac{X_2}{X_1} \quad (2)$$

Where X_1 = exposure in the free air, X_2 = exposure on the ceramic. Since in the experiment, the data that were taken is in dose rate, R/min, we modified again the equation become:

$$B.S.F = \frac{D_2}{D_1} \quad (3)$$

Where, D_1 = dose rate in free air , D_2 = dose rate on the ceramic The ratio of the dose rate can give values of B.S.F with less error.

IV. Results and Discussion

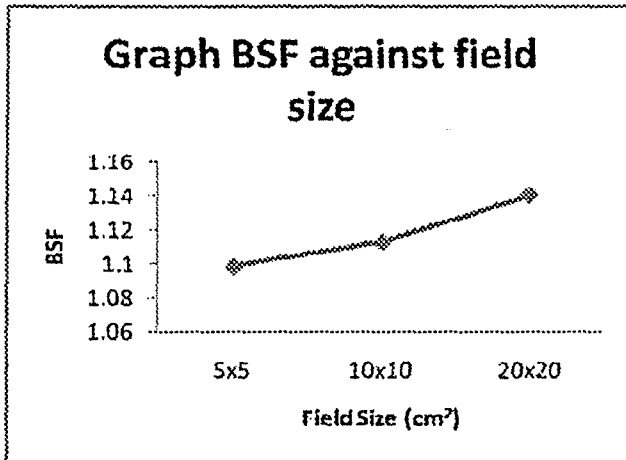


Figure 1.1: Graph BSF against the field size.

The value of the dose rate effects by all the factors that effected exposure reading. In this experiment, we test on the field size. When increasing the field size, the dose rate getting higher. Eventually, after plotting the graph, it shows the same pattern with other researchers. This result gave an idea that the BSF also influence by the factor that affect the exposure and dose rate reading. Since the BSF is the ratio of the dose rate.

Ceramic is one of the inorganic elements. Backscatter system working well on inorganic elements. It can give higher contrast. Nowadays, ceramic used in making dangerous weapons. In airport scanner which having backscatter system used to detect the hidden weapon. [3]

Non-metallic objects are commonly composed of low atomic number elements similar to human tissue ,i.e. Hydrogen, carbon, nitrogen, and oxygen. In prior art systems, especially of the transmission type an operator is required to identify very low contrast objects in the presence of image clutter resulting from the imaging of internal human anatomy. The difficulty of this task results in poor detection capability for a wide range of dangerous objects composed of low atomic number elements such as plastics and ceramics.

One of the methods that have been used to image low-Z materials is backscatter imaging. The technique relies upon the direct detection of photons which have been Compton scattered. An image is created that is separated and independent of any transmission image that may be produced at the same time. Since the photoelectric absorption cross section is small for organic materials, they interact almost entirely through Compton scattering, producing relatively large scatter signatures. This need a study on inorganic material for the backscatter imaging system. [16]

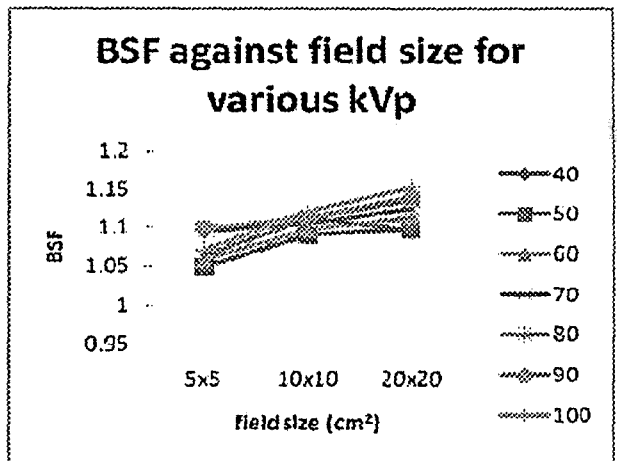


Figure 1.2: Graph BSF against field size with various energy, kVp.

The experiment also carried on various kVp to see the patent. The result was plotted and shown in Figure 1.2. Most of the kVp shows that the BSF proportional to the field sizes. For 40 kVp, the patent is different.

Conclusion

From the experiment, we have found that the inorganic BSF having the same patent with the organic materials. The changes of the field size influenced the BSF value. When the field size increased, the BSF also increase. The effect of changing the field size can be related to the exposure that changes proportionally with the change of the field size. This may conclude that the BSF can be influenced by all the factors that influenced the exposure since the value of the BSF is the ratio of the exposure. The information on ceramic backscatter may help in improving the backscatter system on scanner. By find out the factor that influence the BSF may giving an idea in improving the scanner that based on BSF system.

Acknowledgement

This work was supported by grant no. 600-RMI/ST/DANA 5/3/Dst (139/2011), Excellence Fund, Research Management Institute, University Technology MARA. Special thanks to Prof. Saion for giving some idea in improving this paper.

Recommendation

From the information of this experiment, we may study also another factor that will affect the reading of the BSF values. The results may give an idea to improve the backscatter systems that have been used in this technology world.

References

- [1] U. Chica, G. Flo'rez, M. Anguiano, A.M. Lallena, "A simple analytical expression to calculate the backscatter factor for low energy X-ray beams", *Physica Medica*, vol. 10, pp. 1016-1022, march 2010.
- [2] Keisuke Tanizawa, Tetsuo Sekiya, "Development of a new X-ray source using backscattered X-ray with the use of a cold cathode," *Nuclear Instruments and Methods in Physics Research B*, vol. 269, pp. 313-317, December 2010.
- [3] Daniel S, "Screening individuals with backscatter x-ray systems," *Health Physics Society*, February 2005.
- [4] Sunwoo Yuk, K.H., "Detection of buried landmine with X-ray backscatter technique," *Nuclear Instruments and Methods in Physics Research*, vol. 568, pp. 388-392, August 2006.
- [5] David J. Brenner, "Are X-Ray Backscatter Scanners Safe for Airport Passenger Screening? For Most Individuals, Probably Yes, but a Billion Scans per Year Raises Long-Term Public Health Concerns 1," *Radiology*, vol. 259, pp. 6-10, April 2011.
- [6] Bossi, et al., "Backscatter X-ray Imaging", *Materials Evaluation*, vol. 46, pp. 1462-1467, October 1998.
- [7] Leon Kaufman, Joseph W. Carlson, "An evaluation of airport x-ray backscatter units based on image characteristics," *Springer Science Business Media*, pp. 1007-1015, November 2010.
- [8] Bence B Bartha, et al., "Backscatter x-ray development for space vehicle thermal protection systems," *American Institute of Physics*, vol. 30, pp. 501-508, July 2011.
- [9] Daneil Shedlock, et al., "X-ray backscatter imaging for aerospace applications," *American Institute of Physics*, vol. 30, pp. 509-516, July 2011.
- [10] M.Vijayam, J.B. Shigwan, "Determination of backscatter factors for diagnostic x-ray beams by experiment and Monte Carlo methods and determination of air kerma to dose equivalent conversion factors for the calibration of personal monitors," *Radiology*, vol. 20, pp. 210-218, December 1998.
- [11] Sunwoo Yuk, K.H., "Detection of buried landmine with X-ray backscatter technique," *Nuclear Instruments and Methods in Physics Research A*, vol. 568, pp. 388-392, August 2006.
- [12] Keisuke Tanizawa, Tetsuo Sekiya, S. O., H. A., "Development of a new X-ray source using backscattered X-ray with the use of a cold cathode," *Nuclear Instruments and Methods in Physics Research B*, vol. 269, pp. 313-317, October 2010.
- [13] W. A. Ellingson, C. M. Deemer, J. G. Sun, "NDE Technology for Ceramic Composites," *ASME Turbo Expo 2006*, May 2006.
- [14] Carla Castiglia, G. Humberto, Naoyuki Y, "Subcritical crack growth in porcelains, glass-ceramics, and glass-infiltrated alumina composite for dental restorations," *J Mater Sci: Mater Med*, vol. 20, pp. 1017-1024, December 2009.
- [15] 9000 Series Meters, Radcal Corporation, Multi -function Radiation Monitors.
- [16] Peter Rez, Kenneth L. Mossman, "The Dose from Compton Backscatter Screening," *Department of Physics and School of Materials*, 2009.

Low Cost Infant Monitoring and Communication System

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Abstract: This paper proposes a low-cost, mobile-based monitoring and advisory system that continuously monitors the baby and remotely updates the mother on child status. This technology involves continuous measuring of the temperature, heart rate and motion and send it to a server where the data is processed. The server analyzes the received data and sends the processed biological information of the baby to the mother and generates an alert system if the conditions of the baby are found abnormal. These alert messages are transmitted to support systems and nearby health clinics in emergency situations. Also, advisory first-aid information is sent to the mother in order to take immediate action. Thus, this ubiquitous system would enhance mother's awareness of their baby health status.

Keywords: *infant monitoring; communication; health analysis; low-cost Systems*

I. INTRODUCTION

A mother, especially one with a new born baby constantly worries about the well being of her baby. This anxiety further exacerbates if the mother needs to be physically away from her baby. A mother may have to be away from a baby due to employment, attend to daily household work, such as grocery shopping, firewood or water collection and many other reasons. It has been shown that more females enter work force. According to the World Bank's data, female employment (15-24 year-old) to employment population ratio in the world is 38%. Several developing countries have a higher ratio in this indicator. For example, it is 46% in Nepal, 53% in Paraguay and 72% in Uganda in year 2008 [1].

Vulnerability of the baby and lack of communication skills to explicitly express their emotional and health status intensifies the stress for the mothers. Thus, ubiquitous health

monitoring of the baby and updating the parents on the baby health status can reduce the stress of mothers. Evaluating the baby health and emotional status can be achieved by analyzing the parameters related to physiological and psychological status of the baby. Monitoring combination of parameters will lead to an accurate and reliable decision.

For example, a baby is prone to infections which can cause mild fever. Although fever is a sign that a baby is sick, but it is not usually worrisome. Thus, other factors like the movement, heart beat of the baby need to be monitored in order to tell if the baby is seriously ill. High fever often causes fits and convulsion which is depicted by the abnormal movement of the baby. Abnormal heart beat is the symptom of high/low blood sugar. All these factors put together would determine if the baby needs immediate attention.

The aim of this research is to present a low-cost ubiquitous system to bridge the communication gap between the mother and the baby. This system is low cost because the physiological data of the child are obtained using a few cheap sensors. The system also provides assurance to a remotely situated mother by sending her, information about baby status over a mobile network. Besides it creates a safety network with in-built redundancy in case of emergency situations. The constant capturing of multiple biological parameters of the baby and analysis of the overall health helps mother to understand the internal status of the baby. The rest of the paper is organized as follows: First, we give an overview of similar studies in Background Research part. Then we describe the system design and implementation. We then explain the experimental design. Afterward we discuss the developed prototype and explain the limitations. And eventually conclusion and future work is outlined.

II. BACKGROUND RESEARCH

A. Existing Research Findings

Being the indispensable economic and/or domestic support to the family, women in the developing world often have multiple roles to play. In rural communities, the responsibility of performing household chores and daily errands falls on them. In urban communities, on top of the

This research is carried out under CUTE Project No. WBS R-705-000-100-279 partially funded by a grant from the National Research Foundation (NRF) administered by the Media Development Authority (MDA) of Singapore in the research effort to make use of the existing low cost sensor and signal processing technologies to develop an improved health monitoring system that can be used in the context of child monitoring by the working mothers. The proposed system aims to include emotion detection algorithm that can derive basic emotional information from the biological and physiological signals detected by the sensors worn by its wearer.

domestic tasks, many women are often involved in income generating activities to sustain the relatively expensive standard of living compared to their rural counterparts. Among these women, a sizable portion constitutes working mothers. Due to the wide spectrum of roles working mothers have to undertake in the developing countries (especially the urban area), many new mothers cannot afford to spend too much time with their young children [2]. While the children may be taken care of by the grandparents or relatives, the quality of care may not be sufficient to meet the basic needs of the child.

A study has explored the maternal needs while dealing with childcare and employment. Results show that the effectiveness of the mother in reading signals (voice, gesture, etc.) is directly related to involvement with her children during daily caring. This effectiveness has a direct bearing on shaping her esteem to be a parent. Separation due to employment is likely to result in psychological dilemma between the role of a mother and an employee. Some women may have the capability to strike a balance between these two roles. Less successful mothers may get caught in extreme cases of distress or total disengagement (rejection of motherhood) [3].

B. Information for the Mothers

Various sources have shown that parents have demonstrated interest to understand various manifestations by their children. Common concerns are:

1. Need to understand what the child is trying to communicate when he or she makes some sound [4].
2. Appropriate actions to be taken when abnormal symptoms are shown on their children [5].
3. Need to know the child's reaction to the caregivers they have engaged [6].
4. Need to know if a child falls sick while the mother is away from home [7].

C. Benchmarks for Normal Biological Signals

To gain a basic insight to the magnitude of biological signals that the sensor system is going to handle, a list of benchmarks have been obtained to facilitate the design of the sensor and signal processing unit.

Body temperature	Location	Normal temperature	Fever temperature
	Armpit	35.5 – 37.0 °C	> 38.5°C
	Skin	29.0 – 34.0 °C	> 35.2 °C

Table 1: Body temperature benchmarks

Child Heart Rate	Age	Normal Heart Rate
	Newborn	100-160 BPM
	0-5 months	90-150 BPM
	6-12 months	80-140 BPM
	1-3 years	80-130 BPM

Table 2: Child heart rate benchmarks

It should be noted that the benchmarks stated above are merely guides to the initial approaches in setting benchmarks in the proposed system. Further modifications and adjustments in the benchmarks are likely to be made so as to factor in the intrinsic characteristics of the actual system and minimize systematic error.

D. Existing Child Monitoring Technologies

Some early efforts and developments in sensor technologies and wireless communication technologies include the Smart Jacket Design for Neonatal Monitoring with wearable sensors, which provide reliable health monitoring for critically ill newborn babies admitted in the Neonatal Intensive Care Unit (NICU) [6]. The new monitoring approach for NICU describes the use of a biosensor belt for monitoring the heart rate, breathing frequency, body movements and temperature of the newborn baby with embedded sensors [8]. These technologies are limited for clinical usage and communicate over short range Bluetooth connectivity. There are some home based monitoring systems like, the Wireless Health Monitoring System which is a wireless sensor system, the Health Tracker 2000, that can monitor baby's vital signs and notify the relatives and medical personnel of their location during life threatening situations [9]. The Health gear is a real-time wearable system for monitoring and analysing the physiological signals [10]. Others like the Wireless Crib Monitor that keeps tabs on the baby's breathing [11] and the baby monitor to detect the motion and breathing of the baby using Breath-Optics technology [12] which focuses on the respiratory system of the baby and sends alerts when a problem is detected. Although these devices do offer monitoring some physiological signals and sends alarm to the caregiver, they do not activate an effective support system. Yet another range of digital baby monitors like ones based on Digital Enhanced Cordless Telecommunication Technology (DECT), featured by Philips, allow mothers to monitor their children in another room while they are busy with chores at home [11]. For example, their SCD600 Digital Video Monitor offers live image feed while their SCD535 DECT Baby Monitor allows voice feeds to the pairing parent's display unit. There is very little physiological and biological information being monitored by these systems. Although the SCD535 system does provide temperature readings, they are not the body temperature but room temperature. There is hardly any system that can measure a range of physiological and biological signals of the baby and present it to the mother in an intelligent way. Hence, in situation where mothers wish to be updated about their ill child while having to be away from home, these products cannot provide adequate information.

A study conducted by C. Wei et al has demonstrated a method to use wireless radio frequency communication to replace wirings between conventional sensors and signal processing unit [11]. These papers, among many other similar publications, highlighted sensor systems for infant health monitoring. There is no focus on making use of the

biological signals to derive emotional or contextual information.

The emotion detection studies, in particular, the one conducted by D. Moscovitch et al. analyzed relationship between emotional responses with skin conductance [13]. At the same time, B T Lau's publication demonstrated an innovative method of emotion detect through facial recognition [14]. While both research efforts demonstrated the possibility of using signals detected from the body to derive emotional status, it does not activate any support system nor sends the emotional information to the mother over wide ranges. This paper attempts to explore the possibility of building an expert system which would address all the above mentioned issues in a cost effective way .

III. DESIGN AND IMPLEMENTATION

The overall system architecture is shown in Figure 1. It consists of the following main components:

1. Centralised Server for data analysis, storage and generation of advisory information and alerting using intelligent expert system, installed on the server.
2. Wearable device that can detect the biological conditions of the baby.
3. An algorithm to derive emotional or contextual information from the biological signals.
4. A support system to engage in case of emergency which will be installed in the clinic side

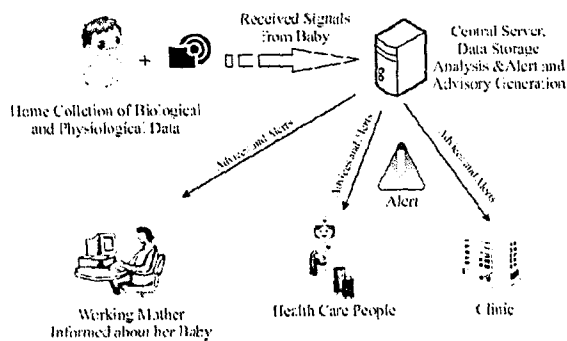


Fig 1: Monitoring system Architecture

The monitoring system comprises of a wearable hardware gadget which captures the biological status of the baby using sensors. This data is then sent to the server at frequent intervals of time, where it is stored and checked for abnormalities. If the baby's health conditions are found normal, an SMS is sent to the mother's cell assuring her of the good health of her baby. Times when an alarming condition is depicted, the expert system installed on server sends an alert to the nearest clinics and the health care workers and briefs about what measures should be taken

before taking the baby to the clinic. The following diagram explains the hardware flow of the device.

The first prototype developed is for the initial test phase. The hardware includes the integration of the motion, temperature and heart rate sensors (both optical and pressure) which are controlled by the microcontroller and connected to the Bluetooth module to provide wireless communication. The description is as follows:

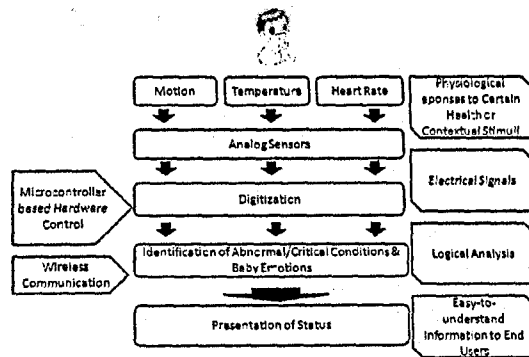


Fig 2: Hardware Flow Diagram

A. Motion Sensor

The accelerometer ADXL335 by Analog Devices is being used as the core motion sensor. The breakout board mounted chip is configured to have the -3 dB bandwidth to be 50 Hz.

B. Temperature Sensor

The digital thermometer chip TMP102 by Texas Instrument is used to implement the core sensor. Since the chip is communicating with microcontroller with (Inter-Integrated Circuit) I2C protocol, the chip is configured with bus address 72 in decimal and behave like a slave device on the I2C bus. Additionally, the temperature chip is configured to execute the temperature conversion at 4 Hz.

C. Heart Rate Sensor (Optical)

After considering the benefits of time saving and trade off with cost in using a commercially available heart rate monitor, it has been estimated that the amount of time saving may not be significant due to the process needed to understand the data format used in these commercially available products before the microcontroller can be programmed to use these data. Additionally, most of the commercially available products are designed for different purpose. A large number of the heart rate monitor watches are designed for sportsman to monitor their heart rate during their training, the ergonomic tends to be adult-orientated and the information is displayed on the sensor unit. However, the requirement for this project does not require the data to be displayed to the wearer. Another possibility was to make use

of the clinical biological sign monitor used by hospitals to monitor critically ill patients. However, this option is quickly ruled out given the size (usually about 20cm x 20cm x 30cm), cost and availability (not readily available compared to sportsman heart rate monitor watches) of such equipment.

Given the compatibility issue of the commercially available heart rate monitors with this project, the heart rate sensing component of this project is being designed and built from scratch with sensor and signal processing components assembled from basic electrical parts.

The components used are 5mm phototransistor and 5mm super bright red light emitting diode.

The signal processing unit comprises of input voltage profile tracing, two stage notch filters, amplifier and digitizer. The combination of these circuit components effectively transformed the minute biological signal (in tens of mill volts) to larger magnitude (about one to two volts peak to peak) so that it can be converted to digital signals with higher reliability.

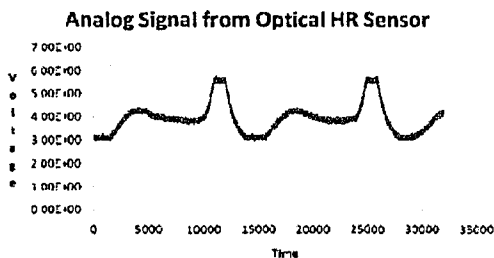


Fig 3: Analog signal detected by heart rate sensor

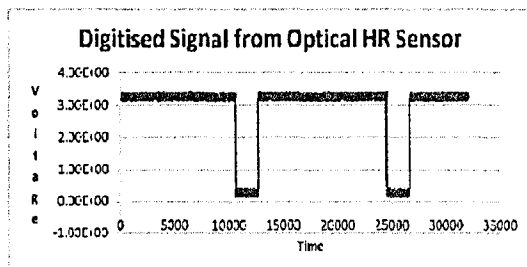


Fig 4: Digitized version of detected analog signal

The digital signal is processed by the microcontroller through comparing with timer values to generate heart rate data.

D. Heart Rate Sensor (Pressure)

Force sensitive resistor is used as the core to build a heart rate sensor that based on detecting heart pulses near the outer edge of the arm.

A small force adaptor is design to spread out the extent of downward pressure on skin and concentrate the upward

force by the blood onto the force sensitive resistor.

E. Controller

The controller is based on the microcontroller chip Atmega328 used by Atmel. This controller is connected with Bluetooth module in current implementation to provide wireless communication capability in initial test phase. When the signal processing algorithm has attained preliminary result, the communication capability of the system will be upgraded to make use of mobile network to improve range.

IV. EXPERIMENTAL RESULTS

A. User Trial

After the hardware (e.g. sensor) design phase has reached the end of the first prototyping stage, the system was put on an initial lab based trial with two of the lab members (adults one male and one female), to gauge its performance in real time usage. Data generated through these tests were used to obtain a preliminary data analysis algorithm that can evaluate the wearer's (hereafter refer to as user) biological signal into his or her status (e.g. calm or excited) information.

The preliminary objective of the user test is to explore reproducible patterns in the biological signal that can be used to differentiate two basic psychological or emotional states: calm and excited.

The dichotomized states are chosen due to the ease of implementing experiments and relatively distinct manifestations for each state from the other in most people (composed in calm state versus more energized in excited state).

The underlying assumption in the user test is that test users are not actively trying to suppress outward manifestation of his or her calm or excited state during the experiment.

The following procedure explains the initial user tests conducted at the laboratory level.

B. Test Procedures

1. Calm state

The experiment is conducted in a tranquil and reposing environment, where the trial user is made to relax and his sensor readings are recorded.

2. Excited state

The experiment is conducted in a commoving environment, making the trial user watch comedy video clips while recording his sensor readings.

C. Test Result Analysis

After the raw data is collected from the test users, static analysis is carried out. The statistical tools being used in this case are moving average and Mann Whitney test.

1. Heart Rate Moving Average Analysis

The raw data was processed by 3 readings centre weighted moving averaging and 15 readings moving averaging. The 3 readings method place 70% weightage on the present (e.g. at time T) heart rate value and 15% on each of the two heart rate values on either side (e.g. T-1 and T+1) to calculate the moving average. The 15 readings method place equal weightage on all of the 15 values used to calculate the moving average.

1) Heart Rate Mann Whitney Analysis

The raw data and the two groups of processed data from each state are then put through the Mann Whitney test. It was concluded that for most of the people, heart rate in calm state is highly independent from the excite state.

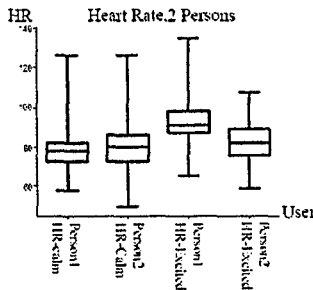


Fig 5: Heart Rate Data Comparison for Test Users

2) Temperature Mann Whitney Analysis

The Mann Whitney tests on temperature readings in calm and excited state demonstrated very small P value for both test user data sample, indicating data independence on temperature readings for calm and excite state.

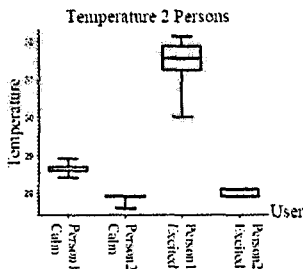


Figure 6: Temperature Comparison for Test Users

D. User State Detection Algorithm Hypothesis

The observation made from the heart rate and the temperature readings of the trial users lead to the conclusion that the heart rate increases the rate at which body temperature is regulated by the blood flow. At the location near the extremities of the body, where the temperature

sensor is designed to be worn in this project design, heat may be transferred away faster than heat energy is delivered to the location. In order to verify this hypothesis, experiments and trials are to be conducted on a larger pool of test users.

V. DISCUSSION

This study is initialized by a pre user study on mothers to figure out and confirm their concerns and problems regarding their baby's while they are away from them. In the second stage existing monitoring technologies and commercial products that can be applied to remote child monitoring are identified and feasibility of implementing them in developing nations is evaluated. Investigating the existing systems we have concluded that there is a need for affordable low cost one which includes a module for communication with parent. Afterward a low cost monitoring and communication system is designed and technologies that are applicable in the proposed system are identified. Then hardware design and implementation is done. And eventually system is tested and limitations are figured out.

Admittedly different individuals have differing biological signals that are characterised by their physiological being, psychological status, lifestyle and even interaction with other individuals around them. On the other hand, the sensors are constructed with materials that characterised them with specific sensitivity capability. Additionally, the signal processing unit in the present system also has certain characteristics in its capabilities. While the integrated system may work well with certain biological signals (especially with signals from the group of test users during the design phase), it may not generate usable results on signals from other individuals whose signals are not characterised or captured in the pool of test users.

VI. CONCLUSION AND FUTURE PLAN

Proposed Child Monitoring System is an affordable and simple to use, which can enhance the quality of infant-parent communication and empathy in developing countries. This system psychologically provides the parents with the feeling of assurance.

In the future, The GSM technology will be included as a key communication component instead of the Bluetooth module, which will enable sending the biological data of the baby in the form of a message to the mother. Also other features such as position monitoring, cry analysis and rest of behaviour analysis modules can be added to the system.

User tests on a larger scale would be conducted. At the present stage, the pressure based heart rate sensor requires further refinement to boost noise tolerance and the existing hardware such as heart rate signal processing units require reduction in size to improve mobility and reduce discomfort caused on the user. This step is essential before a large scale user test is to be carried out.

REFERENCES

- [1] T.W. Bank, "World Development Indicators." [Online]. Available: <http://data.worldbank.org/indicator/all>.
- [2] S. Nakahara et al., "Availability of childcare support and nutritional status of children of non-working and working mothers in urban Nepal.," *American journal of human biology: the official journal of the Human Biology Council*, vol. 18, no. 2, pp. 169-81.
- [3] C. Shuster, "Employed first-time mothers: A typology of maternal responses to integrating parenting and employment," *Family relations*, pp. 13-20, 1993.
- [4] "Philips Baby Monitor Catalog, P." [Online]. Available: <http://www.philips.com.sg/c/avent-baby-monitor/150>.
- [5] W. Chen, S. T. Nguyen, R. Coops, S. B. Oetomo, and L. Feijs, "Wireless transmission design for health monitoring at neonatal intensive care units," in *2009 2nd International Symposium on Applied Sciences in Biomedical and Communication Technologies*, 2009, pp. 1-6.
- [6] S. Bouwstra, W. Chen, L. Feijs, and S. B. Oetomo, "Smart Jacket Design for Neonatal Monitoring with Wearable Sensors," in *2009 Sixth International Workshop on Wearable and Implantable Body Sensor Networks*, 2009, pp. 162-167.
- [7] D. A. Moscovitch, M. K. Suvak, and S. G. Hofmann, "Emotional response patterns during social threat in individuals with generalized social anxiety disorder and non-anxious controls.," *Journal of anxiety disorders*, vol. 24, no. 7, pp. 785-91, Oct. 2010.
- [8] G. Piccini, L. and Ciani, O. and Gronvall, E. and Marti, P. and Andreoni, "New monitoring approach for Neonatal Intensive Care Unit," in *5th International Workshop on Wearable Micro and Nanosystems for Personalized Health*, 2008.
- [9] E. Teaw, M. Gouzman, K. W. Tang, A. Kesluk, M. Kane, and J. Farrell, "A wireless health monitoring system," in *2005 IEEE International Conference on Information Acquisition*, pp. 247-252.
- [10] N. Oliver and F. Flores-Mangas, *HealthGear: A Real-time Wearable System for Monitoring and Analyzing Physiological Signals*. IEEE, 2006, pp. 61-64.
- [11] "Wireless Crib Monitor Keeps Tabs On Baby's Breathing." [Online]. Available: [file:///C:/Users/sunying/AppData/Local/Mendeley Ltd/Mendeley Desktop/Downloaded/Unknown - Unknown - Wireless Crib Monitor Keeps Tabs On Baby's Breathing.html](file:///C:/Users/sunying/AppData/Local/Mendeley%20Ltd/Mendeley%20Desktop/Downloaded/Unknown%20-%20Unknown%20-%20Wireless%20Crib%20Monitor%20Keeps%20Tabs%20On%20Baby's%20Breathing.html). [Accessed: 06-Oct-2011].
- [12] "This baby monitor is a breath-taking gadget." [Online]. Available: <http://www.healthxchange.com.sg/News/Pages/baby-monitor-breath-taking-gadget.aspx>. [Accessed: 06-Oct-2011].
- [13] D. A. Moscovitch, M. K. Suvak, and S. G. Hofmann, "Emotional response patterns during social threat in individuals with generalized social anxiety disorder and non-anxious controls.," *Journal of Anxiety Disorders*, vol. 24, no. 7, pp. 785-791, 2010.
- [14] B. T. Lau, "Portable real time emotion detection system for the disabled," *Expert Systems with Applications*, vol. 37, no. 9, pp. 6561-6566, Sep. 2010.