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# Message from the Editor-in-Chief

## Hello from TOJQIH

TOJQIH welcomes you. TOJQIH looks for academic articles on the issues of quality in higher education and may address assessment, attitudes, beliefs, curriculum, equity, research, translating research into practice, learning theory, alternative conceptions, socio-cultural issues, special populations, and integration of subjects.
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The aim of TOJQIH is to help students, teachers, school administrators and communities better understand the new developments about quality in higher education. Submitted articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJQIH. TOJQIH provides perspectives on topics relevant to the study, implementation and management of quality in higher education.

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The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJQIH.

For any suggestions and comments on the international online journal TOJQIH, please do not hesitate to fill out the comments & suggestion form.

**October 01, 2015**

**Editor,**
**Prof. Dr. Muzaffer Elmas**
Sakarya University
President of Sakarya University

 

 

 

 

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# CONTEXTS AND PROCESSES FOR THE DEVELOPMENT OF CONTENT TESTS TO ASSESS TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE

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**Abstract:** Pedagogical content knowledge (PCK) and content knowledge (CK) are considered key components that affect student success and teaching-learning transactions in the classroom. Recently, the Department of Education in the Philippines underwent crucial steps towards improving education in the country. With the enactment into law and full implementation of the K to 12 reform in the primary and secondary education, the country's education sector faces the crucial time to assess what the teachers know and can do in order to determine their professional development needs to implement the new curriculum. To date, there have been few large scales studies in the Philippines to determine teachers' preparedness to undertake curriculum reform. To address this, content tests based on the new curriculum were developed. The process undertaken in the development of these content tests is discussed in this paper. Further, the paper also offers insights into the theoretical framework used for the development of content tests as an assessment tool and on the importance of determining teachers' PCK as an integral component of enhancing teacher quality. Finally, recommendations for further development of the content test and on their use are discussed.

**Key words**: PCK, teacher quality, assessment of PCK, test development, curriculum reform

## Introduction

The Philippines is an archipelago in South-East Asia. With a projected population of over 96 million inhabiting its 7,100 islands, the country faces challenges amidst international repositioning in the areas of economy, politics and education. Its education sector, for instance, is manned by an estimated 500,000 teachers supervised by one agency, the Department of Education (DepEd) with the head office based in Manila. DepEd faces challenges like shortage of classrooms and other infrastructure, insufficient textbooks, consistent decline in the performance of learners in national assessment, among others. There is also a growing concern over quality of teachers. The government continues to find ways to address these many challenges. Of late, DepEd initiated reforms that aim to address pressing concerns; foremost of this is the implementation of the K to 12 reform.

The enactment into law of the K to 12 curricular reform changes the landscape of education in the country by adding 2 years to the 10 years for primary and secondary education. The 12 year primary and secondary education is patterned after the curriculum of all countries in the ASEAN region and the world. Reports show that only Philippines, Angola and Djibouti have 10-year basis schooling system (news.inquirer.net; http://www.seameo.org/vl/library/DLWelcome/Publications/paper/india04.htm). The move is also in consonance with the launching of ASEAN 2015 which integrates, among others, the educational policies of member nations. The integration for education, for instance, establishes a system of equivalency of courses taken by students in any ASEAN countries.

The K to 12 curriculum, other than a response to the ASEAN 2015 is seen by the Philippine government as "designed to address the poor quality of basic education" (http://www.deped.gov.ph/k-to-12/About/features). The law enacts several reforms and has the following salient features:

a. Strengthening early childhood education or the Universal Kindergarten
b. Making the curriculum relevant to learners (contextualization and Enhancement)
c. Ensuing integrated and seamless learning or the spiral progression
d. Building proficiency through mother tongue based multilingual education
e. Nurturing the holistically developed Filipino or the College and Livelihood Readiness

(http://www.deped.gov.ph/k-to-12/About/features)

More than ever, the Philippine education moves towards giving 'a stronger foundation for the next generation' (http://www.philstar.com/opinion/2014/07/30/1351852/lets-push-k-12-program) Viewed from this perspective, the K to 12 reform enables the country's education group to mobilize all sectors of the society for its successful implementation. This initiative paved the way for the Department of Education to address the critical demand for effectiveness in all areas of the reform: curriculum and instruction, teachers, additional classroom and other infrastructure and system upgrade. Such demand for strengthening effectiveness is the country's open response to the global perspective that expansion in education, as documented in most countries in the world, has its link to the development of work force (Symaco, 2013.) For developing countries, like the Philippines, education development is even considered as indispensible for national development.

The development of content tests is part of one of the major research projects of the Philippine National Research Center for Teacher Quality (RCTQ) based at the Philippine Normal University, the country's National Center for Teacher Education. The Center is established mainly to support the implementation of the K to 12 reform and is funded by the Department of Foreign Affairs and Trade (DFAT) of the Australian Government.

**Teacher Quality**

Many studies point to teacher quality as the most important gauge in determining success of educational policies. To Darling Hammond (2006), the quality of teachers remains to be the most important determiner of student outcome. In fact, teachers have more impact on student learning than any other factor controlled by the school system (Rivkin, Hanushek and Kain,2005).

Teacher quality is often measured using common indicators: teacher experience, possession of graduate degrees, and teacher certification (Jacob, 2012). In the Philippines, teacher quality is defined by DepEd's document called National Competency-based teacher Standards (NCBTS) that was developed in 2006. This set of standards is a self-assessment tool measuring the competence of teachers in the delivery of content knowledge and pedagogical content knowledge. International studies account for the importance of teacher quality as the most important variable in influencing student achievement. Again in the words of Darling-Hammond (2006), it is imperative to measure teachers' ability to deliver their field of specialization. While it is a nationally accepted assessment tool on teachers' knowledge, NCBTS could not gauge other indicators of teacher quality like student performance or achievement. In the OECD report (2005), one important examination was done on students' performance, through standardized tests, to assess teacher performance. The report indicates that the correlation between the two variables, it does not fully define teacher quality, however, but it certainly reflects comparisons.

The need to assess the teachers' 'actual' knowledge based on the current curriculum is leading to understanding teacher competence. Competence is best described as 'complex combination of knowledge, skills, understanding, values, attitudes and desires which lead to effective, embodied human action in the world, in a particular domain' (Hoskins, et al., 2008). This paper underscores the importance, if not relevance, of relying on an objective assessment tool, such as content test, to assess what teachers 'actually know'.

**Pedagogical Content Knowledge**

First introduced by Lee Shulman in 1986, pedagogical content knowledge (PCK) is described as "comprising an understanding of the content being taught, a mastery of the illustrations, examples and explanations that best support students' learning; and an understanding of what makes learning the content easy or difficult for students of different ages and backgrounds" (cited in MET report, 2010). Shulman further posits that pedagogical content knowledge is a form of practical knowledge that is utilized by teachers which help guide their actions and decisions in the classroom. Simply put, PCK is what teachers bring to the classroom, which mainly affect student learning.

Studies on PCK further account for the need to know the PCK knowledge of teachers. Krauss, et al. (2008) posited the need for teachers to have deep knowledge of how to teach their specific subject for effective practice while Williamson McDiarmid & Clevenger-Bright (2008) links teachers' PCK to students' learning.

The years after Shulman's seminal work, most scholars argue that such knowledge contribute fully on the students' success. Based on this notion, pre service programs and professional development opportunities input greatly on developing PCK and CK of teachers. Recent research on this topic try to record the level of PCK and CK of teachers of different subjects/specialization. Descriptions abound on what particular knowledge in English, for example, comprise a teacher's CK and PCK. The development of content tests, described in this paper, adds to the description of particular knowledge that teachers have.

**PCK in Philippine K to 12 curriculum**

The Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013 states that in order to fully and effectively implement the K to 12 curriculum reform, there is a need to conduct training of teachers in the areas of content and pedagogy. In fact, DepEd sponsors series of trainings on content and performance standards of the enhanced basic education curriculum for teachers. Presented below is an example of from the K to 12 curriculum document which shows the content and performance standards for English and the focus of the training programs for teachers.

Table 1 Sample of content and performance standards of the K to 12 curriculum for English

| Reading Comprehension (RC) | Listening Comprehension (LC) | Viewing Comprehension (VC) | Vocabulary Development (VD) | Literature (LT) | Writing and Composition (WC) | Oral Language and Fluency (F) | Grammar Awareness (G) |
|---|---|---|---|---|---|---|---|
| EN7RC-III-a-8:Use one's schema to better understand a text | EN7LC-III-a-7:Use different listening strategies based on purpose, topic and levels of difficulty of simple informative and short narrative texts | EN7VC-III-a-13:Determine the key message conveyed in the material viewed | EN7V-III-a-13.11:Categorize words or expressions according to shades of meaning | EN7LT-III-a-5: Discover literature as a tool to assert one's unique identity and to better understand other people | EN7WC-III-a-2.2: Compose simple narrative texts | EN7OL-III-a-1.3: Express ideas, opinions, feelings and emotions during interviews, group/panel discussions, forums/fora, debates, etc. | EN7G-III-a-1:Link sentences using logical connectors that signal chronological and logical sequence and summation |
| EN7RC-III-a-8.1: Use one's schema as basis for conjectures made about a text | EN7LC-III-a-2.1/3.1: Note specific details of the text listened to | | EN7V-III-a-13.11.1: Identify collocations used in a selection | EN7LT-III-a-5.1: Identify the distinguishing features of literature during the Period of Emergence | EN7WC-III-a-2.2.12: Identify features of narrative writing | EN7OL-III-a-5: Use the appropriate prosodic features of speech during interviews, discussions and forums | |

The K to 12 reform aims to decongest primary and secondary education to allow for mastery, and is learner centered for optimum development of every learner. The content and performance standards feature of the curriculum places much importance on the development of important skills and competencies among learners. In order to address this strong demand for learning, teachers must be trained to deliver efficiently and effectively the new curriculum. Training programs for teachers must be properly designed to emphasize on the specific needs of teachers. This paper argues that before any planning of training programs is conducted, there must be a thorough evaluation of the teachers' knowledge of the contents of the new curriculum. The gap however, is that in the Philippines, there is no existing tool, which aims to assess the content knowledge of teachers other than the Licensure Examination for Teachers (LET), which is administered by the Professional Regulation Commission (PRC). This examination, however, does not test the preservice teachers' content knowledge on K to 12, the latter being very new in the Philippine educational system.

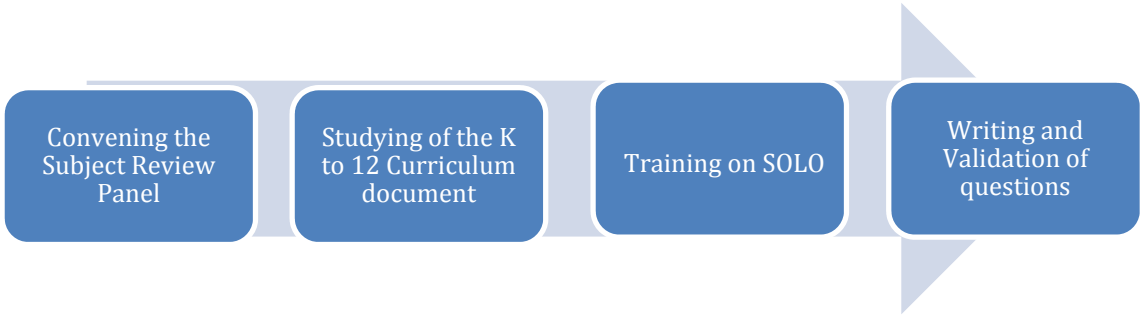
**Test Development Discussion**

This study used the descriptive-developmental research, which describes the process of developing content tools for assessing the content knowledge and pedagogical content knowledge of teachers in the Philippines in the light of the K to 12 educational reform. This article chronicles the effort undertaken by the

research team in the development of content tools in the hope that it can be used as a gauge in measuring the Filipino teachers' actual knowledge in the light of the new curriculum.

The main purpose of this study was to develop content tests to address the pedagogical content knowledge of teachers in the Philippines. The main intention of the development of the content tests is to determine teachers' actual knowledge of the new curriculum and also reflect information on the overall knowledge of teachers in the areas of focus (Mathematics, Science, English and Filipino) and the teaching profession in general.

The steps on the development of content tests is best summarized using the sequence of stages presented here:




Convening the Subject Review Panel

The process began with the convening of the Subject Review Panel, a group which led in the development of content test for the different subject areas. The members of the panels were chosen based on set criteria:

a. They have relevant degrees in the field of Mathematics, Science, English and Filipino.
b. They have been teaching the subject for the last 3 years.
c. They are involved in any work on curriculum inside or outside the University.

The members of the Subject Review Panel were from the Philippine Normal University, which has the mandate of helping quality in the country being the country's National Center for Teacher Education, and from other Higher Education Institutions (HEIs) from the National Capital Region (NCR).

Studying the K to 12 curriculum document

After convening the panels, the members met to read and thoroughly study the available recent K to 12 curriculum on the following subject areas: Mathematics, Science, English and Filipino. The documents used were downloaded from the DepEd website (www.deped.gov.ph). Each document was read with focus and emphasis on the following points:

1. The curriculum ensures that there is an integrated and seamless learning or the spiral progression. In context, this means that the basic/general concepts are learned before the more complex and sophisticated version of those basic/general concepts. Such progression is geared towards strengthening the retention and enhancing the mastery of topics and skills for students to learn topics and skills appropriate to their developmental and cognitive skills (http://www.deped.gov.ph/k-to-12/About/features
2. The curriculum is relevant to learners (contextualization and enhancements). All of the suggested activities, reading or listening materials, visual materials are all based on local culture, history and reality. This feature of the new curriculum allows for more in depth acquisition of knowledge, skills, values and attitude through continuity and consistency across levels and subjects. (http://www.deped.gov.ph/k-to-12/About/features

The study of the documents led to the writing of the Table of Specifications (TOS) which focused largely on:

1. what can be measured in a pen and paper test. Some competencies, expectedly, are oral in nature, i.e. oral language competencies for English. Such are not included in the TOS and not reflected in the content tools.
2. competencies which reflect the alignments of the subject to the outcomes expected of learners who had training under the new curriculum; i.e. *Buo at ganap na Filipino na may kapaki pakinabang na literasi* from the Filipino curriculum (translation in English holistic Filipino steeped with functional literacy).

**Training on SOLO**

An important feature of content test developed is the use of the SOLO framework. SOLO stands for Structure of Observed Learning Outcome developed by Collis and Biggs (1982). The framework focuses on the level of responses of the test taker on a given circumstance. Mainly, the model requires a consideration of the "working memory" at a given situation of the test taker. Not taken as a 'penalizing model', it carefully describes levels of complex understanding. Put simply, SOLO conceives understanding as an increase in the number and complexity of connections students make as they progress in learning. SOLO focuses on the most sophisticated response that a student can provide to a task do at a particular time. (Biggs & Collis, 1989; Biggs & Collis,1991).

The members of the review panel were trained on SOLO, as system to classify the quality of a response, in order to ascertain the level of responses the teachers would have in the questions in the content tests. SOLO accounts for four levels described as unistructural, multistructural, and relational. To address this, the developed content tests have multiple choice items and free response items.

**Writing and Validating of Test Questions**

In writing test items, primary concern is the representation of the competencies in the curriculum. The table below presents the different domains of competencies taken from the curriculum of the four target subject areas. These serve as the basis for the writing of the test questions written for each content test. Another important consideration is to test those competencies, which represent the grade level. The K to 12 reform articulates core learning standards, key stage standard, and grade level standards which reflect the spiral cumulative of the curriculum (www.deped.gov.ph). The goal is to be able to represent the more general competencies in the curriculum and those, which could be measured using pen and paper tests.

Table 2 Learning standards for the four subject area in focus

| Discipline | Domain | Sub strands |
|---|---|---|
| English | • Book and Print Knowledge<br>• Phonics and Word Recognition<br>• Writing and Composition<br>• Grammar Awareness and Structure<br>• Vocabulary Development<br>• Reading Comprehension<br>• Study Strategies | • Reading<br>• Reading<br>• Reading and Writing<br>• Reading and Writing<br>• Reading and Writing<br>• Reading |
| Filipino | • Gramatika at Kayarian ng Wika (Grammar and Language Structure)<br>• Pag unlad ng Talasalitaan (Vocabulary Development)<br>• Pagsulat at Komposisyon (Writing and Composition)<br>• Pag unawa sa Binasa (Reading Comprehension)<br>• Estratehiya sa Pag aaral (Study Strategies) | • Pagbasa at Pagsulat<br>• (Reading and Writing)<br>• Pagbasa at Pagsulat<br>• (Reading and Writing)<br>• Pagbasa at Pagsulat<br>• (Reading and Writing)<br>• Pagbasa<br>• (Reading)<br>• Pagbasa at Pagsulat<br>• (Reading and Writing) |
| Mathematics | • Number and Number Sense<br>• Geometry<br>• Patterns and Algebra<br>• Measurement<br>• Statistics and Probability | |
| Science | • Biology<br>• Chemistry<br>• Physics<br>• Earth Science | |

To sum up, the developed content tests aimed to assess these facets: knowledge of specific content, aptitude for teaching the subject, and knowledge of tasks relating to the subject matter. Literatures support these areas tested in each developed content tests. The separate categories reflect what Magnusson, Krajcik, & Borko (1999) and Gess-Newsome (1999) posited as transformative models of PCK.

Questions for knowledge of specific content (Content Knowledge) elicit test takers' knowledge on the demands of the curriculum on a specific subject area. Questions under this category can be directly mapped to the competencies present in the K to 12 curriculum. Put differently, inside the classroom, strong PCK paves the way for the acquisition of knowledge by students in ways that align with the intent of the curriculum reforms. The questions give us a glimpse of which in the content knowledge teachers know to teach.

Aptitude for teaching the subject area give reference to the over all ability of teachers to understand 'how to teach' the particular competency. Questions under this category relate the situation to the 'real classroom scenario'. Questions that relate to this category is supported by Shulman (1987) when he pointed to the PCK as the transformation of subject matter knowledge. So that it can be used effectively and flexibility in the interaction between teachers and learners in the classroom (Ball, et. al. 2001) .

Questions on knowledge of tasks relating to the subject matter allows the test takers to demonstrate their understanding of the different competencies of each subject area. Drawing on Grossman (1990) and Lortie (1975), the knowledge of tasks reflects the teachers' experiences coupled with their content knowledge. In this perspective, Grossman (2009) argues that teachers' knowledge is shaped by their own experiences.

Pilot Testing

The developed content tests were subjected to pilot testing to ensure that they respond well the curriculum and they offer good information and data to inform DepEd on the possible training programs to address teachers' needs. The series of pilot testing invited randomly selected schools in one region in the country.

The data were subjected to statistical analyses to determine the tools' psychometric characteristics. The members of the Subject Review Panel used the results of the analyses to review and revise the tools. Some items presented in the content tools were removed if they were found not having good psychometric characteristics, meaning, they wont provide much information to determine teachers' actual knowledge. Some questions were reworded in order to assist the teachers to respond correctly to the question. This strategy is consistent with the SOLO model's consideration of 'learners familiarity with the elements of operation, a pattern of response structure of increasing complexity becomes apparent according to the ease with which students process question cues (McPhan, 2008). Another round of iterative process was conducted to ensure that the tools is in the best form to give information on the PCK of teachers in the country.

Presented here are samples of test questions subjected to statistical analyses.

Table 3 Sample Test Question for English

| Competency | Question | SOLO Code |
|---|---|---|
| Draw conclusions from a set of details; organize notes taken from expository text | 54. Arrange the sentences in order to make a coherent paragraph:<br>(1) Changes in food preparation methods, for example, have improved our lives greatly.<br>(2) The twentieth century has brought with it many advances.<br>(3) In some ways life is worse, but mostly it is better.<br>(4) With those advances human lives have changed dramatically.<br><br>A. 4, 3, 2, B. 3, 1, 2, 4 C. 2, 3, 4, 1 *D. 2, 4, 3,1* | A. 0<br>B. 1<br>C. 2<br>D. 3 |

Table 4 Rasch analysis of the sample item

Item 54 Infit MNSQ = 1.24
Disc = .27

| Categories | A | | B | C | D | missing |
|---|---|---|---|---|---|---|
| Count | 1 | | 9 | 37 | 9 | 0 |
| Percent (%) | 1.8 | | 16.1 | 66.1 | 16.1 | |
| Pt-Biserial | -.18 | | -.18 | .31 | -.16 | |
| p-value | .097 | | .096 | .010 | .125 | |
| Mean Ability | .45 | | .88 | 1.20 | .91 | NA |
| Step Labels | 1 | 2 | 3 | | | |
| Thresholds | .27 | .33 | .66 | | | |
| Error | .52 | .51 | .49 | | | |

The final form of the content tests includes multiple choice questions, free response questions and

```
51 item 51                .          * |              .
52 item 52                .        *   |              .
53 item 53                .          * |              .
54 item 54                .            |            *  .
55 item 55                .            |     *        .
56 item 56                .            |            *  .
```

teacher survey. Final check was done on the format for visual consistency.

The process on the development of content test discussed here is in consonance to steps in test development according to Downing (2006). The table below shows the correspondence of the processes.

| Stages carried out in the development of content test to assess teachers' PCK | Effective Test Development (Dowing, 2006) | Specific steps followed |
|---|---|---|
| Planning | Over all plan | The researchers brainstormed on the need to asses teachers' PCK in the Philippines. This is part of the planning of research themes for RCTQ as advised by DepEd. |
| Detailing of activities in the development of the content test | Content definition | The specific steps on the development of content test were discussed. This included convening of the Subject Review Panel. |
| Writing of the Table of Specifications | Test Specifications | The Subject Review Panel (SRP) studied the most recent and available K to 12 curriculum document to write the Table of Specifications (TOS). The TOS was subjected to a series of validation. This step also included the decision on the choices of which competencies and standards will be tested. |
| Writing of Test Questions | Item development | The members of the Subject Review Panel held workshops to write test items. They followed an iterative process of validation, editing, and rewriting of items to meet the SOLO framework that the test follows. Clarifications on items for multiple choice and for the free response were also discussed. |
| Writing, validation, finalizing of Rubrics for free response | Test design and assembly | The SRP followed another iterative process in writing, validation and finalizing of the rubrics for free response part of the content tests. |
| Finalizing content tests for visual consistency | Test production | The content tests were subjected to final rounds of editing to achieve visual consistency before they are sent to a chosen printing press for production. |
| Pilot testing | Test Administration | The content tests were subjected to a series of pilot testing to address validity, reliability and their consistency with the SOLO framework. |
| Coding/marking of free response part of the test | Scoring test responses | The responses of teachers in the free response questions in all content tests were coded/marked using the prepared rubrics. The members of the SRP were trained on the process. |
| Rasch analysis of the content tests and the results of the pilot testing | Passing scores | All responses of teachers in the multiple choice and free response were analyzed using Racsh model/item response theory. The responses were compared to the over all ability of the teachers |
| Reporting test results | Reporting test results | The results of the pilot testing were reported and discussed with the stakeholders. |

**Implications to Philippine Education**

Teacher quality is one of the driving forces of Philippine education laws and reforms. Significant to the definition and subsequent realization of the teacher quality is knowledge of the current curriculum. The K to 12 mandates the whole education sector and stakeholders to focus attention and effort in bringing to the classroom the best learning experiences for both learners and teachers. The development of content tools provide for much needed evidence based policy advice on the possible training programs for teachers in the country by assessing the teachers' knowledge. The development of content tests to measure teachers Pedagogical Content Knowledge underscores a concrete basis for the desired intervention or solutions programs. Understanding the level of PCK knowledge of teachers will affect quality assurance on the deliver of the curriculum because the teacher remains to be the single most important success factor in the deliver of the curriculum (Darling-Hammond, 2006). Further, since policies to ensure that the teaching workforce has the needed and necessary competencies to determine what a classroom teacher needs reflects a more diverse assessment of the important factors of the learning curve. Considered as an iterative process, any changes in the educational process, including the question on ownership of any plans and, measuring PCK and CK knowledge greatly signifies that it is a key to improving education. In fact, Glenn (2000) reported that in order to understand the PCK of teachers and its long-term improvement, there is a need to figure out how to generate, accumulate, and share professional knowledge. The developed content tools serve as good start in the hope of accumulating information from Filipino teachers in the entire country with the primary aim of bringing about change in the country's education sector. The assessment of PCK of teachers also ensures a deep understanding of the need to strengthen teaching and learning in the classroom, thereby ensuring that the students acquire understanding that align with the intent of curricular reforms.

The process followed in the development of content tests also impressed among all stakeholders involved the need to reach a common ground to help address the needs of the education sector especially of the teachers. The significance and relevance of using content tests to assess teachers' PCK is also underscored in the process. The results of the assessment of teachers using the developed content tests served as basis for all other major research projects of RCTQ: Pre service Teacher Development Needs Study (PTDNS), Developmental National Competency Based Teacher Standards (D-NCBTS), and a partnership with World Bank in a research on public expenditure, which are all focused on improving teacher quality and development. Lastly, this research and report on the process involved reiterates the importance of addressing the needs of what is considered the most important part of education- the teachers.

**References:**

Ball, et al. (200). Unpacking pedagogical content knowledge: Conceptualizing and measuring specific knowledge of students. Journal Research in Mathematics.

Biggs, J. (1995). Assessing for learning: Some dimensions underlying new approaches to educational assessment. The Alberta Journal of Educational Research.

Biggs, J.B., and Collis, K.F. (1982). Evaluating the Quality of Learning- the SOLO Taxonomy. New York: Academic Press.

Darling-Hammond, L. (2006). No Child Left behind and school reforms. Harvard Educational Review
Downing, S.M., & Haladyna, T.M. (2006). *Handbook of Test Development*. Mahway, NJ: Lawrence Erlbaum Associates.

Glenn, J.et al (2000). Before it is too late. A Report to the Nation from the National Commision on Mathematics and Scienec Teaching for the 21st Century. A Report submitted to the US Secretary of Education , September 27, 2000. URL: http://wwww.ed.gov.inits/Math/glenn/report. (Accessed October 2,2014).

Grossman, P., Hammerness, K., McDonald, M. (2009). Redefining teacher: Re-imagining teacher education. *Teachers and teaching: Theory and practice.*

Hoskins, B. and Deakin Crick, R. (2008) Social Justice, Research and European Policy: defining and measuring key competences in education. European Education Research Journal, Vol. 7

Jacob, A. 2012. Examining the Relationship between Student Achievement and Observable Teacher Characteristics: Implications for School Leaders.

Krauss, S. et al. (2008) Pedagogical Content Knowledge of secondary mathematics teachers. Journal of Educational Psychology. Vol 100

Kleickmann,T. (2013). Teachers' Content Knowledge and Pedagogical Content Knowledge: The Role of Structural Differences in Teacher Education. Journal of Teacher Education. URL: http//jte.sagepub.com/content/64/1/90 (accessed September 28,2014).

Lortie, D. (1975). School teacher: A sociological study. Univeristy Chicago Press. USA

McDiarmid, W. and Clevenger-Bright. 2008. Supporting Teacher Competence Development. European Commission

McPhan, G. (2008). Generalizing levels of students' understanding about conductivity: A SOLO analysis. Teaching Science vol 54.

OECD. (2005). Teachers Matter: Attracting, Developing and Retaining Effective Teachers. OECD Publications. Paris.

Rivkin, S., Hanushek, E. and Kain, J. (2005). Teachers, Schools, and Academic Achievement. Econometrica, Vol. 73 no. 2

Shulman, L.S.(1987). Knowledge and Teaching: foundations of the new reform . Harvard Educational Review.

Symaco, L. P. (2013). Education in South-Easy Asia. Bloomsbury Publishing, London.

Philippine Star. Lets Push for the K to 12 Program. URL: http://www.philstar.com/opinion/2014/07/30/1351852/lets-push-k-12-program. Accessed on September 25, 2014.

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# FACTORS INFLUENCING MALAYSIAN STUDENTS' CHOICE OF MAJOR IN UNIVERSITIES IN THE UNITED KINGDOM

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**Abstract**: The purpose of this study is to identify factors that influence students' choice of academic majors such as Medicine, Engineering, Law, Architecture and Accountancy, which students believe will lead them towards a better life. These professional majors will change the students' future position in terms of social stratification. This study attempts to determine which social background variables predominantly influences the students' major by examining which social background was most successful in enrolling in universities in the United Kingdom. This study is also meant to investigate students' intentionality of enrolling into British universities and specializing in particular areas. A survey garnering the response of a total of 360 students was administered to assess factors that influence the choice of their majors. The study designed was cross-sectional and comparative in nature, and the instruments used were a self-administered questionnaire and a semi-structured interview. The findings show that the level of education attained by fathers and mothers have strong relationship with the choice of major. For instance, the father's income has strong associations with the choice of major while the level of the mother's qualification plays the most significant role in 'having a proper plan towards higher education' and 'seeking information regarding further studies'. The findings reveal that majority of Malaysian students studying abroad come from those of higher socio-economic statuses. The effort to narrow this widening income disparity between the various income groups between urban and rural households have yet to succeed.

**Keywords**: Socio Economic Status, choice of major, professional courses, social stratification

## INTRODUCTION

Malaysia has sent about 15,015 students to universities in the United Kingdom universities in 2012 (HESA Student Record, 2012/2013). The purpose of sending students abroad is to expose students to scientific and technological advancements with the hope that these students will turn up to be a professional workforce that can help develop the nation. Therefore, the Malaysian government allocated a substantial amount of financial capital for the purpose of sending students abroad, particularly to the United Kingdom. According to United Nations, Malaysia ranked first for education spending at 8.1% of its GDP amongst emerging market in 2002 (http://www.NationMaster.com/InternationalStatistic/2014).

Higher education has been valued as an avenue for individuals to improve their socio-economic status, and it becomes an instrument for the achievement of national development objectives, especially the promotion of social cohesion among its multiethnic population and the creation of a dynamic workforce.

In the Malaysian society, tertiary education is highly valued as one of the channels for self-advancement. A degree is regarded as a passport to lifelong security, comfort and status. Sarjit Singh (1987) wrote that higher education in Malaysia had been valued as an avenue for individual and group socio-economic advancement as well as an instrument for the achieving national development objectives, especially the promotion of social cohesion among its multi-ethnic population and the creation of a dynamic workforce. Overseas training is viewed as an appropriate education investment for the human capital needs especially in developing countries where high-level skilled work force is in demand (Altbach et al., 1984). Studying overseas is also a 'process of developing essential human capital' (Goodman, 1985), especially in highly specialized fields that developing countries were unable to supply but urgently require. The development of any society lies in the improvement of its population, through the contribution of education, which provides the force necessary for industrial development and economic growth (Fagerlind; Saha, 1983). The vast majority of students graduate from high school and aspire to achieve much higher educational goals (Schneider; Stenvenson, 1999). Dalton Conley

(2001) emphasizes that parents' educational level affects the socioeconomic outcomes of offspring, particularly the offspring's educational attainment.

Socioeconomic attainment is strongly linked to educational attainment (Sewell et al, 1970). Trajectory through an educational system might be one of the key issues to understanding the pathways by which social and economic background lead to future inequalities in education. Institutionalized cultural capital, e.g. formal education, plays a crucial role, but appears to be strongly dependant on the availability of sufficient incorporated cultural capital (an affinity for higher education, the motivation to invest in educational degrees), which is provided by parents via transmitting the attitudes and knowledge needed to succeed in the existing educational system. Educational aspirations or educational expectations might be a good proxy measure of a more hidden element of cultural capital. Therefore, understanding the role of educational aspirations in the social reproduction of education inequalities might be an important clue for strategies aiming to reduce inequalities in education. Evidence on the association between socioeconomic background and educational aspirations of offspring are somewhat conflicting, indicating direct as well as indirect pathways. The strong influence of socioeconomic background (parents' education, occupation, family income) on educational expectations was reported by Trusty (1998) in his study of American adolescents.

Meanwhile, Carpenter and Hayden (1987) and Dalton Conley (2001) have concluded a similar finding, that parental education affects the offspring's educational attainment. Furthermore, Tinklin et al. (2003) claimed that there was a strong relationship between social advantage and high attainment. Those with fathers in non-manual occupations, who were more educated, owned homes and attended independent schools were more likely than others to leave school with high educational achievement. In contrast, Demie et al. (2002) confirms that schools with a higher number of disadvantaged families do less well than schools where, a smaller proportion of their pupils come from disadvantaged families.

In Marjoribanks's (2002) analysis on the relationship of family background entitled "Individual and Environmental Influences on Adolescents' Aspiration" in Australia indicated that girls tend to have educational aspirations that are higher than those boys whereas boys have higher occupational aspirations.
In a series of studies, Stevenson and Stigler (1992) proposed that a major difference between the United States and Asian countries (China, Japan, and Taiwan) was that Asian parents generally have much higher academic expectations than American parents. In contrast, Asian American parents have high educational expectations of their children at school. Hence they push their children to attain as high an education as possible. Like Asian American parents, Malaysian parents have similar educational expectations of their children too. Parental support is further emphasized by Sherri Turner et al. (2002) who suggested that in order to participate in an intentional and self-directed means of developing one's own career, young adolescents need both the support and involvement of their parents in a comprehensive school-based guidance programme that develops confidence around career-related competencies such as through career planning and occupational exploration.

A study conducted in Malaysia by Swee (2000) identified the level of career maturity in the urban and suburban schools. She found that students in urban schools are more equipped with information about the world of careers and would therefore, be more vocationally matured. It also indicated that students with parents who are more highly educated and earned higher incomes then to be more vocationally matured.

Proficiency in English is an important factor in determining educational attainment. In investigating the relationship between educational inequality and academic achievement in England and France, Lees (1994: 81) suggests that doing well at the upper levels of both systems usually requires the acquisition of sophisticated patterns of speech and literary culture most which are easily acquired in high-status families.

The main concern that became a key question of the research is regarding the influence of students' social class on their majors because specializing in prestigious majors will lead individuals to professional careers. The profound impact when students work in professional careers will further affect many aspects of people's lives such as labour market outcomes and social mobility (Sarjit Singh, 1989; Breen, & Goldthorpe, 1997). Also it improves the standard of living or at least the continuation of individuals into the social class that is similar to their parents (Bourdieu, & Passeron, 1977) but above all it contributes for strong implications for policy making (Alasdair Forsyth, & Andy Furlong, 2003). From the exploration of past research, it can be concluded that education has been one of the routes to succeed in the world of employment as educational attainment provides students access to particular jobs.

The purpose of this study is to explore the association between socioeconomic background, parents' educational aspiration, school-related factors, English proficiency, and gender factors that influence students' choice of academic major such as in Medicine, Pharmacy, Engineering, Law, Architecture and Accountancy, which students believe will lead them towards a more stable and better life. These professional majors will change the students' future position in terms of social stratification. This study also attempts to determine which social background variables predominantly influences students' choice of major and also to examine which social background is most successful in in enrolling students to universities in the United Kingdom. Moreover, this study also investigates students' intentionality of coming to British universities to specialize in particular areas. It was found that different social backgrounds that led to different choice of academic majors was influenced by parents' knowledge on students' educational aspirations and also by policy makers such as the Ministry of Higher Education in planning the social reproduction over educational inequalities among students.

Based on Bourdieu's theories on cultural and economic capital constraints on achievement (Bourdieu, 1977), together with Gambetta's model of educational choices and intentionality (Gambetta, 1987), this study hypothesized that students' educational attainment which determines students' choice of major consist of inter-related factors as shown in Figure 1.

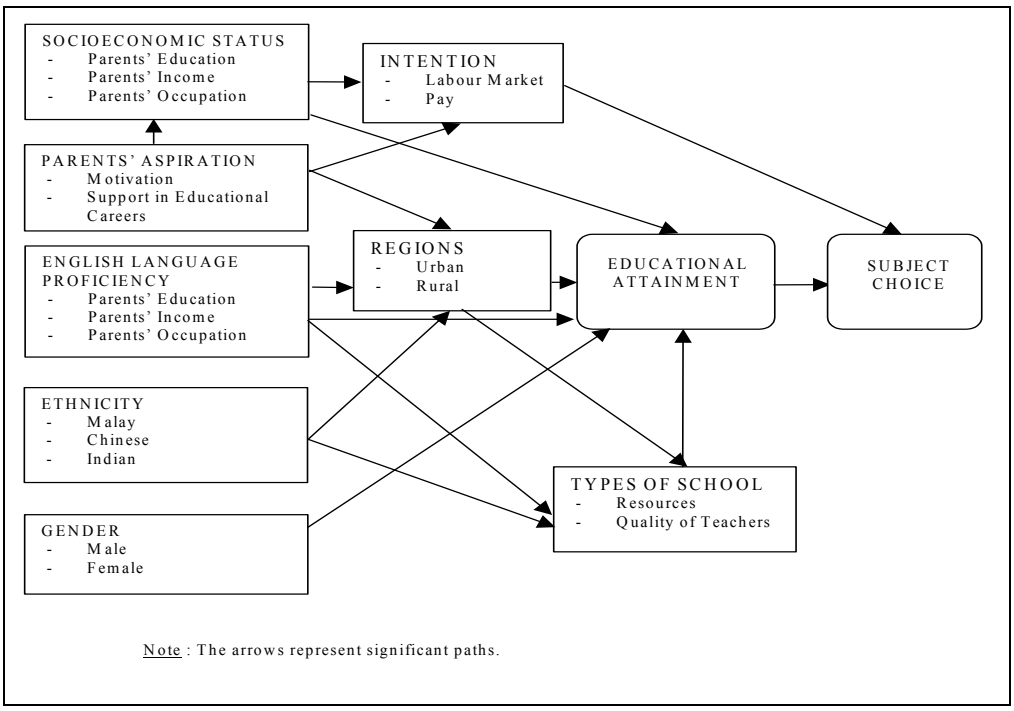


Figure 1: Research Framework of Factors Affect Students' Choice of Majors

## METHODS

### Sample

The sample for this study comprises of Malaysian undergraduate and postgraduate students who were pursuing their studies at six universities in the East Midlands areas of the United Kingdom. Three hundred and sixty (360) students were randomly selected from the target population. The sample consists of all the ethnic groups who were pursuing various courses at different faculties or departments. To ensure that the coverage of the study was extensive, different ethnic groups were represented in the study, and resulted in a sample population comprising of 248 (68.9%) Malays or Bumiputeras, 87 (24.2%) Chinese, and 25 (6.9%) Indians students. The data was collected in the winter of 2006.

The six universities in the East Midlands area was selected to ensure a representative sample. The six universities are

as follows: the University of Nottingham, the University of Leicester, the University of Loughborough, Trent Nottingham University, De Monfort University and Derby University. In Nottingham University alone in 2006, there were over 350 Malaysian undergraduate and postgraduate students.

The degree of reliability (Cronbach alpha) of the instruments used in this study was $\alpha = 0.87$. This research used a descriptive statistical percentage, frequency, mean and standard deviation and inferential statistics, including Pearson-r. The study designed is cross-sectional and comparative in nature, and the instruments used are in the form of: (a) a self-administered questionnaire or survey (b) semi-structured interviews of the Malaysian students in the United Kingdom.

Data analysis was done using Statistical Package for Social Science Program Version (SPSS for Windows Version 14). Descriptive statistics was used to determine the respondents' demographic data in the study. In this research, the analysis utilizes statistical tools - frequency, percentage, mean, T-test and Pearson- correlation r or Chi-square distribution.

**Choice of Major**

The eight main categories of choices of major are: Accounting, Architecture, Education, Engineering, Law, Medicine, Science and Food Science, Social Science and Arts.

**Measuring Instruments**

This study attempts to examine the effects of eight main independent variables, namely the parents' Socio-economic Status (also known as SES - which includes income, occupational status and academic qualification of parents), ethnic group, urban-rural distribution, gender, types of school, parents' aspiration, English language proficiency and the intentionality of undertaking the specialisation as a major.

**The Eight Student's Background Variables**

The Socio-Economic Status (SES) variables, that is parental income, qualification and occupation chosen in this study requires the Interval Scale for the ordinal level of measurement. Parental income is measured on a monthly basis and it is assumed that the gross income comes from father. The values 1 to 7 are given with 7 being the 'highest income', and 1 for 'no income'.The three educational levels that were highlighted are university education, secondary school education and primary school education. The educational level of the parents had a scale of 1 - 7. '1' meant "no schooling", '6' equated to having a university degree while 7 meant owning higher qualifications such as a post-graduate (master's or doctoral) degree or other professional qualifications such as being a member of the Association of Chartered Certified Accountants (ACCA), Chartered Institute of Management Accountants (CIMA) or others.

Respondents were also asked to indicate whether their father and mother were in the professional and managerial group; skilled or semi-skilled workers; and either unemployed or if their mothers were housewives. The researcher went through all 360 responses and gave each a value of 1 to 6, 1 being the highest. The measure of parents' occupational status included six pre-coded response categories: (1) Professional, (2) Managerial, (3) Skilled Worker, (4) Trade and Commerce, (5) Semi-skilled or (6) Unskilled workers. The parents' occupational categories were also simplified from 6 categories to 5 categories, which were 'Professional and Managerial'; 'Skilled Worker'; 'Trade and Commerce'; 'Semi-skilled' and 'Unemployed'.

From the student's questionnaires, information about the possession of wealth and other means of income from other sources such as bonuses or the rental of properties was obtained through the Nominal Scale of 'Yes' or 'No' questions. The scale for parental level of wealth was constructed through an Interval Scale whereby students were required to specify their financial background as very poor, poor, average, above average and rich. Different individuals have a different perception of defining parental wealth. This scale portrays how each individual chooses to indicate level of parents' wealth.

The 'Urban-Rural' distribution of the area of residence was designed to explore the relationship of this variable to the preference in choice of major. In the urban-rural scale, 1 represents urban living conditions while 2 represents rural living conditions. It is worth noting that the Urban-Rural area distribution variable was determined by the place of residence before the respondents entered universities in the United Kingdom. Respondents were asked to classify the

urban-rural areas themselves through open-ended question. Furthermore, they were asked to add details of their residential area by giving the names of their villages, hometowns and cities. The sample in the study was made up of 74.4% urban areas and 25.6% rural areas.

There are three main ethnic groups in Malaysia – the Bumiputera or Malays, Chinese and Indians. The question for ethnicity was designed in the form of nominal scale and this ethic group variable was coded as follows: 1 for Bumiputera, 2 for Chinese and 3 for Indians.

The gender variable was coded 1 for males and 2 for females in the original study. This dichotomous variable, which comprises of only 2 categories, employed the Mann-Whitney statistical test to see its correlation with the choices of majors. The sample in the study comprised of 54.2% male students and 45.8% female students.

Different types of school provide different educational resources. Among school-related variables, the researcher measured school library books, school buildings, laboratories and ICT facilities. Respondents were asked to assess their schools educational resources as (1) excellent, (2) very good, (3) good, (4) fairly good or (5) bad. In Malaysia, ambitious but culturally ill-equipped parents would prefer their children to go to a certain type of school, as Gambetta (1987) said "if not accompanied by an adequate amount of 'cultural-capital', may lead the children to a high risk of failure and of abandoning high school before completion."

The parents' aspiration and educational strategies that they have for their children's achievement in their career choice is manifested in different forms and ways, and at varying degrees of intensity. Higher parents' aspirations would of course mean more readiness to spend capital investment on the child's education. In this questionnaire design, the parents' aspiration was measured in two stages. First, the strategies used by parents to keep track of school progress were measured. This included strategies like frequency of consultation between parents and teachers, providing educational material like books, computers and managing the children's homework. The second stage that was measured was parents' educational motivation and encouragement towards higher education. The motivation could be in the form of giving advice and support, seeking information regarding further studies, having proper planning towards higher education and having interest in children' school progress. The parents' aspiration for their children's higher education was measures using a Likert scale, with scores from 1 to 5. Respondents were asked to assess their schools educational resources as (1) most important, (2) very important, (3) important, (4) lesser important (5) not important at all.

English proficiency is examined through English usage with family and community. Students who speak English at home with their family or even with their surrounding community would have a better foundation in English. The English proficiency variable is considered in the study because it is an important medium of instruction that can lead to higher academic progress.

The intentionality of undertaking a particular major was considered in the design to see if there is an association between the students' intention to specialise in a specific area and their choice of major. Open-ended questions were designed for students to explain why they have decided to come to the United Kingdom to specialise in a particular major. The students for example may intend to meet the market demand after considering the prospects of employment once they have completed their studies and gone back to Malaysia. Financial rewards and career benefits may also be taken into consideration. Details of their intentions and reasons for choosing a particular area was further asked in the form of a Likert Scale of 1 to 5.

**The Interview Survey**

The Interview data-gathering technique was used to comprehend and supplement the questionnaire mode of enquiry. It was also intended to support the questionnaire survey project since certain aspects of the research inquiry might not have captured the initial survey adequately. It is expected that this interview survey would provide additional evidence to assess the reasons for their choice of major. Via the semi-structured interviews, useful information regarding the reasons for the selection of major was attained from 38 interviewees, while the sponsors provided information on the scholarships policy, and the preferences of courses and methods of selecting the students.

## RESULTS

Three hundred and sixty students participated in this survey. The specialization or majors that show a high percentage score are Engineering 92(25.6%), Accounting 66(18.3%), Medicine 52(14.4%), Law 40(11.1%), Education 28(7.8%), Sciences 25(6.9%), Architecture 17(4.7%), Social Sciences 16(4.4%), Food Science 12(3.3%) and Arts 12(3.3%). More than half of the sample population (58.9%) were from the 21-25 age groups, the second largest group (6.4%) were undergraduate students below the age of 20. The third largest group, whose age ranged from 36 to 40 were the post-graduate students. There were 195 (54.2%) male students and 165(45.8%) female students.

**Table 1: Demographics of University Students Who Participated in the Study to Identify Factors Influencing Choice of Major**

| Variable | Frequency | % |
|---|---|---|
| Sex of Respondent | | |
| Male | 195 | 54.2% |
| Female | 165 | 45.8% |
| Area of residence | | |
| Urban | 265 | 73.6% |
| Rural | 94 | 26.1% |
| Ethics Groups | | |
| Malay | 248 | 68.9% |
| Chinese | 87 | 24.4% |
| Indians | 25 | 6.9% |

More than 75% of the population are Malay or Bumiputera students. Most of the Bumiputera students specialise in Accountancy (26%), Engineering (17%) and Medicine (14%). The Chinese students prefer Engineering (45%), Law (21%) and Medicine (16%). The Indians prefer Engineering (40%), to Education & TESL (20%) and Law (16%). The relationships between each ethnic group and SES, type of schools, financial support and sponsorships have different significant values.

**Table 2: Mean and Standard Deviation of Major Choice and Fathers' Income**

| Choice of Major | Mean | Std. Dev | Frequency (%) |
|---|---|---|---|
| For Entire Population | 4.5284 | 1.7368 | 335 |
| Law | 6.2368 | .9982 | 40(11.1%) |
| Medicine | 5.0714 | 1.5266 | 52(14.4%) |
| Engineering | 4.6279 | 1.7852 | 92(25.6%) |
| Architecture | 4.5714 | 1.8273 | 17(4.7%) |
| Accounting | 4.2031 | 1.3003 | 66(18.3%) |
| Social Science & Arts | 3.6875 | 1.8154 | 16(4.4%) |
| Food Science | 3.6667 | .8876 | 12(3.3%) |
| Sciences | 3.6400 | 1.6299 | 25(6.9%) |
| Education | 3.5926 | 1.4212 | 28(7.8%) |

Table 2 provides an interesting way to compare group means and standard deviation for major choice and the fathers' income variable. The highest mean is for Law (6.24) followed by Medicine (5.07), Engineering (4.63), Architecture (4.57), and Accounting (4.20). Highest mean for Law students reveal that the fathers earning the highest income amongst the sample of population.

**Socio-Economic Status as Determinant of Major Choice**

Socio-economic status (SES) was selected as a variable for analysis because a number of studies have suggested that it is the most important influence on students' educational attainment (Burnhill *et al.*, 1990; Paterson, 1991; Sammons, 1995; Biggart, 2000). High SES is associated with high levels of education and job attainment (Sewell *et al.*, 1976). The four prestigious major choices, which are popular among Malaysian students in the six universities in the East Midlands of the United Kingdom, are medicine, law, engineering and accountancy. In

this study, the SES measured is composed of a combination of factors: parents' education, parents' occupation, parents' income, as well as wealth.

The majority of the students who gained entry into the universities came from higher SES backgrounds. Major choices such as medicine, law, engineering and accountancy have strong associations with SES. Although all relationships are statistically significant, the strength of association varies for each factor.

Fathers' income and subject choice is strongly associated at $p< 0.0000$. The study notes that 32% of the fathers, whose income is more than RM3001, have 28% of their children specialising in Law, 25% in Engineering, 17% in Medicine and 15% in Accountancy. This finding clearly answers the hypothesis of the study that fathers' income has a significant influence on students' subject choice. It is found that mothers' income has a negligible relationship with major choice as more than 56% of the mothers are housewives.

The level of education attained by fathers for the whole population is considered high. There is a statistically high significance between parents' education and major choice. 25% of the fathers have tertiary education or have obtained professional qualifications. The fathers with tertiary education have their children specialising in Engineering (28%), Law (25%), Medicine (20%) and Accounting (13%). Apparently, the frequency and percentage of the four prestigious major choices are higher for fathers in the professional and managerial groups. It is important to note that for law, there are no students with fathers in the unemployed or lower occupational category.

Parents' aspiration influences students' subject choice. Parents' qualification is the most important variable in enforcing strategies to keep track with the school progress of their children. The parents' aspiration towards their children's education and future career is seen through two academic strategies. The first strategy is by providing material possessions such as books, computers and other educational resources. The second strategy is the constant visitation of parents to their children's schools' to consult with the teachers regarding the progress of their children.

The level of mothers' education is crucial in inspiring the career choices of their children. Mothers' level of education has the most significant role in giving motivation and encouragement to their children in their pursuit of higher education. Two most effective ways of giving motivation are 'having proper planning towards higher education' and 'seeking information regarding further studies'.

More than 75% of the population are Bumiputera students. Most of the Bumiputera students specialise in Accountancy (26%), Engineering (17%) and Medicine (14%). The Chinese students prefer Engineering (45%), Law (21%) and Medicine (16%). The Indians prefer Engineering (40%), Education & TESL (20%) and Law (16%). The relationships between each ethnic group and SES, type of schools, financial support and sponsorships have different significant values.

In examining the SES within the ethnic groups, the study observes that the majority of fathers (69%) from the three ethnic groups worked as professionals and in managerial capacities. In terms of income, the Chinese fathers earn better compared to the Bumiputera and Indian fathers. The level of fathers' education among the three ethnic groups is high. The reason why 82% Bumiputera students receive grants from the government is related to the government's employment restructuring which is one of the National Economic Policy targets. These sponsorships have enabled Bumiputera students to come to the UK universities to pursue various courses even though their parents' income is the lowest among the three ethnic groups.

**Urban-Rural Distribution and English Usage with the Family**

The urban-rural distribution factor affects the level of English proficiency among the Malaysian students. Students who live in urban areas have better opportunities to communicate in English through their daily activities, with urban communities and through the multi-media. The majority of the students in this study are from the urban areas and the association between urban-rural distribution and English usage does exist.

**Table 3: Urban-Rural Distribution and English Usage with the Family**

| REGION | Speak English "Yes" | Do Not Speak English "No" | ROW TOTAL |
|---|---|---|---|
| Urban | 193<br>72.9% | 72<br>27.2% | 265<br>73.8% |
| Rural | 54<br>57.4% | 40<br>42.6% | 94<br>26.2% |
| COLUMN TOTAL | 247<br>68.8% | 112<br>31.2% | 359<br>100% |

Pearson x 2 = 7.89, df = 2, p < 0.01927

Table 3 shows the cross-tabulation between urban-rural regions and students' English usage at home. Among the urban students, 193 (73%) speak English at home compared to 72 (27%) who do not. For students in rural areas, 54 (57%) speak English and 40 (43%) do not. The data reveals that the urban dwellers speak more English than their rural counterparts. Therefore, it is not surprising that more urban students qualify to enter professional courses.

Of the total population, 74% of the sample in this study comes from urban areas. Nearly 95% of the students who specialise in Law and 81% who are Architecture students come from urban areas. Therefore, there is an obvious urban-rural distribution on subject choice. The level of parents' SES is higher in urban areas than in the rural areas. Parents with high SES are found in urban areas. Therefore, more urban students are eligible to specialise in the four professional prestigious courses.

**Key Personal Role in Students' Educational Career from School to University**

The question in the questionnaire on "who plays the most important role in determining the success in the students' educational career", pans throughout their schooling and their current university life. Who exactly was the most influential person in their life that helped them to achieve well in their educational career?

**Table 4: Key Personal Role for Educational Career**

| KEY PERSON | Value of Score | Frequency | Mean | Std. Dev. |
|---|---|---|---|---|
| 1.Myself | 5 | 257 | 4.668 | .628 |
| 2.Mother | 5 | 196 | 4.320 | .915 |
| 3.Father | 5 | 184 | 4.176 | 1.102 |
| 4.Teacher | 5 | 125 | 3.574 | 1.098 |
| 5.Friends | 5 | 103 | 3.470 | 1.070 |
| 6.Siblings | 5 | 66 | 3.400 | 1.244 |
| 7.Community | 5 | 37 | 2.956 | 1.215 |

Students themselves play the key role for their achievement in their educational career with the mean score of 4.668, the highest score. Mothers are second in importance with mean score 4.320 and fathers third with the mean score of 4.176. Besides the social background factors, the students themselves and their mothers are the two strongest factors in determining their major choice.

  

**Factors Influencing Students' Choice of Major**

Among the factors listed are Type of School, Family Background, Parents' Interest towards Higher Education, School Resources, Availability of Finance, Own Aspiration, Own Ability and Peer Group Influence. However, this question investigates the students' own judgement of the impact of these factors on their choice of major.

The frequency for the item' own aspiration' is the highest, 285, with a mean of 4.759. When one has the aspiration to achieve something, one has the ability to excel or to qualify for certain subjects. 'Own ability', has the second highest score, 227 students and with a mean of 4.545. The parents' interest plays an important role in their educational progress. For example, parents may have shown their interest in their children's progress in school, in their child's higher education options or in their choice of major. The frequency score for the item parents' interest is 146 and with a mean of 4.017. The respondents claim that family background is the fourth factor in pursuing their subject choice. The frequency score for respondents who rated family background as 5 in the scale is a total of 139, with a mean of 3.994. The availability of finance is the fifth most important factor that has enabled them to pursue a particular subject. This is because without the finance, even students who qualify for entry are unable to further their studies in the United Kingdom. The frequency score for respondents who rated availability of finance at 5 is 131, with a mean of 3.911.

**Table 5: Factors Influencing Student's Major Choice**

| FACTORS | Value of Score | Frequency | Mean | Std. Dev. |
|---|---|---|---|---|
| 1.Own Aspiration | 5 | 285 | 4.759 | .517 |
| 2.Own Ability | 5 | 227 | 4.545 | .693 |
| 3.Parents' Interest | 5 | 146 | 4.017 | 1.042 |
| 4.Family Background | 5 | 139 | 3.994 | 1.068 |
| 5.Availability of Finance | 5 | 131 | 3.911 | 1.074 |
| 6.Type of School | 5 | 110 | 3.801 | 1.102 |
| 7.Peer Group Influence | 5 | 77 | 3.655 | 1.063 |
| 8.School Resources | 5 | 66 | 3.449 | 1.131 |

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The frequency for the item' own aspiration' is the highest, 285, with a mean of 4.759. When one has the aspiration to achieve something, one has the ability to excel or to qualify for certain subjects. 'Own ability', has the second highest score, 227 students and with a mean of 4.545. The frequency score for the item parents' interest is 146 and with a mean of 4.017. The respondents claim that family background is the fourth factor in pursuing their subject choice. The frequency score for family background at rate 5 in the scale is 139, with a mean of 3.994. The availability of finance is the fifth most important factor that has enabled them to pursue a particular major. The frequency score for the item availability of finance is 131 at rate 5 with a mean of 3.911.

**Students' Intentionality and Major Choice**

**Table 7: Reasons Why Students Decided to Go to Universities in the UK and Reasons Why Students Chose a Particular Major**

| REASONS FOR CHOOSING MAJOR | Score Value | Frequency | Mean |
|---|---|---|---|
| 1.To get a qualification | 1 | 287 | 1.244 |
| 2.To help me get a job | 1 | 231 | 1.443 |
| 3.To learn something new | 1 | 207 | 1.531 |
| 4.It interests me | 1 | 197 | 1.541 |
| 5.To give me more confidence | 1 | 157 | 1.808 |
| 6.To benefit my parents | 1 | 140 | 1.980 |
| 7.Because of labour market prospects | 1 | 117 | 2.081 |
| 8.It is sponsored | 1 | 105 | 2.345 |
| 9.To get a better job than the present one | 1 | 86 | 2.542 |

The most important reason that the respondents rated among the 10 reasons is 'to get a qualification.' The intention in pursuing a particular subject 'to get the qualification' was important with a mean score of 1.244, which means that the average score is close to 1 or Very Important. The second most important reason is 'to get a job' with a mean of 1.443. Students rated 'to learn something new' as the third most important. The frequency score for students under this category is 207 for the value of 1 with a mean of 1.541.

Like mothers, the variable of fathers' qualification have a significant relationship with items like 'Parents provided material possessions such as books and computer' and 'Parents provided educational in-house activities' (Table 8), where the strength of association are at probability levels $p< 0.00003$ and $p< 0.00005$ respectively. Therefore, it can be said that the higher the parents' qualification, the more the provision of material possessions such as books and computers for their children. Moreover, it was found that highly educated parents also organized in-house activities such as extra coaching, revision or homework.

**Table 8: Level of Significance between SES Variables and Parents' Strategies to Keep Track of School Progress**

| VARIABLES | ITEMS ON PARENTS' STRATEGIES FOR SCHOOL PROGRESS | LEVEL OF SIGNIFICANCE |
|---|---|---|
| Mothers' Qualification | Parents provided material possessions e.g. books & ICT | 0.00000 |
| Fathers' Qualification | Parents provided material possessions e.g. books & ICT | 0.00003 |
| Fathers' Qualification | Parents provided educational in house activities | 0.00005 |
| Mothers' Qualification | Parents used to visit schools | 0.00001 |
| Mothers' Qualification | Parents used to consult teachers | 0.00150 |
| Mothers' Qualification | Parents provided educational in-house activities | 0.00251 |
| Mothers' Income | Parents provided materials e.g. books, IT | 0.00215 |
| Fathers' Qualification | Parents used to consult teachers | 0.00566 |
| Fathers' Occupation | Parents provided material possessions e.g. books, computers etc. | 0.00079 |
| Mothers' Income | Parents provided educational in-house activities | 0.05562 |

**Relationship between Socio Economic Status (SES) Variables and Parents' Motivation towards Higher Education**

The association between parents' SES and the motivation variables towards higher education is presented in Table 9. Among all the relationships, level of mothers' education played the most significant role in providing motivation and encouragement towards their children's higher education. The most effective way of giving motivation was achieved through 'having proper planning towards higher education' and at the same time by 'seeking information regarding further studies' with Chi-sq. $p<.0000$ and $p<.0000$ respectively. Both educated mothers and fathers motivated their children in the same way.

**Table 9: Relationship between SES Variables and Motivation towards Higher Education**

| VARIABLE | ITEMS IN PARENTS' MOTIVATION | SIGNIFICANT LEVEL |
|---|---|---|
| Mothers' Qualification | Having A Proper Planning Towards Higher Education | 0.00000 |
| Mothers' Qualification | Seeking Information regarding Further Studies | 0.00000 |
| Fathers' Qualification | Seeking Information regarding Further Studies | 0.00000 |
| Fathers' Qualification | Having A Proper Planning Towards Higher Education | 0.00000 |
| Fathers' Income | Seeking Information Regarding Further Studies | 0.00004 |
| Fathers' Qualification | Having Interest In School Progress | 0.00009 |
| Fathers' Income | Giving Advice and Support Towards Higher Education | 0.00010 |
| Fathers' Occupation | Having A Proper Planning Towards Higher Education | 0.00001 |
| Fathers' Income | Having A Proper Planning Towards Higher Education | 0.00025 |
| Mothers' Income | Seeking Information regarding Further Studies | 0.00068 |

## DISCUSSION

The findings obtained from the analyses of the data are:

Socio Economic Status or the professional class are more likely to enter the prestigious fields of medicine, law, engineering and accountancy compared to children of unskilled manual workers. The higher SES groups represent the majority of the students qualified to enter the six universities in the East Midlands of the UK. Furthermore, students whose parents are doctors and lawyers may be more likely to be inspired to do medicine and law since this would allow them to maintain the social class status of their parents. No working-class children were found to do law in this study. Specialising in the four professional majors would more or less determine one's place in the social strata.

The socioeconomic status of parents does have a significant influence on subject choice. There is a stark relationship between the income of fathers and subject choice. The majority of students who were successful in gaining admittance into universities in the UK came from families whose fathers' income is high. The study observes that the higher the fathers' income, the greater the tendency for the children to specialise in the four aforementioned professional courses. Financial resource or *economic capital* that comes solely from the father is crucial to bear the

rising cost of educational resources as well as the high fee of any one of the professional courses especially the cost to study Medicine.

With that being said, the qualification of a mother is as equally important as fathers' income. An educated mother plays a significant role in investing in the *cultural capital* of her child's schooling management. Professional mothers also have a higher percentage of enrolling their children to study the abovementioned professional courses.

Parents' aspiration is crucial in motivating and supporting their children towards educational success. Among the SES variables, parents' level of qualification is the most important variable with regard to parental motivation towards higher education. Mothers' level of education remains the most important variable in 'keeping track of the children's school progress'. Professional mothers have higher expectations on the inspiration of their children's educational careers.

Accounting is the main choice of major among the Bumiputera students because they are mainly government sponsored students. The strategy of the government is to increase the number of Bumiputeras in the commercial and business sector. Engineering is popular among the Chinese and Indians as they are mostly self-sponsored students and are free to choose their subjects. The Chinese and the Indian students who attend the Twinning Programmes that are franchised with universities in the UK find such courses affordable.

More males specialise in engineering while more females do the same in medicine and law. Male students fare better than females in Physics and Mathematics. Hence, most of them are capable of specialising in engineering. Medicine seems to befit the nature of women. Overall, girls outperformed boys in public examinations and this academic excellence has qualified them to take up medicine and law. Nevertheless, due to the expansion of educational opportunities for women and equal career opportunities in Malaysia, some females have started to specialise in male dominated careers such as civil engineering.

The majority of the sample population come from urban areas. Since these students reside in urban areas, they come mainly from the higher SES group and in turn are able to specialise in the four aforementioned prestigious subjects. They have benefited from a better *economic and cultural capital* provided by their parents which eventually affects their educational outcomes. They are also well equipped with educational resources and facilities found in the urban areas.

Types of schools have a significant influence on subject choice. The majority of the students attended schools in urban areas. Hence, they are more likely to specialise in the four prestigious subjects. Most Malay students attended boarding schools while most of the Chinese and Indian students attended day schools.

Proficiency in English has a significant impact on subject choice. Students from professional groups speak English more frequently and use English with their families. Mothers' level of qualification and fathers' income also has a significant relationship with English language proficiency. 98% of law students and 54% of medical students communicate in English with their families.

The students' intentions for specialising in their subject choices are to get the necessary qualifications, to get jobs in the labour market, and to learn something new.

**Contributions of the Study**

This research contributes the latest statistics and information regarding Malaysian students pursuing their tertiary education overseas particularly at universities in the UK.

Material and research on Malaysian students abroad is scarce. This study enriches to the pool of documented literature on the subject and further enhances the understanding of the social background of Malaysian students in universities in the UK. It also enriches the study on the disciplines of education and sociology and provides new perspectives for a developing country such as Malaysia.

This study provides information and guidelines for students as well as parents on higher education prospects in universities in the UK. In short, this study could provide some knowledge for students to develop interest in specific

subjects as well as the pursuit of their ambitions. This study also provides guidance for parents on how to enforce effective strategies in preparing for their children's future education. It enlightens them of their role in seeking information and how they can successfully ensure their children's tertiary education. The findings of this study clearly indicates that a parent's ability to plan in advance significantly influences their children ability to specialise in professional courses.

Most importantly, this study provides recommendations and implications for policy makers in implementing the education policy with fair education opportunities for all.

## CONCLUSION

Based on the evidence discussed in this study, it can be concluded that a student's subject choice is determined by his/her family's socio-economic position. Professional parents from higher socio-economic status (SES) provide better *economic and cultural capitals* for their children and hence affect their choice of majors e.g. medicine, law, engineering and accountancy. Specialising in these four professional courses in turn determine more or less a Malaysian's place in the social strata. The most outstanding result is the level of parents' qualification. Mothers' education particularly plays a significant role in inspiring their children towards higher education.

The findings of this research contribute to enrich the academic literature in education. It could probably help with the formulation of new ideas in the process of implementing educational policies. Undoubtedly, this study provides valuable information to policy makers in the Ministry of Higher Education. It would create awareness as to the need for equal opportunities in higher education overseas for students from all walks of life. The study has important implications for the authorities and policy-makers as it reveals which status group of students benefit most from a tertiary education from universities in the UK.

Malaysia would need to urgently build a critical mass of creative and innovative professionals. The education system had been reviewed to produce the required skilled professionals. A system of lifelong learning and skills had been introduced upgraded and strengthened to support the development of a learning society. A coordinated program to attract highly skilled and talented Malaysians living abroad must be initiated.

## REFERENCES

Alasdair, F., and Furlong, A. (2003) "Access to higher education and disadvantaged young people." *British Educational Research Journal*, Vol.29, No.2.

Bourdieu, P. (1973) 'Cultural reproduction and social reproduction', in: Brown, R. (ed.), *Knowledge, Education and Cultural Change*. London : Tavistock.

Bourdieu, P. (1973) 'The Algerian sub-proletariat', in: Zartman, W.I. (ed.) *State and Society in the Contemporary Maghrib.* London: Pall Mall Press.

Breen, R., and Goldthorpe, J.H. (1997) "Explaining educational differentials: towards a formal rational action theory." *Rationality and Society*, 9, pp. 275-305.

Carpenter, P., and Hayden, M. (1987) "Girls academic achievements, single-sex versus co-educational school in Australia", *Sociology of Education*, Vol.60. 3,pp.156-167.

Dalton Conley (2001) "Capital for college: Parental assets and postsecondary schooling", *Sociology of Education*, Vol.74 (January), pp 59-72.

Fagerlind, I.(1983) "Education and national development", *A Comparative Perspective*. Pergamon.

Gambetta, D. (1987) *Were They Pushed or Did They Jump? Individual Decision, Mechanism in Education*. Cambridge: Cambridge University Press.

Goodman,J. "What students learn from early field experiences: A case study and critical analysis", *Journal of Teacher Education,* Nov-Dec, 36(6) ,pp.42.

HESA Student Record (2012/2013) http://www.NationMaster.com/InternationalStatistic/2014

Jasbir Sarjit Singh (1987) "Malaysia." *International Higher Education*, pp.511-523.

Lee, Daniel, Coladanci, Theodore, Donalson, Gordan A. Jr. (1978) *Effects of School Choice on Academic Commitment*. US Maine.

**S**

Schneider, B., and Stevenson, D. (1999) *The Ambitious Generation: America's teenagers, motivated but directionless.* New Haven CT and London: Yale University Press.

Sewell, William H., Robert, Hauser M., and Fearthman, D.C. (1976) *Schooling and Achievement in American Society*. London: Academic Press.

Sherry, T., and Richard T. Lapan (2002) "Career Self-Efficacy and Perceptions of Parent Support in Adolescent Career Development." *The Career Development Quarterly,* (September), Vol.51, pp.44-55.

Tinklin,T. Croxford, L., Ducklin, A., and Frame, B. (2001) *Gender and Pupil Performance in Scotland's Schools.* Edinburgh:University of Edinburgh

  

# FACTORS OF WOMEN ENGINEERING STUDENTS' DROPOUTS IN SOUTH KOREA

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**Abstract**: In this study we conducted a factor analysis on the patterns and reasons of women engineering students' dropout phenomena through interviews and questionnaires carried out on the women students majoring in engineering at P University. The analytical results of the questionnaires indicate that a broad socio-cultural factor, the industry's negative gender cognition and the male-dominant atmosphere of the college of engineering are the three major factors that influence the women engineering students' decisions to drop out. In addition, the women engineering students' physical strength and machine-tool maneuvering ability that are by and large inferior to male engineering students, have greater influence than their academic competence or age. Parents' moral support also plays an influential role. Another important factor is the lack of gender cognitive lectures and gender cognitive job hunting projects for women students. It is recommended that the findings of this study be considered as basic materials in developing a gender cognitive engineering curriculum for women students that befits the environment of the college of engineering.

**Keywords**: Women Students, Dropout, Engineering Education

## I. Introduction

Recently, Korea has been emphasizing creative economy, and one of the emerging important tasks is promoting and supporting female human resources in the workforce and job market as a means of realizing the goal of creative economy. In addition to the barriers that hinder women's advancement to high positions and interrupt their work careers, the measures of fostering and supporting women in science and engineering have become a big issue. However, women students are still facing a glass wall of male-dominant culture and curricula, the male favoring environment, and women's mental and physical differences from men in the college of engineering. As a result, many women students fail to break through the glass wall and end up in taking a leave of absence, or changing their majors from engineering and science to some other fields, or dropping out from the college of engineering completely.

Development of female human resources is an important task not only for the next generation growth power resources but also for enhancing the quality of women's lives. The OECD Mid-to-Long Term Economic Outlook Report (2010. 05. 31) had predicted that the potential growth rate of Korean economy for 2010-2011 would reach 4.0%, which is the highest among the 30 member nations observed; however, they also predicted that the growth rate of Korean economy would rapidly fall as low as 2.4% per annum by 2025. Moreover, they predicted that the new trend of avoiding engineering fields would bring about shortage of manpower in R&D and production lines, which would result in a setback in basic research in science and engineering, ultimately weakening the technological capability of Korea. To resolve these problems, the Korean government enacted a law of Fostering and Supporting Women Scientists and Engineers, establishing various government supporting policies (H. Y. Park, 2008: 151). Despite these government support policies, female students continue to experience much more difficulty than male students in the science and engineering fields. Differences between male and female students are not just physiological. Women students are being discriminated against not only at the university but, directly or indirectly, they are all experiencing prejudice and condescending attitude at home

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and society at all the sociocultural levels. These experiences can strongly influence women students individually.

Therefore, it is necessary to examine how women students' experiences differ from those of male students and why more women students drop out of college. To find out the factors that contribute to the decision to drop out, we conducted interviews and a questionnaire survey. The survey questions were made on the basis of the thoughts and remembrances which women students have had in their campus life about dropping out of school.

After the factors contributing to women students' dropout were defined and the content validity was verified by the experts, the women students majoring in engineering were surveyed. The subject of the survey is P University whose women students majoring in engineering constitute 23% of the student body of the college of engineering as of 2014, which is the nation's highest women student ratio. The purpose of this study is to apply the analytical result of the survey of the factors contributing to women student dropouts in developing a women students engineering education program that befits the engineering college.

## II. Theoretical Background

### 1. Definition of Dropout

In general, dropping out refers to the act of discontinuing the coursework of regular school or college. Morrow (1986) classified dropouts into five types: (1) the push-outs who got pushed out of school after being judged as disqualified students; (2) the unaffiliated students who refuse to associate with others; (3) the capable dropouts who quit school despite their capability because the school and the family demand different values from the students; (4) the educational mortalities who are incapable of completing the coursework, and (5) the stop-outs who return to school. In other words, dropouts are those who stop going to school for various reasons either of their own will or against their will.

For quantitative analysis of the factors contributing to women students' dropout decisions in this study, the measurement standard is the women students who initially enrolled in engineering departments but dropped out to transfer to some other fields. Although the women engineering students on leave of absence can also be a dropout factor that contributes to changes in the major field, they are excluded in this study for they will be the subject of our next research project. The academically outstanding women engineering students' transfer to other major fields is a big loss in engineering human resources since they are highly demanded in the industry, and thus it is a dropout type that has an important significance.

### 2. Factors of Women Engineering Students Dropouts

Dropout phenomenon is attributed not just to one factor but to the combined effects of multiple factors (Y. S. Cho, 2070: 10). Boshier (1973) wrote that chances of dropping out increase when the internal harmony with one's self does not match the harmony of the self with the environment. Garrison's (1987) more macroscopic analysis offered nine factors of dropout: the idealistic self, the self-trust, adequacy of the process, the level of achievement, support for individual students, control by the educational institution, mismatch of the ego with the super-ego, clarity of the objectives, and finally the academic competence. Table 1 gives a thematic summary of researches on dropout phenomena.

Table 1. A thematic summary of researches on dropout phenomena

| Factors | Detailed Content |
|---|---|
| Personal Factor | Concept of self / Self trust |
| | Classwork performance capability |
| | Academic ability |
| | Affiliation with Classmates and faculty members |
| | Single or married |
| | Age |
| Domestic Factor | Housework situation |
| Sociocultural Factor | Position, Regional background |
| University Factor | Major field |
| | How well does the content of education agree with the learner's goal |
| | Difficulty of coursework |
| | Satisfaction level of the educational environment |
| | Satisfaction level of the coursework |

Source: Bae Kyung Suk, 2004: 21 Reorganized

Based on the research results reviewed above, the dropout factors are classified into four categories. (1) In the personal factor, variables are personal inclinations and high schools graduated from. (2) In the domestic factor, household conditions are the main variables. (3) In the sociocultural factor, the economic power of the region and the society are important variables. (4) In the university factor, match or mismatch with the majoring field and the environment are the main variables. (H. M. Park, 2009: 26-35). Research on dropout factors can also be conducted by focusing on differences between continuation and discontinuation of coursework of a college or a majoring field. (Y. J. Oh, 2006) However, the research target of this study is the women engineering students at a coeducational college of engineering. Women engineering students in different majoring fields will be the subject of future research.

## III. Research Method

### 1. Research Procedures

For a factor analysis of women dropouts from an engineering college, we conducted a literature survey, in-depth interviews and a questionnaire survey. A quantitative measurement tool was developed on the basis of the factors reflecting the characteristic features of women engineering students' drop-out phenomena, which are extracted from the interviews. The validity and reliability of the measurement tool were confirmed by applying SPSS 18.

### 2. Research Target

#### A. In-depth Interview

In this study we interviewed 20 women engineering students who are attending P University. The in-depth interview refers to a kind of non-structured face-to-face interview that is capable of accurately drawing out the feelings and thoughts of the interviewees (Boyce & Neale, 2006). The P University is selected as the best engineering college to study women dropout problems since it has a relatively large

number of women engineering students in terms of gender ratio. Interviews, which lasted about an hour, were conducted from November 1, 2013 to December 10, 2013 at the P University campus where interviewees felt comfortable. The interviews were recorded with the permission of the interviewees. The questionnaire was written on the basis of the information obtained from the interviews.

B. Questionnaire

The questionnaire survey was conducted on 276 women engineering students. The measurement tool was extracted from the interviews of women engineering students, and its validity was confirmed by three professors of engineering, one Ph.D. in education, two graduate students majoring in education.

The questionnaire consisting of a total of 56 questions was written, including the personal factor (14 items), the familial factor (5 items), the University factor (14 items), the socio-cultural factor (18 items) and the basic questions (5 items). See Table 2. To prevent the tendency of respondents to check the middle point, a 5 point scale was designed (Very much, Somewhat, So and so, Not very, Absolutely no.)

Table 2. Frame of questionnaire for the four factors

| Items | Personal Factors |
|---|---|
| 1 | Intention to transfer to other major or drop out of college as of now |
| 2 | Intention to drop out due to the influence of students around you |
| 3 | Your response to students who transferred to other major or who dropped out |
| 4 | Does your major agree with your aptitude and your interests |
| 5 | Relation between the degree of agreement with your major and dropping out |
| 6 | Anxiety about getting a job |
| 7 | Difficulty level of coursework in the majoring field |
| 8 | Timing of selecting the major |
| 9 | Available information about engineering college at the time of selecting the major |
| 10 | Dissatisfaction about the curriculum of the major |
| 11 | Availability of consultants (mentors) to discuss your troubles about the major and future career |
| 12 | Possibility of landing a job in the field you are majoring in. |
| 13 | Inner conflict about your major |
| 14 | The main agent that decides your career and your satisfaction |
| Items | Domestic Factors |
| 15 | Parents' perception of women engineering students |
| 16 | Financial conditions of your family |
| 17 | Part time work and payment of your school expenses |
| 18 | Problems encountered when your school work and part time work are simultaneously carried out |
| 19 | Parents' occupations |

  

| Items | Sociocultural factors |
|---|---|
| 1 | Society's prejudice against women engineering students. |
| 2 | Gender differences in the job hunting competition |
| 3 | Business owners' perception of women workers |
| 4 | Gender differences experienced during one's career as a worker |
| 5 | Businesses' preference for men or women |
| 6 | Comparison of engineering fields with liberal arts fields in terms of job landing and success |
| 7 | Gender differences in terms of culture |
| 8 | Role model in the engineering fields |
| 9 | Job landing for men and women in terms of culture |
| 10 | Average number of years the job is held by men and women after getting the job (marriage, child birth, etc.) |
| 11 | Male-dominant culture in businesses |
| 12 | Gender differences in preparations for job hunting |
| 13 | Does the female culture agree with business culture |
| 14 | Culture of workplace and barriers |
| 15 | Gender differences for the environment of career jobs |
| 16 | Unconscious sex discrimination due to culture differences |
| Items | College Education Factor |
| 1 | Distance between the college and your residence |
| 2 | Gender cognitive teaching methods |
| 3 | Gender cognition in the coursework of the majoring field |
| 4 | Ratio of female professors in engineering college |
| 5 | Atmosphere of engineering college for a particular gender |
| 6 | Gender differences in Lab classes |
| 7 | Leaders in the team projects and classroom work |
| 8 | Level of gender cognitive lectures |
| 9 | Supplementary training for women students |
| 10 | Courses directly related to employment of women |
| 11 | Effects of supporting and fostering projects for education of women |
| 12 | University's special attention for women engineering students |

  

3. Data Processing and Analysis

A. In-depth interviews

The recorded interviews were transcribed as soon as possible, and while reading over the transcribed content, the phrases and sentences related to dropout factors were jotted down. Comparing notes on these phrases and sentences, the participating researchers derived the tentative dropout factors that had a high degree of agreement. The data containing the factors thus derived were analyzed, and they were compared with the factors that had been derived earlier, and they were revised and combined. Through repeated feedback, conceptualization of data, and categorization, the factors of women engineering students' dropout phenomena were finally defined.

B. Questionnaire Survey

We conducted a descriptive statistical analysis, a reliability analysis, and a validity analysis on the data collected through the questionnaire survey. First, in the descriptive statistical analysis, we sorted out the questions whose standard deviations are below .10, the questions whose skewness and kutosis are above ±2.0, and the questions with weak discrimination capacity whose response rate is biased more than 50%. Second, in the reliability analysis, we used Cronbach`s α coefficient which is capable of evaluating the internal consistency of the items. Cronbach`s α values are useful in identifying and eliminating the items that hinder the reliability. If the α value increases when a variable is removed, removal of that variable enhances the reliability of the item. In other words, at the early research stage, the α value of 0.5~0.6 is considered as relatively good and the α value of above 0.7 is good enough to be accepted (Nunnally, C., 1976). According to Y. J. Lee(1991), the α value of above 0.7 is good in general. Third, the factor analysis is a method of identifying the components that make up the items which are found by the reliability analysis to be appropriate. In this study, we conducted a factor analysis for each of the four factors. Specifically, our four factors were determined by conducting a principal component analysis. Varimax of the right angle rotation method is used for the rotation method. The number of factors was determined by using the scree test, eigen value, gross dispersion rate of more than 60%, and interpretation potentials. Finally, the validity of the factors was confirmed through the eigen value, the common dispersion versus gross dispersion rate, and the interpretation of the content.

## IV. Research Results

1. Extraction of Dropout Factors through In-depth Interviews

The analytical results of the in-depth interviews revealed four major differences from the previous research on dropout factors.

First, the previously defined social factors were found in this study to include more comprehensive ranges of socio-cultural factors because women engineering students gave significant responses to cultural factors such as the culture of male students attending the college of engineering and its difference from that of women engineering students. In addition, the negative cognition about women engineering students perceived in business and industry and the male-dominant atmosphere of the engineering college were the sub-factors found in their responses instead of the conventional research sub-factors of position and regionalism. Many interviewees opined that although the male-preferring attitude of society is said to have improved much, it is still there and annoying to them.

Second, the personal physical strength and personal ability to maneuver machine-tools, which aid their academic performance, are added to the conventional research sub-factors of academic performance and age. The most dominant opinion in the interview content is that women engineering students felt they are limited in their physical strength when participating in the engineering lab work and lab assignments. This reveals the physical difficulty experienced by women students in carrying out their study in the majoring fields is greater than that of male students.

  

Third, along with the conventional research sub-factor of household situation, parents' support was derived as a new sub-factor. This indicates that parents' support gives strong motivation to women engineering students. Fourth, for the factors related to college education, sub-factors that are more specific than the conventional research sub-factors were derived, such as gender cognitive lectures and instructions and university's support for job hunting. Many interviewees commented on the need to eradicate sexism from lectures and classroom work and the need of University' support for various minority students. These comments indicate that women engineering students are influenced greatly by how the university plays its roles.

2. Analysis of Dropout Factors Through Questionnaire Survey

A. Descriptive Statistical Analysis

Examination of the standard deviation, skewness and kutosis of the four major factors yielded the following data: The averages of the personal factor, the family factor, the university education factor, and the socio-cultural factor are 2.21~3.61, 2.52~3.25, 2.12~2.93, 2.72~3.31, respectively, and the answers are by and large evenly distributed. The standard deviations for the questions for the four factors are distributed between 0.89~1.35, 0.92~1.21, 0.85~1.14, 0.98~1.41, respectively, which indicates that the answers for all the questions given by the interviewees are properly distributed. The skewness is distributed between –1.31~0.38 and the kutosis between –0.68~1.78 on the average, which also shows that the answers given by the respondents to all the questions are not biased but evenly distributed.

B. Reliability Test

The test score of the reliability of the dropout factors of the women engineering students in this study ranged between .620 and .857. This is a relatively high score for the results of social science research. See Table 3.

Table 3. Reliability analysis

| Factors | Cronbach` α |
|---|---|
| Personal Factor | .857 |
| Domestic Factor | .620 |
| University Education Factor | .633 |
| Sociocultural Factor | .816 |

C. Factor Analysis

A factor analysis was conducted to measure the variable factors accurately by using the principal components analysis and the vari-max of the right angle rotation. In this study, the results of interviews were classified into the personal factor, the domestic factor, the University-education factor, and the socio-cultural factor, and the factor analysis was conducted on these four factors. Since the extracted samples explain the population clearly, similar questions were classified as belonging to the same factor. As shown in Table 4, for the personal factor, an item is classified into new factors (sub-factors?) depending the nature of the question.

Factor 1 was named "dissatisfaction about selection of the major" because Item 9 (information on college of engineering at the time of selecting the major) and Item 8 (time to select the major) showed the highest score, respectively. Factor 2 is entitled "influence of the surrounding situations". Item 3 (response about students who transferred to other fields and about students who took a leave of absence) showed a value of .805. Factor 3 is named "networking with classmates and professors" because it is a factor that belongs to the same item that

deals with consulting on the anxiety about the major field and employment. Factor 4 is named "anxiety about employment". We also calculated the percentage variance and eigen value for each factor. Variance is a value which informs whether each item is included in the relevant factor. Percentage variance is the ratio each factor possesses out of the whole 100%. The Eigen value informs whether the number of factors is appropriate, and the value is effective if it is greater than 1. Using the same method, the domestic factor is composed of 5 items. Factor 1 refers to "financial conditions" and Factor 2 is named "parents' support".

Table 4. Analysis of Individual Factors .

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|
| Item 9 | .856 | .121 | -.054 | .113 |
| Item 8 | .837 | .246 | -.049 | -.047 |
| Item 10 | .695 | .168 | .278 | .276 |
| Item 13 | .474 | .205 | .298 | .471 |
| Item 7 | .420 | .381 | .056 | -.169 |
| Item 3 | .092 | .805 | .103 | .384 |
| Item 1 | .148 | .774 | .318 | .159 |
| Item 2 | .165 | .708 | -.109 | .071 |
| Item 5 | .463 | .632 | .349 | -.106 |
| Item 11 | -.150 | .106 | .791 | .109 |
| Item 14 | .492 | .002 | .577 | .235 |
| Item 4 | .520 | .302 | .553 | -.220 |
| Item 6 | -.103 | .141 | -.069 | .818 |
| Item 12 | .288 | .086 | .398 | .658 |
| Eigen Value | 3.218 | 2.570 | 1.847 | 1.749 |
| Percentage Variance | 22.985 | 18.354 | 13.194 | 12.491 |

Table 5. Analysis of Domestic Factors

| | Factor 1 | Factor 2 |
|---|---|---|
| Item 18 | .884 | -.145 |
| Item 17 | .847 | -.027 |
| Item 16 | .762 | .186 |
| Item 19 | -.159 | .871 |
| Item 15 | .469 | .528 |
| Eigen Value | 2.325 | 1.095 |
| Percentage Variance | 46.491 | 21.892 |

Table 6. Analysis of Sociocultural Factors

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
|---|---|---|---|---|---|
| Item 2 | .764 | .148 | .069 | .038 | -.012 |
| Item 3 | .761 | .053 | .135 | .246 | -.174 |
| Item 1 | .700 | .126 | -.126 | .154 | -.252 |
| Item 5 | .689 | .173 | .115 | .096 | .191 |

  

| | | | | | |
|---|---|---|---|---|---|
| Item 11 | .653 | .131 | .164 | .098 | .323 |
| Item 14 | .138 | .748 | .017 | -.021 | .214 |
| Item 15 | .238 | .711 | .025 | .122 | .070 |
| Item 16 | .070 | .683 | .096 | .330 | -.076 |
| Item 13 | .016 | .554 | .518 | -.136 | -.211 |
| Item 9 | .013 | .103 | .801 | .200 | -.048 |
| Item 4 | .467 | -.162 | .560 | -.001 | .150 |
| Item 6 | .136 | .046 | .035 | .803 | .047 |
| Item 7 | .239 | .250 | .318 | .470 | .139 |
| Item 12 | .165 | .306 | .413 | .414 | -.076 |
| Item 8 | -.075 | .032 | -.111 | .115 | .829 |
| Item 10 | .502 | .243 | .187 | -.182 | .511 |
| Eigen Value<br>Percentage Variance | 3.212<br>20.074 | 2.181<br>13.629 | 1.633<br>10.206 | 1.370<br>8.563 | 1.337<br>8.354 |

Table 7. Analysis of University Factors

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Item 2 | .704 | -.049 | .057 |
| Item 4 | .676 | .090 | .068 |
| Item 5 | .623 | .037 | .100 |
| Item 6 | .585 | .436 | .037 |
| Item 3 | .529 | -.103 | .437 |
| Item 12 | -.184 | .674 | .269 |
| Item 9 | -.002 | .649 | -.038 |
| Item 10 | .373 | .591 | -.393 |
| Item 8 | .166 | .508 | .016 |
| Item 1 | .256 | -.188 | .587 |
| Item 7 | .167 | .167 | .569 |
| Item 11 | -.289 | .422 | .518 |
| Eigen Value<br>Percentage Variance | 2.341<br>19.508 | 1.936<br>16.130 | 1.375<br>11.460 |

The socio-cultural factor in Table 6 combines the two separate factors (social and cultural factors) into one factor. The socio-cultural factor is divided into five factors. Factor 1 is named "the negative perception held by businesses about women engineering students" because Item 2 (gender difference in competition for employment) and Item 3 (Business owners' perception of women" played the role of the biggest factor. Factor 2 was named "Discrimination against women employees", and the items about workplace culture and the barrier factors showed a high value of .748. Factor 3 was named "Getting a job and life at workplace"; Factor 4 was named "Preparation for employment and gender differences"; Factor 5 was named "Absence of Role Model". Item 8 is a question about the role model in engineering fields, and the responses to Item 8 indicated that the women engineering students strongly feel the absence of role models and they demand improvement.

As shown in Table 7, University Education Factor is classified into three categories. Factor 1 is involved with Item 2 through Item 6, and it is named "The atmosphere of engineering college and male professors' absolute majority". Factor 1 is composed of Items on gender cognitive teaching method and gender cognition in major

engineering fields. Factor 2 is composed of Items on the University's special considerations for women students and supplementary training for women students, and it is named "Lack of gender cognitive lectures". Factor 3 is named "Lack of University support for Women Engineering Students", and here the sociological question of prejudice against women engineering students showed the highest value of .587.

## V. Conclusions

Our findings from the in-depth interviews and the questionnaire survey conducted on P University women engineering students led us to make the following conclusions on the patterns and causes of women engineering students' dropout phenomena. We developed a measurement tool capable of grasping the reasons why women engineering students are dropping out, and the questionnaire survey based on this tool enabled us to discover significant factors that produce women student dropouts. First, the most important factor that causes women engineering students to drop out is the lack of information and absence of mentors at the time they decide their majoring field as well as the reactions they saw the other women engineering students make as they transfer to other majoring fields. Second, the sociocultural factor, much broader in scope than the social factor, is at work as an influencing factor. The negative perception against women engineering students and the male-dominant atmosphere are felt in the businesses and industries. This is a factor more influential than the influence of position or regionalism. More than in any other fields, the women engineering students are aware of the influence of a role model, especially examples of women who succeeded in engineering fields. Third, women engineering students' physical strength and machine-tool maneuvering ability, which are inferior to those of male students, are also an influencing factor. Fourth, we also learned that the domestic factor of household chores and parents' support plays an important role. Fifth, the analysis of the University Education Factor informs us that gender cognitive education and the institutional consideration for the minority students are important. In other words, women engineering students' dropout phenomena are greatly influenced by the university's policies as in gender cognitive education and support in their employment after graduation.

It is expected that the results of this factor analysis may be used for basic materials in developing a women engineering student education program. Developing an engineering education methodology that reduces the dropout rate of women engineering students is an important issue not only for the next generation growth power but also for upgrading the quality of women's lives. Therefore, it is urgently needed to accurately grasp the women engineering students' dropout factors and develop a women engineering education program that is suitable for the environment of the college of engineering.

## Reference

1. K. H. Kim (2006). An Analysis of Factors Affecting Vocational High School Dropout. Kangwon National University Graduate School of Education Master′s Dissertations.

2. J. H. Kim, M. S. Oh and Y. J. Jeong (2007). Study on Women's engineering workforce for improved adaptability site. KOTEF.

3. J. E. Park, J. H. Kim, Y. K. Jeong and M. S. Oh (2009). Analyses of Female Engineering Education Programs Abroad. Journal of Engineering Education Research. Vol. 12, No. 3, pp. 79-95.

4. H. Y. Park (2008). Women in Science Technology and their supporting policy. Women′s Studys Research. Vol. 18, pp. 141-181.

5. H. M. Park (2009). An Analysis On The Reasons Of Junior College Students' Dropouts, Kyonggi University Master′s Dissertations.

6. K. S. Bae (2004). Reasons for Attrition of the adult students participating in Vocational Education and Training. Korea

University of Technology and Education Master′s Dissertations.

7. Y. J. Oh (2006). An Analytic Study on the University Life Experiences of Freshman, Education Research. Vol. 25, pp. 141-164.

8. Y. J. Lee (1991). Multivariate analysis using the + SPSS / PC. Seokjeong Press, Korea.

9. Y. S. Cho (2007). Studies on the school dropout phenomenon occurs factors. Dongguk University Master′s Dissertations.

10. National Research Foundation of Korea (2010). Women into engineering(WIE) Fourth Consulting Report. National Research Foundation of Korea.

11. R. W. Boshier (1973). Educational participation and dropout : A theoretical context : an analysis of Boshier ' s congruence model. Adult Education.

12. C.. Boyce and P. Neale (2006). Conducting In-Depth Interviews : A Guide for Designing and Conducting In-Depth Interviews for Evaluation Input. Pathfinder.

13. D. R. Garrison (1983). Psychosocial correlates of dropout and achievement in an adult high school completion program. Alberta Journal of Educational Research. Vol. 29, No. 2, pp. 131-139.

14. D. R. Garrison (1987). Dropout prediction within a broad psychosocial model. Adult education. Vol. 23, No. 4, pp. 255-282.

15. G. P. Morrow (1986). Standardizing Practice in the Analysis of Dropouts. Teacher College Record. 87.

16. J. C. Nunnally (1976). Psychometric Theory. McGraw-Hill.

17. OECD (2009). OECD Korea depth analysis of innovation policy. Recommendations for the Elimination of All Forms of Discrimination against women in science and technology in South Korea. Quarterly. Vol. 37, No. 4. pp. 212-222.

# GENDER GAP IN HIGHER EDUCATION: PERSPECTIVE ON FACTORS INFLUENCING ENROLMENT IN MALAYSIAN UNIVERSITIES: A UNIVERSITY OF MALAYA SAMPLE

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**Abstract:** This study aims to identify why academic performance differs between male and female students at a school level that leads them to qualify for entrance into universities. Entrance qualification to university is based on the meritocracy system of their academic achievement. More female students have always outperformed the male students in their educational attainment. The inequality of gender in the enrolment of students into universities has become a serious phenomenon for the past decades. This qualitative and quantitative method of research utilizes data analysis from University Malaya samples. The findings revealed that female students have different characteristics and inspiration that influence their educational achievement. More male students are represented in subject choices like Engineering. The outcome from gender imbalance will hinder the country's development if more females dominated in the job market. In light of these results, several suggestions have been proposed for the solution and implication to increase the number of male students in tertiary institutions.

**Key words:** gender inequalities, gender characteristics, educational attainment, subject choice, enrolment

## 1. INTRODUCTION

In Malaysia, female students are currently over-represented in most public universities and nowadays females have outperformed male students in the examination at school level which then qualifies them for university entrance. As expected, the imbalance of ratio between male and female students enrolled at the universities is becoming a serious phenomenon from year to year as there is no indication showed that precaution had been taken. According to Department of Statistics Malaysia, in 2010, the ratio of females enrolled in public universities was 64.8% or 26,229 out of 46,506 places offered, compared to male students with only 35.2 %.

Generally, Malaysian women's contribution to the country is high and significant, particularly in the sector of education, where females formed the majority as teachers with 72.3% compared with males, 27.7%. Statistics shows that about 38.1 % female students pursuing PhD; 52.9 % in Master degree; 61.9 % in undergraduate and 64.8 % at Diploma level (Quick Facts, 2012).

Is the phenomenon a problem that should be subjected to valid debate? There are education experts who say that this is a global trend that cannot be escaped from and it is not something to be worried about. There are also some who are apprehensive that this eminent problem that has been seen since the last two decades is not a healthy development and it will bring about effects to the community that are yet to be fully comprehended.

According to Article 8 (2) of the Federal Constitution of Malaysia (2001), the constitution guarantees gender equality particularly from the perspective of employment in the private sector, pregnancy and gender discrimination. However, the equal opportunity and rights given to women in making decision or as policy makers at work place are still imbalanced.

Therefore, the Malaysian Cabinet approved a policy that set a target of 30% of women representation in decision making positions across all Malaysian public listed companies by 2016. The importance of improving the gender balance of corporate boards is increasingly recognized across the world. This figure indicates that, a number of women at companies as corporate leaders are still low compared to men. Why are there more men as leaders at corporate boards, organisation or companies when their number is smaller at tertiary institution?

A research study that has analysed and documented these gender inequalities in different countries include Africa, Grace W. Buny I (2003) entitled "The Interventions that Increase Enrolment of Women in African Tertiary Institutions".

According to Dweck, and Licht (1980), gender characteristics determine how well boys and girls adapt to their academic tasks. They suggested that certain academic tasks and areas in general may possess characteristics that are compatibility with girls' cognitive orientation and that is likely to facilitate their performance. Similarly, boys' achievement orientations may make them better suited for certain academic pursuits. For instance, they found that mathematics is an area that, in general, possesses the characteristics that best fit the male cognition, whilst language-based subjects seem to possess those qualities that best fit the female cognition.

Borg E. (2013) examined how working hard in school contributes to explaining gender differences in academic achievement between students in Norwegian (n=8,002) and Pakistani (n=862) descent in secondary schools in Oslo.

In Indonesia, it appears that women have been acquiring secondary and tertiary education in relatively larger numbers than men in recent years, perhaps in response to the greater relative returns to female higher education (Deolalikar, 1993).

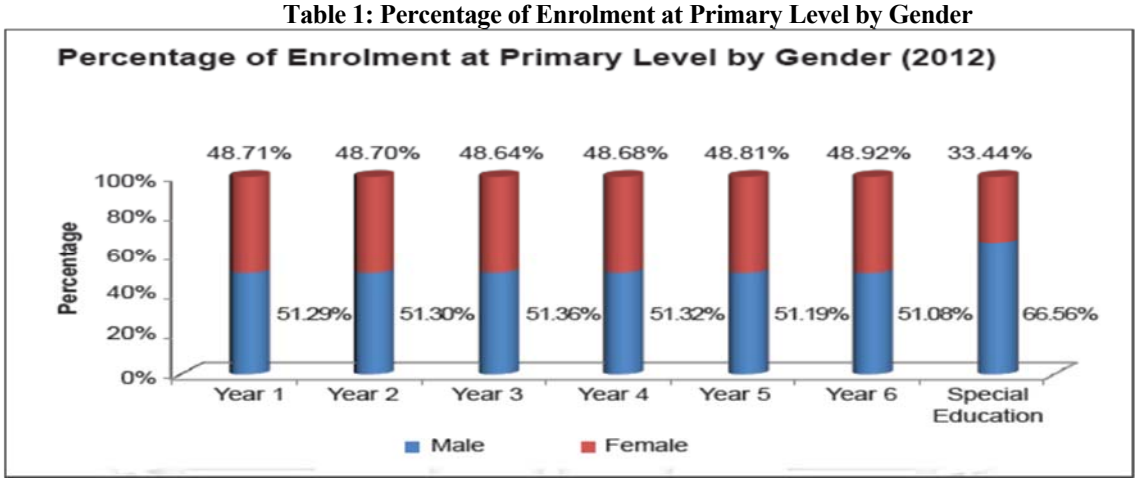
Pickering (1997) and Bleach (1998) claimed that one of the reasons boys in the United Kingdom did less well than girls is that boys considered schooling and the selection of stereotypically female subjects as unfair and biased. As a result, British boys tend to be less motivated to do well in schools. Wong, et al (2002:827) examined gender differences in educational achievements based on a longitudinal sample of more than 45,000 secondary school students in Hong Kong who took a public examination in 1997. The results coincided with the findings from Britain supporting the idea (Pickering, 1997; Bleach, 1998) that boys do less well than girls in all areas of the school curriculum. The multilevel analyses of the effects of schooling, after controlling initial ability, indicated that schooling does have effect on gender differences. Girls achieved better results studying in single-sex schools whereas boys achieve better in co-educational schools.

In Australia, gender differences in many areas of participation in school are receding, but the gap favouring males in mathematics study in senior secondary school persists (Lamb, 1997).

University of Sussex had investigated the key determinants of degree performance. The modest raw gender differential in first class degree rates favoured women but was found to be attributed to their better endowments, particularly pre-entry qualifications (Barrow, 2009).

## 2. BACKGROUND OF THE STUDY

**Table 1: Percentage of Enrolment at Primary Level by Gender**




Source: QUICK FACTS 2012

Table 1 shows the distribution of female students at Primary Schools from year 1 to year 6, which is never more than 50% of boys. It reveals that, since at Primary school level, the claimed made on more girls than boys entered schools is

wrong.

**Table 2: Distribution of Teachers at Pre-school, Primary and Secondary School**

**Number of Schools, Enrolment and Teachers (2012)**

| | Schools | Enrolment | | | Teachers | | |
|---|---|---|---|---|---|---|---|
| | | Male | Female | Total | Male | Female | Total |
| Pre-school | 5,857 | 94,338 | 91,960 | 186,298 | 971 | 7,198 | 8,169 |
| Primary | 7,723 | 1,441,522 | 1,362,883 | 2,804,405 | 72,266 | 164,047 | 236,313 |
| Secondary | 2,296 | 2,326,049 | 2,296,034 | 2,281,775 | 55,155 | 121,252 | 176,407 |
| **TOTAL** | **10,019** | **3,767,571** | **3,658,917** | **5,086,180** | **127,421** | **285,299** | **412,720** |

Source : EPRD - MOE (Data as of 31 January)

In 2012, the number of female teachers at Pre-School, Primary School and Secondary School is high, with 285,299(69.1%), compared to male teachers, 127,421 (30.9%). This data indicates that only one third from the total number of Malaysian teachers is represented by male teachers.

**Table 3: Distribution of Teachers at Secondary School**

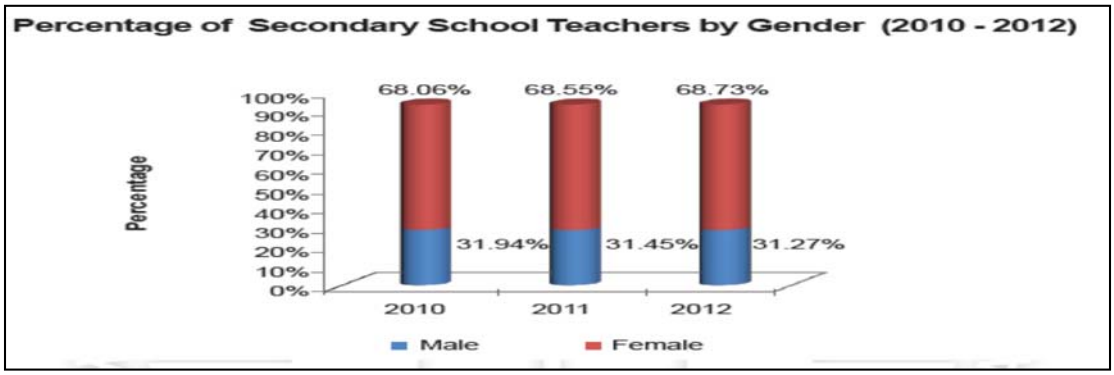



**Table 4: Enrolment of Female Students in Matriculation (Pre-University)**

**Table 3.5 Post Secondary : Matriculation Level (2008 - 2011)**

| | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|
| Number of Matriculation Colleges | 11 | 13 | 13 | 13 |
| Total Enrolment | 23,340 | 18,850 | 22,375 | 21,473 |
| % Female | 66.3 | 68.0 | 69.1 | 68.0 |
| No. of Academic Personnel | 1,464 | 2,045 | 2,228 | 2,264 |
| % Female | 65.8 | 67.1 | 66.9 | 65.7 |

Source : Matriculation Division, MOE (Data as of 15 March 2012)

For years, the number of female students always exceed male students in Matriculation Colleges. Matriculation is a stepping stone for students to qualify themselves for entrance to universities. As the number is already big for female at this level, therefore it is no surprise why more females qualify for university entrances.

**Table 5: Enrolment by Gender in Government and Government Assisted Educational Institutions in 2012**

| Level | Male | Female | Total |
|---|---|---|---|
| Secondary School | 965 054 (49.5%) | 985 692 (50.5%) | 1 950 746 |
| Post-Secondary School | 15 334 (32.0%) | 32 664 (68.0%) | 47 998 |
| Matriculation | 7 425 (37.5%) | 12 407 (62.6%) | 19 832 |
| College/Polytechnics | 44 847 (53.1%) | 39 688 (46.9%) | 84 535 |
| University | 215,900 (39.5%) | 331,087 (60.5%) | 546,987 |
| Total | 2 619 690 | 2 602 128 | 5 221 818 |

Source: QUICK FACTS 2012

Table 5 shows the overall figures of students' enrolment which reveals that female is mainly represented at Secondary School level with 50.5%, Post-Secondary School where they prepare for the examination for entrance to university with 68.0%, Matriculation with 62.6%, and university with 60.5%. While at Polytechnics, where technical and vocational subjects are being offered, male students dominate the population in this type of school with 53.1%.

**Table 6: Distribution of Gender by Subject Choice at Public University**

**14 : TERTIARY EDUCATION - MINISTRY OF HIGHER EDUCATION**

Table 14.2 Entrants and Enrolment of Public University Students by Fields of Study and Gender

| | | Entrants (Sept 2011) | | Enrolment (Oct 2011) | | Graduate (Jan-Oct 2011) | |
|---|---|---|---|---|---|---|---|
| | | Male | Female | Male | Female | Male | Female |
| 1 | SOCIAL SCIENCES, BUSINESS AND LAW | 15,711 | 34,112 | 65,314 | 134,460 | 7,428 | 15,615 |
| 2 | ENGINEERING, MANUFACTURING AND CONSTRUCTION | 18,162 | 13,583 | 70,800 | 51,535 | 9,554 | 7,467 |
| 3 | SCIENCE, MATHEMATICS & COMPUTER | 8,405 | 14,562 | 27,732 | 45,925 | 4,005 | 6,979 |
| 4 | ARTS AND HUMANITIES | 4,412 | 7,723 | 17,659 | 29,711 | 2,329 | 4,696 |
| 5 | HEALTH AND WELFARE | 2,170 | 5,670 | 9,299 | 22,342 | 1,029 | 2,811 |
| 6 | EDUCATION | 1,979 | 5,300 | 12,890 | 30,017 | 2,274 | 5,072 |
| 7 | SERVICES | 1,502 | 2,617 | 6,721 | 10,397 | 897 | 1,083 |
| 8 | AGRICULTURE & VETERINARY | 1,471 | 1,889 | 5,485 | 6,700 | 559 | 756 |
| | TOTAL | 53,812 | 85,456 | 215,900 | 331,087 | 28,075 | 44,479 |

Source : Fakta Ringkas IPTA 2011 - Ministry of Higher Education Malaysia (MOHE)
(Data as of November 2011)

Table 6 shows that female students specialise more in the field of Social Science, Business and Law, Humanities, Health and Welfare and Education. Meanwhile, male students mostly specialise in Engineering, Manufacturing and Construction sectors.

## 3. THE OBJECTIVES OF THE STUDY

This study aims:

i. to identify why academic performance differs between male and female students

ii. to investigate factors contributing to the imbalance of gender in tertiary institutions

iii. to identify differences of subject choices between male and female students

iv. to find solutions and implications for the increase of male students in tertiary institutions

## 4. METHODOLOGY

The data obtained was accessed using Program of *Statistical Package for Social Science Version 16.0 (SPSS for Windows Version 16.0).* A descriptive statistic is used for the data on demography of respondents. Data analysis in descriptive form such as frequency, percentage, mean, std. deviation and statistical inference like chi-square will be used for research analysis.

The instruments used are self-administered questionnaire and semi-structured interviews, where the open- ended questions were also included.

The sample for the quantitative method comprises of (167) of University of Malaya students, were randomly selected. A set of questionnaire asking questions on their perception on the imbalance gender at the university was constructed to obtain data and information.

Other than quantitative method, the qualitative method is applied to 70 Matriculation students at the Center for Foundation Studies in Science of the University of Malaya. The open ended questions and interview are used to examine different factors that contribute to different educational attainment between male and female students from upper secondary schools to pre-university level.

The category of question asked is based on the previous study which indicated the major constraints for gender's unequal achievement in education as follows:

- Secrets of successful behaviors between male and female students
- Different characteristics and positive values between male and female students towards success in education
- Time management, self- management and attitudes towards their studies
- Motivation, vision, inspiration, aspiration in accomplishing them
- Different level of maturity between male and female students

Due to gender differences in their characteristics and behaviors, therefore these factors affect their Sijil Pelajaran Malaysia (SPM or equivalent to O-Level), and their matriculation examination results and their entry qualification and requirements to enter tertiary institutions.

## 4. RESULTS

The demography of sample of population from the questionnaire is shown in Table 7.

**Table 7: Demografy of Respondents**

| Respondence Profile | Category | % | (f) |
|---|---|---|---|
| Gender | Male | 19.4 | 32 |
| | Female | 80.6 | 133 |
| Education Status | Matriculation | 2.4 | 4 |
| | Diploma | 1.2 | 2 |
| | Degree | 19.4 | 156 |
| | Master | 0.6 | 1 |
| | Total | 19.8 | 163 |
| | Missing Value | 2 | 1.2 |
| *N=165* | | | |

Table 7 shows that 80.6% (133) of respondents were males and 19.4% (32) were females. Most of the respondents were the undergraduates with a total of 19.4% (156).

Table 10 shows the evaluation made by the respondents on factors that have impact on the enrolment or entry to the university in Malaysia. The highest mean is shown in Item 2:'Different characteristic between male and female students affect their educational attainment and thus their entry requirement to universities (M=4.12, SD=.96); followed by Item 14:'It does not mean men without high academic achievement, have no job prospects' (M=4.08), SD=1.00); Item 11: Composition of subject choice is different between gender (M3.90, SD=.87); Item 17: Malaysian women are dedicated towards work (M=3.6,SD.90) and so on.

According to Kuebler and Smith (1976), mean score between 3.51- 4.50 shows the factors have high impact or influence on the enrolment of Malaysian students to the universities.

**Table 8: Factors Influence Imbalance Enrolment in University**

| Item | STATEMENT | Scale 1 | 2 | 3 | 4 | 5 | M | SD |
|---|---|---|---|---|---|---|---|---|
| | | Less * | | | | Most* | | |
| 1 | Different characteristics between male & female affect their educational attainment & thus their entry requirement to universities | 9<br>5.5% | 17<br>10.3% | 56<br>33.9% | 57<br>34.5% | 26<br>15.8% | 3.45 | 1.05 |
| 2 | School examination results affect entry requirement to university | 4<br>2.4% | 6<br>3.6% | 25<br>15.2% | 62<br>37.6% | 68<br>41.2% | 4.12 | .96 |
| 3 | Career planning is different between genders | 6<br>3.6% | 16<br>9.7% | 48<br>29.1% | 57<br>34.5% | 38<br>23.0% | 3.64 | 1.05 |
| 4 | Female put priority in academic achievement, Male focus on vocational skills | 9<br>5.5% | 14<br>8.5% | 32<br>19.4% | 58<br>35.2% | 52<br>31.5% | 3.79 | 1.14 |
| 5 | Female are more hardworking, dedicated & ambitious | 3<br>1.8% | 13<br>7.9% | 31<br>18.8% | 62<br>37.6% | 56<br>33.9% | 3.94 | 1.00 |
| 6 | 'Future educational decision' of male & Female influence imbalance enrolment | 6<br>3.6% | 14<br>8.5% | 42<br>25.5% | 72<br>43.6% | 30<br>18.2% | 3.65 | 1.00 |
| 7 | Enrolment of girls in schools level is more than boys | 12<br>7.3% | 14<br>8.5% | 52<br>31.5% | 49<br>29.7% | 36<br>21.8% | 3.51 | 1.15 |
| 8 | Male students aim to be engineers while females aim for careers in education | 3<br>1.8% | 10<br>6.1% | 26<br>15.8% | 76<br>46.1% | 50<br>30.3% | 3.97 | .93 |
| 9 | 'Job consideration' for their future careers influence their academic achievement | 5<br>3.0% | 13<br>7.9% | 48<br>29.1% | 66<br>40.0% | 32<br>19.4% | 3.65 | .98 |
| 10 | Ladies have high 'occupational aspiration' | 10<br>6.1% | 14<br>8.5% | 49<br>29.7% | 65<br>39.4% | 27<br>16.4% | 3.52 | 1.06 |
| 11 | Composition of subject choice is different between genders | 3<br>1.8% | 4<br>2.4% | 41<br>24.8% | 76<br>46.1% | 41<br>24.8% | 3.90 | .87 |
| 12 | Girls frequently outperform boys in public examination | 12<br>7.3% | 19<br>11.5% | 47<br>28.5% | 54<br>32.7% | 33<br>20.0% | 3.47 | 1.15 |
| 13 | Ministry of Education should interfere in for boys to enter residential schools | 12<br>7.3% | 22<br>13.3% | 54<br>32.7% | 48<br>29.1% | 28<br>17.0% | 3.35 | 1.13 |
| 14 | It does not mean that men without high achievement have no job opportunities | 3<br>1.8% | 4<br>2.4% | 30<br>18.2% | 67<br>40.6% | 61<br>37.0% | 4.08 | .90 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 Since women highly educated, they hold higher post at work place | 5<br>3.0% | 13<br>7.9% | 33<br>20.0% | 77<br>46.7% | 36<br>21.8% | 3.77 | .98 |
| 16 If more women are highly educated, it will lead to social instability in a household | 13<br>7.9% | 34<br>20.7% | 39<br>23.6% | 44<br>26.7% | 34<br>20.6% | 3.32 | 1.24 |
| 17 Malaysian women are dedicated and determine towards work | 3<br>1.8% | 6<br>3.6% | 43<br>26.1% | 72<br>43.6% | 41<br>24.8% | 3.86 | .90 |
| 18 There is no gender discrimination in Malaysia | 4<br>2.4 | 3<br>1.8 | 23<br>13.9 | 80<br>48.5 | 55<br>33.3% | 4.08 | .87 |
| 19 The government should take drastic action to overcome this phenomenon | 8<br>4.8% | 9<br>5.5% | 42<br>25.5% | 56<br>33.9% | 50<br>30.3% | 3.79 | 1.08 |

N=167, 1-Not important at all, 2- Not important, 3-Average, 4-Important, 5-Very Important

M-Mean, SD-Standard Deviation

**Table 9: Results of chi-square test of association for comparing opinion on issues related to gender disparity in higher education in Malaysia**

| Statement | Factor | | |
|---|---|---|---|
| | Gender | School Type | Income |
| 1 Do you agree that female students exceed male students at Public & Private Universities? | 0.256 (*0.613*) | 0.903 (*0.342*) | 0.985(*0.321)* |
| 2 Do you agree the imbalance of gender will hinder job opportunities for males | 1.242 (*0.265*) | 2.215 (*0.137*) | **3.960 (*0.047*)** |
| 3 Difference of enrolment happen from Primary School, Secondary School and university | 0.017 (*0.896*) | 0.833 (*0.361*) | 0.508 (*0.476*) |
| 4 Do you think Educational Policy should give special priority for men to enter university | 2.833 (0.092) | 0.740 (*0.390*) | 0.020 (*0.887*) |
| 5 Do you think meritocracy system should be implemented in the university admittance? | 0.011 (0.918) | 0.005 (*0.945*) | 0.032 (*0.857*) |
| 6 There are more female students are in Education, Linguistics & Social Science while there are more men in Engineering, Mathematics and Physics | **4.013 (*0.045*)*** | 1.324 (*0.250*) | 0.533 (*0.465*) |
| 7 Do you agree that male students are slow to mature, tend to not work hard, and not motivated as compared to females | 0.019 (*0.889*) | 2.822 (*0.093*) | 0.013 (*0.909*) |
| 8 This phenomenon does not affect the nation's development and the country's leadership | 2.991 (*0.084*) | 2.584 (*0.108*) | **4.367 (*0.037*)** |
| 9 Male and female have different attitude, vision and inspiration towards education | 0.011 (*0.916*) | **9.571 (*0.002*)** | <0.001 (1.000) |
| 10 Although there are more females at universities, their output at work is less than men | 0.153 (*0.697*) | 0.714 (*0.398*) | 0.089 (*0.765*) |

*Figures in parentheses are the *p*-values

Table 9 shows the cross-tabulation results of factors that influence enrolment to the university and gender male and female. Of the total sample of 167 respondents, the association between factor 'There are more females students in Education, Linguistic and Social Science, while male students are more in Engineering, Mathematics and Physics' is supported by the Chi-square results at p< is 0.045. Since it is significant, we can conclude that there is relationship between gender and subject choices.

The relationship between types of school that the students attended has an association with factor that 'male and female students have different attitude, vision and inspiration towards educational achievement' with Chi-square results at p< is 0.002.

And there is a relationship between 'Income Status of Student' with 'The phenomenon does not affect the nation's development and the country leadership' with Chi-square result at p< is 0.037.

**Table 10: Perception on the factors associated with gender disparity in higher learning**

| Statement | Factor | |
|---|---|---|
| | **Gender** | **School Location** |
| 11 Different characteristics between male and female affect their educational attainment and thus their entry requirement to universities | -0.017 (*0.986*) | -0.136 (*0.892*) |
| 12 School examination results affect entry requirement to university | -0.093 (*0.926*) | -1.492 (*0.136*) |
| 13 Career planning is different between the genders | -0.938 (*0.348*) | -0.150 (*0.881*) |
| 14 Female put priority in academic achievement. While male focus on vocational and technical skills | -0.960 (*0.337*) | -1.727 (*0.084*) |
| 15 Female are more hardworking, dedicated and ambitious | **-2.907 (*0.004**)** | -1.043 (*0.297*) |
| 16 'Future educational decision of male and female influence imbalance enrolment | -0.053 (*0.958*) | **-2.142 (*0.032**)** |
| 17 Enrolment of girls in schools level is more than boys. | **-3.176 (*0.001**)** | -0.732 (*0.464*) |
| 18 Male students aim to be engineers while females aim for careers in education | -1.350 (*0.177*) | -0.158 (*0.875*) |
| 19 'Job consideration' for their future careers influences their academic achievement | **-4.054 (*<0.001**)** | -0.423 (*0.672*) |
| 20 Ladies have high 'occupational aspiration' | -1.404 (*0.160*) | -0.996 (*0.319*) |
| 21 Composition of subject choice is different between genders | -1.170 (*0.242*) | -1.084 (*0.279*) |
| 22 Girls frequently outperform boys in public examinations | **-2.636 (*0.008**)** | -1.368 (*0.171*) |
| 23 Ministry of Education should interfere in order for boys to enter residential schools | **-2.115 (*0.034*)** | -1.202 (*0.230*) |

*Number in parentheses is the p-value*
**Significant at the 5% level of significance*

Table 10 shows there is a significant relationship between variables 'gender' and 'enrolment of girls in schools level is more than boys', with Chi-square result at p< is 0.001; and also between 'gender' and 'female are more hard -working, dedicated and ambitious' with Chi-square results of p< is 0.004.

**Table 11: Perception on the impact of academic excellence**

| Statement | Factor | | | |
|---|---|---|---|---|
| | Gender | School Type | Income | Area of Study |
| 24 Academic achievement determine the imbalance in university enrolment | -0.172 (*0.864*) | -0.192 (*0.848*) | 1.083 (*0.582*) | 1.083 (*0.582*) |
| 25 It does not mean that men who are not highly educated will hinder from job opportunities | **-2.201 (*0.028**)** | -0.965 (*0.335*) | 2.928 (*0.231*) | 2.928 (*0.231*) |
| 26 Since women are highly educated, therefore they hold higher posts at work place | -1.577 (*0.115*) | **-2.201 (*0.028**)** | 2.929 (*0.231*) | 2.929 (*0.231*) |
| 27 If more women are highly educated, it will lead to social instability in the household | -1.031 (*0.303*) | -1.260 (*0.208*) | .344 (*0.842*) | 0.344 (*0.842*) |
| 28 It is true that Malaysian women are dedicated and determined in their academic achievements and employment | **-3.763 (*<0.001***)** | -0.021 (*0.984*) | **6.611 (*0.037**)** | **6.611 (*0.037*)** |
| 29 There is no gender discrimination in Malaysia | ***-2.043 (0.041**)*** | -0.916 (*0.360*) | 5.459 (*0.065*) | 5.459 (*0.065*) |
| 30 The government should take drastic action to overcome this phenomenon | -1.057 (*0.291*) | -0.290 (*0.771*) | 4.453 (*0.108*) | 4.453 (*0.108*) |

*Number in parentheses is the p-value*
**Significant at the 5% level of significance; ** Significant at the 1% level of significance*

Table 11 shows there is a significant relationship between variables 'gender' and 'It is true that Malaysian women are dedicated, determine in academic achievement and employment', with Chi-square result at p< is 0.001; and also between 'gender' and 'There is no gender discrimination in Malaysia' with Chi-square results of p< is 0.041.

From the open ended survey of questionnaire and interviews, various reasons and factors were indicated that contributed and influenced the success in educational attainment. Table 8 and 9 show the different characteristics between genders that lead students' attainment in education. Most of the Matriculation students who identified on gender characteristics that influence academic achievement were from Center for Foundation Studies in Science, of University Malaya. Their answers were sorted to the following factors:

| **Table 12 : The Female Students Characteristics that Contribute for their Success in Educational Attainment** |
|---|
| 1. Females students are hard working in their studies. |
| 2. Female students are very determined in achieving their visions. |
| 3. Female students are more serious in their work and pay more attention in class. |
| 4. Female students have better self- discipline. |
| 5. Female students listen to advises and highly motivated. |
| 6. Female students are more dedicated. |
| 7. Female students have long sighted views. |
| 8. Female students give priorities to their studies |
| 9. Female students getting matured faster than male students |

| **Table 13: The Reasons Why Male Students do not Perform Well in Educational Attainment** |
|---|
| 1. Most male students are not serious in their studies. |
| 2. Most male students are not determined in their work. |
| 3. Most male students are not aware of the life goals. |
| 4. Some male students prefer to work earlier rather than pursuing their tertiary education. |
| 5. Male students prefer technical work and specialize in engineering. |
| 7. Male students spend more time in sports. |
| 8. Male students' maturity growth is slower than females. |

| **Table 14: The Outcomes if More Females than Males are Highly Educated** |
|---|
| 1. More females will become leaders for the country. |
| 2. More highly educated females will not marry. |
| 3. Females are superior to males either at home or at work place. |
| 4. Males in exchange play as female roles at home. |
| 5. More Males need not go to work. Instead wives play vital roles to find money. |

| **Table 15: Implication and Overcoming the Phenomenon for Balance Gender Enrolment at University** |
|---|
| 1. The government should set up a balance quota for male and female students, for entry to university. |
| 2. The Ministry of Education should set up motivational programs to make male students aware of their lagging in educational attainment. |
| 3. The policy of university intakes should give priority and flexibility to male students. |
| 4. The entry requirement into university is not based entirely on academic merit. Consideration should be given more to students' co-curriculum activities and leadership abilities. |

Table 12 and 13 show the different characteristics of gender that contribute for the imbalance of enrolment in Malaysian universities. Table 14 reveals the outcome if more females dominated in tertiary education. Table 14 shows the implications and solutions to create a more balanced gender enrolment at the university.

## 5. FINDINGS

Academic performance differs between male and female students. Different characteristics become the determinant factors that affect the educational attainment. Among the important characters found in this study is that female are more hard working, determine, dedicated, high ambitious in their studies as well as at work. Females formed the majority in subject choice like Education, Linguistic, and Social Science while male incline toward vocational and technical subjects such as Engineering, Mathematics and Physics. However, male are better leaders and good decision makers. As more women are highly educated, they hold higher posts at work place and earning higher pays. This scenario creates an unhealthy social trend where many females tend not to marry or cause social instability in the household. Both male and female students have agreed that, academic achievement as a key factor that determines the unequal of enrolment in university.

## 6. CONCLUSION

Malaysia needs a balanced enrolment of male and female students at tertiary institutional levels. In order to achieve the objectives of Vision 2020 to be a developed country, Malaysia needs quality human resource in Science and Technology. In Malaysia, it is obvious that men play a more vital role in leaderships and decision makings. If men were not as highly educated as females, and lagging behind women in terms of academic achievement, then these phenomena would destruct the social harmony and stability of Malaysian society. Effective measures should be taken in order to overcome the trends where females are more superiors than males in terms of the educational attainment.

## REFERENCES

Barrow, M. (2009). The determinants of undergraduate degree performance: how important is gender? *British Educational Research Journal,* Volume: 35, Issue: 4, 575-597.

Bleach, K.(1998). Why the likely lads behind', in: Bleach, K. (ed.) *Raising Boys' Achievement in Schools.* Stoke-on-Trent: Trentham Books.

Bunyi, W.Grace (2003). Interventions that increase enrollment of women in African Tertiary Institution.

Borg,E. (2013). Does Working Hard in School Explain Performance Differences between Girls and Boys A Questionnaire-based Study Comparing Pakistani Students with Majority Group Students in City of Oslo. *YOUNG* Volume: 21 Issue: 2, 133-154.

Deolalikar, Ab (1993). Gender Differences in the Returns to Schooling and in School Enrolment Rates in Indonesia. *Journal of Human Resources*, Volume:28 Issue:4,899-932.

Dweck, C.S. and Licht, B.G. (1980) 'Sex differences in achievement orientations', in: Marland, M.(ed). *Sex Differentation and Schooling*, London: Heineman, pp.72-84.

Lamb,S. (1997). Gender differences in mathematics participation: An Australian perspective. *Educational Studies,* Volume: 23 Issues: 1, 105-125.

Pickering, J. (1997) *Raising Boy's Achievement*, Stanford: Network Educational Press.

Wong, K.C., Raymond, L.Y., and Lai-Ming (2002).The effects of schooling on gender differences, *British Educational Research Journal*, Vol. 28, No.6.

# PROCESS IN ARCHITECTURAL DESIGN EDUCATION: A CASE STUDY ON HOW TO CONDUCT A FOUNDATIONAL STUDIO?

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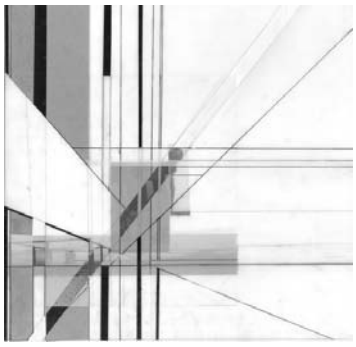
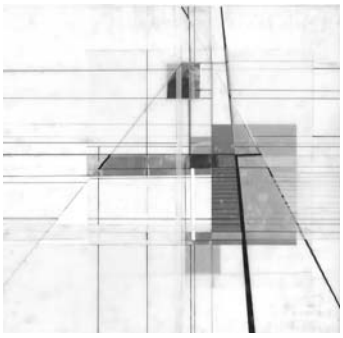
**Abstract:** A perennial question for architectural education, especially the design studio education, has been the degree of narrativity and conceptuality of philosophical, psychological, and social thinking in the design process versus the concreteness of built environment. While architecture is always concrete as to its built form, the questions of its relevance -cultural, experiential, social, temporal, etc.- hinge on the thinking processes that bring about the concrete end result. Arguments for the narrativity and conceptuality of design process are formed around this open-endedness of architectural thinking in the making of culture as a mode of production. However, they also run the risk of falling short of addressing the complexity of architecture as viable built form. On the other hand, the arguments for comprehensive building studies as the core of architectural design studio, while addressing the complex issues of realizing buildings, fall short of advancing critical thinking in the making of architecture as a cultural catalyst. Because, comprehensive building studies usually, necessarily, rely on conventional ways of making buildings without integrating a speculative design process, which, while unfolding experiential, tectonic, spatial possibilities beyond cultural habits, is hard to achieve end results with in the limited time of a design studio. The following study presents a foundational design studio that aims at bringing the explorative design process and concrete tectonic spatial constructs in close proximity in a generative process of *thinking* and *making* architecture beyond habitual ways of making. The curricular approach presented here also aims to establish the notion of process as a research method that links various acts of making in the continuum of iterative experiments.

## INTRODUCTION

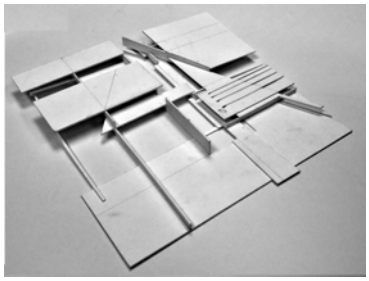
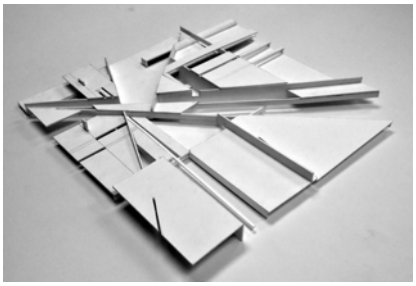
The following studio is conducted at the University of South Florida School of Architecture and Community Design in Fall 2013. In the studio sequence, this studio is the first Core studio of the 4 year Masters program. The students usually come to this studio having one or two introductory studios from different venues including community colleges and other universities. USF also has an undergraduate program with two introductory studios. The curricular objective of the studio is first to establish a rigorous tectonic understanding in the service of space making in different modalities and gradually introduce the idea of occupation and program in relative scale constructs that explore and discuss various architectural typologies (See Angelil 2003 and Frenzen 1999 for further understanding of this pedagogical approach, and Benedikt 1987 for resultant architectural qualities). To this end, the semester starts with diagrammatic analysis as a way for new design iterations that progressively move from two and three dimensional studies into fragmented space studies with some kind of occupational, experiential, and tectonic programming. During the semester, ideas of context and intervention are also introduced in various forms from armature constructs with relative scalar hierarchy to the idea of making in the city. By the end of the semester, the students are expected to have a strong sense of a process of making and detailing of space at various scales through continuous iterations and be ready to tackle with more complex architectural programs in the following studios.


**BEGINNINGS: FROM NARRATIVE STRUCTURES TO CONSTRUCTED EXPANSIONS**

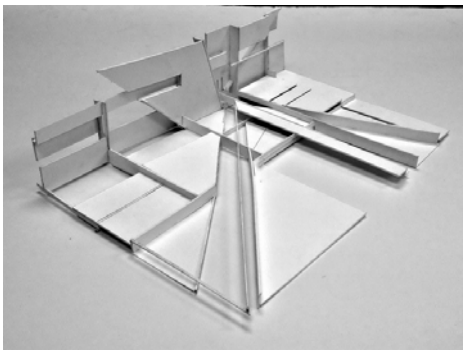
We started the semester by analyzing a film in terms of constructed surface collages. The objective of the first part of the semester is to develop a way of making that would allow tectonic decisions to unfold through various iterations from two dimensional studies to three dimensional volumetry in the continuity of a process that explores experiential possibilities of systemic architectural constructs. In order to distance the students from a thinking based on internally closed geometrical systems, we gave them a film as a generative device that would let them think in terms of visual and narrative structures of the moving image. We asked the students to focus and study certain aspects like the camera movements, the subject movements, the relations between gaze, movement, and space, light conditions, horizontality and verticality, and map these on a collage that tectonically iterates these conditions in the construction of an expanded field.

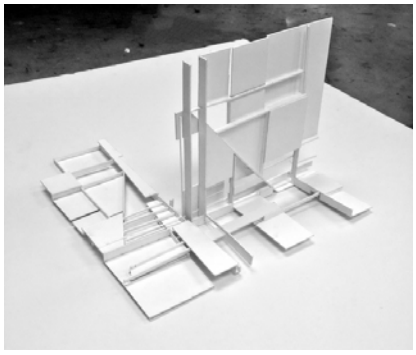



Each student is asked to produce two of these collages which carry the memory of the film, but make space also beyond the filmic conditions as systemically constructed surfaces with various layers of information. Juxtaposition of different layers is used as a device to enable students to think about not only the planar spatiality, but the sectional possibilities for the forthcoming step. In accordance with the objective of moving from two dimensional studies to controlled and programmed volumetry, we then asked the students to construct thick surface structures with particular sectional qualities. Using the collages as a starting point, the constructed surfaces further iterate on the filmic analysis in terms of its experiential and spatial findings. While the collages utilized color, toning, and imagery in terms of materiality, the surface constructions muted this materiality to focus on basic elemental conditions of nodes, vectors, and fields, in a carefully controlled systemic hierarchy to make planar and sectional space.

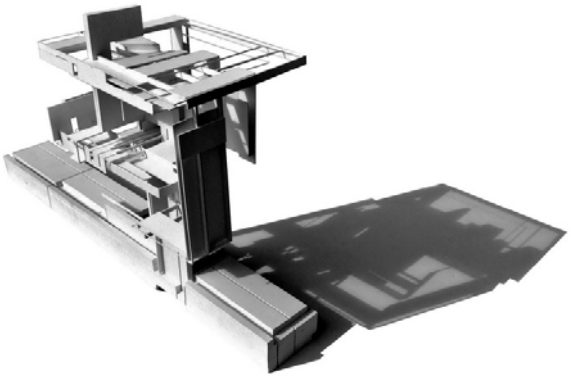



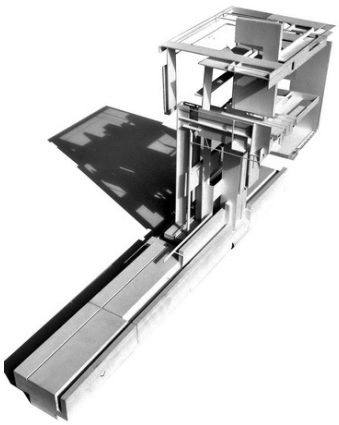
The next iteration is to explore the volumetric possibilities of the constructed surface studies. To this end, we started folding the constructed surfaces on one axis, but with different cuts. As each student have two surface studies, one is cut by 1/3 and folded, the other is cut by 1/3 and 1/2 and folded. The discussion on the folds focused on turning a corner with a continuous tectonic strategy that will achieve a carefully calibrated degree of spatial enclosure. This intermediary step of folding the surfaces lead to the next step of constructing a volumetric device by bringing the two folded surface conditions into a kind of dialogue in a three dimensional configuration.





Because each surface was constructed independently from the other, the initial exercise for the volumetric construct is just to simply hold the two surfaces in various relations and analyze potential moments to weave space between them. Unlike the folding exercise, where the iterated relations emerge form an initial unity, the unity for the volumetry between two different entities has to be constructed by using implications from each surface. Eventually, the surfaces started the volumetric conversation, and finally are transformed in the unity of a volumetric device that carries only their traces as generative ideas. In the process of constructing the volumetric study, another parameter is added to the discussion. With the next phase of the studio in mind, the volumetry question is introduced with a context in the form of a horizontal armature and a vertical scaffold holding the volumetric entity. Held by this horizontal / vertical context, the volumetric study not only discussed internal tectonic and spatial programming, but also the notion of being situated in another scale, with a critical dialogue to it.



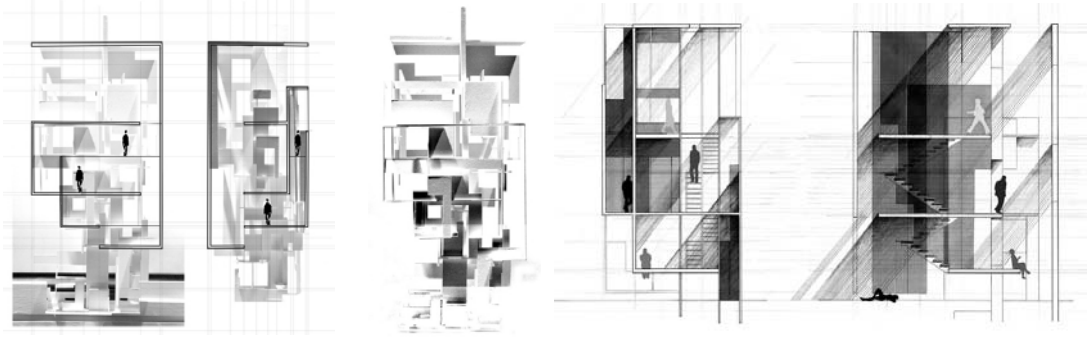


**MOVING FORWARD, PHASE 1: FROM IN-THE-ABSTRACT TO ARCHITECTURAL EXPERIENCE**

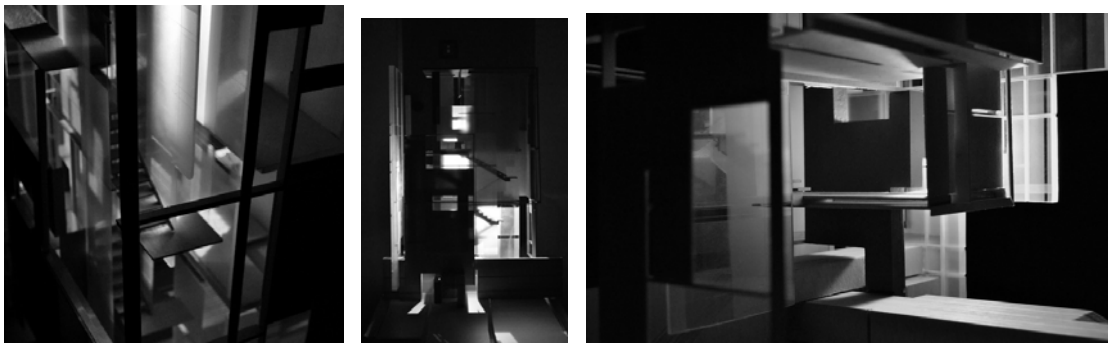
From the very start, the dimensions for each exercise are chosen so that the volumetric study would end up in a construct that is about 18 x 6-8 x 11-13 volumetric device held by about 25-30 inches long and about 18-20 inches tall armature structure. These final dimensions are chosen to fit to the following phase of the semester which is a 1/8ths of an inch equal to 1 foot scale study of architectural space and promenade discussing thresholds, boundaries, degrees of enclosure and transparency, vertical and horizontal movement, light in the form of a model that is large enough to calibrate a rigorous sense of materiality, scale, and detail in the service of lived architectural experience.

In the final presentation of the volumetric construct, which are scaleless relative to human body, we introduce 1/8"=1' scale figures into the models and ask the students 'what if?' While these constructs are scaleless relative to human body, their mode of construction, and the actual dimensions immediately start to resonate possibilities of occupying these as more concrete architectural spaces once they are seen with the scale figures in them.

Following this initial play of scale figures in the constructs, the students are asked to take elevational photographs of their models, print them 1-1 scale, and start using these as a template for sectional studies of a habitable construct that would have 2-5 distinct spaces with scalar and experiential hierarchy and the movement between these spaces in the continuity of an architectural promenade. At this point, they are also reminded of the film that started the process. In order to program this habitable construct, they are asked to go back to the film and bring particular aspects of the filmic narrative into space making and architectural experience.



The final results are achieved in about 4 weeks and presented as a model, a section drawing, and occupational photographs that analyze the model as to its potentials for distinct architectural experiences. This exercise, with its focus on space, movement, and tectonic detail becomes of keystone in the overall school program as it allows the students to study issues of surface construction as part of space making, experience of light and visibility, degrees of enclosure and transparency in a very concentrated occupational scale without the burdens of a social program other than an experiential narrative. What is also exciting is that these models carry the traces of the initial surface constructions which are now much more controlled and systemically constructed in the service an architectural narrative based on 1-1 occupation.



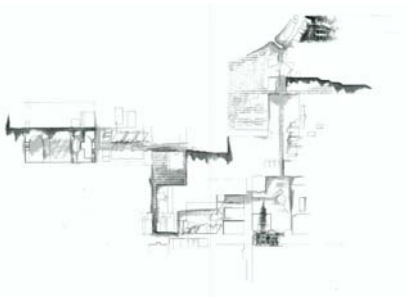
**PHASE TWO, ENDING THE SEMESTER: CONTEXTS AND INTERVENTIONS**

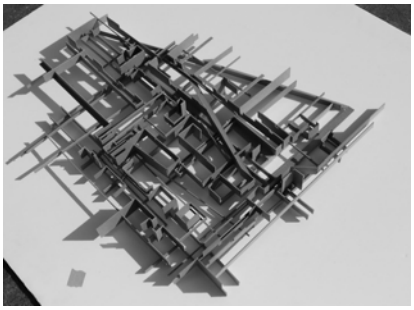
One of the objectives of the studio is introducing the idea of making in the city, and cultivating a sense for urban civic space. While the students are not ready to fully operate in the context of a given city with a certain architectural program, the last phase of the studio focuses on the idea of how to look at urban space and how to think about operating in it in the form of an abstracted spatial and experiential condition (See Casey 1993 for this understanding of urban in its abstracted spatial and experiential form).

A week long studio trip takes the students to Savannah GA, and Charleston SC, where the students are exposed to the two cities with strategic walks, sketching exercises, diagramming and mapping. While history, typologies, ways of living, etc. [more prominent urban questions] are discussed on the trip, the focus is more on how the built fabric constructs a sense of lived urban experience, and regulates a distinct sense of place in the architectural experience. Highly different in character, seeing both cities start a healthy discussion on ways of

making public space in the city. An anecdote from the previous phase, the habitable construct, is in order: At the final presentation of the habitable construct, which is after the trip, only 10 minutes before their presentation, the students are asked to come up with an urban program for their model, locate it in a particular place in Savannah or Charleston, and talk about it in these terms. Being forced to come up with a story different from their initial story, the students have to make an imaginative leap here, in 10 minutes. Whether they come up with something successful or not is not the key issue here, it is that they are introduced the idea of a different program and had to see their models under a new light.

Thus, provided a glimpse of what is next at the presentation, the students are asked to think about a 'memory city' where some places from Savannah and Charleston with distinct urban characters are to be brought together with an idea of moving between them in the sequence of an urban walk. The initial study is to make a drawing that will carry a sense of 'urban' to some generic degree and have more identifiable moments in its construction of this texture. This initial study is about capturing an 'idea force' that Steven Holl emphasizes in the design process (See Holl 1996, 2007) In the form of a collage, the drawing uses existing maps, line and shade work, and even imagery to construct a kind of urban experience mostly explored on plan. It deals with invisible structures of temporality and modulation along with the edge, surface, and volumetric conditions that make place. This initial collage evolves into a model, which is more or less without a determined scale, which can have multiple scales, but specifies an experiential unity in the third dimension. Mixed in materiality, this model unfolds the drawing into more specific spatiality.



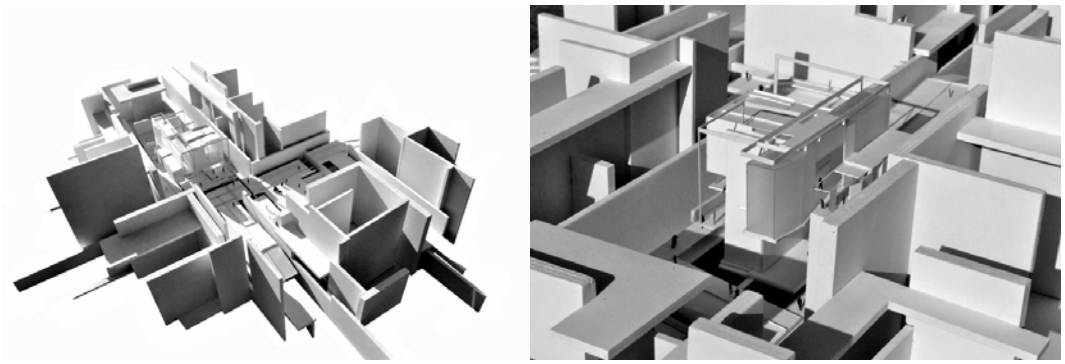


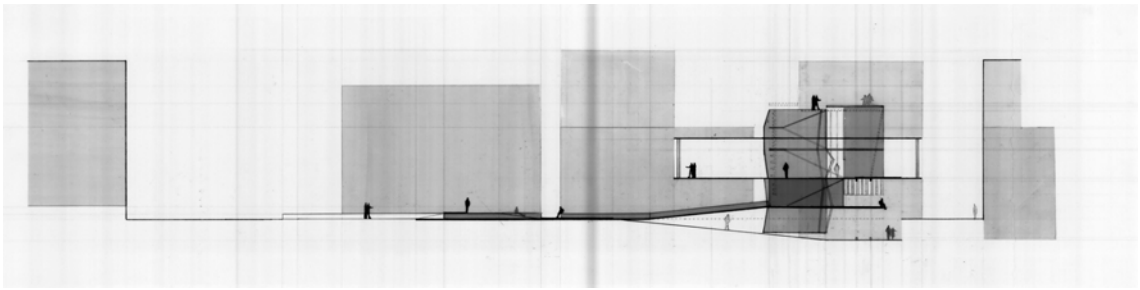
Determined at the very start in accordance with the objectives of the studio, the final project of the term is an urban intervention in a constructed 'city'. The scale decided is 1/16"=1', and the idea is to use the habitable constructs at 1/8"=1' as a generative device for the urban intervention. As the habitable construct is distinctively vertical, it allows a viable introduction into making in the city. Just like the chosen dimensions for the beginning volumetric study are to allow it to unfold into the habitable construct at the given scale, the volumetric and experiential character of the habitable construct is driven with an eye on the coming phase of urban intervention. Most importantly, the vertical movement studied in detail in the habitable construct becomes a key conceptual armature for the urban study, along with the notions of tectonic complexity which is hard to cultivate a sense for at small scale studies. Once the students construct a 1/8 scale architectural fragment, they become more capable of exploring experiential qualities in terms of tectonic making and systemic volumetric unity at smaller scales.

Because the initial 'city' drawing and model are scaleless, and the objective scale is 1/16, in the next iteration after the 'memory' model, the students are asked first to construct a diagrammatic model of habitable structure in 1/16 scale, and then start constructing the 'city' around it, to control the scale of transformation of the 'memory' model. The focus in this step is to carry the qualities explored in the 'memory' constructs into an imagined urban condition with a particular scale and a strategy of intervention. Once a proper scale is achieved, the habitable structure diagrams are evolved into urban interventions with some civic program of students' choice. These programs include work and display spaces, reading rooms, art exhibitions, etc. The common aspect of the programs is that the intervention becomes a frequent node of visit for the city lover. The interventions focus on degrees of publicness, vertical and horizontal programming, ground as city, grounding in the city, degrees of interior vs. exterior, the constant dialogue between the urban volume and the intervention in terms of movement and visibility, scales of approach, entry, being-in, being-out, etc.

The final results are achieved in about five weeks and presented in the form of a model, section and plan drawings, and occupational photographs with varying scales of proximity, along with the process work of constructing a 'memory city'. Without the complexities of working in the city, this exercise sets the tone for

future studios by establishing a sense of urban experience, the urban civic space, grounding in the city, and programming a larger sense of experience extending beyond the confines of the individual building.





**DISCUSSION**

This studio experience shows that it is possible to run a series of exercises that lead to each other in the continuity of a design process where students produce tectonic and spatial constructs in various forms and scales by using a set of tools that they themselves develop along the journey (See Pressman 2012, and Yee 2012 for the importance of flexibility of design tools). The variety of assigned formal properties and varying scales ensure that the students do not repeat, but iterate on earlier findings expanding their vocabulary and understanding of space making. Also important is that the students cultivate a structural sense of tectonic engagement and materiality that is able to generate distinctively rich architectural experience. From generative devices that are scaleless to lived architectural space, these iterations set the tone for an understanding of architectural design process in terms forming meaning without reverting back to habitual ways of making (See Gregotti 1996 and Kipnis 1992 for further discussion on design process). Thus, architectural making becomes a research in the immediacy of here and now, able to think the particular in the making by its own determinations.

While the complexity of realizing buildings in real world is much more that the exercises presented here, once the students are equipped with this understanding of tectonic and formal flexibility, and the ability to think in various forms and modalities, they establish a much richer and explorative repertoire in their future education.

**REFERENCES**

Angelil, M. M., & Uziyel, L. (2003). Inchoate: An Experiment in Architectural Education / Marc Angélil. Zürich : Swiss Federal Institute of Technology (ETHZ), c2003.

Benedikt, M. 1987. *For an Architecture of Reality*. New York: Lumen Books.

Casey, E. S. 1993. *Getting Back into Place: Toward a Renewed Understanding of the Place-World*. Bloomington and Indianapolis: Indiana University Press.

Franzen, U. (1999). Introduction, 1971. In Education of an Architect: A Point of View, The Cooper Union School of Architecture 1964-1971, eds. U. Franzen, A. Perez-Gomez, K. Shkapich, 8-9. New York: The Monacelli Press.

Gregotti, V. 1996. *Inside Architecture*. London and Cambridge: The MIT Press.

Kipnis, J. 1992. Forms of Irrationality. In *Strategies in Architectural Thinking*, eds. J. Whiteman, J. Kipnis, and R. Burdett, 149-165. Cambridge and London: The MIT Press.

Holl, S. 1996. *Intertwining*. New York: Princeton Architectural Press.

Holl, S. 2007. *House: Black Swan Theory*. New York: Princeton Architectural Press.

Pressman, A. (2012). Designing Architecture: The Elements of Process. Hoboken: Taylor & Francis, 2012.

Yee, R. (2012). Architectural Drawing: A Visual Compendium of Types and Methods (4th ed.). Hoboken: John Wiley & Sons, 2013.

# QUALITY INDICATORS IN HIGHER EDUCATION INSTITUTIONS:IMPLICATIONS TO GLOBAL COMPETITIVENESS

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**Abstract**: Higher Education Institutions (HEIs) in the Philippines are at the crossroad with respect to quality indicators set by local accrediting organizations and the international sectors that conduct annual world university ranking. In spite of the Education Criteria for Performance Excellence set by the local accrediting bodies, still HEIs in the Philippines did not make it in the ranking of Times Higher Education (THE). Only the four leading schools in the country which include University of the Philippines (UP), Ateneo de Manila University (ADMU), University of Santo (UST) and De La Salle University (DLSU) made it to Quacquarelli Symonds (QS) Top 500. This paper examined the criteria used by local accrediting bodies and international agencies. Major findings revealed that local accrediting bodies and international sectors use different assessment criteria, resulting to Philippine HEIs lagging behind rankings for universities in Asia and worldwide. Local accrediting agencies such as Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) and Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA) gave more attention to the following quality indicators such as the physical facilities of the institution, its contribution to the local community and the credentials of the professors and administrators. On the other hand, international accrediting agencies such as Times Higher Education (THE) and Quacquarelli Symonds (QS) gave a huge percentage on the institution's popularity based on academic peer review and the international exchange of faculty and students. This juxtaposition indicates the discrepancy in defining the quality in higher education. Country can achieve global competitiveness by improving its quality of education system in higher education which is one of the efficiency enhancers (World Economic Forum). Philippines is currently between the factor-driven and efficiency-driven stage of development. Quality of higher education is crucial for economies that want to move up the value chain beyond simple production processes and products (Kremer, 1993).
**Keywords**: Quality Indicators, Quality Assurance, Accreditation, Global Competitiveness, Higher Education Institutions

## Introduction

Quality of education is defined by UNICEF (2000) as outcomes that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society. Quality in higher education is a multidimensional concept (Brennan, Vries, Williams, 1997) that looks at the quality of a whole institution. Educational quality can be measured by means of indicators (Scheerens et al., 2011) which include educational input, process, outcome and context indicators. Education indicators provide information about the health of the educational system (Kaagan and Smith, 1985).

Higher Education Institutions (HEI) are regarded as one of the crucial factors in developing excellent manpower in a country. HEIs in the Philippines are either public or private colleges and universities which are licensed, controlled and supervised by the Commission of Higher Education (CHED). It is the government agency responsible for the formulation and implementation of plans, policies and program for the development and efficient operation of higher education system in the Philippines.

Most HEIs in the Philippines were subjected to the process of voluntary self-regulation carried out by local accrediting. Educational accreditation is a type of quality assurance process under which services and

operations of an educational institution or program are evaluated by an external body to determine if applicable standards are met. Should standards be met, accredited status is granted by the agency (PAASCU, 2008). In the Philippines, two major accrediting agencies exist – Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) and Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA). These accrediting agencies are under one umbrella – The Federation of Accrediting Agencies of the Philippines (FAAP).

Aside from the local accrediting bodies, some HEIs opted to obtain accreditation and certification for Quality management system (QMS) through ISO. Quality management system (QMS) is a set of policies, processes and procedures required for planning and execution (production/development/service) in the core business area of an organization. It integrates the various internal processes within the organization and provides a process approach for project execution. It enables the organizations to identify measure, control and improve the various core business processes that will ultimately lead to improved business performance (Baldridge, 2008). Unlike ISO, educational accreditation is a "formal recognition of an educational program as possessing high level of quality excellence based on the analysis of the merits of its educational operations in attaining its objectives and its role in the community it serves" (PACU-COA Manual of Regulation, 2006).

International organizations such as Times Higher Education and Quacquarelli Symonds provide ranking to the HEIs from all over the world that met their criteria. Based from the data of world rankings, Philippine HEIs did not make it to the top 100 Universities in the world, not even the top 10 in Asia, still HEIs in the Philippines did not make it in the ranking of Times Higher Education (THE). Very few of these schools made it to Quacquarelli Symonds (QS) Top 500.

## The Problem

With the aim of understanding the gap between the quality indicators used by local and international agencies in evaluating the performance of HEIs, this paper sought to answer the following questions:

- What are the objectives of the local and international agencies and organizations in conducting accreditation and university ranking?
- What are the criteria used by the local and international agencies in evaluating the HEIs?
- What is the methodology used by the local and international agencies in assessing the HEIs?

## Philippine Accrediting Agencies

**Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU).** PAASCU is a private, voluntary, non-profit, non-stock corporation and service organization that accredits academic programs which meet standards of quality education. It is also one of the three founding members of the Federation of Accrediting Agencies of the Philippines (FAAP), which was established in 1977 and is authorized by the Commission on Higher Education (CHED) to certify the levels of accredited programs for the purpose of granting progressive deregulation and other benefits.

PAASCU has been a full member of the International Network for Quality Assurance Agencies in Higher Education (INQAAHE). As of 2005, INQAAHE is composed of 150 accrediting agencies coming from over 60 different countries. These agencies have also created regional networks, one of which is the Asia-Pacific Quality Network (APQN), with PAASCU being one of its active members. PAASCU also has linkages with the Council for Higher Education Accreditation (CHEA), a private, non-profit national organization that coordinates accreditation activity in the United States, as well as with the National Committee on Foreign Medical Education and Accreditation (NCFMEA), which is based in Washington, D.C.

**PAASCU'S Objectives**:

1. To stimulate and integrate the efforts of institutions in elevating the standards of education in the Philippines.
2. To strengthen the capabilities of educational institutions in providing service to the nation.

  

3. To identify educational institutions which meet or exceed the stated educational quality criteria.
4. To encourage and assist institutions which have the potential and interest to improve through continuing evaluation and self-surveys.
5. To provide counsel and assistance to developing institutions and programs.
6. To provide basis for institutional relationships, particularly in the transfer of students
7. To provide guidance to students and parents on their choice of institutions and programs.
8. To attract financial aid from government and other sources intended for schools applying for accreditation and accredited programs.
9. To assist schools in their quest for local and international recognition of their academic programs.
10. To create network with national and international organizations involved in quality assurance.

**PAASCU'S Standards**. The Association does not impose arbitrary standards. The survey forms developed by PAASCU identify principles and practices which are found in excellent institutions. The statements in the survey forms are more qualitative rather than quantitative. The Association does not have specific formulas to apply or particular patterns of organization to follow. The criteria and survey instruments are merely tools to help the school measure educational quality. They are intended to serve as a guide for institutions as they strive for excellence and for accreditors as they assess institutional achievement. The standards reflect a realistic appraisal of the school's resources and their efficient utilization to help the institution achieve its goals.

Much emphasis is placed on the formulation of the school's purposes and objectives. Only when its goals are clear can the school discover the extent to which such purposes and objectives are being achieved. The self-made survey by an institution applying for accreditation is essential in the accreditation process. The said survey is an analysis by the institution's own staff, educational resources and effectiveness in relation to its purposes and objectives. PAASCU judges an institution not by comparison with other institutions but primarily by the degree to which each institution's avowed purposes are matched by actual practice in various areas being evaluated. Thus, a school is judged on the basis of the "total pattern" presented.

During the survey visits, the following areas are evaluated: (1) College/School Community Involvement, (2) Faculty, (3) Curriculum and Instruction, (4) Library, (5) Laboratories, (6) Physical Plant, (7) Student Services and (8) Administration. (PAASCU Primer)

**Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA).** The Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA) is a private accrediting agency which gives formal recognition to an educational institution by attesting that its academic program maintains excellent standards in its educational operations, in the context of its aims and objectives.

**PACUCOA's Objectives:**

1. To identify schools whose competence and performance in a particular field warrant public and professional recognition.
2. To guide students in choosing quality schools, colleges and universities that will meet their individual needs.
3. To help learning institutions achieve maximum educational effectiveness through self-evaluation and self-discipline.
4. To enlist the cooperation of learning institutions and professional associations in the mission of advancing the interest of education.

**PACUCOA Accreditation**. Accreditation is a concept of self-regulation which focuses on self-study and evaluation and on the continuing improvement of educational quality. It is both a process and a result. As a process, it is a form of peer review in which an association of schools and colleges establishes sets of criteria and procedures to encourage high maintenance of standards of education among its affiliate members. As a result, it is a form of certification granted by a recognized and authorized accrediting agency to an educational program or to an educational institution as possessing certain standards of quality which are over and above those prescribed as minimum requirements for government recognition. Accreditation is based upon an analysis of the merits of educational operations in the context of the institution's philosophy and objectives. Areas evaluated by PACUCOA accrediting team are (1) Purposes and Objectives; (2) Faculty); (3) Instruction; (4) Library; (5)

Laboratories; (6) Physical Plant & Facilities; (7) Student Personnel Services; (8) Social Orientation and Community Involvement; and (9) Organization and Administration. (http://www.pacucoa.ph/about_pacucoa.htm)

**International Standards**

**Times Higher Education (THE) World University Ranking.** The Times Higher Education World University Rankings conduct international ranking of the world's top universities published by Times Higher Education (THE). The Times Higher Education (THE), formerly Times Higher Education Supplement (THES), is a weekly British magazine based in London reporting specifically on news and other issues related to higher education. Figure 1 shows the weighting scheme used by Times Higher Education to produce World University Ranking. It can be gleaned that there were 13 indicators used group into five broader categories.

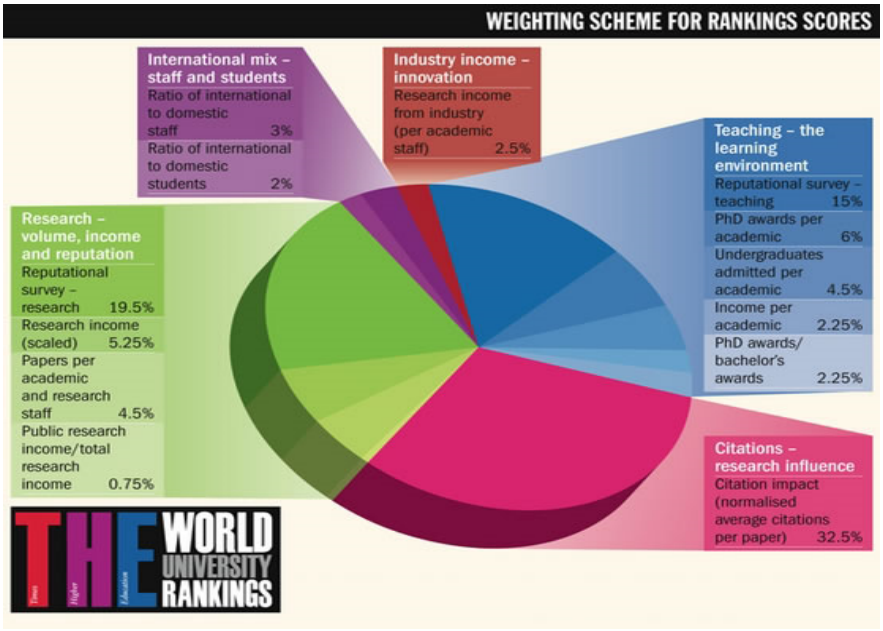


**Figure 1. Times Higher Education (THE) Weighting Scheme for Ranking Scores** (http://www.timeshighereducation.co.uk/world-university-rankings/2010-11/world-ranking/analysis/methodology

**THE Weighting Scheme for Ranking Scores**. High weightings are given where consultation has shown unmistakable enthusiasm for the indicator as a valuable proxy and clear confidence in the data we have. Lower weightings are employed where confidence in the data or the usefulness of the indicator is less pronounced.

**1. Industry income** — innovation (2.5 percent of the overall ranking score). This category is designed to cover an institution's knowledge-transfer activity. It is determined by just a single indicator: a simple figure giving an institution's research income from industry scaled against the number of academic staff.

**2. Teaching** — the learning environment (30 percent). This broad category employs five separate indicators designed to provide a clear sense of the teaching and learning environment of each institution, from both the student and academic perspective. The flagship indicator for this category uses the results of a reputational survey on teaching. This broad category also measures the number of undergraduates admitted by an institution scaled against the number of academic staff. A form of staff-to-student ratio is essential. This measure is employed as a proxy for teaching quality — suggesting that where there is a low ratio of students to staff, the former will get the personal attention they require from the institution's faculty. The teaching category also examines the ratio of PhD to bachelor's degrees awarded by each institution. The final indicator in this category is a simple measure of institutional income scaled against academic staff numbers.

**3. Citations** — research influence (32.5 percent). This is measured by the number of times its published work is cited by academics. It has the largest of the broad rankings categories which reflects the relatively high level of confidence that the global academic community have in the indicator as a proxy for research quality.

**4. Research** — volume, income and reputation (30 percent). The most prominent indicator in research volume, income and reputation is based on the results of reputational survey. The research environment category includes a simple measure of research volume scaled against staff numbers.

**5. International mix** — staff and students (5 per cent). This category looks at diversity on campus — a sign of how global an institution is. The ability of a university to attract the very best staff from across the world is the key to global success. The market for academic and administrative jobs is international in scope, and this indicator suggests global competitiveness. The ratio of international to domestic students is a sign of an institution's global competitiveness and its commitment to globalization.

Universities were excluded from the World University Rankings tables if they do not teach undergraduates; if their research output amounts to less than 50 articles per year; or if they teach only a single narrow subject (http://www.timeshighereducation.co.uk/world-university-rankings/). With these criteria, most HEIs in the Philippines are excluded because their research output is less than 50 articles per year. A study on the status of research outputs in various HEIs in the Philippines showed a low turnout (13,859 research reports submitted to the ZRCs from 1996-2001). Among these studies, those conducted by individuals (72%) far exceeded collaborative and institutional research. About 69% of these individual studies were done by graduate students (master's and doctoral) as part of their degree requirements (Vicencio, Bualat, et.al, as cited in Salazar-Clemeña and Almonte-Acosta, 2007).

**Quacquarelli Symonds World University Ranking.** Quacquarelli Symonds (QS) is a company specializing in education and study abroad. The company was founded in 1990 by Wharton School MBA graduate Nunzio Quacquarelli. QS launched the World University Rankings in 2004, in cooperation with the Times Higher Education Supplement. QS and THE ceased their business relationship after the publication of the 2009 Rankings.

**Quality Indicators**

**1. Academic peer review** (40%). This is the most controversial part of the QS World University Rankings. Using a combination of purchased mailing lists and applications and suggestions, this survey asks active academics across the world about the top universities in fields they know about.

**2. Recruiter review** (10%). This part of the ranking is obtained by a similar method to the Academic Peer Review, except that it samples recruiters who hire graduates on a global scale.

**3. Faculty student ratio** (20%). These indicators attempt to measure teaching commitment.

**4. Citations per faculty** (20%). Citations of published research are among the most widely used inputs to national and global university rankings. The QS World University Rankings used citations data from Thomson (now Thomson Reuters) from 2004 to 2007, and since then uses data from Scopus, part of Elsevier. The total number of citations for a five-year period is divided by the number of academic staff in a university to yield the score for this measure, which accounts for 20 percent of a university's possible score in the Rankings.

**5. International orientation** (10%). This indicator is intended to capture their internationalism: 5 percent from their percentage of international students, and another 5 percent from their percentage of international staff. (http://www.topuniversities.com/university-rankings/world-university-rankings)

**Comparative Analysis**

Standards and criteria are defined and explicated by local accrediting agencies and international bodies in different ways. Figure 2 shows the comparison of the assessment criteria used by local and international agencies.

  

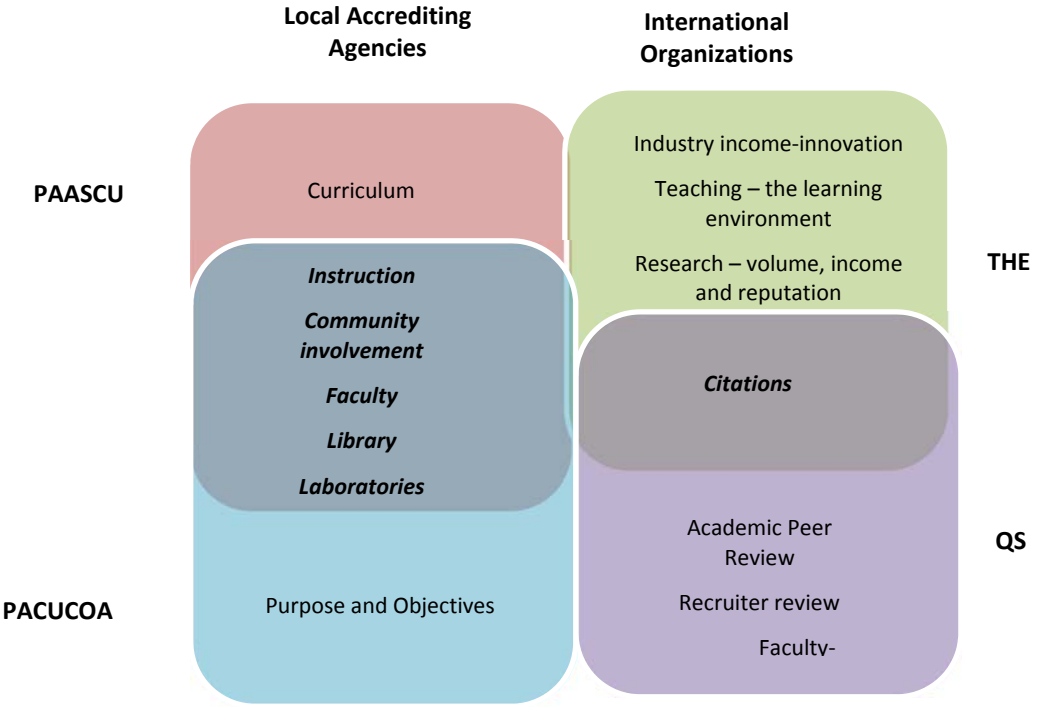


**Figure 2. Venn Diagram showing the Comparison of Local and International Assessment Criteria**

It can be gleaned from the Venn diagram that Philippine accrediting agencies (such as PAASCU and PACUCOA) have their own set of established performance criteria that universities or colleges need to meet in order to qualify and gain recognition. These criteria are far different from the indicators used by international organizations such as THE and QS. Based on the above presentation, local accrediting agencies focused more on the instruction, community involvement, faculty profile, library collections, laboratory facilities and administration. On the other hand, international organizations such as THE and QS give more emphasis on the citations of published research articles and international aspects. Apparently, local and international agencies have different set of criteria used in their assessment.

**Status of HEIs in the Philippines**

The Commission on Higher Education (CHED) defined a higher education institution (HEI) as an institution of higher learning that primarily offers degree program which leads to a specific academic credential such as a bachelor's degree, a master's degree, or doctorate degree (The Revised CHED Data Element Manual, 2005). The HEIs in the Philippines are classified into State University/College (SUCs), Local University and College (LUCs), Other Government School (OGS) and Private HEIs. State University/College (SUCs) - State University/College (SUCs) is a chartered public higher education institution established by law, administered, and financially subsidized by the government. Local University and College (LUCs) is a public higher education institution established by the local government through an appropriate resolution/ordinance and financially supported by the local government concerned. Other Government School (OGS) is any public secondary and post-secondary education institution, which is usually a technical-vocational education institution that offers higher education programs. Private HEIs are classified into private non-sectarian and private sectarian. Private non-sectarian (PN) is any private higher education institution duly incorporated, owned and operated by private entities, which are not affiliated to any religious organization. Private Sectarian (PS) is any private higher education institution, usually non-stock, non-profit, duly incorporated, owned and operated by a religious

  

organization (Glossary of Commonly Used Terms in Education Statistics). Figure 3 shows the distribution of HEIs in the Philippines.

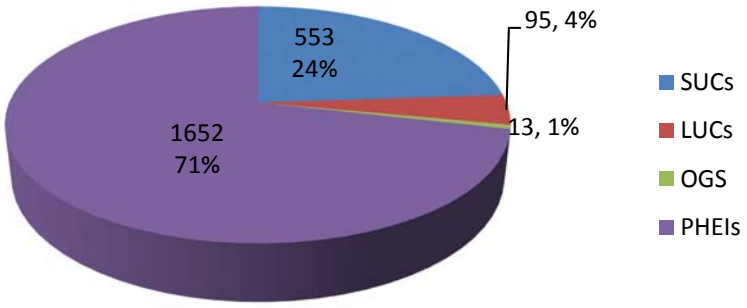


**Figure 3. Distribution of HEIs in the Philippines**
(http://data.gov.ph/infographics/ched-higher-education/d1/2/2012/2013)

The leading universities in the Philippines include University of the Philippines (UP), Ateneo de Manila University (ADMU), University of Santo (UST) and De La Salle University (DLSU) are included in international academic circles based from the ratings done by Quacquarelli Symonds (QS). Except for UP, these top universities are considered private catholic HEIs. Figure 4 shows the ranking of these leading universities in the QS University Ranking in Asia from 2011-2014. Both UP and UST have PACUCOA accredited programs as of April, 2013 (http://www.pacucoa.ph/accredited%20institutions/ncr/ncr.htm) while DLSU and ADMU have PAASCU accredited programs. The Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) awarded De La Salle University-Manila (DLSU-M) Level IV status. DLSU-M is the first university to be given the highest accreditation (http://www.dlsu.edu.ph/offices/iaa/articles/dlsu_paascu.asp).

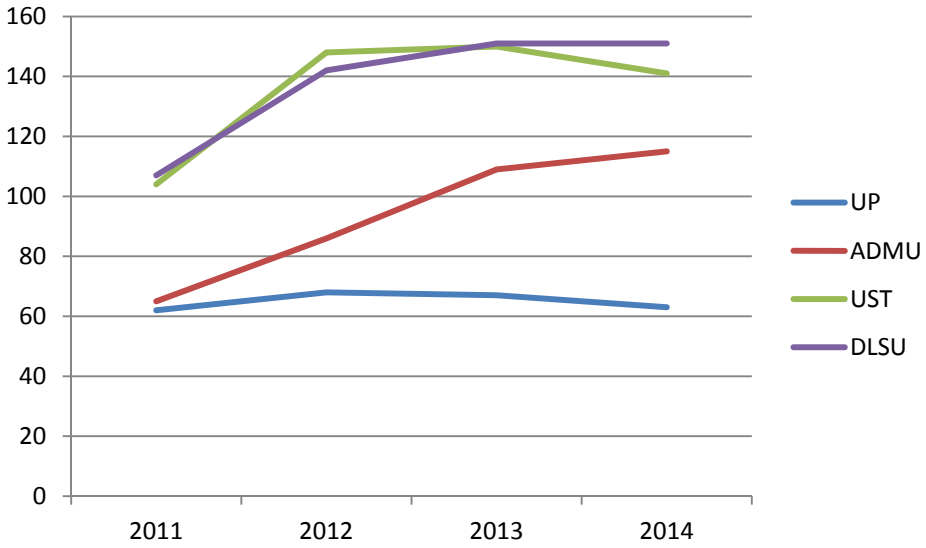


**Figure 4. Philippine HEIs included in the QS University Ranking in Asia from 2011-2014**
(Data from http://www.topuniversities.com/university-rankings/asian-university-rankings)

  

**Global Competitiveness**

In the World Economic Forum, global competitiveness is defined as the set of institutions, policies and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the level of prosperity that can be earned by an economy. Global competitiveness have 12 pillars (Figure 5) which is clustered into three categories such as basic requirements, efficiency enhancers and innovations and sophistication factors. Among the six pillars included in the efficiency enhancers is the higher education and training which is one of the key factors for efficiency-driven economies. Quality of higher education is crucial for economies that want to move up the value chain beyond simple production processes and products (Kremer, 1993).

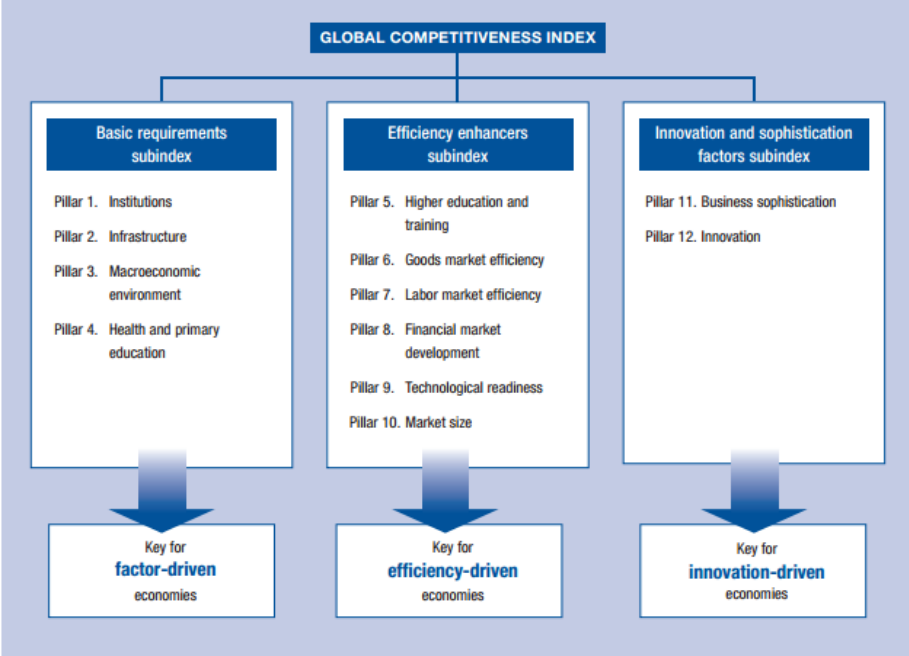


**Figure 5. The 12 Pillars of Competitiveness**
(http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf)

The Philippines is the "most improved country overall" in terms of global competitiveness in the last four years wherein it climbed 33 notches since 2010 (Rivera, 2014). The country's gain of 33 places since 2010 (Figure 6) is the largest over that period among all countries studied. The results suggest that the reforms of the past four years have bolstered the country's economic fundamentals. Nevertheless, Philippines is between the economies which is factor-driven and efficiency-driven stage of development. Quality of higher education is one of the pillars in efficiency enhancers.

  

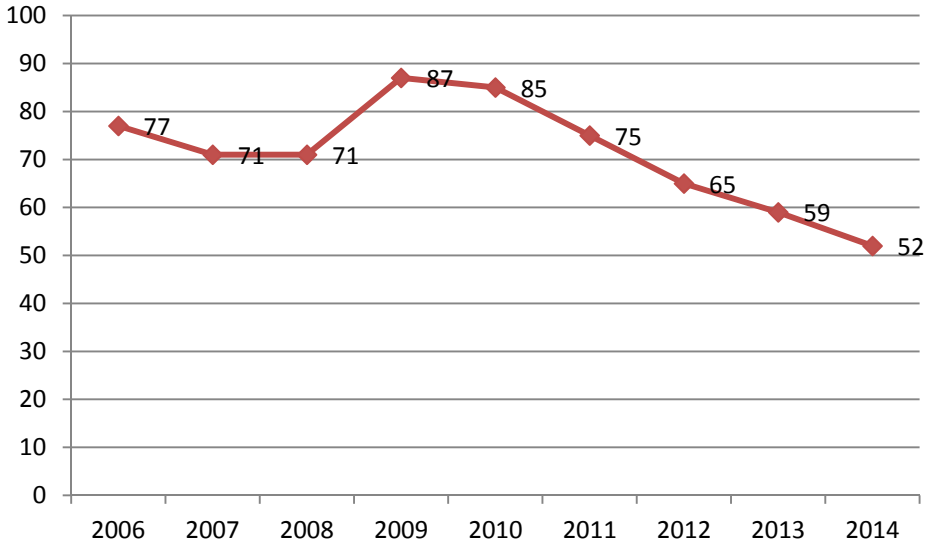


**Figure 6. Philippines Global Competitiveness Index 2006-2014**
(http://reports.weforum.org/global-competitiveness-report)

**Conclusion**

Accrediting agencies are established to ensure quality education and student satisfaction among institutions worldwide. Major findings revealed that local accrediting bodies and international sectors use different assessment criteria, resulting to Philippine HEIs lagging behind world rankings for universities in Asia and worldwide. Local accrediting agencies (such as PAASCU and PACUCOA) gave more attention on the physical facilities of the institution, its community contribution, and, credentials of faculty and administrators. On the other hand, international accrediting agencies (such as THE and QS) gave a huge percentage on an institution's popularity based on academic peer review and its international exchange of faculty and students. With the mentioned juxtaposition, it leads to the conclusion that Philippine HEIs do not meet the emerging challenges for global competencies of graduates-professionals due to differences of performance criteria. More importantly, an urgent recommendation should be addressed immediately by the Commission on Higher Education to close the growing gap in terms of educational standards.

**Recommendations**

The annual Global Competitiveness Report (GCR) published by the World Economic Forum includes higher education institutions (HEIs) as one of the 12 pillars of competitiveness, providing a comprehensive picture of the competitiveness landscape in countries around the world at all stages of development (http://www.weforum.org/issues/global-competitiveness). Thus, it is imperative for every nation to develop an excellent higher education system that will improve knowledge of the labor force to become globally competitive. Grassroots efforts should start from each HEI in the Philippines by repositioning their strategies to the concept of globalization. Furthermore, local accrediting agencies for Philippine HEIs may consider the performance indicators used by the international agencies such as THE and QS. This may help in preparing Filipino graduates to be globally competitive.

**References:**

Brennan, John, Peter De Vries, Ruth Williams (1997). *Standards and Quality in Higher Education*. Pensylvania: Jessica Kingsley Publishers.

Glossary of Commonly Used Terms in Education Statistics (2006) Retrieved from http://www.nscb.gov.ph/statref/pub_info.asp?call_no=GCUTES+2006

Institutions with PACUCOA Accredited Programs Retrieved from http://www.pacucoa.ph/accredited%20institutions/ncr/ncr.htm

ISO 9000, 9001, AND 9004 Quality Management Definitions Retrieved form http://www.praxiom.com/iso-definition.htm#Process-based%20quality%20management%20system%20(QMS)

Kaagan, S. and Smith, M. (1985). Indicators of Educational Quality. *Educational Leaership.*

Kremer, M. (1993). The O-Ring Theory of Economic Development. Quarterly Journal of Economics 108 (3): 551–75.

PAASCU Primer retrieved from http://www.paascu.org.ph/paascuprimer.pdf

PACUCOA Retrieved from http://www.pacucoa.ph/about_pacucoa.htm

QS Asian University Rankings 2011 from http://www.topuniversities.com/university-rankings

QS Asian University Rankings 2011 from http://university-list.net/rank/univ-110023.html

QS World University Ranking Retrieved from http://www.topuniversities.com/university-rankings/world-university-rankings

Rivera, Danessa (2014) PHL is most improved country in global competitiveness – WEF report, GMA News. Retrieved from http://www.gmanetwork.com/news/story/377550/economy/business/phl-is-most-improved-country-in-global-competitiveness-wef-report

Salazar-Clemeña, R.M. and Almonte-Acosta, S.A. (2007). Developing Research Culture in Philippine Higher Education Institutions: Perspectives of University Faculty. Presented at the Regional Seminar "Competition, Cooperation and Change in the Academic Profession: Shaping Higher Education's Contribution to Knowledge and Research" Hangzhou, China Retrieved from http://unesdoc.unesco.org/images/0015/001578/157869e.pdf

Scheerens, J. et al. (2011). Perspectives on Educational Quality. SpringerBriefs in Education. Retrieved from file:///C:/Documents%20and%20Settings/enrol/My%20Documents/Downloads/9789400709256-c2.pdf

THE Criteria Retrieved from www.iium.edu.my/qau/uploads/.../university%20ranking%20criteria.ppt

The Revised CHED Data Element Manual (2005). Retrieved from http://www.chedcaraga.com/index.php/downloads/files?download=131:Revised%20CHED%20Data%20elements%202005

THE World University Ranking Retrieved from http://www.timeshighereducation.co.uk/world-university-rankings/

Times Higher Education (THE) Weighting Scheme for Ranking Scores Retrieved from (http://www.timeshighereducation.co.uk/world-university-rankings/2010-11/world-ranking/analysis/methodology)

UNICEF (2000). Defining Quality in Education Retrieved from http://www.unicef.org/education/files/QualityEducation.PDF

World Economic Forum. Global Competitiveness. Retrieved from http://www.weforum.org/issues/global-competitiveness

# REFLECTIONS OF THE MUSEUM OF THE HISTORY OF SCIENCE AND TECHNOLOGY IN ISLAM ON HIGHER EDUCATION

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**Abstract**: In this study, the role of "Museum of the History of Science and Technology in Islam" and its founder in developing an education setting, will be discussed and assessed. A copy of the museum named "Science and Technology in Islam" which took years to be established by Goethe University in Germany was established in Istanbul in 2008. In addition to eight hundred objects in the museum in Germany and five hundred objects in the similar museum in Istanbul, research methods of inventors are also displayed. Questioning "Museum of the History of Science and Technology in Islam" and exemplary thoughts of scholars who have works in this museum, their research methods, and professional personalities, the findings are evaluated for the development of science and technology in today's world and betterment of education system.

Prof. Dr. Sezgin, who is an internationally-known and efficient science historian and opinions of chosen scientists in the history of science and technology, their research methods, scientific personalities and their qualities of being a role model will be discussed and assessed. The life of chosen scientist, his works, awards, the museum he established and publications about him will be analyzed; his professional goals and argument of scientific civilization will be discussed and interpreted according to Kuhn's concept of "war of paradigms".

**Key Words**: history of science and technology, science and technology in Islam, science and technology museum, teacher and engineer training

## Introduction

Most of the orientalists, studying current and historical culture of the east, ignore developments in eastern cultures and civilizations and continue making negative assessments. Although they accept a thousand-year dark age between ancient age and renaissance, they disregard the effect and contribution of "Islamic Civilization" to Europe in the dark age (Bayraktar, 2012, p:8-12; Sezgin, 2009, p:9-19; Turan, 2010 p:37-38; Yılmaz, 2009, p:45-52;Yıldırım, 2003).

Turkish intellectuals have difficulty in believing the contributions that their society could have made to today's civilizations, because they don't know and don't investigate the historical contributions our society made to the development of western culture (Sezgin, 2009, p:9-19; Turan, 2010, p:37-38; Yılmaz, 2009, p:45-52). Most of the Turkish intellectuals are shy to produce shared projects with their westerner colleagues or lack self-confidence (Sezgin,2009 p:9-19; Hocaoğlu, 1995 p:425-435). Turkish intellectuals are too far from having a purpose and grief in their hearts and life visions to establish a new civilization (Hocaoğlu, 1995 p:434-435). .

Prof. Dr. Sezgin's academic characteristic, his personal development, the background of the first production process of the cars in his museum and scientific principles of his way of thinking will lead to new developments and new dimensions for education system. The way how we can reflect Dr. Sezgin's historical and outstanding skills, experiences and opinions on today's education system should be discussed.

  

## Method of this Study

The methodology of this study consists of analyses of different publications, including five-volume book "Science and Technology in Islam". In the analyses of documents, distinct features in scientific characteristics of scientists, their important qualifications are reviewed as case studies (Cohen, 2000 p:181-190). Dr. F. Sezgin's life, academic development and works have been chosen as a role model in education. Dr. F. Sezgin's life, works, academic development, characteristics which can be role model, are discussed and evaluated through qualitative method (Creswell, 2014. p:23). Research methods of talented historical figures, whose works are exhibited in this museum, their thoughts, suggestions, their contributions to their own civilizations are investigated, and their reflections on today's education are discussed and assessed (Cohen, 2000 p:181-190 ).

Parallel similarities between Dr. Sezgin's life, academic pesonality, methodology and historical figures he studied are remarkable. Like his predecessors Biruni and his PhD advisor Prof. Ritter, Dr. Sezgin's principle of learning the language of the field he was studying, similar to archaeological excavations, refers to qualitative research methodology (Creswell, 2014. p:23; Cohen, 2000 p:137-156; Sezgin, 2010, p:9-19; Turan, 2010 p:46, 52; Yılmaz, 2009, p:14-15).

## Dr. Sezgin's Biography

F. Sezgin was born in Bitlis, Turkey and came to Istanbul for higher education in science-engineering. One of his friends took him to a seminar given by orientalist Professor Hellmut Ritter. What German professor said in the seminar overwhelmed Fuat Sezgin. Although Turkish intellectuals despised their own history of science, German Ritter claimed the contrary. After this seminar, Fuat Sezgin decided to pursue his field and academic studies with Ritter. However, it wasn't easy to catch up with Ritter's work pace, and his pace of language learning (Yılmaz, 2009. p:14). His advisor Ritter told his student Sezgin that he wouldn't be a scientist with 13-hour work pace and he had to increase this (Yılmaz, 2009. p:13). Fuat Sezgin, who gave a great importance to planning time like his advisor Ritter, stated that he had been late only for three appointments throughout his life and he had never been able to forget the grief (Turan, S. 2009 s:14).

He internalized the virtues and high merits of summit personalities he encountered in "History of Science"; he preferred to understand the article, which he was studying, learning the writer's original language (Sezgin, 2010. p:17-27; Yılmaz, 2009. p:13-14). When needed, there was no country that Dr. Sezgin didn't travel, and there was no language that he didn't learn.

In his PhD, he gave the first signals of his thesis "The Bridge of Islamic Civilization". In opposition to the claims of western orientalists, in his associate professorship thesis "The Sources of Buhari", he proves that the hadiths and their bases are nourished from written sources. He was an associated professor who was suspended from the university in 1960 military coup and was among the professors known as 147s. He was smeared and became unemployed during those times http://www.dunyabulteni.net/haber/134407/147likler-neden-universiteden-atildi-

## Dr. Sezgin's Scientific Personality

Dr. F. Sezgin who became unemployed in Turkey chose Germany to continue his research career abroad. With the studies he conducted in Germany, firstly, he renewed his associate professorship, and then became the professor of the history of science. He founded a research institute, a department, a foundation and a museum and so gained an international reputation.

In UNESCO meetings, it was believed that, available "Arabic Handwritings Archive" (Geschichte der Arabischen Schrifttum/GAS), could be renewed only by a commission of experts. Dr. Sezgin published the first volume of his studies that he conducted on this issue and the commission dispersed (Yılmaz, 2009 p:29). Dr. Sezgin's Arabic-German AHA publications, of which 21st volume will be published in 2014, remind of the function of Kasgarli Mahmut's "Divan-i Lugat-i Turk" which was the first Arabic-Turkish book and they are also appreciated by Arabic professors (Turan, 2011, p.8-9; Turan,2010,p.18). (http://ekitap.kulturturizm.gov.tr/Eklenti/10825,123pdf.pdf?0).

After working six months, Dr. Sezgin discovered that his employment in Germany was temporary. With his reply to the administrator of the department, he proved his belief: "Please don't be upset! I have planned all my

career steps respectively and I have achieved all of them. Planning and achieving must have spoiled me; this is why this has happened to me. I don't know what to do tomorrow" (Turan, 2011).

## Dr.Sezgin'sMethodology ,Civilization Argument

Parallel similarities between Dr. Sezgin's life, academic personality, research methodology and historical figures he has studied are remarkable. Before commencing a study, Dr. Sezgin, like Biruni, learns the language of the target subject; and supports the principle that original thoughts should stay connected with their essence (Bayraktar, 2012, p:24-37; Sezgin, 2010. p:17-27). This principle indicates that he has adopted ethnographic research methodology in archeological excavations (Cohen, 2000 p: 137-156; Bayraktar, 2012, p:24-37)..

He commemorates prior western scientists who studied the positive contributions of Islam civilization to western culture and referred to these contributions in their publications. Dr. Sezgin states that most of the western scholars disregard Islam civilization as result of the sense of superiority; that scholars in Islam don't know Islam civilization at all and have a sense of inferiority. (http://www.ibttm.org/TR/media/konusma.pdf)..

As being a science historian, instead of "inferiority /superiority argument", he defends "The Bridge of Civilization Argument" in his studies of "Science and Technology in Islam". Sezgin's "The Argument of the Bridge of Islam Civilization" was supported, before him, in the studies of European historians of the science, Herder, Goethe, Humboldt and others with documents (cited from Sezgin, 2010 p 24). The claim which Dr. Sezgin cites from science historian Franz Rosenthal is also remarkable: "If Islam civilization had defined the science only in terms of practical benefit and scientific curiosity, it couldn't have developed so fast and efficiently. The understanding of the science in the beginning of Islam covers the whole life; it is the impulse of the life and in the center." (Cohen, 2000 p:137-156; Sezgin, 2018 Volume-I p: 5).

Dr. Sezgin's "The Bridge of Islam Civilization Argument", at the present time, is also supported by Kuhn's work "The Structure of Scientific Revolutions" and his concept of "war of paradigms" (http://www.theodor-rieh.de/heinrich/Kuhn.pdf).

Before Dr. Sezgin, another successful advocate of the same research method was a German named Eilhard Wiedeman. Five of the tools belonging to Islam civilization which Wiedeman, who had more than two hundred publications, produced are in the inventory of Deutsches Museum, today. (http://www.ibttm.org/TR/media/konusma.pdf ).

## The Museum of History of Science and Technology in Islam

"Museum of History of Science and Technology in Islam" was opened in Gulhane district by Istanbul Municipality on 26th of May, 2008. It covers an area of 3500 square meters. Approximately five hundred tools from different disciplines, such as astronomy, geography and cartography, medicine and pharmacy, mathematics, physics and technology, chemistry, botanic, mineralogy and hours, are exhibited in showcases in Turkey (eight hundreds in Germany). There are also publications related to research methods of important scholars in history, their advisory thoughts and museum (Cohen, 2000 p:137-156) (http://www.igaiw.de) (http://www.ibttm.gov.tr).

In international famous museums, the models of tools which are considered to be important for the developments in the history of science, are also displayed similarly (e.g. Deutsches Museum, British Museum). In this field, half open-air museum in the famous research institute in CERN in Switzerland was designed for a different function. While huge vehicles retired from the accelerator in the CERN, their functions and services in open-air and their contributions to technological developments (MR and PET in medicine, http://www protocol in communication etc.) are introduced and displayed in open-air, students are allowed to wander through the copy of research tunnel and to conduct experiments inside the facility (Corlu, 2009; tour and observation records, course materials). Schools are encouraged for education trips as groups and they are supplied with the support of education guidance. University students and instructors are encouraged to participate in summer education programs in CERN with expert guides in their own languages (including Turkish) (http://home.web.cern.ch/students-educators/summer-student-programme).

## Findings, Results and Suggestions

Explaining the structure of scientific revolutions, Kuhn also criticizes the understanding of research and science in the form of "solving puzzle" (Kuhn, 2014). With their puzzle-solving understanding functioning as "a screw in the machine of western civilization", researchers from the countries, which are outside Europe and aren't regarded within the scope of civilization, couldn't produce a genuine and valid civilization argument and an understanding of shared science-technology, and it seems that they won't be able to.

The ones, who shaped the history of science and the development of technology in eastern cultures, dedicated their lives to the development of science and technology with compassion and high motivation. İbni Batuta, departing from Morocco and traveling to 44 countries (at the present time) in three continents, recorded his tours which lasted 29 years in his book (Al Hassani, 2010 p 256-261; Everett and Reid, 2001 s 4-5; Sezgin, 2012 VI p:61 and VIII p:8). Biruni, Evliya Celebi, Katip Celebi, Khwarizmi conveyed their studies, lifelong observations, findings, problem solutions to today, recording them in their books (Sezgin, 2012; Bayraktar, 2012 p.28-79). Abdus Salam (Salam, 1988) and Franz Rosenthal explain the source of impulse that motivated distinguished, high quality scholars who are famous in the history of science to dedicate all their lives to science working night and day, with the real science paradigm in the beginning of Islam (Sezgin, 2003 volume-I p:5). An advanced civilization argument, a universal science understanding and an education system, which could gain such a high motivation and impulse for scientific research, had borders with Europe and kept in touch with Europe, remaining at the top for eight hundred years (Kuhn, 2014; Sezgin, 2008; Sezgin, 2010; Sezgin, 2012; Salam, 1984; Salam, 1988)..

The genuine copy of the book "Museum of the History of Science and Technology in Islam", which Dr. Sezgin summarizes, consists of five volumes (http://www.igaiw.de). With expertise museums reflecting the developments in the history of science and technology and "education support programs" which they organize, they contribute to the formation of science-technology culture in the society. In the museum established in Istanbul, scientific understandings of these outstanding and talented people who had important contributions in the history, their research methods, techniques of experiment, assessment and observation, their advices on the development of science and science history preserve their actuality for today's education (Cohen, 2000 p:137-156; Sezgin, 2010 p:17-27). .

Scholars, teachers, trainers, engineers, scientists and politicians of the countries, which are not regarded as a part of the culture of western civilization, investigating and learning their own history of science, can look for understanding of shared science and civilization arguments where they lost them.

**Note :** Subjects in Museum of the History of Science and Technology in Islam were presented as assignments of "History of Science" course by students at Mathematics Department of Istanbul Commerce University.

## References

Al-Hassani, T. S. S. (2010). 1001 İcat, Dünyamızda İslam Mirası Ed.

(Al-Hassani, T. S. S. (2010). 1001 Inventories, Islam Heritage in our World Ed.)

S. T. S. Al-Hassani, Çeviri Salih Tahir; Foundation For Science Technology And Civilisation

(S. T. S. Al-Hassani, translated by Salih Tahir; Foundation For Science Technology And Civilisation)

Bayraktar, M. (2012). İslam Bilim Adamları, Inkılap Yayınları

(Bayraktar, M. (2012). Islam Scientists, Inkılap Publications)

CERN, (2014). http://home.web.cern.ch/students-educators/summer-student-programme

Cohen, L and others (2000). Research Methods in Education

Çorlu, M. A. (2009). Cern Müzesinde Gezi, Gözlem Kayıtları, Ders Materyalleri

(Çorlu, M. A. (2009). Trip in CERN Museum, Records of Observation, Course Materials)

Creswell, W. J. (2014). Research Design *Qualitative, Quantitative, and mixed methods approaches 2.Ed.*

Everett, F. and Reid, S. (2001). KAŞİFLER Çeviri Miyase Göktepeli 11. Baskı Tübitak Popüler Bilim Kitapları

(Everett, F. and Reid, S. (2001). INVENTORS Translated by Miyase Göktepeli 11. Print Tübitak Popular Science Books)

Hocaoğlu, D. (1995). Laisizm'den Milli Sekülerizme

(Hocaoğlu, D. (1995). From Laisizm to National Secularism)

Kuhn, T. S. (2014) http://www.theodor-rieh.de/heinrich/Kuhn.pdf

Salam. A. (1984, 27 April). Islam and Science Islam and West Meeting by Unesco House in Paris

Salam, A. (1988, 10-12 Dec). Notes on Science Technology and Science Education in the Development of the South, prepared for 4. Meeting of South Comission

Sezgin, F. (2008). İslam'da Bilim ve Teknik, 5 Cilt, 2.Ed. Çev. A. Aliy

(Sezgin, F. (2008). Science and Technique in Islam, 5 Volume, 2.Ed. Translated by. A. Aliy )

Sezgin, F. (2010) İstanbul İslam Bilim ve Teknoloji Tarihi Müzesi

Sezgin, F. (2010) Museum of the History of Science and Technology in Islam

http://www.ibttm.org/

http://www.ibttm.org/TR/media/konusma.pdf

Sezgin, F. (2012) İslam Bilimler Tarihi Üzerine Sohbetler Timaş yayınları

(Sezgin, F. (2012) Conversations on the History of Sciences in Islam Timaş pub.)

Turan, S. (2010) Bilimler Tarihçisi Fuat Sezgin Ed. S. Turan Timaş Yayınları 2010

(Turan, S. (2010) Historian of Science Fuat Sezgin Ed. S. Turan Timaş Pub. 2010)

Turan, S. (2011) Bilim Tarihi Sohbetleri (Conversations about the History of Science) 3.Ed. S. Turan Timaş Yayınları 2011

Yılmaz, İ. (2009) Yitik Hazinenin Kaşifi Fuat Sezgin (The Discoverer of the Lost Treasure, Fuat Sezgin) hazine@hazine yayinlari.com

Yıldırım, C. (2003). Bilim Tarihi (The History of Science) 8. Ed. Remzi Kitabevi

# SAVING OUR PLANET THROUGH SUSTAINABILITY-LITERATE ACADEMIC RESEARCH IN BUSINESS

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**Abstract: Primary purpose**: To delineate academic research in business as a means to provide answers/solutions to the global challenges of attaining sustainable development for planetary well-being.
**Design/methodology/approach**: Critical discursive research based on a wide range of published works to identify the gap between contemporary business research that is dissociated from the biosphere, and the imperative of promoting sustainability-centred business research in higher educational institutions (HEIs).
**Findings:** The ensuing discourse supports the claim that business research in HEIs across the world ought to, and can be undertaken by sustainability-literate and sustainability focused academia through trans-disciplinary, enactive research.
**Research limitations and implications**: The focus of the paper and the literature survey is narrowly scoped to include only business research conducted by academics.
**Practical implications**: The study helps build a strong case for mainstreaming sustainability-literate business research in academic institutions for addressing the global challenge to preserve natural and social systems through creative business practice.
**Originality/value:** This paper represents a unique attempt to redirect business practice in a meaningful manner towards sustainability through the pathway of academic learning of business researchers.
**Paper type**: Conceptual and critical

## INTRODUCTION

***"The world we have created today as a result of our thinking thus far has problems which cannot be solved by thinking the way we thought when we created them."…Albert Einstein***

Business management is, inherently, an integrative academic discipline that ought to be based upon a world-view of business entities and communities nested within a wide-ranging socio-ecological context. Historically, the reductionist world-view of business as a self-contained, self-regulating and separable stand-alone entity has prevailed, indicative of a serious "nature-deficit disorder" (Louv, 2005) in the mind-set of researchers, educators, consultants, leaders, and practitioners in the business community. Progressively, with the dawning realization about planetary stewardship and preservation, alternative conceptions of the relationship among business, society and nature (B-S-N) are emerging. Currently, three discrete perspectives are discernible in management literature (Marcus et al., 2010: 402), namely, (i) the traditional atomistic *disparate* perspective, (ii) the systemic *intertwined* perspective, and (iii) the holarchical *embedded* perspective (Table 1). The adoption of a specific perspective can lead to very different strategic aspirations and choices regarding value creation in business for coping with contemporary global environmental, social and economic challenges.

**Table 1: Three alternative perspectives of the business, society and nature (B-S-N) interface**

| Perspective / B-S-N Relationships | Disparate (Atomistic) | Intertwined (Systemic) | Embedded (Holarchical) |
|---|---|---|---|
| 1. **Business (B)** | Separable; self-contained and self-regulating | Partially separable; has relatively equal status to society and nature | Inseparable; a sub-system that contribute to social welfare within the biosphere |
| 2. **Society (S)** | Is an aggregation of individual interests; exogenous to business | Interfaces with business through networks of stakeholder | Includes all human systems and activities across various levels of analysis |
| 3. **Nature (N)** | Unrelated and exogenous to business | Interfaces with business to enhance business value and natural capital | Finite; manifests as all-embracing life-support system |
| 4. **Relevant value domains** | Economic value only | Multi-form, but unordered—usually ranked in order of priority as economic, social and environmental | Multi-form and ordered—nature, society and business exist in a holistic hierarchy, i.e., a "*holarchy*" |
| 5. **Relationship of B to S and N** | Independence | Interdependence | Dependence |

*Source*: Marcus et al. (2010) (adapted)

The atomistic *disparate* perspective governing mainstream business management thought and practice, provokes a conception of the central role of a business system as the maximization of financial wealth while satisfying human needs (Friedman, 1971; Jensen, 2002). Accordingly, the adverse impacts of business on nature and society are externalized in market transactions (Crouch, 2006). Acceptance of the less popular systemic *intertwined* perspective yields mixed results—on the one hand, we witness support for unprecedented economic growth in many parts of the world (e.g., the BRICS economies) and ruinous mega-corporate scandals, devastating ecosystem impacts, social inequity and conflict; on the other, we also observe a parallel trend in the business community's wider acceptance of sustainable development as a global ethic, fostering more environmentally benign business practices. It is worth noting that the intertwined perspective is ill-equipped to resolve the critical dilemmas subsumed in the multiple dimensions of the global sustainability challenge. What is imperative today is a "more robust understanding of the B-S-N interface" in terms of the embedded perspective (Marcus et al., 2010: 419), which advocates a redefining-reorganizing *"holarchical"* (holistically hierarchical) perspective of the B-S-N interface (Marcus et al., 2010: 402). B-S-N are seen as nested systems (Porritt, 2006; Victor, 2008), so that business, like all other systems (e.g., religious, moral and legal) of human creation, is seen as a component embedded within the larger societal system, and society is considered completely nested within the natural environment. The eco-centric *embedded* view is alien to, and generally lacks support from business researchers, although it appears to be the most appropriate in addressing today's planetary-scale, global socio-ecological challenges. The *embedded* perspective of business affords a logical ordering of the three meta-systems (i.e., macro-systems made up of smaller sub-systems), and underscores the critical dependency of society and economy on nature.

## SCOPE, BACKGROUND, OBJECTIVES, AND DESIGN OF THE STUDY

The ideas proposed in this paper stand on the central premise that institutionalization of the embedded view of the B-S-N interface is indispensable, and that this is achievable only if higher educational institutions (HEIs) committed to business research shape up increasingly as "learning organizations" (Senge, 1990, 1996) to embrace a spiritual perspective of organizational life and purpose, and to enjoin the sacredness of organizational work performed by creative individuals who pursue self-mastery through their self-directed visions within this intrinsic spiritual foundation (Stead et al., 2004).

Business research is a term connoting a systematized, data (primary or secondary) intensive process of scientific inquiry (critical, interpretive or objective) dwelling upon specific business-related questions, issues, and/or problems. The purpose of such research is to propose/ find answers/ solutions that can guide informed business (strategic or operational) problem-solving. Business research can help create a rich action-oriented interface among researchers, educators, entrepreneurs, business leaders, managers and consultants for supporting

innovation, collaborative value networks, identification of new bases of competitive advantage, improvement in decision-making tools, increase in investment quality and cost effectiveness, risk reduction, and reputation management.

It is possible to identify two types of business research, namely, (i) fundamental and (ii) applied research. Fundamental/basic/pure business research is driven by the researcher's curiosity or interest to comprehend and answer scientific research questions with the intention to contribute to knowledge expansion in some aspect of business, rather than to create or invent a product/service/ process/system having direct commercial business value. Its societal value emanating through publications, pure knowledge-creation and reputation-building is more qualitative in nature. No matter what the academic worth of the research outcomes, the market value of fundamental business research is perceived to be either non-existent or not directly traceable to improving the human condition through need fulfilment. Fundamental business research is usually the forte of academic researchers in HEIs, and could be mono-disciplinary, multi-disciplinary or inter-disciplinary. It can be undertaken by individual researchers working in "ivory tower" university settings or through researchers working in cross-disciplinary teams on collaborative research projects. On the contrary, applied business research addresses practical problems arising in the business world, often within given work settings, and seeks solutions with some notion to improve the human condition (improved lifestyles, comfortable living, health, product quality, product development, service delivery, process safety, etc.). To acquire knowledge as an end in itself is not the primary motivation. Applied business research takes the form of industry-academia collaborative research in addition to corporate research and development (R&D), corporate training and development (T&D), and consultancy-based research. The value of corporate-funded collaborative, project team-based business research in academic institutions could be transaction based, relation-based, cost-based, market-based, or income-based. Thus, both fundamental and applied business research typify academic research in business (i.e., business research undertaken by the academia within HEIs).

By way of this paper, the author's major contention is articulated from an explicit ethically positive stand-point, as a basis for developing a social critique of the current state of business research pursued in institutions of learning dedicated to higher education. The primary endeavour constitutes a reflection on the constraints and distortions created by the business academe in the way of promoting sustainability-literacy among researchers, and a challenge of the status quo in terms of extant social, psychological and economic conditions deterring the achievement of enlightenment, excellence, equity, and environmental improvement by the business community to expedite humankind's journey towards a sustainable future. The explicit ethical basis, characteristic of critical research (Myers, 2009), which buttresses the thesis of the paper, opens up opportunities to suggest substantial improvements for mainstreaming sustainability-literate business research in academia.

To this end, the key objective of this paper is to underscore the role of planetary stewardship of higher education institutions (HEIs) facilitating business research, and to explore why and how scholarly academic research in business could be relevant to preserving and protecting Planet Earth. Accordingly, there are two important ontological assumptions that require clarification. Firstly, we perceive sustainability as neither the antithesis of crude competition under free market capitalism, nor as a euphemism for charity and socialism. Instead, sustainability is a basic ingredient of sustainable value creation (Friedman, 2009: 54) crucial for corporate survival in the future. Sustainability is construed both as an *end* (i.e., an outcome of individual, organizational, corporate and governance activities) and as a *means to the end* (practices founded upon the principles of sustainable natural systems). Secondly, we posit that an alignment of evocative business research outcomes of academic researchers culminating from pure theorization, with the global imperative of holistic (i.e., environmental, social and economic) sustainability of business practices is the fountain-head for strategic thinking about planetary well-being because for (i) the discovery of *creative business opportunities*, (ii) their embodiment in *dynamic organisational capabilities*, and (iii) the generation of *radical and disruptive sustainable innovations* for customer satisfaction, societal progress, environmental preservation, and long-term business profitability (Chatterjee, 2009: 2).

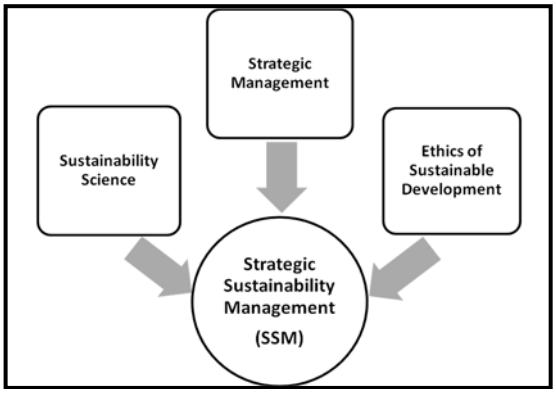
## NEW PATHWAYS OF SUSTAINABILITY FOR ACADEMIC RESEARCH IN BUSINESS

It is worth noting that *sustainability* serves as a core value for making actionable the embedded view of the B-S-N interface, because it enables us to "transcend the divergent dilemma facing humankind today" (Stead et al., 2004: 133) of balancing economic activity with the thresholds of social system and ecosystem viability. Sustainability needs to be implemented through human decision and action by means of eight instrumental

values (Stead et al., 2004: 133-9) , namely, (i) *wholeness* (denoting interconnectedness, relatedness, mutual causality and balance), (ii) *posterity* (signifying future generations of human beings and other species as key stakeholders in present-day human decision-making), (iii) *community* (fostering the notion of individuals and organizations for collective good in place of radical individualism), (iv) *appropriate scale* (focusing human organizational efforts on resource and materials reduction, energy efficiency, recyclability and reusability that is attuned to our planet's source and sink 'carrying capacity'), (v) *diversity* (highlighting the need for supporting life through social and cultural survival in global relationships, for maintaining ecosystems), (vi) *quality* (valuing collaborative networks over hegemony, future over the present, and better over more in order to integrate wholeness, posterity, scale, and community), (vii) *stakeholder engagement via dialogue* (creating interactive patterns to reveal, question and assess implicit assumptions, perceptions and values regarding various stakeholders) and (viii) spiritual well-being (contributing to quality of life in the larger community through peacefulness, love, joy, happiness, enlightenment, satisfaction, accomplishment, and creative expression). The adoption of such sustainability-centred value systems helps organizations reveal their assumption-based cognitive frameworks that "stand for sustainability" (Stead et al., 2004: 140), frame strategic decisions, and measure effectiveness in ecological, social and economic terms.

The holistic, spiritual dimension of a learning HEI, dedicated to academic research in business, can be instrumental in unleashing the potential of business research in several interdisciplinary areas, positioned at the confluence of strategic management, sustainability science and sustainability ethics that could vary somewhat in nomenclature, but would be quite similar in scope (Chatterjee, 2009: 8). For instance, the business academia could contemplate new research avenues in the fields of "strategic sustainability management", "strategic sustainable development", "strategic management for sustainability", "sustainable strategic management", "corporate sustainability management", "sustainable value creation with bio-mimicry", "sustainopreneurship", and "corporate sustainability reporting", to name a few. These fertile research areas would be germane sub-disciplines of both sustainability science and strategic management, committed to caring for the Earth as the ultimate corporate stakeholder. Hence, their acceptance and adoption could effectively reorient classical strategic management from profit-maximizing business behaviour in free-market economies towards the critical requirement of obeying planetary "carrying capacity" constraints, and reducing humanity's ecological footprint through meaningful planetary stewardship under natural capitalism (Lovins et. al., 1999).

**Figure 1: Emerging Sustainability-centred Business Research Possibilities**




Whatever, the nomenclature, the common ground for such upcoming research is the necessary focus on five major directions of concern (Parnell, 2008): (i) integration of near-term, long-term, and very long-term perspectives (e.g. climate change, climate justice and climate ethics) on the business strategy-performance relationship; (ii) examination of linkages among contemporary perspectives of business ethics, corporate responsibility, corporate governance, and moral leadership; (iii) development of robust models that can facilitate effective planetary resource management from ecological and societal perspectives while upholding the concept of capitalism; (iv) adaptation and integration of current strategic management models to a sustainability management perspective; and (v) redefinition of organizational crises and risks to improve built-in resistance to the effects of crisis from natural disasters, disruptive technological innovations, and global terrorism.

## THE CASE FOR "SUSTAINABLE" ACADEMIC RESEARCH IN BUSINESS

Like most academic disciplines with a pragmatic basis, contemporary academic business research is "unsustainable", given the cognitive and psychological barriers that prevent researchers from adopting an eco-centric "systems view" of life. 'The 21st century finds academia moving steadily from a position characterized by continual crisis towards one of epochal catastrophe. In a world in which global industrial systems have clearly emerged as major powers, thereby generating unprecedented historical outcomes of planetary genocide, ecocide, zoöcide—and likewise, epistemicide (see McLaren, 2012)—the idea of "sustainability" must thus strive to take rigorously oppositional and tactically concrete forms both on and off campus, if it is to transcend greenwashing by the public relations industry as purchased by the "power complex" (Best et al., 2011) of said systems. Sustainability cannot simply be handed over to STEM (science, technology, engineering and mathematics) programs to coordinate as a field of endeavour without being falsified'(Fassbinder et al., 2012: xvi). To serve the needs of an overly financialized industrial society, higher education systems around the world are servile to reductionism as the dominant scientific paradigm; consequently, researchers are reduced to inert cogs of a dysfunctional techno-economic machine, thoroughly oblivious of the broader socio-ecological implications of their well-funded research outcomes, on the fragile web of life (Capra, 2003: 180). Reductionism is anthropocentric; so, it assumes that humankind has an inherent right to disrespect life, to over-exploit other life forms, and to display arrogance in capricious deployment of planetary resources. As a knower, the researcher is a "cognitively privileged being" (Barfield, 1987) who can take possession of the world that is known. Barfield (1987: 71-72) maintains: 'The real world, the whole world, does not consist only of the things of which we are conscious; it consists also of the consciousness and sub-consciousness that are correlative to them. They are the immaterial component of the world. But today the only immaterial element our mental habit acknowledges is our own little spark of self-consciousness. That is why we feel detached, isolated, cut off not only from the world as it really is, but also from those other little sparks of detached self-consciousness we acknowledge in our fellow human beings'. Agreed, that researchers have a strong sense of belongingness to their respective intellectual communities, but, this should not incite them to abandon critical thinking, and cower from knowing the truth. Ivan Illich (1991) laments: 'The university… has become a service for sale, ever more ready to hire itself out to governments or multinationals. It makes itself important through communal navel-gazing. Pedagogues and astronomers, gene researchers and sociologists, all work to process data and present them for verification to a management committee of peers, that is, likeminded data producers. What goes on in the lab has lost all but a tenuous tie to sense and meaning, let alone truth. Why is it…that so few of those who share our conviction are willing to come out and confess this?

Academic business researchers must realise sooner rather than later that they are wrong in their belief that what is not known does not harm; in fact, what is not known and eludes our visibility harms us, others, and the planet at large. Therefore, research skills must include the "ecological intelligence" (Goleman, 2009: 30), which is typified by conscious experiential learning of the principles of ecology (networks, cycles, solar energy, partnership, diversity, and dynamic balance), cultivation of non-human sensibilities such as rights of unborn generations (Singer, 1975), animal rights, and plant rights for engaging both human and non-human stakeholders, systemic understanding of the interactions between human and ecological systems, and rendering such cognition into a set of principles of business organization for the attainment of planetary well-being, i.e., sustenance of all living systems, both human and non-human communities, through a process of dynamic co-evolution (Capra, 2003: 201).

"Well-being" as a goal suggests a complex construct focused on positive functioning (Ryan and Deci, 2001: 14; Seligman, 2011), and demonstrates three essential attributes (Dewe and Cooper, 2012: 67): (i) a qualitative notion capturing the twin eudaimonic ideas of happiness and harmony, (ii) a subjective notion, allowing individuals to judge the parameters and priorities in the interplay of happiness and harmony (i.e., whether at the material, psychological, psycho-social, social or ecological level), and (iii) a positive notion (not merely the absence of the negative) of the psychological human condition (Diener, 1984; Seligman and Csikzentmihalyi, 2000: 5-14; Diener et al., 2003; Alexandrova, 2005; Kesebir and Diener, 2008) conveyed through positive life-experiences (Simonton and Baumeister, 2005), positive human traits and capacities (Luthans, 2002), positive health (Seligman, 2008), positive responses such as "eustress" (Nelson and Simmons, 2003), positive deviance (Parkin, 2010), positive organizational behaviour (Nelson and Cooper, 2007: 3-4; Luthans and Avolio, 2009), positive organizational scholarship (Cameron et al., 2003; Roberts, 2006), authentic transformational leadership (Price, 2003), positive appraisals (Aldwin, 2009), positive psychological capital as competitive advantage

(Luthans and Youssef, 2004) and positive corporate citizenship (Waddock, 2005). Positivity is essentially linked with a notion of balance, a state of harmony in the parts of a whole, about a sustainability of equilibrium, and is associated with issues concerning a "good and healthy work agenda" (Coats and Lekhi, 2008). The ideas of balance, health, and good work encompass emotional, social, ecological, spiritual and ethical dimensions, rather than merely the body-mind split (Quick and Macik-Frey, 2007).

In this paper, we draw upon four major sources of inspiration to lead us to establish a case for "sustainability-literate" academic business research. Firstly, Capra (2003: 200-1) avers that ecological sustainability is a core value essential for reshaping globalization; therefore, educational institutions and centres of learning in the new global civil society have to choose 'sustainability as their explicit focus'. He asserts that the creation of 'sustainable communities is the great challenge of our time'. However, in order to make ecological sustainability operational, it is not necessary to invent sustainable human communities from scratch but to realize that they can be modelled after nature's ecosystems where sustainable communities are inhabited by plants, animals and micro-organisms. Hence, the first step towards building sustainable (learning) communities is to become sustainability-literate and develop a comprehensive system of education for sustainable living, based on sustainability literacy at all levels—from primary and secondary schools to colleges, universities, and the continuing education and training of professionals. This entails pedagogy that places biophilia, i.e., an understanding and respect for life, at the core, and emphasizes experiential learning in the real world (e.g., restoring wetlands, organic farming, exploring a watershed) to closely understand living systems and overcomes our nature-deficit disorder.

Secondly, *Goal 8* enshrined in the United Nations Millennium Development Goals, 2005, calls for developing a global partnership, including government, business and the social sector, for catalysing progress towards sustainable development (United Nations, 2011). Given the complex structure of global dilemmas humankind faces, both in terms of gravity and scale, finding business solutions that "stand for sustainability" to address poverty, environmental protection and sustainable consumption hinges largely upon the creation of networks of partnerships among business enterprises themselves, governments as regulators, and HEIs as representative of civil society interests to develop new skills and competences by which sustainable development can be the key to business thinking for coping with the urgency of social and environmental challenges (WBCSD, 2005: 5-6 www.wbcsd.org/web/sustainableworldandyou).

Thirdly, the UN Global Compact Principles for Responsible Management Education (PRME) documented in 2007, aimed at promoting responsible management education, research and thought leadership globally, provides a set of six guiding principles as 'an engagement structure for academic institutions to advance social responsibility through incorporating universal values into curricula and research' (www.unprme.org, 2007). Since research is a core mission of universities and many business schools, Principle #4 states: 'We will engage in conceptual and empirical research that advances our understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value' (www.unprme.org, 2007). The collective and global nature of research implies that it is instrumental in shaping the thought process of professors, advancing the public body of knowledge through pedagogy, and influence the academic content of curricula within HEIs. Furthermore, Ghoshal (2005) and researchers at the Aspen Institute (2002) have affirmed that research deeply impacts the managerial values. The current business curriculum is not value neutral. Today's dominant theories and frameworks (e.g., shareholder value maximization and agency theory) have contributed to creating, reinforcing and perpetuating harmful values among business faculty, deans, and graduate students. A transformation towards socially and environmentally responsible management education depends heavily upon robust, respected and influential research paradigms that address the global sustainability challenge as an aspect of management that has been neglected and not been adequately addressed. Responsible academic business research can also ensure that the inaccuracy of one-size-fits-all theories and tools is reduced by studies conducted in diverse cultural, institutional and political settings.

Fourthly, Goleman et al., (2013) identify eco-literacy or sustainability literacy as a new integration of emotional, social and ecological intelligence directed towards the understanding of natural systems that students, researchers and educators should learn to take a long-term view when making decisions about how to live. Development of eco- literacy through educational systems helps cultivate the knowledge, empathy and action necessary for practising sustainable living and creating positive relationships with the natural world.

## "SUSTAINABILITY LITERATE" ACADEMIC BUSINESS RESEARCH PARADIGM

It may be generalized that all manifestation of unsustainable human activity eventuates from the mechanistic reductionist world-view of the universe endorsing man's domination of nature and an over-emphasis on rational, analytic thinking. 'The understanding of ecosystems is hindered by the very nature of the rational mind' Capra (1982: 24-34). Rational thinking is linear, whereas ecological thinking is systemic and cyclical. The mechanistic-reductionist paradigm is unable to capture the subtlety of nature's interconnectedness, and hence, is cognitively inadequate to address problems posed by nature. The holistic, ecological paradigm, by contrast, involves an integration of intuition and rationality as complementary modes of an elevated human consciousness that can transform reason into ordered intuition (Sri Aurobindo, 1920: 3). In this context, the academic business researcher must be imbued with an expansive "4-E vision", combining scenarios of the ethicist, the ecologist, the economist, and the entrepreneur, because the identifiable characteristics of a "sustainability-literate" research paradigm differ immensely from the voguish reductionist research paradigm. This is evident from Table 2 below.

**Table 2: Characteristics of unsustainable versus sustainable business research paradigms**

| Descriptors/ Characteristics | "Unsustainable" Mechanistic Reductionist Paradigm | "Sustainable" Holistic Ecological Paradigm |
|---|---|---|
| Basic quality | Mechanistic and reductionist | Organic and holistic |
| Focus | Anthropocentric and technocentric | Ecocentric and biophilic |
| Characteristics of knowledge | Divisible, value-free, empirical, controlling | Indivisible, value-driven, empirical, empathic |
| Process of knowledge creation | Understanding through rational analysis | Rational and intuitive synthesis |
| Concern with measurement | Emphasis on the quantitative | Emphasis on the qualitative |
| Recognition of constraints | Few or no technical and ecological limits | Ecological limits determine technical limits |
| Perception of reality | Emphasis on material reality | Concern with physical and metaphysical reality |
| Recognition of values | Only instrumental values are recognized | Intrinsic values are integrated with the instrumental through systemic values |
| Conception of Nature | Nature is made up of discrete parts; the whole is not more than the sum of the parts | Nature consists of interrelated wholes, which are greater than the sum of their parts |
| Time and causation | Linear concepts of time and causation | Cyclical concepts of time and causation |
| Fact and value linkage | Fact and value are unrelated | Fact and value are closely related |
| Integration of ethics | Ethics and ordinary life are separated | Ethics is integrated into ordinary life |
| Subject and object linkage | Subject and object are separate | Subject and object are interactive |
| Conception of well-being | The power of a unit—money, resources, influence | The quality of interrelationships between systems equated with well-being |
| Locus of organizational control | Centralization of power | Decentralization of power; participation |
| Work organization | Individualized and Specialized | Multi-dimensional and collaborative |
| Relationship of participants | Competitive | Cooperative |
| Human system design | Homogeneity and disintegration | Diversity and integration |
| Goal of economic system | Undifferentiated, short-term quantitative growth in a financialized economy | Qualitative long-term sustainable development in an economic biosphere |
| Corporate goal | Profit maximization | Value creation |
| Human values | Individualism; self-interest; independence | Communitarianism; community interest; interdependence |
| Corporate values | Profit, growth, control | Trust, learning, value creation through service |
| Corporate outlook | Self-preservation | Cooperative alliances |
| Organizational structure and human relationships | Authoritarian hierarchies | Interactive networks |
| Attitudes towards nature | Nature is inanimate, external, exploitable, and commoditized | Nature is a living system, and symbiotic with human communities |
| Relation of Nature and humans | People and nature are separate; humans dominate nature | The relationship of humans and nature is systemic and synergic; humans preserve nature |
| Work environment | Fear, stress, anxiety, resistance to change | Trust, openness, inclusiveness |
| Attitude to problem-solving | Focus on cure as solution | Focus on prevention as solution |
| Notion of accountability | To shareholders | To stakeholders |
| Key managerial role | Decision-maker | Facilitator, servant, advocate |
| Notion of cost | Measurable internal costs | Total life-cycle costs (internal and external) |
| Environmental preservation | A problem | A Challenge |
| Environmental opportunity | None found | Potential recognised |
| Competitive challenge | Competing for market share | Competing for opportunity share |
| Nature of competition | Competing as a single entity within existing industry structure | Competing as a coalition to shape future industry structure |
| Role of corporate strategy | Strategy as positioning | Strategy as foresight |
| Mobilizing for the future | Strategy as fit | Strategy as stretch |
| Strategic leadership | Transactional | Transformational and transcendent |

By embracing the sustainability-literate research paradigm, a business researcher in academe can inject many latent competences into the research process when delineating the various elements, namely, research opportunities, the research problem, the research philosophy (articulation of ontology, epistemology and axiology), the research strategy, and the research design, and the research methodology of a study. These new researcher competences are as under:

- Recognizing the centrality of ethical behaviour to the effectiveness of a post-corporate market economy;
- Respecting life and using life as the measure for evaluating economic choices and performance;
- Encouraging stakeholder identification, engagement and management by rendering inclusive research outcomes that encompass need fulfilment of economic stakeholders, direct and indirect social stakeholders, silent stakeholders, and Earth as the ultimate business stakeholder;
- Promoting humanistic (i.e., whole-being), dignified, and intrinsically satisfying production processes;
- Assuming pro-active responsibility for business impacts on the natural world and human society;
- Advocating identification and management of the full costs of decisions to guide decision-makers in making socially and environmentally responsible choices;
- Recognition and maintenance of five capitals—critical and renewable natural capital, social capital, human capital, manufactured capital, and lastly financial capital;
- Engendering the development of low-carbon, multi-functional and durable product-service systems characterized with low material-intensity, low energy-intensity, and bio-degradability;
- Facilitating the notion of shared ownership collaborative consumption, having durability and long-term utility, the use or disposition of which will not jeopardize the health of future generations;
- Transforming consumerist customers to ecologically conscious customers by educating them about their unarticulated intrinsic needs that business must serve;
- Redirecting the focus of members of the business community towards sustainable value creation across the ecological value chain; and
- Explore the dynamics of human-scale firms and nature-inspired innovations so that participants can maintain living relationships founded upon trust and caring.

"Sustainability-literate" academic business research, which partakes the nature of "use-inspired basic research" (Stokes, 1997), would, thus, evolve into a novel "enactive" approach, characterized as a theoretical and methodological foundation of focusing on a core set of ideas, including autonomy, sense-making, emergence, embodiment, and experience (Varela et al., 1991, Torrance, 2005, 2007; Di Paolo et al., 2011). The enactive approach can combine and confront some of the most difficult questions in philosophy and science, such as: What is meaning and what is its source? What defines cognition? What is the relationship between life and mind? What defines agency? What is special about social forms of interaction? What is the role of culture for human consciousness? This research framework is inherently trans-disciplinary. The trans-disciplinary epistemological perspective seeks to provide 'a platform of knowledge' (Komiyama and Takeuchi, 2006: 4) that can integrate disparate fields of inquiry (geology, climatology, life sciences, ecology, geography, engineering, technology, political science, psychology, sociology, ethics, economics, management, and finance). Trans-disciplinary research examines issues between, across and beyond all disciplines to develop an understanding of the complexities of contemporary global problems, instead of only focusing on a part of it (Nicolescu, 2001). Hence, enactive research is fertile ground for generating a discourse that can integrate diverse and wide-ranging phenomena from the single cell organism to human society (Thompson, 2007), which are otherwise separated by mono-disciplinary discontinuities. This trans-disciplinary integration has to forge a delicate balance between eliminative reductionism and abstruse dualism, so that observations draw from distinct levels of phenomena retain a relative independence with respect to each other, while revealing interdependencies.

Sustainability-literate business research can open up numerous corporate social opportunities (Grayson and Hodges, 2004) in the uncharted "blue oceans" (Kim and Mauborgne, 2005) of sustainability innovations in business. Particularly, the following benefits are discernible:

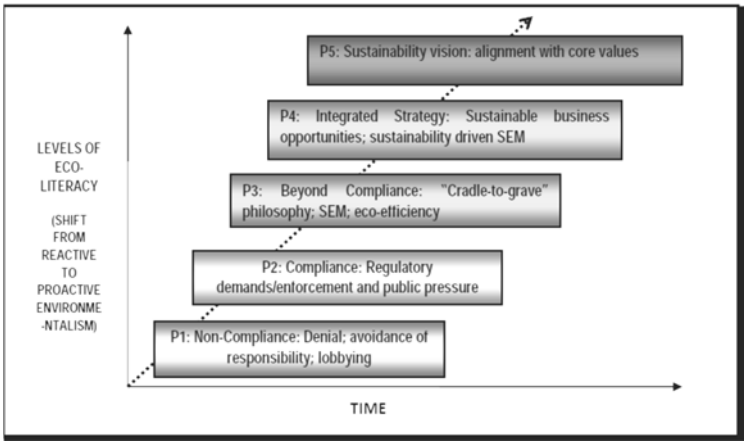
1. A system-oriented, network approach leading to a new value system where the natural environment cannot be construed as an asset or resource that can be used free of charge;

2. An evolved system of higher level organisational structure and objectives to match environmental complexities and interdependencies;
3. Integration of environmental protection into organisational objectives through a system of learning and unlearning, since this area creates the greatest value discrepancy between the general public and the world of business;
4. Design of information systems capable of recording non-monetary variables (that reveal value changes due to environmental impacts) and communicating the environmental advantages of products;
5. Efficient organisational performance with respect to horizontal tasks requiring flat hierarchies, cross-functional teams, decentralised decision-making and open communication; and
6. Innovation management for the successful introduction of integrated environmental technologies aimed at pollution prevention [P2], as the most strategic variable that can optimise ecology, globalisation, technology, complexity, values and information.

## QUALITIES OF SUSTAINABILITY-LITERATE ACADEMIC BUSINESS RESEARCH

Sustainability-literate business research in academia symbolizes an evolutionary process occurring within the business community in terms of increasing levels of eco-literacy across 5 stages (P1 through to P5 in Figure 2). The ultimate goal is to reach the apex, i.e., "P5: Sustainability vision and alignment with core values" as a living reality. Then, business research by academics comes to be (i) a life-long, participatory, experiential learning process, plus (ii) a pro-actively responsible way of living, (iii) an approach to holistic education, trans-disciplinary in its application, (iv) encouraging the development of an environmental ethic alongside sensitivity, awareness, understanding, critical thinking, and problem solving, (v) construing the environment in totality (including spiritual, aesthetic, moral, social, political, economic and technological aspects) to reveal the connectedness between human and natural systems, (vi) integrating local to global space as well as past, present and future temporal dimensions .

**Figure 2: Evolutionary path of eco-literacy within the business community**




## MAJOR FINDINGS

The major findings emanating from the discourse generated in the paper are:

- The *embedded* holarchical perspective of the B-S-N interface appears to be the most appropriate in addressing today's planetary-scale, global socio-ecological challenges.
- *Sustainability* serves as a core value (along with eight instrumental values) for making actionable the embedded view of the B-S-N interface, because it enables us to "transcend the divergent dilemma facing humankind today".

- The holistic, spiritual dimension of a learning HEI, dedicated to academic research in business, can be instrumental in unleashing the potential of business research in several interdisciplinary areas, positioned at the confluence of strategic management, sustainability science and sustainability ethics .
- Contemporary academic business research is "unsustainable", given the cognitive and psychological barriers that prevent researchers from adopting an eco-centric "systems view" of life.
- Academic business research skills must include "ecological intelligence" and seek attainment of planetary well-being.
- A strong case for "sustainability-literate" academic business research stands on four arguments: (1) Ecological sustainability is a core value essential for reshaping globalization; therefore, educational institutions and centres of learning in the new global civil society have to choose 'sustainability as their explicit focus'; (2) *Goal 8* of the Millennium Development Goals calls for developing a global partnership, including government, business and the social sector, for catalysing progress towards sustainable development; (3) Principle #4 of the UN PRME, 2007 espouses engagement in conceptual and empirical research that advances understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value; and (4) Eco-literacy or sustainability literacy as a new integration of emotional, social and ecological intelligence directed towards the understanding of natural systems that students, researchers and educators should learn to take a long-term view when making decisions about how to live.
- Identifiable characteristics of a "sustainability-literate" research paradigm differ immensely from the voguish reductionist research paradigm
- By embracing the sustainability-literate research paradigm, a business researcher in academe can inject many latent competences into the research process when delineating the various elements, namely, research opportunities, the research problem, the research philosophy (articulation of ontology, epistemology and axiology), the research strategy, and the research design, and the research methodology of a study.
- Sustainability-literate academic business research, is "use-inspired basic research" and can evolve meaningfully into a novel "enactive" trans-disciplinary approach.
- Sustainability-literate business research can open up numerous corporate social opportunities (Grayson and Hodges, 2004) in the uncharted "blue oceans" (Kim and Mauborgne, 2005) of sustainability innovations in business.

## CONCLUSION

In conclusion, we acknowledge that all research is ultimately rooted in philosophy because it offers the most profound ideas of inquiring into the nature of knowledge. Given this, sustainability-literate business research in academic circles will come to represent an endeavour in "experimental philosophy" (Appiah, 2008) dwelling on the three classical philosophical virtues—*true, beautiful and good* by making an entry into the sub-fields of philosophy—epistemology for truth, aesthetics for beauty, and ethics for goodness (Gardner, 2011: 203). For a sustainable future, Ending on a note of optimism, this paper was a humble way to open the window of opportunity for the rapid emergence of a truly global phenomenon—a responsible and sustainable academic business research community possessing all the five minds of the future (Gardner, 2008)—the disciplined mind contributing to expertise, the synthesizing mind integrating information from diverse and disparate sources, the creating mind engaging in out-of-the-box ideation, the respectful mind accepting and embracing biological and cultural diversity, and the ethical mind transcending the narrowness of self-interest and self-preservation in favour of intra-generational and inter-generational equity.

## REFERENCES

Aldwin, C.M. (2009). *Stress, coping, and development: an integrative perspective*. New York: The Guilford Press.

Alexandrova, A. (2005). Subjective well-being and Kuhneman's "objective happiness" *Journal of Happiness Studies*. 6, 301-24.

Appiah, A. (2008). *Experiments in ethics*. Cambridge, MA: Harvard University Press.

Aurobindo,Sri. (1920). *Thoughts and glimpses*. Pondicherry: Sri Aurobindo Ashram.

Barfield, O. (1987). *History, guilt, and habit*. Middletown: Wesleyan University.

Best, S., Kahn, R., Nocella II, A. J., and McLaren, P. (2011). *The global industrial complex: systems of domination*. Lanham, MD: Lexington Books.

Cameron, K. S., Dutton, J.E. and Quinn, R.E. (2003). *Positive organizational scholarship: foundations of a new discipline*. San Francisco: Berrett Koehler.

Capra, F. (1982). *The turning point: science, society and the rising culture*. London: Wildwood House

_____(2003). *The hidden connections*. New Delhi: Harper Collins.

Chatterjee, K. (2009). 'The primacy of "righteousness" and "relevance" over "rigour" in strategic sustainability management research', *Business Studies* 30 (1): 1-31.

Coats, D. and Lekhi, R. (2008). *"Good Work": job quality in a changing economy*. London: The Work Foundation.

Crouch, C. (2006). Modelling the firm in its market and organizational environment: methodologies for studying corporate social responsibility. *Organizational Studies, 22*: 1533-51.

Dewe, P. and Cooper, C. (2012). *Well-being and work: Towards a balanced agenda*. New York: Palgrave Macmillan.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95: 542-75.

Diener, E., Oishi, S., and Lucas, R.E. (2003). Personality, culture, and subjective well-being: emotional and cognitive evaluations of life. *Annual Review of Psychology*, 54: 403-25.

Di Paolo, E.A., Rohde, M., and De Jaegher, H. (2011). Horizons for the enactive mind: Values, social interaction, and play. In J. Stewart, O. Gapenne, and E.A. Di Paolo (eds), *Enaction: toward a new paradigm for cognitive science*. (pp. 33–87) Cambridge, MA: The MIT Press.

Friedman, M. (1971). Capitalism and freedom. Chicago: University of Chicago Press.

Gardner, H. (2008). *5 minds for the future*. Boston, MA: Harvard Business School Publishing.

_____ (2011). *Truth, beauty and goodness reframed: educating for the virtues in the twenty first century*. New York: Basic Books.

Ghoshal, S. (2005). Bad management theories are destroying good management practices. *Academy of Management Learning and Education*, 4(1): 75-91.

Goleman, D. (2009). *Ecological intelligence: knowing the hidden impacts of what we buy*. London: Penguin.

Goleman, D. Bennett, L. and Barlow, Z. (2013). *Ecoliterate: how educators are cultivating emotional, social, and ecological intelligence*. New York: Jossey Bass.

Grayson, D. and Hodges, A. (2004). *Corporate social opportunity: 7 steps to make CSR work for your business*. Sheffield, UK: Greenleaf.

Illich, I. (1991). *Text and university: on the idea and history of a unique institution*. A translation by Lee Hoinacki of the keynote address delivered at the Bremen Rathaus, September 23, 1991. Retrieved from http://www.davidtinapple.com/illich/1991_text_and_university.PDF.

Jensen, M.C. (2002). Value maximization, stakeholder theory, and the corporate objective function. *Business Ethics Quarterly*, *12*: 235-256.

Fassbinder, S. D., A. J. Nocella II and Kahn, R. (2012) *Greening the academy: ecopedagogy through the liberal arts*. Rotterdam: Sense Publishers.

Kesebir, P. and Diener, E. (2008). In pursuit of happiness: empirical answers to philosophical questions. *Perspectives on Psychological Science*, 3: 117-25.

Kim, W.C. and Mauborgne, R. (2005). *Blue Ocean Strategy: Creating Uncontested Marketspace*. Boston, MA: Harvard Business School Press.

Komiyama, H. and Takeuchi, K. (2006). Sustainability science: Building a new discipline, *Sustainability Science*, *1*: 1-6.

Louv, R. (2005). *Last child in the woods: saving our children from nature-deficit disorder*. New York: Algonquin Books.

Lovins, A., Lovins, H. and Hawken, P. (1999). *Natural capitalism*. New York: Little Brown.

Luthans, F. (2002). The need for and meaning of positive organizational behaviour. *Journal of Organizational Behavior*, 23: 695-706.

Luthans, F. and Avolio, B.J.(2009). The "point" of positive organizational behaviour. Journal of Organizational Behaviour, 30: 291-307.

Luthans, F. and Youssef, C.M. (2004). Investing in people for competitive advantage. *Organizational Dynamics*, 33: 143-60.

Marcus, J., Kurucz, E.C. and Colbert, B.A. (2010). Conceptions of the business-society-nature interface: Implications for management scholarship. *Business and Society*; *49(3)*: 402-38.

McLaren, P. (2012). Objection Sustained: Revolutionary Pedagogical Praxis as an Occupying Force. *Policy Futures in Education, 10*(4), pp. 487–494.

Myers, M.D. (2009). *Qualitative research in business and management*. London: Sage.

Nelson, D. and Cooper, C.L. (2007). Positive organizational behaviour: an exclusive view. In D. Nelson and C.L. Cooper (eds.), *Positive organizational behaviour*. (pp3-8). London: Sage.

Nelson, D.L. and Simmons, B. L. (2003). Health psychology and work stress: a more positive approach. In J.C Quick and L.E. Tetrick (eds.), *Handbook of occupational psychology*. (pp. 97-119). Washington D.C.: American Psychological Society.

Nicolescu, B. (2001). *Manifesto of Transdisciplinarity* (Translated from French by Karen-Claire Voss). State of New York Press: New York.

Parkin, S. (2010). *The positive deviant: sustainability leadership in a perverse world*. London: Earthscan.

Parnell, J.A. (2008). Sustainable strategic management: construct, parameters, research directions. *Journal of Sustainable Strategic Management*, 1(1): 35-45.

Porritt, J. (2006). *Capitalism: as if the world matters*. London: Earthscan.

Price, T.L. (2003). The ethics of authentic transformational leadership. *The Leadership Quarterly*, 14: 67-81.

Quick, J.C. and Macik-Frey, M. (2007). Four perspectives on conservation of resources theory: a commentary. Applied Psychology: An International Review, 50: 392-400.

Roberts, L.M. (2006). Shifting the lens on organizational life: the added value of positive scholarship. *Academy of Management Review*. 31: 292-305.

Ryan, R.M. and Deci, E.L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*. 52: 141-166.

Senge, P. (1990). *The Fifth Discipline: the art and practice of the learning organization*. New York: Doubleday.

_____ (1996). Leading learning organizations. *Training and Development*, 50(12): 36-40.

Seligman, M.E.P. and Csikzentmihalyi, M. (2000). 'Positive psychology: an introduction'. *American Psychologist* 55(1): 5-14.

Seligman, M.E.P. (2008). Positive health. *Applied Psychology: An International Review*. 57:3-18.

_____ (2011). *Flourish: a new understanding of happiness and well-being and how to achieve them.* London: Nicholas Brealey.

Simonton, D. and Baumeister, R. (2005). Positive psychology at the summit. *Review of General Psychology*, 9:99-102.

Stead, W.E., Stead, J.G. & Starik, M. (2004). *Sustainable strategic management*. New Delhi: Prentice Hall of India.

Stokes, D. (1997). *Pasteur's quadrant: Basic science and technological innovation*. Washington DC: Brookings Press.

Thompson, E. (2007). *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*. Cambridge, MA: Harvard University Press.

Torrance, S. (2005). In search of the enactive: Introduction to special issue on enactive experience. *Phenomenology and the Cognitive Sciences* 4(4): 357–368.

_____ ( 2007). Introduction to the second special issue on enactive experience. *Phenomenology and the Cognitive Sciences* 6(4): 425.

United Nations (2011). *The Millennium development goals report, 2011*.

Varela, F.J, Thompson, E., and Rosch, E. (1991). *The embodied mind: cognitive science and human experience*. Cambridge, MA: The MIT Press.

Victor, P.A. (2008). *Managing without growth: slower by design, not disaster*. Northampton, MA: Edward Elgar.

Waddock, S. (2005). Positive psychology of leading corporate citizenship. In R.A. Giacalone, C.L. Jurkiewicz, and C, Dunn (eds.), *Positive psychology in business ethics and corporate responsibility* (pp. 24-45). Charlotte, N.C.: Information Age.

World Business Council for Sustainable Development [WBCSD] (2005). *Moving sustainable development into the mainstream*. Geneva Switzerland. www.wbcsd.org.

# SOME SUGGESTIONS TO ENHANCE THE QUALITY OF THE ENGLISH LANGUAGE TEACHING PROGRAMMES IN TURKEY[2]

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**Abstract:** The teaching of English language is attached so much importance in the Turkish educational system that it is currently started at the very beginning of the primary education, as of the second grade in the new 4+4+4 system. This high importance of the issue necessitates a satisfying level of quality in English education at all levels ranging from primary to tertiary phase. Under this framework, the training of the English language teachers undertakes a quite significant role. Therefore, the available English language teaching (ELT) programmes at Turkish universities take on the serious responsibility of educating the future English language teachers who are expected to teach the future generations. However, it is not possible to say that everything about these programmes goes flawless. In this study we present some suggestions to enhance the quality of education in the ELT programmes. The major points covered as part of these suggestions range from additions to and extractions from the eight-semester curriculum, the (non)employment of native speaker instructors considering especially the development of oral skills, and the broadening of the alternatives provided under the student exchange programme to the specialization alternatives to be provided for the undergraduate ELT students who want to specialize in teaching English to very young learners. In accordance with the presented broad-range suggestions this study aims to contribute to the elevation of the standards of the training of prospective English language teachers and thus, in the long run, the whole English language education in Turkey.

**Keywords:** English language teaching programmes, quality, native instructors, Erasmus, curriculum

## 1. Introduction

The status of the English language as the lingua franca all over the world renders it the most important foreign language among others. Thus the teaching of English to the speakers of other languages has gained an ever-growing gravity in almost all of the developing countries. If they want to keep pace with the recent developments in many fields ranging from technology to education, it appears to be a must for them to have English-knowing qualified citizens. This high importance attached to the English language shows itself in many contexts in Turkey as country that belongs to the Expanding Circle that encompasses the speakers of English as a foreign language according to the classification proposed by Kachru (1985). For example, most of the job vacancies demand a good command of English as a prerequisite. This can be easily observed even in the ordinary vacancy announcements on the daily newspapers. This upper status of English in Turkey is elaborated by Dogancay-Aktuna (1998) as follows:

> "In Turkey English carries the instrumental function of being the most studied foreign language and the most popular medium of education after Turkish. On an interpersonal level, it is used as a link language for international business and for tourism while also providing a code that symbolizes modernization and elitism to the educated middle classes and those in the upper strata of the socioeconomic ladder" (p.37).

Likewise, the appointment of other language teachers like German and French account for only a limited percentage of the whole language teacher appointment rate in the Turkish Ministry of Education in September 2013 and 2014. An overwhelming majority of the appointed language teachers belong to the English branch.

[2] This study is the extended version of the author's oral presentation titled "Some Suggestions to Enhance the Quality of English Language Teaching Programmes in Turkey" at International Conference on Quality in Higher Education 2014 (ICQH) in Sakarya on December 3-5, 2014.

  

Table 1 below shows the distribution of the language branches in the September-2013 and September-2014 teacher appointment by the Ministry of Education:

Table 1. Distribution of the branches in the September-2013 and September-2014 teacher appointment by the Ministry of Education

| **Branch** | English | German | Arabic | Russian | Chinese | Italian | Spanish | French | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Number (September 2013)** | 5034 | 420 | 128 | 11 | 3 | 1 | - | - | 5597 |
| **Number (September 2014)** | 3931 | 254 | 203 | 3 | 1 | - | 1 | 5 | 4398 |

(www.meb.gov.tr)

As it is clear from the Table 1, the English branch dominates the foreign language teacher appointments in Turkey. Even only this numerical datum is enough to demonstrate the significance of the English language and its teaching in Turkish education system. As for the education of these English language teachers, there are distinct programmes centrally based on the English language in the Turkish university education system. These are English language teaching (ELT) which aims to carry out the training of the prospective English language teachers, English translation and interpreting, English linguistics, English language and literature, and American culture and literature. Although the ELT programmes constitute the only pure source of English language teachers, the graduates of the other mentioned programmes become English language teachers provided that they complete a pedagogical formation programme successfully.

The leading universities considering the field of ELT in Turkey are those like Bosporus University, Middle East Technical University, Hacettepe University, İstanbul University, and Gazi University. Currently, the number of the universities with an active ELT programme has reached 55 according to the 2014-data by the Student Selection and Placement Centre in Turkey (www.osym.gov.tr). According to the 2004-data of OSYM, the total number of the active ELT programmes in Turkish universities appears to be 28 (www.osym.gov.tr). These figures apparently show that the number of the programmes has doubled in the last decade and this figure is expected to rise in the coming years with the opening of new state and foundation universities.

As the quantity of universities and ELT programmes increases, the quality and standards of education are also expected to increase with each passing day. There has certainly been a considerable amount of progress; however, there are undeniable problems and shortcomings embedded in the running system of these programmes. The main question here is whether quality accompanies quantity or not. In this paper, the main points of suggestions are shaped considering issues like additions to and extractions from the eight-semester curriculum of the ELT programmes, the (non)employment of native speaker instructors at undergraduate level, the broadening of the country alternatives provided under the exchange programmes like Erasmus, Mevlana, and Farabi, the specialization alternatives to be provided for the undergraduate ELT students who want to specialize in teaching English to very young learners.

## 2. Suggestions for English Language Teaching Programmes in Turkey

The first suggestion comes as to the curriculum followed in the ELT programmes throughout eight semesters. All of the programmes in Turkish universities follow a framework curriculum determined by the Higher Education Council (YOK); and this brings a certain level of standardization. However, there are two major problems about the current application of the curriculum. The first problem is the existence of courses delivered in Turkish by the instructors of the Department of Educational Sciences. Courses like Introduction to Educational Science, Educational Psychology, Classroom Management, Guidance, and Turkish Education System and School Management are among these. Likewise, the course Assessment and Evaluation is delivered in Turkish in the 6$^{th}$ semester and the similar course Assessment and Evaluation in Foreign Language Teaching is delivered in English in the 8$^{th}$ semester, which gives the impression that testing is carried out in different ways in both languages. The language of instruction in ELT programmes is automatically English. Therefore, there is no need to deliver such courses in Turkish. The teaching staff in the ELT programmes is specialized in the field

of education and can readily offer these courses in English. This will also raise the extent to which the undergraduate students are exposed to the English language, which is also expected to enhance their professional development. Thus, the course Assessment and Evaluation that is normally offered in Turkish can be extracted from the curriculum and Assessment and Evaluation in Foreign Language Teaching can be extended to two semesters. In addition to these points, the curriculum should be enriched with the participation of new elective courses. Elective courses should be open to change and they should be named and shaped in accordance with the changing conditions. For instance, an elective course on the Common European Framework (CEF) can be a good complementary tool for the related courses on materials design and course development. Again related with the curriculum followed in the ELT programmes, we suggest the period allocated to school experience and teaching practice be extended. In the current system, school experience is covered in the 7th semester and teaching practice is covered in the 8th semester. Instead of being left to the last year of the undergraduate education, these two highly important opportunities of practicum should be increased and covered as of the 3rd or 4th semester. No matter what they learn as a university student, every teacher develops a personal teaching style in the classroom where they are in front of their students. Therefore, ELT students as prospective English language teachers should be given broader opportunities to breathe the air of the classroom and should be enabled to shape their original styles through first-hand observations and subsequent teaching practices.

As Turkey is an EFL country, it is quite normal to encounter problems about authenticity in the process of developing language skills. This disadvantage can somehow be compensated in terms of reading, writing, and listening skills especially with the help of internet. However, speaking skill is more demanding to develop in EFL contexts and it is really hard for non-native English-speaking teachers to motivate students to speak in English even in ELT programmes. At this point, the popular dichotomy of NESTs (Native English-speaking teacher) and Non-NESTs (Non-native English-speaking teacher) comes to the agenda. Medgyes (2001: 434) states the following differences between NESTs and Non-NESTs:

- NESTs and Non-NESTs differ in terms of their language proficiency;

- They differ in terms of their teaching behaviour;

- The discrepancy in language proficiency accounts for most of the differences found in their teaching behaviour;

- They can be equally good teachers on their own terms.

NESTs and Non-NESTs naturally differ from each other remarkably in many respects. The important thing here is making utmost use of the strengths of both parties. Therefore, the employment of native speaker instructors can bring serious advantages considering especially the development of oral skills. Native speaker instructors can not only constitute an ideal model in view of speaking but also pose a good helper in developing intercultural competence. In most of the ELT programmes in Turkish universities, there are Fulbright assistants or short-term-working native speaker instructors. Instead of short-term native instructors, ELT programmes can make better use of long-term-working native speaker instructors who are familiar with the Turkish educational system and the characteristics, needs, and expectations of the students. Briefly, ELT programmes in Turkey need at least one experienced native speaker instructor to raise the potential of the offered education.

Authentic experiences are quite important in terms of broadening the horizons of the students. A new university, a new city, and a new country can offer many plus points for ELT students. Accordingly, student exchange programmes like Farabi, Mevlana, and Erasmus hold a strong potential of rich opportunities. The country and university alternatives provided under especially international Erasmus and Mevlana exchange programmes should be broadened each year to address as many students as possible. This is important for the students of all programmes; however, as prospective language teachers ELT students need an overseas experience much more than other students.

As of the 2012-2013 school year, the 4+4+4 system was launched in the Turkish primary, elementary, and secondary education. According to this new system English course begins in the 2nd grade of the primary education. This means that English language teachers are expected to address children of ages 7 and 8. Naturally, teaching English to a child at the age of 7 and an adolescent at the age of 17 shows radical differences. Communicating with little children and teaching a totally new language to them requires a special talent and flexibility. Therefore, at the undergraduate level, specialization alternatives can be provided for ELT students who want to specialize in teaching English to very young learners. This can be achieved through offering extra courses for those who are volunteers to teach English to little children when they begin professional life. It does not seem possible to divide the ELT programme into two as is the case with the two different mathematics

education programmes in Turkey, elementary mathematics education programme and secondary mathematics education programme. However, at least some extra elective courses on how to teach English to very young learners and accordingly shaped extra teaching practice opportunities at primary schools can be offered to the voluntary undergraduate ELT students.

The last point we cover as a part of our suggestions is the professional efficacy of the teaching staff in the ELT programmes. The number of both state and foundation universities and the active ELT programmes (see Appendix) is on the increase. Nevertheless, quantity should not be allowed to shadow quality. The quality of the offered education should be always maximized. To this end, the professional development of the academic staff should be strongly encouraged and supported. Their regular participation in the academic events like national and international symposiums, conferences, and workshops is quite important. Likewise, being an active part of professional organizations like INGED, IATEFL, and TESOL can bring many benefits professionally. Similarly, they should be encouraged to produce scholarly publications on a regular basis. Such academic activities will not only help academic staff develop themselves personally and professionally but also contribute to their command of the lessons and classroom management.

## 3. Conclusion

In this study, we have identified some specific problems posing a barrier for the quality of the ELT programmes at Turkish universities. In terms of focusing on physical problems, we have tried to put the human factor in the very centre of the issue. Therefore, our suggestions are presented with the aim of helping both students and academic staff throughout the whole education process. Their personal and professional development should be attached utmost importance. Under this framework, the presented suggestions about the curriculum, the employment of native speaker instructors, student exchange programmes, teaching English to very young learners, and the participation of the academic staff in academic events are expected to make contributions to the quality standards of the ELT programmes at Turkish universities.

## References

Dogancay-Aktuna, S. (1998). The spread of English in Turkey and its current sociolinguistic profile.

Journal of Multilingual and Multicultural Development 19(1), 24-39.

Kachru, B.B. (1985). Standards, codification and sociolinguistic realism: The English language in the

outer circle. In R. Quirk and H. Widdowson (Eds.), English in the world: Teaching and learning the language and literatures (pp. 11-36). Cambridge: Cambridge University Press.

Medgyes, Peter (2001). "When the Teacher is a Non-native Speaker". In M. Celce-Murcia (Ed.), *Teaching English as a second or foreign language***.** New York: Newbury House, p. 429-442.

www. meb.gov.tr Accessed on June 3, 2014.

www.osym.gov.tr Accessed on July 23, 2014.

## Appendix

**Alphabetical List of the Universities in Turkey with an Active ELT Programme**

| University Name | Status | City |
|---|---|---|
| Abant İzzet Baysal University | State | Bolu |
| Akdeniz University | State | Antalya |
| Aksaray University | State | Aksaray |
| Amasya University | State | Amasya |
| Anadolu University | State | Eskişehir |

  

| | | |
|---|---|---|
| Atatürk University | State | Erzurum |
| Bahçeşehir University | Foundation | İstanbul |
| Balıkesir University | State | Balıkesir |
| Başkent University | Foundation | Ankara |
| Boğaziçi University | State | İstanbul |
| Canik Başarı University | Foundation | Samsun |
| Cumhuriyet University | State | Sivas |
| Çağ University | Foundation | Mersin |
| Çanakkale Onsekiz Mart University | State | Çanakkale |
| Çukurova University | State | Adana |
| Dicle University | State | Diyarbakır |
| Dokuz Eylül University | State | İzmir |
| Erciyes University | State | Kayseri |
| Eskişehir Osmangazi University | State | Eskişehir |
| Fatih University | Foundation | İstanbul |
| Gazi University | State | Ankara |
| Gaziantep University | State | Gaziantep |
| Hacettepe University | State | Ankara |
| Hakkari University | State | Hakkari |
| İnönü University | State | Malatya |
| İstanbul Aydın University | Foundation | İstanbul |
| İstanbul Bilgi University | Foundation | İstanbul |
| İstanbul Kültür University | Foundation | İstanbul |
| İstanbul Sabahattin Zaim University | Foundation | İstanbul |
| İstanbul University | State | İstanbul |

  

| | | |
|---|---|---|
| İzmir University | Foundation | İzmir |
| Karadeniz Technical University | State | Trabzon |
| Kocaeli University | State | Kocaeli |
| Maltepe University | Foundation | İstanbul |
| Marmara University | State | İstanbul |
| Mehmet Akif Ersoy University | State | Burdur |
| Mersin University | State | Mersin |
| Mevlana University | Foundation | Konya |
| Muğla Sıtkı Koçman University | State | Muğla |
| Mustafa Kemal University | State | Hatay |
| Necmettin Erbakan University | State | Ankara |
| Nevşehir Hacı Bektaş Veli University | State | Nevşehir |
| Middle East Technical University | State | Ankara |
| Okan University | Foundation | İstanbul |
| Ondokuz Mayıs University | State | Samsun |
| Pamukkale University | State | Denizli |
| Sakarya University | State | Sakarya |
| Süleyman Demirel University | State | Isparta |
| Trakya University | State | Edirne |
| Ufuk University | Foundation | Ankara |
| Uludağ University | State | Bursa |
| Yeditepe University | Foundation | İstanbul |
| Yıldız Technical University | State | İstanbul |
| Yüzüncü Yıl University | State | Van |
| Zirve University | Foundation | Gaziantep |

  

# THE ROLE OF ACCREDITATION STANDARDS IN DELIVERING A QUALITY ASSURED PROGRAM - EXPERIENCE IN THE UAE

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**Abstract**: In an era where higher education institutions aspire to gain a reputation of quality, accreditation bodies have been restructuring their standards to match the needs of the education community. This study aims to evaluate the extent to which the accreditation body, viz. Commission of Academic Accreditation (CAA) in the UAE has achieved this goal; using the experience of two HEI's in the country. The study of the accreditation history especially for the last two decades of the Dubai Medical College and Dubai Pharmacy College has been evaluated. The improved commitment and loyalty of the faculty, improved communication channels and structured reporting has made it easy to detect problems before they lead to undesirable effects. Leadership support has led to mobilization of resources and expansion based on the needs of the community. The mission driven outcomes based assessment based on the CAA standards have led to remarkable improved in student satisfaction rates and in proactively mitigation of risks.
**Keywords**: quality assurance, higher education, accreditation standards

## INTRODUCTION

One of the functions of accreditation is to provide medical and health science schools an opportunity for critical self-analysis which leads to significant improvement in quality. In the present day, higher education institutions (HEI) aspire to gain academic excellence that will give them a reputation of quality. This has led accreditation bodies to review their credibility due to which they have been restructuring their standards to match the needs of the education community.

### Aim of Study

a. To evaluate how accreditation standards lead to a quality assurance of a higher education program.

b. To assess which areas are benefited by accreditation standards.

The experience of the accreditation process for last 8 years of two colleges were studied and evaluated for the effects.

### Background

In UAE, the Ministry of Higher Education and Scientific Research's licensing agency and accrediting body, the Commission for Academic Accreditation (CAA), has strict guidelines and regulations covering areas such as Mission, Organization and Governance, Quality Assurance, Educational Program, Faculty and Professional Staff, Students, Learning Resources, Physical Resources, Fiscal Resources, Public Disclosure and Integrity, Research and Scholarly Activities and Community Engagement. These are the areas where the commission takes an active role in evaluating programs offered in the UAE. Since 2011, Community Engagement has received a lot of importance in the CAA standards.

For program accreditation, the CAA invites a team of visiting international experts (the Evaluation Review Team or ERT) to evaluate specific areas related to curriculum of the specified profession. This has helped them keep

the standards more generic and applicable to a wide variety of HEI. All HEI within the country are mandatorily accredited by the Commission of Academic Accreditation (CAA) under the Ministry of Higher Education in accordance with its compliance to the latest Standards 2011 for Licensure and Accreditation.

For example, it has been reported that this does not affect the quality in medical education, as they use an external review team composed of expert team from international arena as a crucial part of the accreditation process.(Ahmed & Shersad, 2010). In addition to creation of systematic processes, this accreditation also provides opportunities for learning across different sectors of higher education.

## REVIEW OF LITERATURE

It was noted that in order to ensure quality of educational programs HEI should have an institution level performance appraisal system in place and this process should be evaluated by an accreditation body which provides incentives through grading so that the quality does not deteriorate with time.(Stella & Gnanam, 2003)

Multiple levels of analysis are done in most institutions and these standards vary from region to region. Every country has a particular set of values and norms which have to be reflected in the standards. These standards should be aligned with international standards and use of specific international standard can be due to attributes related to individual like information type, adaptation of standards) and by country-level attributes (i.e., absorptive capacity, linguistic distance, incentives for adoption of standards). (Popescu, 2010) It is evident that Standards have been improved by time with a holistic approach while distinguishing the supply side and the demand side of the knowledge economy.(Brink, 2010)

In the UAE, though the public higher education sector provides free education to the national students, the private sector has grown steadily since 1997. But even while the economy was booming, many scholars reported that it was the low level of trust by the employees and employers in the higher education system that has been a challenge in meeting the needs of the economy (Hijazi, Zoubeidi, Abdalla, Al-Waqfi, & Harb, 2008). A great deal of effort has been reported in the higher education sector and it has gone a long way in improving higher education in the country. (Parikh, 2010)

Past researchers have reported that the accreditation paradigm of health professions education has to change according to the move towards outcome-based education, so that it builds competence related to context of society. (Davis & Ringsted, 2006) The CAA has introduced the national qualifications framework in order to bring all levels of education under the ambit of a single structured format and this has been mandated by every institution since 2010.

Several other studies in Europe and USA have pondered over this topic of benefits of accreditation standards in medical and paramedical programs. Several studies evaluated the way different accreditation bodies affect education institutions by comparing the effects of two different accreditation bodies in controlled circumstances. The study comparing the effects of the different accrediting bodies on medical and osteopathic schools failed to prove that accreditation bodies make any difference in the quality. (Wood & Hahn, 2009) However, if we look an individual institution it will definitely show a positive impact.

Studies in the Asia-Pacific regions have shown that India and China have excelled in a broad spectrum of access, quality, and delivery indicators (Goldman, Kumar, & Liu, 2008). While the higher education sector has been assured quality by accreditation bodies, non-conformance indicates that more than two thirds are below quality (Gupta & Gupta, 2012).

## RESULTS

Evaluation was done on the accreditation and the effects of the process on two bachelor's programs viz. Bachelor Pharmacy of Dubai Pharmacy College and Bachelor of Medicine and Surgery of Dubai Medical College. Currently both colleges are licensed and accredited by the Commission of Academic Accreditation. Both colleges have also achieved laurels for their strong programs from organizations like GCC Pharmaceutical Congress, Dubai Quality Award and Mohammed Bin Rashid Al Maktoum (MRM) Excellence Award.

**Desirable effects of the accreditation process:**

The benefits of the process as delineated from the effects in the colleges and the programs as reported in the annual reports and the feedback of faculty are given below:

1. Evolution of culture of self-assessment at the individual unit and institutional level
2. Development of a common language
3. Greater faculty professional development
4. Creation of standardized institution-wide indicators
5. Streamlining of data through the *Centre for Higher Education Data and Statistics* (CHEDS)
6. Creation of a holistic framework where every aspect is systematically and regularly assessed and improved
7. Integration of the framework of output of each unit to align with the mission and vision of the entire organization.

**1. Evolution of culture of self-assessment at the individual unit and institutional level**

Since the CAA insisted on submitting clearly delineated self-assessment document, it became imperative for the two institutions to perform a systematic outcome based self-assessment annually. This was the reason why the institutional effectiveness unit was put in place. In Dubai Medical college, the institutional effectiveness unit had put in place a self assessment model for each unit individually and then the annual reports from each department was channeled through the unit to obtain results. The results are fed into the strategic plan for the next year for improvement activities. Processes were identified and committees were formed to ensure proper implementation and evaluation of these processes. Each committee formulated their own intended outcomes. Then the strategic plan was built based on this input and the overall mission.

In Dubai Pharmacy College, the institutional effectiveness unit started from strategic plan and intended outcomes were distributed by IE to functional units which were responsible for major areas of the plan. IE prepares the indicators and results of the indicators for each unit. At the end of every year, each unit prepares their assessment based on the results.

Remarkably, both institutions created a culture of self-assessment, which was applauded by external reviewers of accreditation team and other organizations.

**2. Development of a common language**

Language improvement was in three strata

1. International terms related to IQA system.
2. Terms used in day to day management where faculty and staff refer to different parts or functions.
3. Understanding what each of the terms entail. It also helps in the application of key terms of the institution, like mission, vision, values, priorities, strategic plan etc.

The terminology related to quality assurance like indicators, learning outcomes, benchmarking, key enablers and stakeholders developed. The terms used for day to day activities became clear for all and unified across the institutions. Even the definition of unit level and institutional level activities became clear to all members. This is in spite of the fact that the terms were coined specifically for the institution or whether international terms were used.

Some of the first steps involved were mission vision exercises where all members were made familiar with a common mission, vision and values. This translated into improved efficiency of all processes.

  

**3. Creation of standardized institution-wide indicators**

As the criteria for improvement were analyzed, several indicators emerged. These indicators were gradually benchmarked with international institutions and refined. These now were standardized indicators for the entire institution. During this process, a clear and standardized institution wide indicator system developed.

**4. Greater emphasis on faculty development:**

One of greatest advantages of having an accreditation body is perhaps the focus on developing faculty. Both colleges show the high level of satisfaction rates for their own professional growth and development. A systematic process to assess the needs and to meet the needs has been in place in both colleges. The difference is that while DMC has focused on training and workshops, DPC has a majority of efforts towards research. The presence of evaluation system meant that all members used all the resources available to them to perform research and to publish. The linkage to promotion has also helped in achieving this target.

**5. Streamlining of data through the *Centre for Higher Education Data and Statistics* (CHEDS)**

When the CAA introduced the database system which evolved into the CHEDS initiative, the colleges conformed to the regulatory needs. The data was now possible to be benchmarked with similar institutions and this made a valuable external target for the individual institutions to aim for. Therefore, collection of data is streamlined and funneled through the Centre for Higher Education Data and Statistics (CHEDS).

**5. Creation of a holistic framework where every aspect is systematically and regularly assessed and improved**

Since the CAA insisted on alignment of the institutional strategy with that of each unit. This meant that all units followed the same overarching goals at the level of the institution. The CAA 2011 criteria stressed on the need for program goals and institutional goals over and above the unit level goals or targets. These had to show linkages with the individual departments goals as well. This meant that the improvement was synergistic and all parts followed the same path. The micro level as well as macro level improvements was all aimed at achieving the mission and vision of the college. The next level of the program level indicators and strategic priorities were now clearly communicated and understood by all involved.

**6. Integration of the framework of output of each unit to align with the mission and vision of the entire organization**

Every course file contains the institutional mission and goals. The outcomes assessment matrix requested by the CAA, meant that the department outcomes should be derived from the institutional goals.

**DISCUSSION**

The majority of the benefits are related to the improved motivation and commitment of the faculty members. The synergistic processes and clear responsibilities led to clear job descriptions and efficiency of time. Leaders ensured resource mobilization and improvement which would have otherwise taken years was now done in a very short span of time. Time constraints now became time efficient.

The enhanced reputation attracted better faculty which in turn led to improved pedagogy. The reputation also led to higher quality of applicants and better outcomes. Faculty benefits of professional development led to improved efficiency, commitment, accountability and satisfaction.

Process improvement, involvement of leaders and commitment of faculty led to increased commitment and innovation. Regular assessment has shown major benefits in alignment of the mission and vision to the activities of individual units leading to improved effectiveness.

  

**Conclusion**

The multiple benefits of individual indicators lead to better achievement of the mission and vision. This alignment in turn encourages involvement and commitment of all stakeholders. Such a comprehensive drive for the better produces overall benefit to the program and the institution.

**REFERENCES**

Ahmed, M. G. E. D., & Shersad, F. (2010). UNIQUE REQUIREMENTS OF MEDICAL EDUCATION. Retrieved from http://www.anqahe.org/files/abu_dhabi_2011/FullPapers/Mohamad_Galal__Fouzia_Shersad.pdf

Brink, C. (2010). Quality and Standards: Clarity, Comparability and Responsibility. *Quality in Higher Education*, *16*(2), 139–152.

Davis, D. J., & Ringsted, C. (2006). Accreditation of undergraduate and graduate medical education: how do the standards contribute to quality? *Advances in Health Sciences Education: Theory and Practice*, *11*(3), 305–313. doi:10.1007/s10459-005-8555-4

Goldman, C. A., Kumar, K. B., & Liu, Y. (2008). *Education and the Asian Surge: A Comparison of the Education Systems in India and China. Occasional Paper*. RAND Corporation. P.O. Box 2138, Santa Monica, CA 90407-2138. Tel: 877-584-8642; Tel: 310-451-7002; Fax: 412-802-4981; e-mail: order@rand.org; Web site: http://www.rand.org. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED502691

Gupta, D., & Gupta, N. (2012). Higher Education in India: Structure, Statistics and Challenges. *Journal of Education and Practice*, *3*(2), 17–24.

Hijazi, R., Zoubeidi, T., Abdalla, I., Al-Waqfi, M., & Harb, N. (2008). A Study of the UAE Higher Education Sector in Light of Dubai's Strategic Objectives. *Journal of Economic & Administrative Sciences Vol*, *24*(1), 68–81.

Parikh, R. (2010). Ensuring Excellence in Higher Education: Vision and Reality-the Case of UAE. In *34th Annual Pacific Circle Consortium Conference* (p. 146).

Popescu, D. (2010). *Determinants of Effective Information Transfer in International Regulatory Standards Adoption*. ProQuest LLC. 789 East Eisenhower Parkway, P.O. Box 1346, Ann Arbor, MI 48106. Tel: 800-521-0600; Web site: http://www.proquest.com/en-US/products/dissertations/individuals.shtml. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED513461

Stella, A., & Gnanam, A. (2003). *Making the most of accreditation: Balancing the national and international developments in higher education*. Concept Publishing Company.

Wood, D. L., & Hahn, M. B. (2009). Accreditation standards of osteopathic and allopathic medical schools: could they affect educational quality? *Academic Medicine: Journal of the Association of American Medical Colleges*, *84*(6), 724–728. doi:10.1097/ACM.0b013e3181a8c296

# TRANSFORMATIONAL AND SERVANT LEADERSHIP: EVIDENCE FROM INDIAN HIGHER EDUCATION

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**Abstract:** The emergence and impact of leadership date back to the ancient days of war and conquest. Over time, leadership evolved to accomplish goals. The guiding thoughts of a mission and vision are the essence of new millennium leadership. The modern business companies aim for continuous identification and understanding about the wide array of the global perspectives of leadership. This paper discusses organisational leadership, leaders' traits and habits; leadership competencies to manage workplace crises; transformational and servant leadership; the importance of towards transformational leadership; and the unification of leadership and business culture. The paper concludes with an appeal for global leadership that builds sustainability in a dynamic global business environment.

**Keywords**: Leadership, Capabilities, Transformational, Servant, Organisation, Higher education

## INTRODUCTION

Business leaders emphasise the necessity of leadership in an increasingly turbulent and complex organisational environment. The role of an organiser has shifted from being a 'leader' to 'leading' the organisational hemisphere. Leadership is the role which an individual occupies at a given time in a given group (Gouldner, 1950). The accomplishment of organisational goals is illuminated by the visionary leader. The power supplemented by authority has been replaced by guidance, coordination and integration in resolving organisational issues. The organisational success is led by the leader in confronting the hindrances with confidence coupled with a deeper sense of belongingness, foresightedness and creativity. Leadership is the ability to attract willing followers and to effect change (Mamoria & Gankar, 2007).

The purpose of this paper is to cast light on organisational crises and leadership capabilities, leading organisations through transformational and servant leadership, urgency for transformational leaders for organisational prosperity and anchoring organisations with global leadership. The empirical part of the paper describes transformational and servant leadership in Indian higher education. The paper ends by reiterating the value of global leadership for organisational growth and prosperity.

The crisis is an inevitable phenomenon in the context global leadership behaviour. The leadership styles create the central theme in the story of leadership success and leadership failure. The uncertainty in the leadership emerge as the major concern in organisations. The traits and the behavioural attributes of leadership behaviour of successful crisis leaders may be comprehended as the perception of the reality, the comprehensive approach to tasks and functions, multiple alternatives for the organisation building, decisiveness, collaboration at work, calm andpositive composure, the risk taking attitude, rule-centred behaviour and accepting criticism concerned with mistakes (Pearson &Mitroff, 1993).

Common leadership capabilities for crises management can be understood in terms of typical competencies such as initiating groundwork, management of loss, revival of trade and enhancement of knowledge. Such competencies of a leader go a long way in addressing the visible crises in the organisational hemisphere: the creation of faith, the innovative outlook, identifying vulnerability, speedy decision making and introduction of new learning (Pearson & Clair, 1998).

Thus there is a positive relationship between leadership capabilities and crises management in the global context towards building an optimistic change in the real sense of the term. To combat the storms of organisational catastrophe a leader should adhere to the directives of crisis management in the sphere of over-viewing the actual situation with prompt action compounded through management of expectations and assuming control action supplemented by a liberal outlook. A leader's perspective is often measured during catastrophic conditions to keep a distinguishing mark of insight, vision and ability amidst the underlying waves of divergent upheaval for organisational survival and sustenance (Nurdan, 2003).

## TRANSFORMATIONAL AND SERVANT LEARDERSHIP

A common paradigm is often cited between transformation and service to blend the shades of human nature which enrich the lives of individuals for building better organisations. Blending the philosophies of servant leadership which enriches organisations through its concept of epitomising servant value over leadership phenomenon with the ever-changing shades of transformation in leadership styles is quite apparent and inevitable exercise in the organisational hemisphere.

Following the path of effective leadership with visionary views supplemented by the intellectual stimulation and with spirited motivation amidst the waves of transformational leadership behaviour strengthens the relationships and trust between the leader and followers (Segil, Goldsmith & Belasco, 2003).Transformational leadership is the product of past experience to future course of action through innovative ideas, views and intellect. Servant leadership encompasses collective force, power, collaboration and the empowerment of followers.

### Attributes of transformational leadership

The process of renovation takes the form of transformational leadership through the phases of transition substituting older views of leader-centred ideals to the innovative views designed with the varied dimensions of leadership theory (Bauers Joslin, 1996; Burns, 1978; Drew & Coulson-Thomas 1996; Lea, 2004). The new avenues of transformational leadership step forward with fresh considerations within Watters' (2004) four-dimensional construct that includes:

- idealised authority
- inspirational motivation
- intellectual stimulation
- individualised contemplation

In the arena of idealised influence, transformational leaders are internally driven visionaries who look beyond technical competencies and political exchange. A transformational leader focuses on vision realisation and acts within the frame of the moral system gaining the strength of control in the spectrum of values, behavioural oneness and self-generating ideals. The qualitative aspect of a transformational leader can be visualised in the context of adaptability and realign their perspective amidst ever-changing environment. The storehouse of strength is the epicentre of potential of transformational leaders paving the way for the future followers in the organisational hemisphere.

The waves of encouragement join with inspirational motivation where a transformational leader takes part in the organisational makeover through actions, modelling, decision-making and personal attitude all revitalising for a refresh organisational culture. The hymn of inspiration enlightens the true spirit within the employees as they constitute the realistic foundation of freedom, fruitfulness and fraternity.

The wideness of intellect touches the feat of attainment where the transformational leader encourages a follower's innovation and creativity and steps forward to shoulder risks and uncertainties for organisational benefit in the long run. A universal mind-set is crafted by the transformational leader to participate, promote and

  

promise for the sake of organisational upliftment united within the wings of rights, responsibilities and reward. The decision making mechanism runs through all the layers of the organisational hierarchy where all the members possess the right to participate.

The significance of individualised consideration takes part in individual endeavour through assimilation of employees' cultural perceptions, shared values, beliefs and norms. The transformational leader attempts to recreate an understanding between employee perception, performance and productivity.

**Attributes of servant leadership**

The proponent sof servant leadership could not penetrate deep into the levels of the organisational surface with the constraints as the field is not broad based. Servant leadership contemplates on greater mutual power and influence, emphasises collective and collaborative follower participation and promotes follower learning and empowerment. The source behind servant leadership has its root in the theory of complexity and chaos. The wheels of servant leadership encircle decentralisation, the differentiation of tasks, collaboration, flexibility and adaptability of structures and processes, participation and autonomy.

The images of servant leadership can be visualised within the perspectives of individual, cultural, decision-making and organisational change (Banutu-Gomez, 2004; Hamilton & Bean, 2005). Servant leaders are signified by their traditional component. Servant leaders believe in and selflessly serve their people. The goodness of a follower is the distinctive feature of the servant leaders which postulates the significance of a good leader.

The phases of growth, learning, encouragement and affirmation provide the cultural perspective of the servant leaders. The knot of well-built relationships complemented with collaboration, value opinion, openness, willingness to learn, development of integrity and trust all contributes the cultural magnitude of servant leaders. Regardless of their own concern, servant leaders step forward to contribute to the cultural enhancement and wellbeing of people (Pepper, 2003; Rowe, 2003).

Visualising the decision making domain where a true servant leader takes decision focusing on renovating their followers to elevate to the level of greatness at the cost of sacrificing their own acknowledgment and recognition. The trueness of servant leaders chases the progression to pursue their follower's finest interest, to create a psychological and social platform with their followers and to expand and extend the tangible and intangible relationships with the followers.

The assessments of the effectiveness of a servant leader need to be initiated from the perspective of an organisational change over. The multi-angled phenomenon of efficacy comprising skill, future foresight, the visionary goal all attributes of servant leaders conglomerated during the organisational transformational process promotes an add on value in developing an exemplary organisational culture. The servant leaders strive amidst the phases of organisational change shares status, vision and power with the aim of supporting the followers to adapt and focus on the advent of new ethnicity at the organisational hemisphere (Salopek, 2004; Whetstone, 2002).

**Comparative understanding of transformational leadership and servant leadership**

Figure 1 depicts the attributes underlying transformational and servant leadership styles. The notion behind the comparative analysis between transformational leadership and servant leadership rests on leadership behaviour on the individual and organisational perspective. With regard to intellectual stimulation transformational leaders have a stronger focus than servant leaders. Transformational leaders emphasise employee innovation. Servant leaders give priority to individualised enhancement. The proposition behind the transformational leader is centred on confronting wider organisational success. The prominence of emotional element is significant among the servant leaders. The spotlight on the prime objective of the transformational leader vests on the attainment of the organisational goal and servant leaders follow the principles of self-enhancement and employee promotion (Avolio & Yammarino, 2002; Washington, 2007).

  

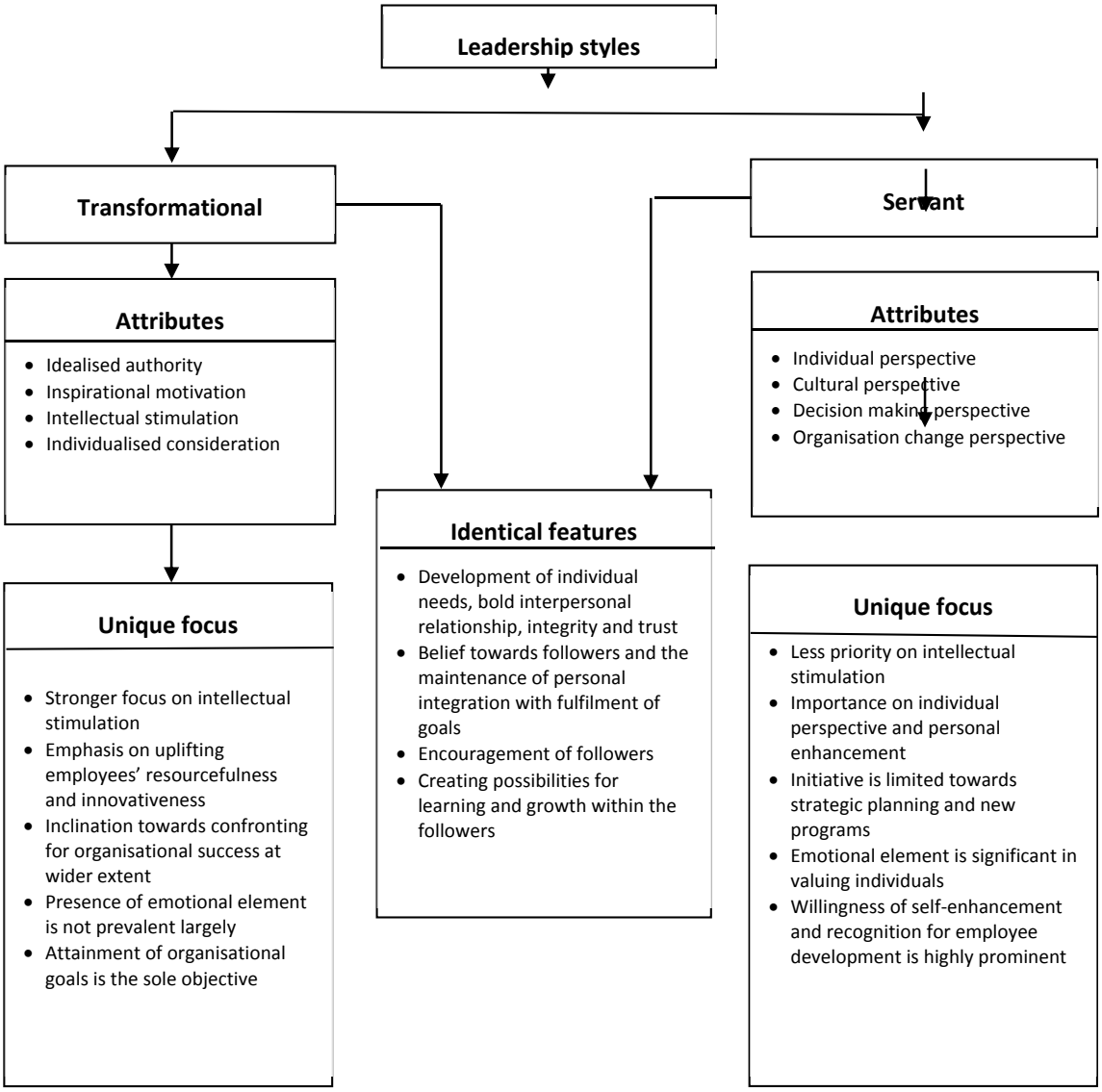


Figure 1.An outlook of transformational and servant leadership styles

## NEED FOR TRANSFORMATIONAL LEARDER FOR ORGANISATIONAL PROSPERITY

Figure 2 identifies the fundamental aspects of transformational leadership. The requirement of basic ingredients in the creation of an ideal transformational leader is rooted within skill and behavioural characteristics. In today's organisation, development can occur with the changing waves and positive vibes of transformational leaders disseminated throughout various organisational cells in the form of individuals, groups and teams. The three core elements of transformational leadership can be determined with recognition, creation and institutionalisation whereby assimilation between organisation development and transformational leadership is viewed with a self-renewal perspective and organisational effectiveness (Bennis, 2006).

Strategic management involves planning for the long term with clearly articulated mission, direction and values. Strategic management helps the organisation to lead their personnel towards the fulfilment of objectives. The questions of who is involved in the strategy process, how the process is taking place and how to motivate personnel receive different answers in each organisation. The involvement of management, personnel and other stakeholders is important in the process. The strategy process creates commitment to achieve the strategic objectives. The communication and implementation of the strategic plan are typically much more important than the plain strategy document (Kettunen, 2006, 2008; Kettunen & Chaudhuri, 2011).

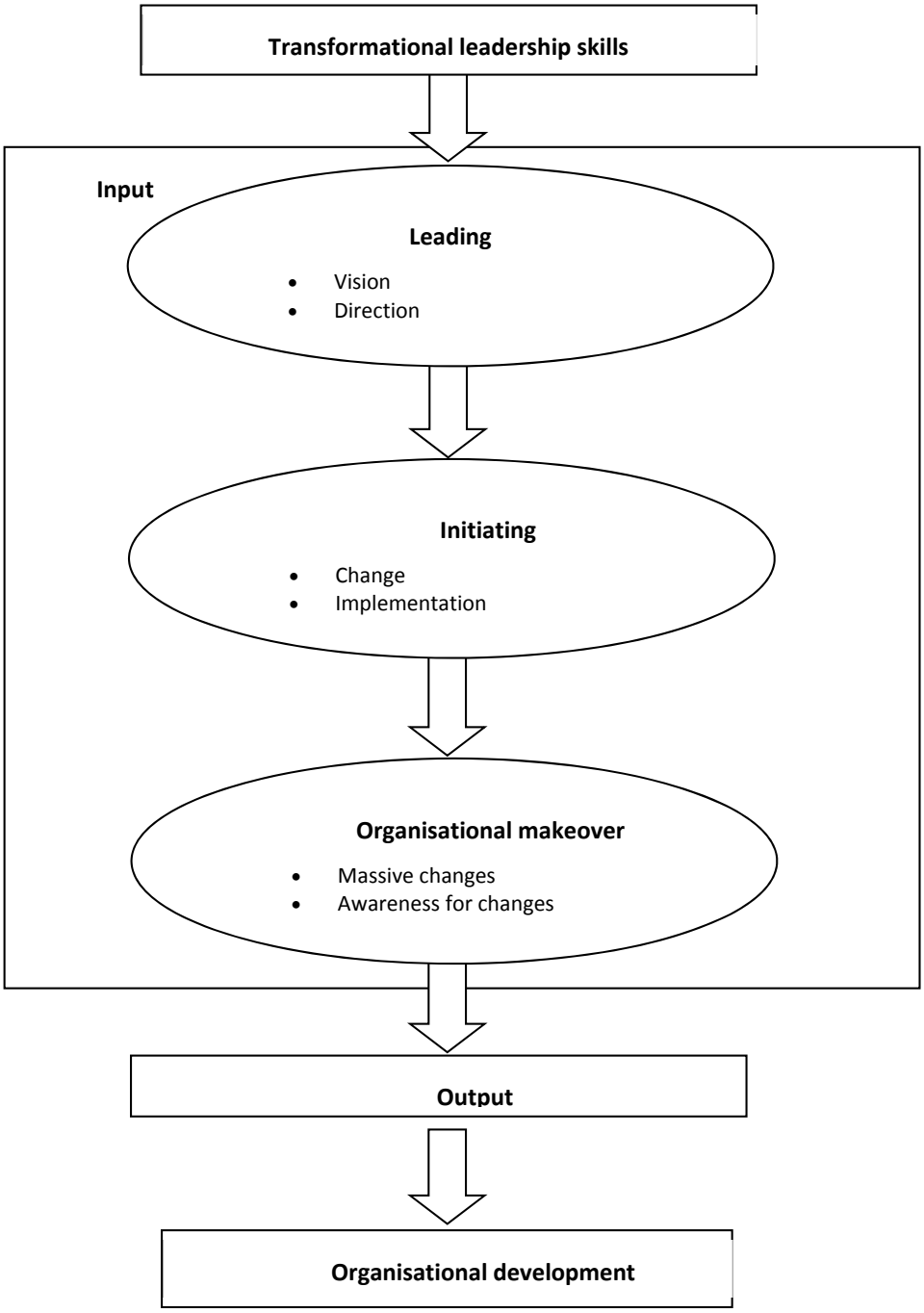


Figure 2. Transformational process

The need for transformational leaders can be visualised with vision, personified with personality and strengthened with strategies. The makeover component of transformational leaders truly inspires the followers to change their perceptions, personality and performance through passion, morale and motivation propounded by the reformatory leaders. Transformational leadership is embedded in three core concepts of leading, initiating and organisational makeover. The leader behaviour in this pattern of leadership interacts with the organisation as an input mechanism towards creating the apt and timely output towards organisational development. This output refers to the end results and outcomes of an effective transformational leadership skill set geared towards overall organisational prosperity as time passes(Jung, Chow & Wu, 2003).

  

## EMPIRICAL EVIDENCE FROM LEARDERS IN HIGHER EDUCATION IN EASTERN INDIA

Leadership can be continuously improved following Deming's (1986) Plan-Do-Check-Act sequence. At the first stake, the objectives of leadership are planned. The plans are then implemented. The third stage is the evaluation of the achievement of objectives and the conformance to processes. Based on the results of the evaluation leadership can be improved. Once leadership has been amended, improved results can be expected.

Table 1 depicts the empirical evidence on transformational leadership in Indian higher education. A random sample of 23leaders in higher education institutions in Eastern India shared their view of transformational and servant leadership. An open-ended discussion generated the following responses describing the elements of transformational leadership. The table supports the evidence that transformational leadership is extremely relevant in higher education. Development steps can be taken in leadership using these results.

Table 1: Empirical evidence on transformational leadership

| ***Elements of transformational leadership*** | ***Summary of responses*** |
|---|---|
| Idealised authority | Extremely significant for top leaders |
| Inspirational motivation | Relevant in day-to-day work processes |
| Intellectual stimulation | Relevant to nurturingnovelty |
| Individualised consideration | Significant for building effective teams |
| Beingresourceful | Effective for crafting a learning organisation |
| Being innovative and creative | Extremely effective to build on sustainability |
| Confrontation for organisational success | Significant in brainstorming meets |
| Empathy and emotion | Effective to create organisational citizenship |
| Leadership for cultural change | Helps in building on self-efficacy and adaptability |
| Ability to attract followers | Significant in group dynamics and cohesion |
| Crises handler | Relevant in generating trust on leaders |

Table 2 depicts the empirical evidence of servant leadership in Indian higher education. The summary of responses shows that many elements of servant leadership are relevant supporting the fact that both leadership styles are relevant and needed in higher education institutions. The leadership styles must be balanced in each organisation to find an appropriate combination of leaders to achieve the desired objectives.

Table 2: Empirical evidence on servant leadership

| ***Elements of servant leadership*** | ***Summary of responses*** |
|---|---|
| Individual perspective | Significant for situational analysis |
| Cultural orientation | Helps in adhering to cultural norms |
| Ability to decide | Significant in fostering sustainability |
| Clarity in organisational change | Effective in embracing novelty |
| Goal of personal enhancement | Effective for creating a learning organisation |
| Belief in strategic planning | Extremely effective to build on sustainability |
| Ability to value individuals | Significant in teambuilding |
| Recognition of employee development | Effective to create superior performers |

Table 1 and Table 2 depict what practitioners in the field of higher education thinkabout the core elements of both transformational and servant leadership. Both approaches build on organisational success; however, it remains in the demands of the situation being handled and the profile of the leadership position that ultimately dictates a choice between transformational and servant leadership.

## DISCUSSION

Amidst the ever-changing phases of the global environment, the urge for leadership competencies confronts multifaceted complications worldwide. The leading assignment designed with interactions and fabricated by the cultural interconnectedness encircles the prospects and dynamics of leadership. The leaders of the new

millennium have laid the cornerstone of global leadership development with the combination of the trio level of intelligence patterns. The magnitude of leadership expertise compounded by diverse complexities results in increasing inconsistency in leadership behaviour among the twenty-first century leaders (Begley & Byod, 2003).

The varied attributes of way of life in the form of language, race, gender, ethnicity, experience, knowledge and other allied elements characterises the effectiveness of future leaders across the globe. The progression of leadership development equipped with creative coaching, methodical mentoring, systematised schedules and potential personality assignments lead the way to reach the elevation of success and sustenance. The scale of valiant leadership confidence engulfed with diversities and differences can truly be termed as the global leadership footprint in the organisational landscape.

Adapting a global mind-set with the inherent influential ability to think, appreciate, develop, share and synthesise the framework of international standards, all have driven global leadership competencies across the world-wide diversity. The prominent clusters or anchors in identifying global leadership skills viz. diversity strategies, diversity tools, diversity competence, diversity dimensions and cultural bias and real life situations cumulatively constitute the vital fundamentals of leadership effectiveness in a global framework. Crossing the constraints of time, overcoming the limitations of fund, shaping the uncurbed into formations through the journey filled with inadequacy, insufficiency and uncertainty, leaders reinvent the ways and means which postulates the best chance of maximising returns to strengthening global leadership potential (Bartlett & Ghoshal, 1992).

## CONCLUSIONS

Leadership has distinct capabilities and competencies, manages crises effectively, upholds typical traits like transformational and servant leadership, handholds the organisation towards long run prosperity, generates profitable end-results for the business and unifies complexities towards building strong organisations in the real sense of the term. The eternal Vedic hymns of the Vedas, spreading the light of oneness "*Busudhava Kutumbakam*", which means "The whole universe is your family", truly reflects the images of global leadership.

It is the universal leadership foresight which postulates all the facets of vibrant leadership terrain to identify, welcome and admire for the acceleration of worldwide leadership experience on a global stage. Following the words of Peter F. Druker (2001) "management is doing things right; leadership is doing the right things". A true manager is always born from a true leader, whether it is crisis or smooth sailing in the workplace, whereby goes a long way for creating global organisational success in the real sense of the term.

Leadership is the most crucial for organisational operations and it can be evaluated and developed using the principle of continuous improvement in quality assurance. The empirical results support the argument that transformational leadership is necessary in higher education for organisational development and prosperity. It must be balanced with servant leadership, which contemplates greater mutual power and influence. Both leadership styles build on organisational success, but their balance remains in the demands of the situation being handled.

## RERFERNCES

Avolio, B. J., &Yammarino, F. J. (2002). *Transformational and charismatic leadership: The road ahead*. Amsterdam: JAI - Elsevier Science.

Banutu-Gomez, M. B. (2004). Great leaders teach exemplary followership and serve as servant leaders. *Journal of American Academy of Business*, 4(1/2), 143-150.

Bartlett, C. A., &Ghoshal, S. (1992). What is a global manager? *Harvard Business Review*, 70(5), 124-132.

Bauers Joslin, S. J. (1996). *Predicting transformational and transactional leadership behaviors from individual thinking and behaving preferences* (Unpublished doctoral dissertation). The University of Nebraska-Lincoln, United States.

Begley, T. M., & Boyd, D. P. (2003). The need for a corporate global mind-set. *MIT Sloan Management Review*, 44(2), 25-32.

Bennis, W. (2006). Why lead? *Leadership Excellence*, 23(10), 4-5.

Burns, J. M. (1978). *Leadership*. New York, NY: Harper & Row.

Deming, W.E. (1986).*Out of the crisis*. Cambridge, MA: MIT Center for Advanced Engineering Study.

Drew, S., & Coulson-Thomas, C. (1996). Transformation through teamwork: The path to the new organization. *Management Decision*, 34(1), 7-17.

Drucker, P. F. (2001). *The essential Drucker: Management, the individual and society*. New York, NY: Harper Collins.

Gouldner, A. (1950). *Studies in leadership*. New York, NY: Harper & Row.

Hamilton, F., & Bean, C. J. (2005). The importance of context, beliefs, and values in leadership development. *Business Ethics: A European Review*, 14(4), 336-347.

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership is enhancing organisational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, 14, 525-544.

Kettunen, J. (2006). Strategic planning of regional development in higher education. *Baltic Journal of Management*, 1(3), 259-269.

Kettunen, J. (2008). A conceptual framework to help evaluate the quality of institutional performance. *Quality Assurance in Education*, 16(4), 322-332.

Kettunen, J., & Chaudhuri, M. R. (2011). Knowledge management to promote organizational change in India, In M. Al-Shammari (Ed.), *Knowledge management in emerging economies: Social, organizational and cultural implementation* (pp. 308-324). Hershey, PA: IGI Global.

Lea, D. (2004). The imperfect nature of corporate responsibilities to stakeholders. *Business Ethics Quarterly*, 14(2), 201-217.

Mamoria, C. B., &Gankar, S. V. (2007). *Personnel management*. Mumbai: Himalaya Publishing House.

Nurdan, Ö. (2003). Effects of transformational leadership on empowerment and team effectiveness. *Leadership and Organization Development Journal*, 24(6), 335-344.

Pearson, C. M., & Clair, J. A. (1998). Reframing crisis management. *Academy of Management Review*, 23(1), 59-76.

Pearson, C. M., &Mitroff, I. I. (1993). From crisis prone to crisis prepares: A framework for crisis management. *Academy of Management Executive*, 7(1), 48-59.

Pepper, A. (2003). Leading professionals: A science, a philosophy and a way of working. *Journal of Change Management*, 3(4), 349-360.

Ray Chaudhuri, M. and Naskar, P. (2015) "Strategic HR for Workplace Restructuring: Managing Discontentment, Discourteousness and Aggression" in *Malaysian Management Review,* of The Malaysian Institute of Management, Petaling Jaya, Selangor, Malaysia, 50(1), 9-37.

Ray Chaudhuri, M., Kettunen J. & Naskar, P. (2014) "Transformational and Servant Leadership: Evidence from Indian Higher Education" in *International Conference on Quality in Higher Education - ICQH 2014 Proceedings Book,* edited by Prof. Dr. Aytekin İŞMAN and Assoc. Prof. Dr. Ahmet ESKİCUMALI of Sakarya University, Turkey, published from Sakarya University**,** Sakarya, Turkey, 465-474.

Rowe, R. (2003). Leaders as servants. *New Zealand Management*, 50(1), 24-25.

Salopek, J. J. (2004). Engaging mind, body and spirit at work.*T+D*, 58(11), 17-19.

Segil, L., Goldsmith, M., & Belasco, J. (2003). *Partnering: The new face of leadership*. New York, NY: AMACOM.

Washington, R. R. (2007). *Empirical relationships between theories of of servant, transformational, and transactional leadership*. Academy of Management Proceedings, 1–6. Retrieved December 13, 2007, from Business Source Complete database.

Watters, K. (2006). Thinking about leadership.*Adults Learning*, 18(3), 18-19.

Whetstone, J. T. (2002). Personalism and moral leadership: The servant leader with a transforming vision. *Business Ethics: A European Review*, 11(4), 385-392.