



ISLAMIC UNIVERSITY OF TECHNOLOGY

**Organization of Islamic Cooperation (OIC)
Board Bazar, Gazipur: 1704**

**MASTER OF SCIENCE IN TECHNICAL EDUCATION
(Specialization in Mechanical Engineering)**

**First Year Learning Experiences from Student's Perspective in a
Multicultural Setting: The Case of Islamic University of Technology (IUT)**

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OCTOBER 2017

**First Year Learning Experiences from Student's Perspective in a
Multicultural Setting: The Case of Islamic University of Technology**

A Master of Science Research Thesis

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**Submitted in fulfillment of the requirements for the
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Department of Technical and Vocational Education (TVE)**

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Gazipur, Bangladesh

October 2017

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**DEDICATED TO MY PARENTS
WHO BROUGHT ME INTO THIS NICE WORLD**

ACKNOWLEDGEMENTS

I remember deeply **Allah (SWT)** who has giving me the opportunity and ability for performing my research work. This thesis represents the culmination of a journey of reading, understanding and writing which has at times been frustrating and troublesome with challenges, through hard work, patience, compromise and positive discussion with supervisors proved solvable.

I was highly encouraged by Professor Dr. Che Kum Clement, Head of Department of Technical and Vocational Education (TVE), Islamic University of Technology (IUT), Gazipur, Bangladesh who gave me the opportunity to pursue my M.Sc.TE (ME) program. Also, I would like to express my appreciation and gratitude for the contributions of Dr. Shahadat Hossain Khan through the course of educational research and research seminar.

This work would not have been possible, if not for the 167 participants from MCE, CSE and EEE departments of IUT Dhaka who freely provided their precious time in filling the questionnaire and those 18-20 students during the focus group discussions. My sincere gratitude goes to Mahonde Daoud and Alhassan Dodo who provided some support in data entry.

I am especially grateful to my supervisor, Assistant Professor Dr. Md. Aktaruzzaman who has offered valuable support and guidance. Dr Aktaruzzaman has offered kindness and understanding through reading drafts as well as unlimited support for clarifying any issues. I am really proud to have you as my supervisor.

Finally, if not for the support, sacrifice and love of my wife, Ngo Tigyo Francoise Nadine (Faiza) and son, Mufti Habibou Rahman Mbey who is now to become an Islamic scholar, I would not have been able to successfully reach this milestone. The last two years required numerous sacrifices on your part and I hope to return to my former self in the near future.

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LIST OF ACRONYMS

BANBEIS	Bangladesh Bureau of Educational Information and Statistics
BMT	Business and Management of Technology
CEE	Civil and Environmental Engineering
CSE	Computer Science and Engineering
EEE	Electrical and Electronic Engineering
FGDs	Focus Group Discussions
HEIs	Higher Education Institutions
HE	Higher Education
HSC	Higher Secondary Certificate
IUT:	Islamic University of Technology
IIT	Islamic Institute of Technology
ICTCTR	Islamic Centre for Technical and Vocational Training and Research
ICFM	Islamic Conference of Foreign Ministers
MCE	Mechanical and Chemical Engineering
MWW	Mann-Whitney-Wilcoxon
NGO	Non-Governmental Organization
OIC:	Organization of Islamic Cooperation
SPSS	Statistic Package for Social Sciences
SSC	Secondary School Certificate
UGC	University Grant Commission
WA	Weighted Average

ABSTRACT

This study examined and assessed the learning experience of first year engineering student's perspective in a multicultural setting in terms of nationality, language and gender. It was conducted with MCE, CSE and EEE first year stream students of session 2016-2017 studying at the Islamic University of Technology (IUT), Gazipur, Bangladesh.

The population of this study was the First Year Engineering students of IUT. As the population was mixed and multicultural, representative portion should be included in the sample. Purposive sampling were used throughout the study. The sample selection was validated against population parameters to ensure that appropriate proportions of gender, mode of attendance, study area and citizenship characteristics are present in the sample.

Research was conducted using questionnaire based on Grade Point Average (GPA) and other characteristics of the local and international students. Statement-wise category percentage, weighted average (WA) and Mann-Whitney-Wilcoxon (MWW) test were used to assess the learning experience of first year engineering students of IUT in relation to research objective 1. Two-way ANOVA were also used to compare academic achievement of local and international, as far as male and female students at IUT relating to research objectives 2 and 3 respectively in winter semester of the academic year 2016-2017. 167 students were selected in three departments (MCE, CSE, and EEE) and assigned the questionnaire randomly. Students of the study were divided in to three groups such as local, international, female students and organized for a Focus Group Discussion of six students per group. A null hypothesis was tested by analyzing the data collected from the questionnaire and achievement test. The results revealed that there was significant difference in the overall mean achievement scores of the three subgroups of IUT.

This investigation was an effort to observe how teaching-learning process affects the achievement of students according to their status and gender in a multicultural environment. The main objective of this study was to assess the learning experience of first year engineering students of IUT in terms of (i) quality of teaching-learning, (ii) learning resources, (iii) curriculum structure (iv) student support, (v) extra-curriculum activities.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Student learning is the focus of teaching learning process. Theorists have always been made concerted efforts to facilitate students learning by enhancing the quality of learning experiences. Students in their first year at engineering university represent a diverse cohort in terms of their age, culture (nationality, ethnicity), educational experiences (high school), life experiences (direct from high school, employment), and personal conditions (family/parenting responsibilities, employment demands, financial commitments).

Generally, the first year experience research that has followed to date has been around the curriculum, or in aid of it. Through our search of the literature we found a limited number of studies focused on first-year student's experiences, and several were focused on specific groups of first-year students. For example, Smith and Wertlieb (2005) surveyed a cohort of 31 first-year pre-business major students to compare their expectations for the university experience with their actual first-year experiences. The motivation for the study was based on evidence indicating that little collaboration exists between K-12 schools and institutions of higher education, suggesting gap between first-year student expectations and university experience.

1.2 Statement of the Problem

In many countries, one quarter commencing undergraduate engineering students will not persevere with their studies (Krause, Hartley, James & McInnis, 2005). Universities address these issues of transition in various ways, but most commonly through orientation programs which integrate learning skill development. In response to this research, many universities are now turning to embedding transition skills in curriculum design (Cluett & Skene, 2006). It has been shown that students who had more realistic expectations of university life looked to have reduced stress, which in turn stemmed in improved adaptation to the university environment (Burns, 1991; Pancer, Hunsberger, Pratt & Alisat, 2000).

Islamic University of Technology, Dhaka (IUT), the international university in the country, is regarded as one of the top Science and Technology Universities in the OIC world. However, the institution faces numerous issues and challenges that revolve around its administrative and academic operations, as well as acknowledgement of its multicultural as well as sociological value and concomitant recognition within the Muslim community. The aim of this study was to examine this diversity having significant implications for students' expectations, motivations, and the academic as well as personal resources that they bring to their university experience. Therefore, it is critical for teachers not to make assumptions about students' entry-level knowledge and skills. That makes need of new strategies to be explored. Thus, there is justification for conducting research regarding first-year engineering students' experiences to determine the supports necessary for student success in a multicultural setting, like IUT where students from 57 OIC member states are pursuing higher education and training.

1.3 CONTEXT OF THE INVESTIGATION

The study was focused on IUT, Dhaka - a subsidiary organ of OIC in Bangladesh. This section briefly introduces Bangladesh and its education system generally and then Islamic University of Technology (IUT) in Bangladesh. These two cases are described in the subsequent sections.

1.3.1 Bangladesh and its Education System

Bangladesh is located in South Asia, bordering the Bay of Bengal, between Myanmar and India and is a close neighbor to China, Thailand, Nepal and Bhutan. Its population is approximately 160 million with a density of 1033 per sq. km and ranked among the most densely populated countries on the globe (World Fact book of CIA, 2014). The economy of Bangladesh is predominantly agro-based and its main endowments include a vast human resource base, rich agricultural land, relatively abundant water and substantial reserves of natural gas (Budde Comm, 2013).

However, the people of this country experience poverty, along with political instability/confrontation, poor infrastructure, corruption, insufficient power supplies and slow implementation of economic reforms (Budde Comm, 2013). The World Bank (2012) reports that almost one-third of the population (31.5%) live below the poverty line (less than \$1.25 per day) and are, therefore not receiving basic needs and amenities.

According to the University Grants Commission [UGC] (2012), there are approximately 90 universities in Bangladesh including 34 public, 54 private and 2 international universities. Public universities are evenly placed throughout the country, whereas most of the private universities (45 out of 54) are situated in the capital city of Dhaka. Therefore, the government is encouraging private universities to have their campuses in other parts of the country (Bangladesh Bureau of Educational Information and Statistics [BANBEIS], 2012).

According to BANBEIS (2012), the present education system of Bangladesh is broadly divided into three major stages, viz. primary, secondary and tertiary education. Primary education is comprised of 5 years of formal schooling (Grades I - V) and is compulsory for all (BANBEIS, 2012). Secondary education is comprised of 7 (3+2+2) years of formal schooling. The first 3 years (Grades VI-VIII) are referred to as junior secondary; the next 2 years (Grades IX - X) as secondary while the last 2 years (Grades XI - XII) are called higher secondary. In secondary and higher secondary education, there are three streams, namely, Humanities, Science and Business Education, which start at Grade IX and XI respectively, and where students are free to choose their course(s) of studies along with several core courses. At the end of Grade X and XII, students are required to sit for the SSC (Secondary School Certificate) and HSC (Higher Secondary Certificate) examinations respectively (BANBEIS, 2012). Tertiary education is comprised of 2-6 years of formal study. HSC or equivalent degree holders are qualified to enroll in 3-year degree pass courses and then two years for a Master's degree in the colleges or equivalent institutions or they can enroll in 4-year bachelors' degree honors courses and then one year for Masters at the universities. Eligible Masters Graduates can pursue M. Phil for 1 year or PhD for 3-4 years at the universities (BANBEIS, 2012).

1.3.2 Islamic University of Technology (IUT)

Islamic University of Technology at Dhaka, Bangladesh commonly known as IUT is a subsidiary organ of the Organization of the Islamic Cooperation (OIC), representing fifty-seven member countries from Asia, Africa, Europe and South America. It was initially established as the Islamic Centre for Technical and Vocational Training and Research (ICTVTR) in 1981. ICTVTR was renamed as the Islamic Institute of Technology (IIT), by the Twenty-second ICFM held in Casablanca, Kingdom of Morocco in 1994. The process of renaming Islamic Institute of

Technology (IIT) as Islamic University of Technology (IUT) began with a discussion in the 25th meeting of the Governing Board of IIT held in Dhaka, Bangladesh on 20 – 23 November 2000 and renamed as Islamic University of Technology (IUT) in 2001. The renaming of IIT as IUT is an important milestone in the annals of this unique educational institution, only of its kind under the umbrella of the OIC which has been emerging as the most visible demonstration of the Islamic Solidarity and Joint Islamic Action under the Makkah–Al–Mukarramah Declaration. As per its statute, IUT has the commitment to develop human resources, particularly in different branches of science, engineering, technology and technical education to support social and economic fulfillment of the member states of the OIC by trying to achieve academic excellence through dissemination, creation and application of knowledge in an Islamic environment.

IUT is basically an educational and research institution offering a wide range of undergraduate and postgraduate academic programs conducted in the fields of engineering, technical education and teachers' training. It also offers knowledge and skill updating and upgrading short and special courses as needed by the Member States. International and regional seminars and workshops are also arranged regularly by IUT to provide forums and to keep abreast of the latest technological developments. It also undertakes technological and industrial research projects, promotes technical cooperation, exchanges technical know-how and disseminates basic information of development of human resources as co-focal point under UN-OIC collaboration among the Member States of the OIC. IUT ensures coordination between its objectives with other national and regional institutions of the Islamic countries as well as with international institutions. It also undertakes advisory and consultancy services for Government, International Bodies, Foundations and allied Organizations. IUT continued its dedication to its basic commitment: providing the best possible opportunities of learning to the students. The IUT education prepares the the students to take up their role as both citizens and leaders of the rapidly changing global community.

Location: The University is located at Board Bazar, Gazipur, about 30 km north of Dhaka (Latitude=23°43'N, Longitude = 90°25'E), the capital of Bangladesh. The capital is served by an international airport with widely developed airlines network with the rest of the world and by satellite telecommunication.

Values and Culture: As a subsidiary organ of the 57-nation Organization of Islamic Cooperation (OIC), IUT is guided by the noble Islamic values of unity and fraternity. It is determined to preserve and promote the Islamic values of peace, compassion, tolerance, equality, justice and human dignity. It is committed to work for revitalizing Islam's pioneering role in the world while ensuring sustainable development, progress and prosperity for the peoples of the member states.

Considering its present size, student population and the number of graduates it produces every year, IUT is not a big university. However, it pursues excellence in all its endeavors. Since IUT believes in dynamism, it encourages continual improvement in all its academic activities. IUT values learning as a way of life and promotes the habit of critical thinking and intellectual curiosity. It tries to offer students access to cutting-edge learning experiences, facilities and material support. IUT also believes that its academic efforts require intellectual freedom and a climate that encourages free and open exchange of ideas. The university endeavors to attain a distinctive feature specializing in a particular field in which it intends to be prominent. Specializing in any area in the field of high, frontier and emerging technologies will enable IUT to establish itself among the renowned seats of higher learning. The university shall explore its potentialities in any leading and cutting-edge technology in which it may strengthen its research activities.

The budget of the University is financed by mandatory contributions of the Government of the Member States in proportion to their contribution to the budget of the General Secretariat of the OIC. The university has different committee for assessing the quality of the education and other necessary components to place IUT as one of the leaders in teaching and research in the field of engineering in Bangladesh, OIC member countries as well as internationally.

Structure: The structure of the University comprises the Joint General Assembly, the Governing Board, Syndicate and the Vice Chancellor. The internal setup and working conditions of the University are governed by its Internal Rules and Regulations as approved by the Islamic Conference of Foreign Ministers (ICFM) as well as by the provisions of the Personnel and Financial Regulations of the OIC.

List of Department: At present there are six departments under two faculty at IUT. These departments are Mechanical and Chemical Engineering (MCE), Electrical and Electronic Engineering (EEE), Computer Science and Engineering (CSE), Civil and Environmental Engineering (CEE), working under the broad direction of Faculty of Engineering & Technology. The departments of Technical and Vocational Education (TVE), and Business and Management of Technology (BMT) works under the Faculty of Science and Technical Education.

The current distribution of student population at IUT according to nationality is as follows:

Table 1.1 Total Students by Nationality

Sl.	Country	Total No. of students
1	Afghanistan	19
2	Bangladesh	1393
3	Cameroon	47
4	Chad	1
5	Comoros	19
6	Djibouti	3
7	Gambia	10
8	Indonesia	1
10	Nigeria	35
11	Pakistan	39
12	Palestine	26
15	Somalia	20
16	Sudan	7
17	Uganda	8
18	Yemen	27
Total		1653

PROGRAM REQUIREMENTS:

Academic Calendar: IUT follows the Semester System for the purpose of conducting instructions and examinations. An academic year consists of two semesters each of sixteen weeks of instruction. They are winter semester and summer semester. There is also a short semester in between summer semester of the last academic year and winter semester of the upcoming academic year to facilitate the industrial training for IUT students of all departments and arrangement of short courses by all departments as per needs of different countries of the OIC.

Medium of Instructions: The official languages of the University are Arabic, English and French. Medium of instructions and examinations at present is English. A preliminary English Language Programme is arranged for Arabic and French speaking students in the beginning of their program at IUT. All students are required to learn one of the three languages as second language. However, all non-Arabic speaking students are required to learn Arabic as spoken language.

Admission: The Islamic University of Technology (IUT) announces its offering of programs each academic year in Doctor of Philosophy, Masters of Science, Masters of Engineering, Bachelor of Science, Higher Diploma and Diploma under various academic departments. Nominations of eligible candidates for admission to different programs of study are invited from the relevant Ministries or Authorities of the Member States by the end of September each year. Nominations for the programs are to be sent to IUT in order of merit on the basis of tests prescribed by the University and conducted by the Nominating Authority and Focal Points of the Member States of the OIC. Each nomination should be accompanied with Application of the nominee in the prescribed form duly filled in and signed, available in the office of the Nominating Authority and Focal Points, along with attested copies of Academic Certificates and Mark Sheets.

Program offered: IUT offers programs of various durations. Different programs of study offered by IUT are illustrated below:

- I. Bachelor of Science (4-Year Programme) in (i) Mechanical Engineering, (ii) Electrical and Electronic Engineering, (iii) Computer Science and Engineering, (iv) Civil Engineering and (v) Software Engineering (starting from 2017-18).

- II. Bachelor of Business Administration (4-Year Programme) in Technology Management (starting from 2017-18).
- III. Higher Diploma (3-year Programme) in (i) Mechanical Engineering, (ii) Electrical and Electronic Engineering and (iii) Computer Science and Engineering
- IV. Postgraduate Programmes in Engineering and Technology
 - (a) Doctor of Philosophy in (i) Mechanical Engineering, (ii) Electrical and Electronic Engineering and (iii) Computer Science and Engineering.
 - (b) Master of Science in (i) Mechanical Engineering, (ii) Electrical and Electronic Engineering, (iii) Computer Science and Applications, (iv) Computer Science and Engineering and (v) Civil Engineering.
 - (c) Master of Engineering in (i) Mechanical Engineering, (ii) Electrical and Electronic Engineering, (iii) Computer Science and Engineering and (iv) Civil Engineering.
- V. Technical Education Programmes in (a) Master of Science in Technical Education (1 to 2-year programme depending on the background of the candidate), (b) Postgraduate Diploma in Technical Education (1-year programme), (c) Bachelor of Science in Technical Education (1 to 2-year programme depending on the background of the candidate) and (d) Diploma in Technical Education (1-Year Programme).

Degree Requirements: Undergraduate Programmes in Engineering

Islamic University of Technology (IUT) runs Bachelor of Science (B.Sc.) in engineering programs in four departments. Program requirements and the structure are given as follows.

Table 1.2 Programme Requirements details for Bachelor of Science (B.Sc.)

Programme Requirements details				
Programme	Department	Total duration (Year)	Total Semester	Total Credit hour
Bachelor of Science (B.Sc.)	MCE	4	8	180.75
	EEE	4	8	182.00
	CSE	4	8	181.75
	CEE	4	8	181.0

Besides, Islamic University of Technology (IUT) runs **Higher Diploma** in Engineering Programs in three departments. The program requirements and the structure are given as follows.

Table 1.3 Higher Diploma Programs in Engineering

Programme Requirements details for Higher Diploma Program				
Program name	Department	Total duration (Year)	Total Semester	Total Credit hour
Higher Diploma (HD)	MCE	3	6	138.75
	EEE	3	6	141.25
	CSE	3	6	137

Moreover, there is Technical and Vocational Education (TVE) department in Islamic University of Technology (IUT). The different program requirements and the structure of TVE departments are given as follows.

Table 1.4 Programme Requirements for Technical and Vocational Education (TVE) department

Technical and Vocational Education (TVE) department				
Program name	Department	Total duration (Year)	Total Semester	Total Credit hour
DTE	TVE	1 Year	02	44.50
BSc TE	TVE	2 Years	04	87.50
MSc TE	TVE	2 Years	04	60.00

The minimum duration of the Ph.D. programmes shall normally be six semesters from the date of registration. A full time student must complete all the requirements for the Ph.D. degree within six academic years from the date of registration and part time within eight years. The minimum duration of the M.Sc. Eng., M.Sc. and M. Eng. programmes shall normally be three semesters each consisting of 16 weeks. For the degree of Ph.D. a student must earn a minimum total of 54 credit hours including a thesis for which a total 42 credit hours shall be assigned. For the Degree of M.Sc. Eng./M.Sc., a student must earn a minimum total of 36 credit hours, including a Thesis for which a total of 18 credit hours shall be assigned. For the Degree of M. Eng., a student must earn a minimum total of 36 credit hours including a Project for which a total of 6 credit hours shall be assigned.

1.4 OBJECTIVES OF THE STUDY

The objectives of this study were to:

- find out the learning experience of first year engineering students of IUT in terms of
(i) Quality of teaching-learning, (ii) learning resources, (iii) curriculum structure
(iv) Student support, and (v) extra-curriculum activities.
- Compare academic achievement of local and international engineering students at the department and university level at IUT.
- Compare academic achievement of male and female engineering students at the department and university level of the university.

1.5 RESEARCH QUESTIONS

The overarching research questions guiding this study were:

1. How do first year engineering students at IUT both local and international experience their learning?
2. What is the effect of nationality status on academic achievement for first year local and international students at the department and university level in IUT?
3. What is the effect of gender on academic achievement for first year male and female engineering students at the department and university level in IUT?

1.6 SIGNIFICANCE OF THE STUDY

Among various possible outcomes of the research work, the following are the remarkable-

- The findings of the study will enable the University management to identify areas of the first year learning experience that have enhanced students' academic and social development.
- The study will also throw more lights on those areas that need to be improved to further enhance positive student learning experience, satisfaction and retention.
- To transform IUT's programs and courses to meet the needs of our future students, industry, the professions and the wider community.
- Provide advice and support to faculties in the design, administration, delivery and evaluation of first year learning experience.
- Support academic staff engagement in teaching to improve the experience of first year students.
- Establish and maintain a community of academic and professional staff focused on supporting and enhancing the first year student learning experience.

1.7 DEFINITION OF TERMS AND CONCEPTS

In the following sections, the definitions of terms and concepts relating to this study are vividly presented, which includes First Year, Learning Experience, Multicultural Setting, Diversity in Education, and students' academic achievement.

1.7.1 The First Year

What does 'first-year' mean? For the sake of this review it refers to the first-year of study of a student in an institution at undergraduate level. In IUT context, it refers to first year study within a university rather than within a college of further education. The vast majority of the literature refers to students in their first year of undergraduate study. Some literature addresses issues related to transfer into a higher education institution (four-year institution in the United States) from further education or community college; the transferees' first year in the institution may not be their first-year of undergraduate study. The situation relating to the first-year is made more

complicated by the differences between full-time and part-time study. In the latter section, the first-level study may go on beyond the first year. Similarly, in some higher education institutions it can be difficult to identify first-year undergraduates if there are modular systems with students taking modules at different levels in one year and the university records student information by the level of study rather than the year of study. In some cases first-year undergraduates may not only be doing modules at different levels but also may move between part-time and full-time modes. This review covers all students who are seen by their institutions as being in their first year.

1.7.2 What is Learning Experiences?

Learning experience refers to any interaction, course, program, or other experience in which learning takes place, whether it occurs in traditional academic settings (schools, classrooms) or nontraditional settings (outside-of-school locations, outdoor environments), or whether it includes traditional educational interactions (students learning from teachers) or nontraditional interactions (students learning through games and interactive software applications).

Because students may learn in a wide variety of settings and ways, the term is often used as a more accurate, preferred, or inclusive alternative to terms such as *course*, for example, that have more limited or conventional connotations. *Learning experience* may also be used to underscore or reinforce the goal of an educational interaction—learning—rather than its location (school, classroom) or format (course, program), for example.

The growing use of the term *learning experience* by educators and others reflects larger pedagogical and technological shifts that have occurred in the design and delivery of education to students, and it most likely represents an attempt to update conceptions of how, when, and where learning does and can take place. For example, new technologies have dramatically multiplied and diversified the ways in which students can learn from and interact with educators, in addition to the level of independence they may have when learning. Students can email, chat, or have video conversations with teachers, and they can use online course-management systems to organize and exchange learning materials (e.g., the assignments given by teachers or the work turned in by students). Students can use software programs, apps, and educational games to learn on their own time, at their own pace, and without instruction or supervision from teachers. Students can also watch videos created by their teachers, conduct online research to learn more about a concept

taught in a class, or use tablets to record scientific observations in a natural environment—among countless other possible options and scenarios. While listening to a lecture, reading a book, or completing a homework assignment remain “learning experiences,” students are now learning in different ways than they have in the past and in a wider variety of outside-of-school settings, such as through internships, volunteer activities, or dual-enrollment programs, to name just a few examples.

1.7.3 What is a Multicultural Setting?

During the search for a precise definition of a multicultural setting, to choose a specific definition that represents or provides an exact meaning of diverse education was not an easy endeavour. Amongst the various definitions, however, one implies that a multicultural setting is an environment in which both the students and the teacher are from different ethnic backgrounds accepting of all races, cultures, and religions. Not only students from different, cultures, faiths, backgrounds, but also students with different learning styles, abilities and intelligences (Allen, Paasche, Langford, Nolan 2002). Another definition considers a multicultural setting in school as an inclusive classroom that welcomes students from various abilities and backgrounds. Inclusive classrooms consider that all students are full members of the school community and are entitled to the opportunities and responsibilities available to other students in the school (Gurin, Dey, Hurtado, & Gurin, 2002; Hutchinson 2007). A university that recognizes that all students are unique in their own way and that their differences could consist of their athletic ability, cultural background, personality, religious beliefs, reading level, etc.

1.7.4 What is Diversity in Education?

According to O’Donnell (2008), diversity is of visible and non-visible types. Racial, ethnic, religious, and linguistic backgrounds are visible diversity and different learning styles, different levels of motivation, and different opinions about the world are nonvisible diversity. In Hofstede’s (2001) work, diversity refers to all of the ways that people are different, and this includes individual groups and cultural differences. According to Hofstede (2001), the dimensions of diversity include race, ethnicity, gender, sexual orientation, language, culture, religion, mental and physical ability, class, and immigration status. Another definition describes diversity as a variety of learning styles. Hall and Mosely (2005), identify that there are a few main types of learning styles that students

may possess. These main styles of learning are visual, audio, and kinesthetic. Hall and Mosely (2005) address visual learners as those who learn best through what they see in front of them (i.e., through diagrams, displays, or handouts). Second, auditory learners are those who learn best through hearing what they learn through lectures, discussions, discussion, and debate. Third, kinesthetic learners learn best through hands-on activities, and through physically interacting with the world around them. So a diversity in university is one that responds to the needs of various groups within the class and to the learning style differences among students.

1.7.5 What is Student Performance or Achievement?

Student achievement has become a hot topic in education today, especially with increased accountability for classroom teachers. The ultimate goal for any teacher is to improve the ability level and prepare students for adulthood. Defining student achievement and factors that impact progress is critical to becoming a successful teacher. Student achievement measures the amount of academic content a student learns in a determined amount of time. Each grade level has learning goals or instructional standards that educators are required to teach. Standards are similar to a 'to-do' list that a teacher can use to guide instruction. Student achievement will increase when quality instruction is used to teach instructional standards. For instance, you have a to-do list that involves three tasks: dropping off the cleaning, filling your gas tank, and studying for a final. Questions you may ask yourself are: In what order do I accomplish my tasks? How am I going to get each task finished? Should I study at the library where it is quieter or at home where I may be distracted? Is it worth it to purchase gas a few blocks from home at a higher price or drive a short distance to save money? Your goal is to get your to-do list finished in the most efficient and timely way possible. When teaching, you must use the same process when addressing instructional standards. Questions you should ask to successfully complete your 'to-do list' or learning standards in a timely and efficient manner include: What type of students do I have? How am I going to teach the standard? Will they understand the vocabulary? How long do I think it will take for students to fully learn the material? Successful instruction of standards results in student achievement. However, knowing the 'what' and the 'how' is just the first step to successful student achievement. Understanding the factors that can impact a student's ability to learn is equally important.

CHAPTER II

REVIEW OF LITERATURE

This literature review aims to consider the research literature exploring the undergraduate engineering first-year experience and to identify key emerging issues to inform university policy makers, practitioners, researchers and other interested parties.

2.1 Conceptualization of Internationalization of Higher Education

To different people, institutions and countries, the nature, purposes and practices of the internationalization of higher education may be different. Some people may adopt a narrow activity-based or technical approach to conceptualizing and managing internationalization. Limited by narrow conceptions, there may be some myths and misconceptions about internationalization. For example, Knight (2011) pointed out five myths such as foreign students as internationalization agents; international reputation as a proxy for quality; the more international agreements an institution has, the more it is seen as being prestigious and attractive; the more international accreditations an institution has, the more it is seen as being internationalized; and internationalization for global branding. Furthermore, de Wit (2011) highlighted nine misconceptions in a predominantly activity-oriented approach towards internationalization:

1. Education in the English language;
2. Studying or staying abroad;
- 3 Internationalization is synonymous with providing training based on international content or having international connotations;
4. Having many international students equals internationalization;
5. Few international students' guarantees success;
6. There is no need to test intercultural and international competencies;
7. The more partnerships, the more the success of internationalization;
8. Higher education is international by nature; and
9. Internationalization as a precise goal.

Following the worldwide progress in the past two decades, the scope, nature and aims of internationalization of higher education have been much expanded and enriched and should be conceptualized in a more comprehensive process-based approach instead of a narrow conception with focus mainly on some technical activities or provisions of international education. Knight (2008) has proposed a broader definition of internationalization of higher education as ‘the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education’. As further argued by Ennew and Greenaway (2012), internationalization is a set of activities as well as a way of approaching the operation of a university, serving as a management philosophy and an organizational function covering a broad range of key components such as:

- An international curriculum (in terms of both skills and content);
- An international environment and experience (food, community, and entertainment);
- Inward and outward student mobility (which may include exchange, study abroad and fee-paying international students);
- Inward and outward staff mobility;
- International collaboration, whether with universities, businesses, governments, NGOs or others;
- Research collaborations (whether at the level of individual subjects or at institutional level, formal or informal);
- Teaching (joint, dual degrees, split site programs, validations,);
- International operations (delivering teaching or research in a different location internationally), (Ennew & Greenaway, 2012, pp. 4–5).

From the above discussion, we can see that the nature and purpose of internationalization of higher education have become increasingly complicated, dynamic and multidimensional in the last few decades. It may have multiple purposes or motives including academic/educational motives (e.g. development of student/staff global competences, world-class academic capacity building, international benchmarking, etc.), economic motives (e.g. development of economic competitiveness, financial income, etc.), political motives (e.g. enhancement of national soft power, regional diplomatic influence, etc.) and social/cultural motives (e.g. facilitating societal

transformations, multicultural adaptations in response to a globalized world, etc.) (Altbach & Knight, 2007; Ennew & Greenaway, 2012; Mohsin & Zaman, 2014; Yeravdekar & Tiwari, 2014).

2.2 The First-Year Experience

The first-year experience in higher education has been the topic of research and comment in academic publications worldwide for more than forty years. The expansion of higher education has led to an increased requirement to support the diverse student population, a possible reason for an increasing concern with the first-year experience. The work of Kuh and colleagues has drawn international attention to the concept of first year student engagement and its role in promoting student learning and demonstrating institutional effectiveness.

The majority of the reported research on the first-year experience is based on single institutions studies, often with small samples of students, not uncommonly from a single programme of study. Often, existing data relating to a student cohort, such as registry data, grades and to a lesser extent satisfaction ratings are used to identify significant factors that impact on the first-year experience, in particular decisions whether to persist or withdraw. The main theory in this area is based on notions of social and academic integration. Students withdraw from the first year if they feel they are not integrated. Predicting success and evaluating performance overlaps with concerns about retention of students in the first year.

Abada et al. (2008) describe that, culturally and linguistically diverse students may have customs, traditions, and values that set them apart from their peers and interfere with their self-esteem and ability to participate in learning experiences. Some students may be fluent in English and some may be English language learners. Therefore, it is fundamental that educators recognize that diversity not only refers to ethnic, racial, and linguistic diversity, but neither does it only refer to students with exceptional needs. Diversity includes all students, their ethnic language, family structure, learning styles, and personalities. All these factors contribute to the construction of multicultural diverse educational setting.

2.3 Performance of First Year

There have been many attempts to predict the success of students in their first year (and beyond). Most of the research tries to identify a simple determining factor of first-year performance. The literature suggests that secondary school grades and special tests do not closely relate to first-year performance in general. Prior knowledge or expertise in a subject and grades achieved in the early part of the first year are indicators of success but only in combination with other variables. Results of previous assessments at all stages are the best predictor of subsequent results. Published research evaluating performance suggests that first-year students tend to overrate their knowledge and abilities. Such evaluative studies are designed to identify gaps as a basis for implementing interventions designed to overcome student deficiencies. Predicting success and evaluating performance overlaps with concerns about retention of students in the first year. The main theory in this area is based on notions of social and academic integration. Students withdraw from the first year if they feel they are not integrated. Models of social and academic integration have been criticized because they tend to reflect a traditional (white middle-class residential) college student experience. Augmentations of the integration model include cultural capital theories. One clear message from the literature is that no model fits all situations.

2.4 Factors Impacting on Performance

There is a large body of research on the factors that affect first-year performance and persistence in higher education. The research suggests that there is no simple relationship between integration variables and retention. Withdrawal is the result of a complex combination of student characteristics, external pressures and institution related factors. Students' decisions to leave are often the result of a build-up of factors. In the UK, research seems to suggest that persistence is related to student satisfaction, which is integrally linked with their awareness for higher education and expectations. Choice of institution and programme of study is often crucial.

There is some suggestion that first generation students make assumptions about higher education, not least the support they will get, which are unmet. Although performing at least as well as younger students, mature students are likely to feel more socially isolated and have financial and family concerns that impact on their first-year performance and persistence. Access to teaching staff and feedback on progress are important motivators for first-year mature students. Males tend

to have lower persistence rates than females. Although there are differences in ethnic group performance and persistence, within ethnic groups there are differences in male and female success. Another area of research was to see whether providing support services for students improved first-year performance and persistence. The research suggests that those students who participate in support activities benefit, although it does depend on student characteristics. However, students who most need the support are not always those who make use of it.

Research suggests that finance is not as big a factor in student persistence as is often presumed. It is rarely the only reason for withdrawal. Many students undertake paid work but there is little evidence to suggest that moderate amounts of part-time working adversely affect first-year performance. Furthermore, the impact of paid work during term time is not always negative.

Another area of research has been the impact of student residence. Living on campus is presumed to be an important factor in social integration but there is ambiguous evidence about whether living in residences actually enhances grades. The beneficial effects of residential living seem to be dependent on the context and may be more beneficial in small institutions or where students not only live in residential settings but also study together.

Stress and health of first-years students is also an area explored for its impact on performance and persistence. The limited evidence suggests better health leads to better academic performance and persistence in higher education. There is some evidence that health tends to deteriorate over the first year. The main causes of stress appear to be study factors rather than external factors.

2.5 Teaching-learning and First-Year Learning Behaviour

Research suggests that the first year is a time of considerable cognitive growth and appears to be important in developing learning behaviour. However, rigid prior conceptions about the subject area or approaches to learning can inhibit learning. Research shows that students find conceptual development difficult and staff need to assess whether their teaching styles enable students' conceptual development. Males and females appear to develop different learning behaviours although there is little correlation between learning behaviour and student achievement in the first

year. First-year students tend to adopt surface learning or instrumental approaches. This does not seem to impact greatly on first-year results.

Research suggests that students may accept the principle of autonomous learning but need help in becoming autonomous learners. There is a movement, particularly in the US, promoting the advantages and effectiveness of first-year learning communities.

Research shows that students prefer student-centred, active learning rather than lectures. Problem-based learning, practical projects and team working seem to be effective provided the student is well prepared. Research on assessment shows a preference by students for coursework assessment, although this is not the case in all settings. Peer assessment appears to be beneficial and, if carefully planned, on-line assessment can be a useful learning aid. However, it is important that students and staff have a shared understanding of the language of assessment.

2.6 Support for the First-Year

There is a sizeable literature on support services for first-year students, much of which outlines good practice and the need for appropriate and integrated interventions. Induction is important and published material suggests that induction processes should avoid information overload and unnecessary bureaucratic procedures. There seems to be a strong case for a gradual process of induction. Learning skills development is best contextualized and embedded in the curriculum rather than being supported by stand-alone courses or workshops.

Research suggests that students need help in adapting to university life and becoming autonomous learners and that feeling positive and having a friendship group greatly aids social and emotional adjustment to higher education. It is also noted that students shift emphasis from one source of support to another as they progress through the year. Students adjust quicker if they learn the institutional 'discourse' and feel they fit in. Integration, through supportive interaction with teachers, greatly enhances adjustment, as does access to learning resources and facilities.

Some research has explored how different types of student adapt. Males and females adjust differently. Mature students often find adjustment difficult, especially when they are a tiny

minority. Adjustment is a particular problem for students from local authority care. External influences, such as family and friendship groups (outside university) can impact significantly on adjustment in the first year.

2.7 Why Improve the Student Experience?

The higher education has become increasingly competitive and students have become more demanding and better informed about what services and support they expect to receive whilst studying at university.

As a result, institutions need to provide an excellent quality student experience to safeguard their continued organizational existence. Being committed to improving the student experience can increase the ‘retention’ of students by reducing withdrawal rates and aid student progression. It is also pivotal to a higher education institution’s (HEI) ability to attract students. It is no longer acceptable, if it ever was, to treat students entering this level of study as a homogenous group. The increasing level of student diversity, the increasing costs of delivering HE, the reduction in government/ state funding and resource constraints means delivering an excellent quality student experience has never been more challenging for us.

Lawrence (2002, 2005) in her framework for successful transition to university relies on three major groups of factors which are essential to success in the first year of undergraduate studies:

- Socio-cultural competencies, such as seeking help, participating in a team, making social contact, seeking and giving feedback.
- University based literacies such as academic literacy and numeracy, information literacies, administrative, library and research literacies.

Lawrence’s views are supported by the work of Clegg, Bradley and Smith (2006) on help seeking behaviors; and Wingate (2006) on learning and study skills. Kift (2009) developed the Transition Pedagogy which is strengthened by two key principles: Students must be engaged as learners to be successful at university. Students in their first year at university benefit from specific strategies designed to assist them with the social and academic transition to university.

2.8 How to Best Support Diversity?

In considering how best to provide support for diversity and social justice, Martell (2013) recommends that teachers go beyond the assessment of their students' aptitudes, skills, and knowledge with respect to the subjects being taught. According to Martell, teachers must strive to use inclusive language examples as much as possible, because some differences are less visible and it is impossible to know every student's situation. Grant and Gibson (2011), and Gay (2013) believe that there is a strong connection between democratic processes and the achievement of social justice. Martell (2013) synthesizes that engaging students in democratic process helps further students' sense of responsibility and appreciation for the participation of all community members in decision-making. Simultaneously, teachers need to apply professional judgment in deciding when having students "assume control" of learning processes will best further their learning.

2.9 Multicultural Experience in Student Learning

We believe that examining the relationship between multicultural experience and creativity can have important ramifications for both organizations and student learning. Intercultural dynamics are becoming increasingly salient in both international corporations and educational environments (Jenn, Northcraft, & Neale, 1999; Williams & O'Reilly, 1998). Bringing students from different cultural backgrounds into the same department provides one form of multicultural experience that can potentially make people more facile at creative problem solving and idea generation. Indeed, an increasing number of multicultural organizations have created the position of chief diversity officer (CDO) to manage workforce diversity (Johansson, 2005). The research presented here on the psychology of multicultural experience could help diversity specialists implement policies to motivate students to integrate native and new cultural knowledge; effective integration of the familiar with the unfamiliar should boost cognitive and behavioral flexibility in response to the evolving demands of intercultural business contexts.

Maehr and Yamaguchi (2001) commented that educators should first recognize the positive features of cultural diversity but that the ultimate challenge is to transform schools into educational enterprises that value diversity. To his knowledge, few studies have systematically explicated the potential beneficial role of multicultural experience in student learning (e.g., acquiring new

perspectives and creative abilities). We believe that the current article is able to demonstrate to educators and practitioners the positive aspects of cultural diversity that can benefit every student, thus giving students from diverse ethnic and cultural backgrounds the confidence and motivation to learn in a multicultural education setting. In addition, his studies provide insight into how to structure multicultural exposure to achieve its benefits. Learning about other cultures should involve juxtaposing elements of the new culture with those of the host culture and contemplating possible fusions of the two.

Finally, the findings may be part of a larger process of becoming culturally intelligent that is, possessing the ability to make sense of and blend into unfamiliar cultural contexts (Chiu & Hong, 2005). Some individuals may be naturally more adept at blending into new cultural environments than others. However, not only may acquiring the ability to adapt to and mentally juxtapose aspects of different cultures help people become increasingly culturally intelligent, but the mental processes involved in exposure to heterogeneous environments may have the beneficial side effect of enhancing creativity as well. Despite these possible benefits, the results also indicate that multicultural experience does not guarantee competency. Having the motivation to adapt and to contemplate similarities and dissimilarities to one's own culture while immersed in another culture abroad is critical. In addition, multicultural experience does not improve an individual's performance in an innovative task unless the individual is predisposed to being open to experience. Furthermore, a performance context that deemphasizes one's mortality and the desire for firm answers is also important for reaping the creative benefit of multicultural experience. These facilitative and limiting factors deserve serious consideration in the design of diversity education and training programs.

2.10 Implications for Administration and Research

The first-year experience is not a homogeneous experience but a multiplicity of experiences contingent on type of institution and student characteristics. The published studies have tried to identify key factors that relate, for example, to retention but it is clear that the first-year experience is complex. Furthermore, the first-year experience evolves and changes both temporally and culturally. Issues facing students when they first arrive are not the same as issues half way through the first year or towards the end: expectations and satisfaction with the experience change. The

culture shock of induction becomes replaced by issues of assimilation and absorption of values. Some students become integrated academically and socially and others experience an accumulation of issues and problems.

The legitimate question can be raised: is there a first-year experience, however diverse, or should it be seen as part of a long process of cultural, social and intellectual assimilation? The published evidence seems to suggest that to decontextualize the first year from the entire student experience deflects from a need to ensure a positive learning experience suited to the evolutionary stage of the student. The literature suggests that institutions often do not focus on the first-year experience separately from the experience of other years.

Most of the research is small scale, usually institutionally-based studies with limited focus (reflecting the funding and status of education research). The result has been an accumulation of piecemeal studies. There is a need for a more systematic attempt to explore and theories the totality of the first-year experience. This does not just mean larger samples in more than one institution but attempts to synthesize the literature and address substantive issues. What is needed are more studies that explore why, for example, particular practices are effective in integrating students and holistic research that reflects the complexity of the student experience.

There is, therefore, an onus on those who publish research to seek studies that answer substantive questions. What is needed is the encouragement of approaches that go beyond simple answers to safe but insubstantial questions and that adopt approaches other than empiricist reductionism.

A clear implication from the research, then, is that institutions should do more with the data they collect that relates to the first year of study. However, institutions should treat the first year experience as more than about induction and retention.

2.11 The Australian First Year Experience Studies

The Australian first year experience studies began in the mid-1990s to collect data to assist in the monitoring and enhancement of the quality of university education. The first study in 1994 (McInnis & James, 1995) was commissioned as awareness grew of the impact of student diversity in a mass higher education system. There was a growing recognition at the time of the formative

role of the first year experience in shaping student attitudes and approaches to learning. The 1999 study (McInnis, James & Hartley, 2000) provided an opportunity to repeat the 1994 research, using a slightly modified questionnaire but with a student sample selected from the original seven universities. The 2004 study (Krause et al., 2005) built on the tradition set by the early studies, although the sample of institutions was enlarged to enhance its representativeness at the national level. In line with international research trends, the questionnaire was modified and updated to incorporate new questions on the use of information and communication technologies (ICTs), and to explore more fully the issue of student engagement.

These research report data from the 2004 study first year study that included a special focus on engagement. Specifically, they report psychometric results from their analysis of the first year engagement scales, and locate these scales in salient research contexts. These data have the potential to inform understanding of many aspects of university life, such as student affairs, pedagogical quality, recruitment and selection, attrition and retention, equity, and student learning processes. The analysis also makes a broader contribution to higher education research by developing a strong case for regular national studies of the first year student experience which include a focus on student engagement.

2.12 The Chinese Research on First Year Experience

Educators worldwide are faced with challenges of understanding how undergraduates are making their school-to-university transition and becoming inducted into their academic discipline. A recent study investigated Hong Kong first-year Chinese students' experiences of transition from school to university and induction into their discipline in relation to perceived course experiences, approaches to study and achievement of goals. Analysis of the survey data of this study indicates that although students reported transition difficulties, these were unrelated to perceptions of the course, approaches to study or achievement of goals. Students who reported good understanding of their discipline were those who achieved their goals, had a good course experience and adopted deeper study approaches. These findings suggested that rather than focusing mainly on tackling students' transition difficulties, efforts of promoting a positive first-year experience for Chinese university students and facilitating their goals achievement should be oriented towards constructing a facilitative learning environment.(Ref?)

2.13 Chapter Summary

This chapter provided a detailed review of the literature relating to internationalize of a higher education institutions. The multicultural experience of first year student learning and the factors that can impact their performance. There is a need for the implication of the administration and the research community to bring enquiries and solution for these complexities. The chapter then highlighted a number of necessity to provide support to the diversity and it shown in the literature requiring further consideration and signifying the need for this particular study. Therefore present the Australian and Chinese research findings.

CHAPTER III

METHODOLOGY OF RESEARCH

3.1 Design of the Study

The conceptualization of the student experience was based on five conceptual domains including quality of teaching-learning, learning resources, curriculum structure, student support, extra-curriculum activities. The First Year Student Experience focused on measureable aspects of students' engineering education course experiences linked to student support, learning resources, learner engagement, teaching and development outcomes, and other associated issues.

3.2 Sampling

The population of this study was the First Year Engineering students of IUT. As the population was mixed and multicultural, representative portion should be included in the sample. Purposive sampling was used throughout the study. The sample selection were validated against population parameters to ensure that appropriate proportions of gender, mode of attendance, study area and citizenship characteristics present in the sample.

Table 3.1 Presentation of sampling procedure

Population size	First year and second year students of IUT (625)		
Sample Size (167)	Local Students (55)	International Students (56)	Female Students (56)

*There are three international female students and all of them were included in the sample.

3.3 Tools of research

Structured Questionnaires were used for data collection and Focus Group Discussions (FGDs). This first area was operationalized by means of five-point rating scales, supplemented by textual transcription and coding for feedback on the best aspects of participant's learning experience at IUT.

3.4 Data collecting procedures

The data were collected through structured questionnaire by the researcher himself and three focus group discussions were organized at a time and place convenient to the participants.

3.4.1 Structured Questionnaire

Questionnaire is considered as one of the primary media for gathering data or information in education and social science research. In this study, structured form of questionnaire was used as the primary data collection tool. In consultation with supervisors, the researcher had prepared appropriate questionnaires to collect data from students of different departments at IUT. The questionnaire consisted of fill-up the gap, short answer type and statement-wise opinion for providing tick within the five-point rating scale. These items were supplemented by few open ended textual questions in order to elicit details on the best aspects of participants' educational experience and problems at their respective institutions. The researcher himself printed the hardcopy and distributed the questionnaire to the participants. Statement-wise data format were designed on 5-point rating scale.

5-point rating (Likert) scale was used for first year students.

1. Strongly agree(SA)
2. Agree(A)
3. Undecided (U)
4. Disagree(D)
5. Strongly disagree(SD)

3.4.2 Focus Group Discussions (FGDs)

Varkevisser, Pathmanathan, and Brownlee (1993) define focus group discussion (FGD) as a group discussion involving about 6-12 persons with similar backgrounds or experiences guided by a facilitator, during which members talk spontaneously and freely about a certain topic. The group size is deliberately small, so that its members do not feel unsettled but can express opinions freely (Barbour, 2007). Roulston (2011) described the methodology of focus group discussions as a method of employing an easily and informally structured format for brainstorming new ideas through listening to a segment of targeted respondents and learning from their discussion. FGDs

can be useful in providing an insight into different views and thoughts among different parties involved in the process, thus enabling the total process to be managed more smoothly (Krueger & Casey, 2009). According to Mealer and Jones (2014), the major benefits that emerge from the interaction of participants in focus group discussions include spontaneity, stimulation, security and synergism. It is relatively efficient as different views can be obtained at the same time and thereby, summarization becomes quick and easier (Kroll, Barbour, & Harris, 2007)). A FGD guide to aid discussion is usually prepared beforehand to ensure a range of aspects relating to the topic are explored (Stewart, Shamdasani & Rook, 2007).

The researcher worked as the facilitator in all the focus group discussions held at the Multimedia Lab of IUT, Gazipur, Bangladesh. The first step was to develop a guide to conduct the FGDs. The guide was designed with one of the three research questions in mind. The FGD guide was constructed in such a way that related topics and issues were adequately explored.

The next step was to prepare each group of participants for the FGD. The session focused on introducing the researcher and outlining the research objectives to the participants, their role in the discussion, clarification of any issues and fixing a time and place for the FGD. It was found to be an effective strategy to conduct a pre-session with each group of participants, particularly the female student group, as due to cultural constraints. It would not have been possible to conduct the FGD without first becoming acquainted and setting up a suitable venue.

The final step was to conduct the FGD with each group of participants for about 45 minutes. Each FGD session was audio-recorded. Strategies were used to avoid sidetracking or domination by a few vocal individuals and ensure the discussion was smooth and respectful for all participants. The discussion comprised three groups including international, local and female students.

Roulston (2011) indicates the reasons for employing focus groups include the fact that focus groups function as a method that is convenient for carrying out interviews among numerous people who have familiarity with the topic of discussion. Therefore, FGDs provided an efficient method in this study to generate a rich set of information within a limited time frame. FGDs were conducted to determine the first year experience towards teaching and learning process in IUT.

3.5 Data analysis techniques

Data were analyzed using SPSS 20 software for comparative analysis using Category Percentage, Weighted Average (WA), Mann-Whitney-Wilcoxon (MWW) test and ANOVA. However, the FGDs were organized and analyzed manually.

After data collection, the information was tabulated in the Statistical Package for Social Science (SPSS) software version 20.0 was used for analyzing and interpreting the data obtained. Two-way ANOVA was used to find out whether there was any significant difference exists between the academic performance of local and international students as well as between male and female students in their respective departments at IUT. The mean, standard deviation, standard error were calculated but the sig. value (p value) was used basically to compare it to 0.05, which is a fixed value for any inferential statistics at SPSS software.

The statement-wise category percentage is just the ratio of number of participants from a particular group responded to one of the 5-rating scale (SA/A/U/D/SD) of a statement and the total number of respondents for the same statement multiplied by 100. The weighted average of the opinion of each statement is calculated by using the following formula:

Weighted Average, W. A. = $\frac{N_1 + 2N_2 + 3N_3 + 4N_4 + 5N_5}{N_1 + N_2 + N_3 + N_4 + N_5}$ where N_5, N_4, N_3, N_2 and N_1 are the number of respondents who supported “Strongly Agree”, “Agree”, “Undecided”, “Disagree” and “Strongly Disagree” respectively.

The five-point rating scale is as follows:

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
5	4	3	2	1

Likert questionnaires are widely used in survey research, but it is unclear whether the item data should be investigated by means of parametric or nonparametric procedures. According to de Winter and Dimitra (2010), the chi-square test does not use the ordinal information and treats the different values as nominal groups, which do not have a natural ordering, such as bitter, sweet or sour. 5-point rating scale or Likert data is basically ordinal data, which means it has a natural

ordering of values, but yet differences between the levels don't necessarily represent equal intervals. The Mann-Whitney-Wilcoxon test both incorporates the ordinal information that is contained in Likert items and should have more statistical power. By using the chi-square test in these cases, one would be losing ordinal information and probably statistical power to detect the differences between groups (de Winter & Dimitra Dodou, 2010)

To examine statements of questionnaire, Mann-Whitney-Wilcoxon test was conducted. As like other inferential statistical tests in SPSS, the sig. value was compared to .05 to draw conclusions about the research questions. Category percentage and weighted average were calculated using Crosstab followed by its detailed interpretation. These tests were considered in this study for assessing different aspects of first year learning experience at IUT.

3.6 Ethical consideration

Before starting any data collection, the researcher was seeking required permission from the participating departments and corresponding class teachers. To make the process systematic, an invitation letter was signed by the Head, Department of Technical and Vocational Education, Islamic University of Technology (IUT), had been forwarded to the appropriate authorities of the participating departments and teachers. Each and every participant was given a questionnaire and required time was given to fill the questionnaire voluntarily. All the participants' information were used and kept confidential with utmost care.

CHAPTER IV

Analysis and Interpretation of Data

This chapter presents the findings emerging from analysis of the questionnaire distributed to the students of IUT. The parametric and non-parametric test results from the collected quantitative data relating to participant's perceptions of learning experience at IUT are presented and discussed in relation to the current body of literature. As part of the analytic process, the themes and subthemes generated from the focus group discussions are used to help explain each of the test results in the following chapter, which in turn, serves as a triangulation of data.

4.1 Data Analysis

It is important that the researcher select the appropriate test, since an incorrect test can lead to erroneous conclusions. The first decision is whether a parametric or nonparametric test is to be selected. The data obtained from the respondents through questionnaire were tabulated in the Statistical Package for Social Science (SPSS version 20) software (Md.Akhtaruzzaman, 2011). In case of research question 1, statement-wise category percentage, weighted average (WA) and Mann-Whitney test were used to findout the learning experience of first year engineering students of IUT. Two-way ANOVA were used to compare academic achievement of local and international, as far as male and female students at IUT relating to research question 2 and 3 respectively.

The criteria for five-point rating scale are interpreted as follows:

Weighted Average	Responses
$WA \geq 4.5$	Strongly Agree SA (5)
$4.5 > WA \geq 3.5$	Agree A (4)
$3.5 > WA \geq 2.5$	Undecided U (3)
$2.5 > WA \geq 1.5$	Disagree D (2)
$WA < 1.5$	Strongly Disagree SD (1)

4.1.1 Analysis of Objective 1

The first objective of this study was to investigate on the learning experience of first year engineering students of IUT in five different areas, which includes (i) quality of teaching-learning, (ii) learning resources, (iii) curriculum structure, (iv) student support, and (v) extra-curriculum activities. The subsequent sections of this chapter present the analysis sequentially based on these areas.

Table 4.1 Analysis of Teaching-learning Quality

Sl.	STATEMENTS	STATUS	5(SA)	4(A)	3(U)	2(D)	1(SD)	WA	Mean Rank	Sig.
1	You would rate the quality of teaching you have experienced in your discipline	International	19.6%	51.8%	16.1%	7.1%	5.4%	3.7006	81.83	.346
		Local	5.4%	67.6%	18.0%	8.1%	0.9%		88.30	
2	You do practical work by your own hand	International	25%	41.1%	19.6%	7.1%	7.1%	4.1138	65.21	.000
		Local	45.9%	47.7%	1.8%	1.8%	2.7%		93.48	
3	Lecturer provided clear explanations on coursework and assessment	International	17.9%	41.1%	23.2%	14.3%	3.6%	3.6228	81.74	.649
		Local	16.2%	45.9%	27%	9.0%	1.8%		85.14	
4	Lecturer engaged you actively in learning and stimulated you intellectually	International	14.3%	41.1%	23.2%	10.7%	10.7%	3.2814	89.79	.250
		Local	8.1%	35.1%	34.2%	17.1%	5.4%		81.08	
5	Lecturer commented on your work in ways that help you learn	International	12.5%	39.3%	12.5%	21.4%	14.3%	3.2635	80.79	.528
		Local	13.5%	34.2%	28.8%	18.0%	5.4%		85.62	
6	You would give good rate in the quality of your entire educational experience	International	21.4%	30.4%	26.8%	14.3%	7.1%	3.4611	84.14	.977
		Local	4.5%	56.8%	22.5%	13.5%	2.7%		83.93	

It is observed from table 4.2 that 71.4% international students and 73% local students have opined in the category of agree and strongly agree on statement 1, which implies most of the students are positive (agree/strongly agree) regarding the quality of teaching they experienced in their discipline. The responses are also in the category of 'Agree' in terms of weighted average (WA= 3.7006). Meanwhile, mean ranks of international and local students are 81.83 and 88.30 respectively and their Sig. value is .346, which is greater than .05 that implies the null hypothesis is accepted. So, there is no significant difference between international and local students in terms of their responses to this statement. As the responses of both international and local students are highly positive and there is no significant difference between them, it can be interpreted that the quality of teaching students have experienced in their respective discipline is very good.

It is observed that 66.1% international students and 93.6% local students have opined in the category of agree and strongly agree on statement 2, which implies most of the students are positive (agree/strongly agree) regarding the available opportunity to do their practical works by their own hands. The responses are also in the category of 'Agree' in terms of weighted average (WA= 4.1138). Meanwhile, mean ranks of international and local students are 65.21 and 93.48 respectively and their Sig. value is .000, which is less than .05 that implies the null hypothesis is rejected. So, there is a significant difference between international and local students in terms of their responses to this statement. As the mean rank of international students is much lower than the local students, it can be concluded that some of the international students do not acquire ample opportunities to do their practical work by their own hand.

It is observed on statement 3 that, 59% international students and 62.1% local students have viewed in the category of agree and strongly agree. The responses are also in the category of 'Agree' in terms of weighted average (WA= 3.6228). Meanwhile, mean ranks of international and local students are 89.79 and 81.08 respectively and their Sig. value is .649, which is greater than .05 that implies the null hypothesis is accepted. So, there is no significant difference between international and local students in terms of their responses to this statement. As the responses of both international and local students are positive and there is no significant difference between them, it can be interpreted that Lecturer provided them clear explanations on coursework and assessment.

The statement 4 indicates that 55.4% international students and 43.2% local students have viewed in the category of agree. The responses are in the category of 'Undecided' in terms of weighted average (WA=3.2814). Meanwhile, mean ranks of international and local students are 89.79 and 81.08 respectively Sig. value is .250, which is greater than .05 that implies we are in the acceptance region of the normal curve, the null hypothesis (there is no difference between the category-wise responses on the statement) is not rejected. So the responses on the statement are not statistically significant. Therefore, it can be concluded that lecturer did average level efforts in student's engagement in learning as well as stimulation intellectually.

The statement 5 indicates that 51.8% international students and 47.7% local students have viewed in the category of agree. The responses are in the category of 'Undecided' in terms of weighted average (WA=3.2635). Meanwhile mean ranks of international and local students are 80.79 and 85.62 respectively and Sig. value is .528, which is greater than .05 that implies we are in the acceptance region of the normal curve, the null hypothesis is accepted .There is no difference between the category-wise responses on the statement. So the responses on the statement are not statistically significant. Therefore, Lecturer commented on their work in ways that help them learn but their efforts in this regard is just average.

The statement 6 indicates that 55.4% international students and 43.2% local students have viewed in the category of agree. The responses are in the category of 'Undecided' in terms of weighted average (WA=3.4611). Meanwhile, mean ranks of international and local students are 84.14 and 83.93 respectively and Sig. value is .977, which is greater than .05 that implies we are in the rejection region of the normal curve, the null hypothesis (there is no difference between the category-wise responses on the statement) is accepted. So the responses on the statement are not statistically significant. As the overall responses of both international and local are nearly 50%, it can be said that students' experience of their entire educational life was of medium quality.

So, the overall analysis of students' responses to the statements related to analysis of teaching-learning quality revealed that majority of the respondents agree that the teaching-learning quality in general is good as it was found out at a mean average of 3.54. However, there is a significant difference between international and local students in terms of their responses to the statement 2.

The mean rank of international students is also much lower than the local students, which shows that the international students do not acquire ample opportunities to do their practical work by their own hand. However, no significant difference was observed in case of statement 1, 3, 4, 5 and 6.

Table 4.2 Analysis of Learning Resources

S/NO	STATEMENTS	STATUS	5(SA)	4(A)	3(U)	2(D)	1(SD)	WA	Mean Rank	Sig.
1	Teaching spaces (e.g. lecture theatres, tutorial rooms, laboratories) are Good	International	25%	44.6%	12.5%	12.5%	5.4%	3.9162	75.85	.330
		Local	34.2%	45%	12.6%	4.5%	3.6%		88.11	
2	Student spaces and common areas are Good	International	21.4%	50%	10.7%	14.3%	3.6%	3.5329	90.16	.531
		Local	18.9%	42.3%	13.5%	14.4%	10.8%		80.89	
3	Assigned books, notes and resources are relevant	International	14.3%	51.8%	14.3%	17.9%	1.8%	3.7126	77.65	.253
		Local	17.1%	61.3%	8.1%	9%	4.5%		87.20	
4	Library resources and facilities are Good	International	23.2%	41.1%	19.6%	14.3%	1.8%	3.5928	87.33	.624
		Local	19.8%	43.2%	13.5%	18%	5.4%		82.32	
5	Laboratory or studio equipment is well equipped	International	14.3%	50%	21.4%	8.9%	5.4%	3.5389	85.29	.527
		Local	18.9%	41.4%	11.4%	17.1%	5.4%		83.35	
6	Computing / IT resources are Excellent	International	26.8%	41.1%	16.1%	12.5%	3.6%	3.7186	85.90	.941
		Local	24.3%	39.6%	21.6%	10.8%	3.6%		88.04	

From table 4.2, the Statement1 indicates that 69.6% international students and 79.2% local students have viewed in the category of agree (WA=3.91620). Meanwhile, mean ranks of international and local students are 75.85 and 88.85 respectively and Sig. = .330 which is greater than .05. It means

that our result is not significant. As most of the respondents are agree, it can be understood that their Teaching spaces (e.g. lecture theatres, tutorial rooms, laboratories) are good.

From statement 2, there are 71.4% international students and 61.2% local students who have viewed in the category of agree (WA=3.5329). Meanwhile, mean ranks of international and local students are 90.16 and 80.89 respectively and Sig. = .531 which is greater than .05 level of significance. It means that our result is not statistically significant. We may say that student spaces and common areas are good.

In statement 3, there are 66.1 % international students and 78.4% local students who have viewed are positive (agree/strongly agree) regarding this statement. The responses are also in the category of 'Agree' in terms of weighted average (WA=3.7126). Meanwhile, mean ranks of international and local students are 77.65 and 87.20 respectively and Sig. = .253 which is greater than .05. It means that the result is not statistically significant. Therefore assigned books, notes and resources are relevant.

The statement 4 shows that, there are 64.3% international students and 63% local students who have viewed in the category of agree (WA=3.5928). Meanwhile, mean ranks of international and local students are 87.33 and 82.32 respectively and Sig. = .624 which is greater than .05. It means that the result is not significant. Thought we can say that library resources and facilities are good.

The statement 5 shows that, there are 64.3% international students and 60.3% local students who have viewed in the category of agree (WA=3.5389).Meanwhile, mean ranks of international and local students are 85.29 and 83.35 respectively and Sig. =.527 which is greater than .05 level of significance. It means that the result is not statistically significant. Then we may say that laboratory or studio equipment is well equipped.

The statement 6 indicates that, there are 67.9% international students and 63.9% local students who have viewed in the category of agree (WA=3.7186). Meanwhile, mean ranks of international and local students are 85.90 and 83.04 respectively and Sig. = .941 which is greater than .05 level of significance. It means that the result is not statistically significant. At that point we may say that, Computing / IT resources are Excellent.

So, the overall analysis of students' responses to the statements related to analysis of learning resources, presented that the distribution of the hypothesis of the statements are the same across the categories of the status, and we are in the acceptance of the null hypothesis, which means that, there are no differences between the category-wise responses on all statements. It was found at a mean average of 3.70 that majority of the respondents agreed that the learning resources are good.

Table 4.3 Analysis of Curriculum structure

S/NO	STATEMENTS	STATUS	5(SA)	4(A)	3(U)	2(D)	1(SD)	WA	Mean Rank	Sig.
1	Your course curriculum is periodically reviewed and updated	International	17.9%	48.2%	12.5%	17.9%	3.6%	3.5868	86.13	.130
		Local	11.7%	49.5%	27%	9%	2.7%		82.92	
2	The course developed my problem-solving skills.	International	16.1%	37.5%	16.1%	21.4%	8.9%	3.3234	84.90	.006
		Local	3.6%	47.7%	30.6%	14.4%	3.6%		83.55	
3	The course helped me develop my ability to work as a team member.	International	19.6%	37.5%	17.9%	17.9%	7.1%	3.4072	86.65	.525
		Local	11.7%	41.4%	26.1%	15.3%	5.4%		82.66	
4	I usually had a clear idea of where I was going and what was expected of me in this course structure.	International	12.5%	50%	25%	5.4%	7.1%	3.2575	98.04	.032
		Local	6.3%	34.2%	30.6%	21.6%	7.2%		76.91	
5	Overall, I was satisfied with the quality of this course contents	International	14.3%	35.7%	35.7%	7.1%	7.1%	3.4012	85.18	.141
		Local	7.2%	46.8%	27%	15.3%	3.6%		88.41	
6	As a result of my course, I feel confident about tackling unfamiliar problems.	International	17.9%	39.3%	17.9%	17.9%	7.1%	3.3114	90.68	.054
		Local	7.2%	36%	34.2%	19.8%	2.7%		80.63	

From statement 1, there are 66.1 % international students and 61.2% local students who have viewed in the category of agree (WA=3.5868). Meanwhile, mean ranks of international and local

students are 86.13 and 82.92 respectively and Sig. = .130 which is greater than .05 level of significance. It means that the result is not statistically significant. At that point, we may say that, the course curriculum is periodically reviewed and updated. From the statement 2, there are 53.6 % international students and 51.3% local students who have viewed in the category of agree (WA=3.3234). Meanwhile, mean ranks of international and local students are 84.90 and 83.55 respectively, and Sig. = .006 which is less than .05 level of significance, the null hypothesis is rejected (there is significant difference between the category-wise responses on the statement). As most of the respondents agreed, it can be said the course developed their problem-solving skills.

From the statement 3, there are 57.1 % international students and 53.1% local students who have viewed in the category of agree (WA=3.4072), Meanwhile, mean ranks of international and local students are 86.65 and 82.66 respectively and Sig. = .525 which is greater than .05 level of significance. It means that the result is not statistically significant. Furthermore, it may be said that, the course helped them develop their ability to work as a team member. Looking from statement 4, there are 62.5 % international students and 40.5% local students who have viewed in the category of agree (WA= 3.2575). Meanwhile, mean ranks of international and local students are 98.04 and 76.91 respectively and Sig. = .032 which is less than .05 level of significance, the null hypothesis is rejected (It means that there is significant difference between the category-wise responses on the statement). As most of the respondents are agree, it can be said that they usually had a clear idea of where they were going and what was expected of them in the course structure.

From statement 5, there are 50 % international students and 54% local students who have viewed in the category of agree (WA=3.4012). Meanwhile, mean ranks of international and local students are 85.18 and 83.41 respectively and Sig. = .141 which is greater than .05 level of significance. It means that the result is not statistically significant. Though it may be said that, they were overall satisfied with the quality of their course contents. In the statement 6, there are 57.2 % international students and 43.2 % local students who have viewed in the category of agree (WA= 3.3114). Meanwhile, mean ranks of international and local students are 90.68 and 80.63 respectively, Sig. = .054 which is less than .05 level of significance, the null hypothesis is rejected (It means that there is significant difference between the category-wise responses on the statement). As most of the respondents are agree, it may be may be said that as a result of their course, they feel confident about tackling unfamiliar problems.

So, the overall analysis of students' responses to the statements related to analysis of curriculum structure, shown that there are 50% significant difference between the category-wise responses on the statements (2, 4 and 5). It has been found at a mean average of 3.30 that majority of the respondents are undecided. It might be said obviously that, they have doubt is the good quality of curriculum structure in IUT.

Table 4.4 Analysis of Student Support

S/No	STATEMENTS	STATUS	5(SA)	4(A)	3(U)	2(D)	1(SD)	WA	Mean Rank	Sig.
1	You have found administrative staff or systems (e.g. online administrative services, frontline staff, enrolment systems) to be helpful	International	16.0%	46.0%	17.0%	14.0%	5.4%	3.6228	80.96	.825
		Local	19.0%	44.0%	21.0%	11.7%	2.7%		85.54	
2	You have found academic advisors to be helpful	International	12.0%	41.0%	21.0%	21.4%	3.6%	3.5509	77.05	.128
		Local	18.0%	38.0%	31.0%	9%	1.8%		87.50	
3	You received appropriate English language skill support	International	14.0%	30.0%	23.0%	26.8%	5.4%	3.2635	81.41	.360
		Local	9.9%	41.0%	24.0%	16.2%	8.1%		85.31	
4	You felt induction/orientation activities were relevant and helpful	International	7.1%	44.0%	32.0%	16.1%	0.0%	3.5329	77.47	.202
		Local	16.0%	45%	23.0%	11.7%	3.6%		87.29	
5	You experienced efficient enrolment and admissions processes	International	12.0%	44.0%	25%	17.9%	0.0%	3.6647	75.84	.146
		Local	21.0%	46.0%	18.0%	9%	3.6%		88.12	
6	You have found support services such as financial/legal advisors and health services to be helpful	International	12.5%	48.0%	17.0%	19.6%	1.8%	3.6048	79.55	.087
		Local	20.7%	39.0%	27.0%	8.1%	3.6%		86.24	

In viewing the statement 1, there are 78.6 % international students and 63.9% local students who have viewed in the category of agree (WA=3.6228). Meanwhile, mean ranks of international and

local students are 80.96 and 85.54 respectively and Sig. = .825 which is greater than .05 level of significance. It means that the result is not statistically significant. While it may be said that they have found administrative staff or systems (e.g. online administrative services, frontline staff, and enrolment systems) to be helpful. From statement 2, there are 53.6 % international students and 57.6 % local students who have viewed in the category of agree (WA=3.5509). Meanwhile, mean ranks of international and local students are 77.05 and 87.50 respectively, also and Sig. = .128 which is greater than .05. It means that the responses are not statistically significant. Though it could be said that their opinion they have about the help of the academic advisors is average.

In the statement 3, there are 44.7 % international students and 51.3% local students who have viewed positive (agree/strongly agree) and the average mean is in the category of undecided (WA=3.2635). Meanwhile, mean ranks of international and local students are 81.41 and 85.31 respectively also sig. =.360 which is greater than .05 level of significance. It can interpreted that the responses are not statistically significant. Accordingly, it can be said that the students' competency of having confidence in their English language skill support is below average. In the statement 4, there are 51.7 % international students and 61.2 % local students who have viewed in the category of agree (WA=3.5329), Meanwhile, mean ranks of international and local students are 77.47 and 87.29 respectively and Sig. = .202 which is greater than .05 level of significance. It means that the result is not statistically significant. Consequently it can be said that they felt induction/orientation activities were relevant and helpful.

In the statement 5, there are 57.1 % international students and 68.3 % local students who have viewed in the category of agree (WA=3.6647). Meanwhile, mean ranks of international and local students are 75.84 and 88.12 respectively and Sig. = .146 which is greater than .05 level of significance. It means that the result is not statistically significant. Accordingly, it can be said that they have experienced efficient enrolment and admissions processes. In the statement 6, there are 60.7 % international students and 57.3 % local students who have viewed in the category of agree (WA= 3.6048). Meanwhile, mean ranks of international and local students are 79.55 and 86.24 respectively and Sig. = .087, which greater than .05 level of significance. It means that there is no significant difference between the category-wise responses on the statement. Thus it can be said that, there are some students who do found the support services such as financial/legal advisors

and health services to be helpful. So, the overall analysis of students' responses to the statements related to analysis of student support shown that the distribution of the hypothesis of the statements are the same across the categories of the status and we are in the acceptance of the null hypothesis which means that there are no differences between the category-wise responses on all statements. It was found at a mean average of 3.53 that majority of the respondents agreed that the student support is available and good average, however it still a weakness that make the students' competency of having confidence in their English language skill support is below average.

Table 4.5 Analysis of Learning Engagement

S/NO	STATEMENTS	STATUS	5(SA)	4(A)	3(U)	2(D)	1(SD)	WA	Mean Rank	Sig.
1	You have had a sense of belonging to IUT	International	21.4%	41.1%	10.7%	19.6%	7.1%	3.6826	78.52	.162
		Local	21.6%	48.6%	17.1%	10.8%	1.8%		86.77	
2	You often interacted with students who are very different from you	International	16.1%	35.7%	21.4%	17.9%	8.9%	4.1138	66.69	.000
		Local	26.1%	53.3%	16.2%	5.4%	0.0%		92.73	
3	You frequently interacted with students outside study requirements	International	16.1%	32.1%	16.1%	21.4%	14.3%	3.7665	64	.000
		Local	32.4%	44.1%	14.4%	7.2%	1.8%		94.09	
4	You have never been given opportunities to interact with local / international students	International	7.1%	23.2%	23.2%	32.1%	14.3%	2.2934	103.56	.003
		Local	4.5%	9.9%	10.8%	36%	38.7%		74.13	
5	Sometimes you have worked with other students as part of your study	International	17.9%	44.6%	16.1%	19.6%	1.8%	3.9581	66.62	.000
		Local	30.6%	60.4%	4.5%	2.7%	1.8%		92.77	
6	You have felt very little prepared for your study	International	10.7%	41.1%	19.6%	25%	3.6%	3.4551	77.21	.110
		Local	24.3%	31.5%	23.4%	14.4%	6.3%		87.43	

In the statement 1, there are 62.5 % international students and 70.2 % local students who have viewed in the category of agree (WA=3.6826). Meanwhile, mean ranks of international and local students are 78.52 and 86.77 respectively and Sig. = .162 which is greater than .05 level of significance. It means that the result is not statistically significant. You have had a sense of belonging to IUT. In the statement 2, there are 51.8 % international students and 79.4 % local students who have viewed in the category of agree (WA= 4.1138). Meanwhile, mean ranks of international and local students are 66.69 and 92.73 respectively and Sig. = .000 which is less than .05 level of significance, the null hypothesis is rejected (It means that there is significant difference between the category-wise responses on the statement). As most of the respondents are agree, it can be said that they often interacted with students who are from different status.

In the statement 3, there are 48.2 % international students and 76.5 % local students who have viewed in the category of agree (WA=3.7665). Meanwhile, mean ranks of international and local students are 64 and 94.09 respectively and Sig. = .000 which is less than .05 level of significance, the null hypothesis is rejected (It means that there is significant difference between the category-wise responses on the statement). As most of the respondents are agree, it can be said they frequently interacted with students outside study requirements. In the statement 4, there are 46.5 % international students and 74.7 % local students who have viewed in the category of undecided (WA= 2.2934). Meanwhile, mean ranks of international and local students are 103.56 and 74.13 respectively and Sig. = .003 which is less than .05 level of significance, the null hypothesis is rejected (It means that there is significant difference between the category-wise responses on the statement). As most of the respondents agreed, it can be said that they have never been given opportunities to interact with local / international students.

In the statement 5, there are 62.5 % international students and 91 % local students who have viewed in the category of agree (WA= 3.9581). Meanwhile, mean ranks of international and local students are 66.62 and 92.77 respectively and Sig. = .000 which less than .05. It means that there is a significant difference between the category-wise responses on the statement. As most of the respondents are agree, it can be said they have worked with other students as part of their study. In the statement 6, there are 51.8 % international students and 55.8 % local students who have viewed in the category of agree (WA=3.4551). Meanwhile, mean ranks of international and local

students are 77.21 and 87.43 respectively and Sig. = .110 which is greater than .05 level of significance. It means that the result is not statistically significant. Then it can be said that they have felt very little prepared for your study.

So, the overall analysis of students' responses to the statements related to analysis of learning engagement is in the category of 'Agree' as the overall weighted average is 3.54. However, there is a significant difference between international and local students in terms of students' interaction in classroom as well as in extras-curriculum activities, and they do not have opportunity to work and study each other.

4.2 Analysis of objective II

Table 4.6 Descriptive Statistics

Dependent Variable: CGPA				
Department	Status	Mean	Std. Deviation	N
CSE	Local	3.6077	.36618	53
	International	3.1184	.56077	25
	Total	3.4509	.49132	78
EEE	Local	3.2960	.15978	5
	International	2.6744	.35574	25
	Total	2.7780	.40468	30
MCE	Local	3.4342	.32698	53
	International	2.6850	.22967	6
	Total	3.3580	.39058	59
Total	Local	3.5108	.35258	111
	International	2.8737	.49638	56
	Total	3.2972	.50499	167

The objective 2 of this study was to compare academic achievement of Local and International engineering students at the departmental and University level. In this section, Two-way ANOVA was explored. Two ways means that there are two independent variables, and between groups indicates that different people are in each of the group. This technique allows us to look at the individual and joint effect of two independent variables on one dependent variable. The

advantage of using a two-way design is that ‘main effect’ for each independent variable can be tested and also possibility of an ‘interaction effect’ can be explored. The output of this procedure is shown at Table 4.6 above.

4.2.1 Levene’s Test of Equality of Error Variances.

This test provides one of the assumptions underlying analysis of variance. The value we are most interested in is the Sig. level. We want it to be greater than .05, and therefore not significant. As well as we found in our study a significant result (less than .05) suggests that the variance of our dependent variable across the groups is not equal. In that case, it is recommended that we set a more stringent significance level (e.g., .01) for evaluating our results of two-way ANOVA (Cohen, J., 1988). Meanwhile we will only consider the main effects and interaction effects significant if the sig. value is greater than .01. The main output from two-way ANOVA is the table labeled Tests of Between-Subjects Effects. This gives us the information below.

Table 4.7 Tests of Between-Subjects Effects

Dependent Variable: CGPA								
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^b
Corrected Model	18.850 ^a	5	3.770.	25.848	.000	.445	129.240	1.000
Intercept	730.859	1	730.859	5010.951	.000	.969	5010.951	1.000
Department	2.813	2	1.406	9.642	.000	.107	19.283	.980
Status	7.143	1	7.143	48.972	.000	.233	48.972	1.000
Department *Status	.293	2	.147	1.005	.368	.012	2.011	.223
Error	23.482	161	.146					
Total	1857.862	167						
Corrected Total	42.332	166						
a. R Squared = .445 (Adjusted R Squared = .428)								
b. Computed using alpha = .05								

4.2.2 Main effects

There is significant main effects for Status (Local, International) as the sig. value (sig. = .000) is less than .01(Cohen, J., 1988) and it’s the same result for Department (sig. = .000). This means

that both Local and International students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different for local and international students. For local their achievement may increase with department while for international, it may decrease. Also there is a difference in scores for the departmental level (MCE, EEE, and CSE). So the status or the department has significant effects on the achievement of the students.

4.2.3 Effect size

The effect size for department variables is provided in the column labeled Eta Squared (.107). Using Cohen's (1988) guidelines for interpreting this value are: .01= small effect, .06= moderate effect, .14= large effect. For our present result, we can observe that the effect size of .107 is large. So, although this effect reaches statistical significance, the actual difference in the mean value is small. From the descriptive table we can notice that the mean of scores for the three departments (collapse for status) are 3.4509, 2.7780, and 3.3580. The difference between the groups appears to be a little practical difference.

4.2.4 Interaction effects

Thus in our result, the sig. value is greater than .01, the interaction effect is not significant (Status * Department: sig. = .368). This indicates that there is no significant difference in the effect of department on the achievement for local and international students.

4.2.5 Post-hoc tests

Although we know that our department has significant effect on the achievement of the students. However this result does not tell which department is responsible for effect (the mean difference). To scrutinize, we have to conduct post-hoc tests, therefore we are unconstrained to plow more by means of the post-hoc tests for department.

Table 4.8 Multiple Comparisons

Dependent Variable: CGPA						
Tukey HSD						
(I) Department	(J) Department	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
CSE	EEE	.6729*	.08205	.000	.4788	.8670
	MCE	-.0929	.06589	.338	-.0629	.2488
EEE	CSE	-.6729*	.08205	.000	-.8670	-.4788
	MCE	-.5800*	.08564	.000	-.7825	-.3774
MCE	CSE	-.0929	.06589	.338	-.2488	.0629
	EEE	.5800*	.08564	.000	.3774	.7825

4.2.6 Multiple comparisons

The results of post-hoc tests are provided in the table labeled multiple comparisons. We have requested the Tukey Honestly Significant Difference test, as this is one of the most commonly used tests. In the above study, only group (CSE-EEE) and (MCE-EEE) differ significantly from one to another however the group (MCE-CSE) does not differ each other.

4.2.7 Profile Plots analysis of achievement scores

We can observe output plot of achievement scores for local and international students across the three departments. This plot is very useful allowing us to visually inspect the relationship among our variables. The plots help us better understand the impact of our two independent variables. In the plot there appears to be quite a large difference in local and international students' scores. The plot shows high achievement for local students than international. Local students have in general good performance in all departments whereas international students had lower achievement in particular EEE and MCE. Additionally, CSE is the only department where the international student's achievement is high.

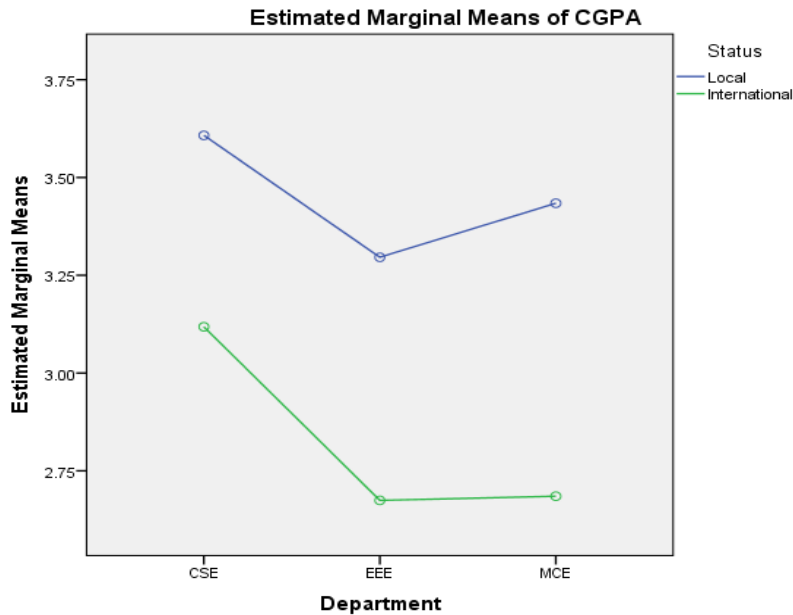


Figure 4.1 profile plots analysis of estimated means of CGPA

4.2.8 Presenting the results from two-way ANOVA of objective II

The results of the analysis conducted above could be presented as follows:

A two-way between-groups analysis of variance was conducted to explore the impact of status (local, international) and department (MCE, CSE, EEE) on the achievement of the students. Subjects were divided in three groups according to their department (MCE, CSE, EEE) also in two groups according to their status (local and international). They were a statistically significant main effect for department [$F(2,161) = 9.642, sig. = .000$] and status [$F(1,161) = 48.972, sig. = .000$] while their effect size was large (Eta Squared = .107 and .233). Post-hoc comparisons using the Tukey HSD test indicate that the mean score for only EEE department ($M = 2.7780, SD = .40468$) was significantly different from one another department. MCE ($M = 3.3580, SD = .39058$) did not differ significantly from CSE ($M = 3.4509, SD = .49132$). The main effect [$F(2,161) = 9.642, sig. = .000$] and the interaction effect [$F(2,161) = 9.642, sig. = .000$] had reached statistical difference. Local and International students do differ in terms of their achievement scores. It is found that the influence of the department on achievement is different for local and international students. The achievement for local students may increase with department while for international, it may decrease. In addition there is a difference in scores within department (MCE, EEE, and CSE).

Consequently the status or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher levels of achievement.

4.3 Analysis of objective III

The objective 3 of this study was to compare academic achievement of male and female engineering students at the department and university level of the university. In this section two-way, between-groups analysis of variance or two-way ANOVA was explored.

Table 4.9 Descriptive Statistics

Dependent Variable: CGPA				
Department	Gender	Mean	Std. Deviation	N
CSE	Male	3.2609	.54631	33
	Female	3.5902	.39806	45
	Total	3.4509	.49132	78
EEE	Male	2.6744	.35574	25
	Female	3.2960	.15978	5
	Total	2.7780	.40468	30
MCE	Male	3.3679	.38506	53
	Female	3.2700	.46609	6
	Total	3.3580	.39058	59
Total	Male	3.1799	.51147	111
	Female	3.5296	.40458	56
	Total	3.2972	.50499	167

4.3.1 Levene's Test of Equality of Error Variances.

It tests the null hypothesis that the error variance of the dependent variable is equal across groups. Our result shown a sig. value (sig. = .003) less than .05 which means we are in the rejection region of the normal curve, the null hypothesis is rejected, that suggests the variance of our dependant variable across the groups is not equal. In that case, we set a more stringent significance level (e.g., .01) for evaluating our results of two-way ANOVA (Cohen, J., 1988).

The main output from two-way ANOVA is the table labeled Tests of Between-Subjects Effects. This gives us the information below.

Table 4.10 Tests of Between-Subjects Effects

Dependent Variable: CGPA								
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^b
Corrected Model	13.874 ^a	5	2.775	15.698	.000	.328	78.489	1.000
Intercept	792.098	1	792.098	4481.20	.000	.965	4481.205	1.000
Department	2.665	2	1.332	7.538	.001	.086	15.077	.941
Gender	1.522	1	1.522	8.610	.004	.051	8.610	.831
Department * Gender	1.299	2	.649	3.673	.028	.044	7.347	.669
Error	28.458	161	.177					
Total	1857.862	167						
Corrected Total	42.332	166						
a. R Squared = .328 (Adjusted R Squared = .307)								
b. Computed using alpha = .05								

4.3.2 Main effects

There is significant main effects for Gender (male, female) as the sig. value (sig. = .004) is less than .01 and as well as for Department (sig. = .001). This means that male and female students do differ in terms of their achievement scores and also there is a difference in scores for the departmental level (MCE, EEE, and CSE). So the gender or the department has significant effects on the achievement of the students.

4.3.3 Effect size

The effect size for department variables is provided in the column labeled Eta Squared (.086). Using Cohen's (1988) guidelines for interpreting this value are: .01= small effect, .06= moderate effect, .14= large effect. For our current result, we can observe the moderate effect size of **.086**.

So, although this effect reaches statistical significance, the actual difference in the mean value is small. The difference between the groups appears to be a little practical difference. From the Descriptive table we can notice that the mean of scores for the three departments (collapse for

gender) are 3.4509, 2.7780 and 33580. The difference between the groups appears to be a little practical difference.

4.3.4 Interaction effects

Accordingly, for our result, the sig. value (Department*Gender: **sig. = .028**) is greater than .01, this indicates that the department as well as gender has no significant effect on the achievement of male and female students in general.

4.3.5 Post-hoc tests

Even though we recognize that our department has significant effect on the accomplishment of the students. However this upshot does not enlighten which department is accountable for effect (the mean difference). To investigate we need to conduct post-hoc tests, therefore we are without hindrance to dig further using the post-hoc tests for department.

Table 4.11 Multiple Comparisons

(I) Department	(J) Department	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
CSE	EEE	.6729*	.09032	.000	.4592	.8866
	MCE	.0929	.07254	.408	-.0787	.2645
EEE	CSE	-.6729*	.09032	.000	-.8866	-.4592
	MCE	-.5800*	.09428	.000	-.8030	-.3569
MCE	CSE	-.0929	.07254	.408	-.2645	.0787
	EEE	.5800*	.09428	.000	.3569	.8030
Based on observed means.						
The error term is Mean Square (Error) = .177.						
*. The mean difference is significant at the .05 level.						

4.3.6 Multiple comparisons

The results of post-hoc tests are provided in the table labeled multiple comparisons. We have requested the Tukey Honestly Significant Difference test. In the exceeding study, just group (CSE-EEE) and (MCE-EEE) differ significantly from one to another.

4.3.7 Profile Plots analysis

Looking at the graph of achievement scores for male and female students across the three departments, it is evident to observe a large difference mean scores according to gender. It appears an interaction effect between male and female as well as a consistency for MCE. Female performed higher than male students. Mean scores for male decrease drastically in EEE department while female had a medium change. Indeed, Female achievement scores have a peak in CSE whereas male achievement highs appear both in CSE and MCE. Overall, it is clear that EEE is responsible for low means achievement both male and female.

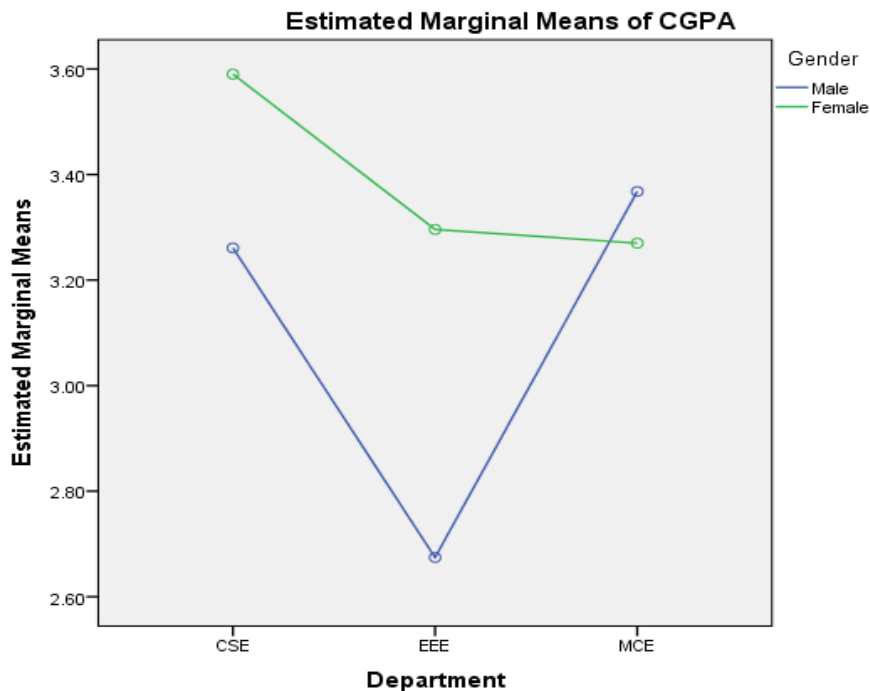


Figure 4.2 profile plots analysis of estimated means of CGPA

4.3.8 Presenting the results from two-way ANOVA of objective III

A two-way between-groups analysis of variance was conducted to investigate the impact of gender (male, female) and department (MCE, CSE, EEE) on the achievement of the students. There was a statistically significant main effect for department [$F(2,161) = 7.538$, $sig. = .001$] and gender [$F(1,161) = 8.610$, $sig. = .004$] while effect sizes were medium (Eta Squared = .086 and .051). Post-hoc comparisons using the Tukey HSD test indicate that the mean score for only department EEE ($M = 2.7780$, $SD = .40468$) was significantly different from one another department. MCE ($M = 3.3580$, $SD = .39058$) did not differ significantly from CSE ($M = 3.4509$, $SD = .49132$). The main effect [$F(2,161) = 7.538$, $sig. = .001$] along with the interaction effect [$F(2,161) = 3.673$, $sig. = .028$] had reached statistical difference. Male and female students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different according to gender. The achievement for male students may increase with both CSE and MCE departments while for female, it may raise only for CSE. In addition, there is a difference in scores between departments (MCE, EEE, and CSE). Consequently the gender or the department had significant effects on the achievement of the students. The department of EEE which has the lowest mean score would be mostly responsible for the mean difference (effect) whereas the CSE department reported a higher level of achievement. Female performed higher than male students. Mean scores for male decrease drastically in the EEE department while female had a medium change. Indeed, female achievement scores have a peak in CSE whereas male achievement highs appear both in CSE and MCE. Overall, it is clear that EEE is responsible for low mean achievement both male and female.

4.3.9 Focus Group Discussions (FGDs)

Consistent with Choi (2008) and Ng's (2011) finding that adapting to the local culture was a major source of frustration for international students. Students reported experiencing several problems adjusting to life in Bangladesh, such as overcrowding, air pollution, homesickness and difficulties adjusting their diets. One student found the study mode in Bangladesh to differ drastically from that of her place of origin:

I need to participate in a group to complete my project. I need to cooperate with others to design a way to present in the classroom. My work is no longer assessed fairly. It is completely different from what I am used to. (Student Informant 2)

Some of the student respondents expressed that they had met nice people, including their fellow local students in the beginning of the year. However, majority indicated experiencing problems with social integration and limited interaction between local and international students. The international students had several perceptions of their interactions with local students. They observed that the local students did not express a great interest in interacting with them. They also perceived that the local students had different lifestyles and study habits. In the worst scenario, students from Africa mainland felt discriminated against.

In addition to noting the lack of foundation year programmes to support overseas students, some students described the inadequacies of the English-medium teaching and learning environment in IUT. Some even reported experiencing difficulties with lecturers' spoken English and overuse of Bangla in class. As such, the administration in IUT should pay attention to the language policies in their curricula. For example, some of the Middle East students found it difficult to engage with English as a medium of instruction at the beginning of their studies. The language issues indicated here are consistent with the findings of studies conducted by Mazzarol and Soutar (2001) and Jowi (2012). One female student expressed the following:

Sometimes I have to pay very careful attention to a lecturer's spoken English. I do not understand what he says sometimes. He speaks with a strong accent and frankly speaking he is not fluent in English either. (Student Informant 5)

In focus groups with international and local students, themes emerged which, when analyzed together, indicate discomfort with talking about racial and ethnic difference and lack of multicultural competencies. In highlighting these findings, we seek to identify how IUT learning environment might be adapted to increase Bangladeshi student enthusiasm for diversity education.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the details of the summary, discussion of findings, conclusion and recommendation as well as suggestion for further studies.

5.1 Summary

The aim and purpose of this thesis was to study the first year engineering student learning experience at IUT.

The objective of the study was to:

- Assess the learning experience of first year engineering students of IUT in terms of (i) quality of teaching-learning, (ii) learning resources, (iii) curriculum structure (iv) Student support, (v) extra-curriculum activities.
- Compare academic achievement of first year of local and international engineering students at the department and university level at IUT.
- Compare academic achievement of first year male and female engineering students at the department and university level of the university.

The data obtained from the respondents through questionnaire were tabulated in the Statistical Package for Social Science (SPSS version 20) software. In case of research question 1, statement-wise category percentage, weighted average (WA) and Mann-Whitney test were used to assess the learning experience of first year engineering students of IUT. Two-way ANOVA were used to compare academic achievement of local and international, as far as male and female students at IUT relating to research question 2 and 3 respectively.

5.2 Findings

Hence, the overall analysis of students' responses to the statements related to analysis of teaching-learning quality revealed that majority of the respondents agree that the teaching-learning quality in general is good as it was found out at a mean average of 3.54. However, there is a significant difference between international and local students in terms of their responses to the statement 2 also the mean rank of international students is much lower than the local students, which shows that the international students do not acquire ample opportunities to do their practical work by their own hand.

Related to analysis of learning resources, the overall analysis of students' responses to the statements, presented that the distribution of the hypothesis of the statements are the same across the categories of the status, and we are in the acceptance of the null hypothesis, which means that, there are no differences between the category-wise responses on all statements. It was found at a mean average of 3.70 that majority of the respondents agreed that the learning resources are good.

The overall analysis of students' responses to the statements related to analysis of curriculum structure, shown that there are 50% significant difference between the category-wise responses on the statements (2, 4 and 5). It has been found at a mean average of 3.30 that majority of the respondents are undecided. It might be said obviously that, they have doubt is the good quality of curriculum structure in IUT.

Related to analysis of student support, the overall analysis of students' responses to the statements shown that the distribution of the hypothesis of the statements are the same across the categories of the status and we are in the acceptance of the null hypothesis which means that there are no differences between the category-wise responses on all statements. It was found at a mean average of 3.53 that majority of the respondents agreed that the student support is available and good average, however it still a weakness that make the students' competency of having confidence in their English language skill support is below average.

Finally, the overall analysis of students' responses to the statements related to analysis of learning engagement is in the category of 'Agree' as the overall weighted average is 3.54. However, there is a significant difference between international and local students in terms of students' interaction in classroom as well as in extras-curriculum activities, and they do have opportunity to work and study each other.

A two-way between-groups analysis of variance was conducted to explore the effect of status (local, international) and department (MCE, CSE, EEE) on the achievement of the students. Subjects were divided in three groups according to their department (MCE, CSE, EEE) also in two groups according to their status (local and international). They was a statistically significant main effect for department [$F(2,161) = 9.642$, sig. = .000] and status [$F(1,161) = 48.972$, sig. = .000] while their effect size was large (Eta Squared = .107 and .233). Post-hoc comparisons using the Tukey HSD test indicate that the mean score for only EEE department ($M = 2.7780$, $SD = .40468$) was significantly different from one another department. MCE ($M = 3.3580$, $SD = .39058$) did not differ significantly from CSE ($M = 3.4509$, $SD = .49132$). The main effect [$F(2,161) = 9.642$, sig. = .000] and the interaction effect [$F(2,161) = 9.642$, sig. = .000] had reached statistically difference. Local and International students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different for local and international students. The achievement for local students may increase with department while for international, it may decrease. In addition there is a difference in scores within department (MCE, EEE, and CSE). Consequently the status or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher levels of achievement.

Another two-way between-groups analysis of variance was conducted to investigate the effect impact of gender (male, female) and department (MCE, CSE, EEE) on the achievement of the students. They was a statistically significant main effect for department [$F(2,161) = 7.538$, sig. = .001] and gender [$F(1,161) = 8.610$, sig. = .004] while effect sizes was medium (Eta Squared = .086 and .051). Post-hoc comparisons using the Tukey HSD test indicate that the mean score for only department EEE ($M = 2.7780$, $SD = .40468$) was significantly different from one another department. MCE ($M = 3.3580$, $SD = .39058$) did not differ significantly from CSE ($M = 3.4509$,

SD=.49132). The main effect [$F(2,161) = 7.538$, sig. = .001] along with the interaction effect [$F(2,161) = 3.673$, sig. = .028] had reached statistically difference. Male and female students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different according to gender. The achievement for male students may increase with both CSE and MCE departments while for female, it may raise only for CSE. In addition, there is a difference in scores between departments (MCE, EEE, and CSE). Consequently the gender or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher level of achievement. Female performed higher than male students. Mean scores for male decrease drastically in EEE department while female had a medium change. Indeed, Female achievement scores have a peak in CSE whereas male achievement highs appear both in CSE and MCE. Overall, it is clear that EEE is responsible for low means achievement both male and female.

5. 2.1 Discussion of Findings

Objective one

The objective was to find out the learning experience of first year engineering students of IUT in terms of (i) quality of teaching-learning, (ii) learning resources, (iii) curriculum structure (iv) Student support, (v) extra-curriculum activities.

The finding of the study revealed that majority of the respondents agree that the teaching-learning quality in general is good as it was found out at a mean average of 3.54. However, there is a significant difference between international and local students, in terms of their responses to the statement related to the practical work done by their own hand. Which shown that the international students did not acquire ample opportunities to do their practical work by their own hand. Related to analysis of learning resources, the overall analysis of students' responses to the statements, presented that the distribution of the hypothesis of the statements are the same across the categories of the status, there were no significance differences between the category-wise responses on all statements. It was found at a mean average of 3.70 (agree) that majority of the respondents agreed that the Learning Resources are good.

The overall analysis of students' responses to the statements related to analysis of curriculum structure, shown that at a mean average of 3.30 majority of the respondents are undecided. It might be said obviously that, they have doubt is the good quality of curriculum structure in IUT. Related to analysis of student support, the overall analysis of students' responses to the statements shown that there are no differences between the category-wise responses on all statements. It was found at a mean average of 3.70 that majority of the respondents agreed that the Learning Resources are good. The global scrutiny of students' responses to the statements related to analysis of learning engagement is in the category of 'Agree' as the overall weighted average is 3.54. However, there is a significant difference between international and local students in terms of students' interaction in classroom as well as in extras-curriculum activities, and they do have opportunity to work and study each other.

These overall findings corroborate with student interviews held locally with international student's confirmed that some of them found it difficult to integrate into the local community. They seem that social and cultural barriers, such as intercultural insensitivity and concern over local diets on campus for students from diverse cultural backgrounds, have also negatively affected the experience of international students in IUT, Bangladesh. In considering how best to provide support for diversity and social justice, Martell (2013) recommends that teachers go beyond the assessment of their students' aptitudes, skills, and knowledge with respect to the subjects being taught. Although, these outcomes are aligning with Crose (2011), who emphasis that academic and administrative staff, support service providers and local students on campus must nurture the multicultural perspective.

Objective two

The objective was to compare academic achievement of local and international engineering students at the department and university level at IUT.

A two-way between-groups analysis of variance was conducted to explore the impact of status (local, international) and department (MCE, CSE, EEE) on the achievement of the students. Subjects were divided in three groups according to their department (MCE, CSE, EEE) also in two groups according to their status (local and international). They was a statistically significant main

effect for department [$F(2,161) = 9.642$, sig. = .000] and status [$F(1,161) = 48.972$, sig. = .000] while their effect size was large (Eta Squared = .107 and .233). Local and International students do differ in terms of their achievement scores. It has been found that the influence of the department on achievement is different for local to international students. The achievement for local students may increase with department while for international, it may decrease. In addition there is a difference in scores within department (MCE, EEE, and CSE). Consequently the status or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher levels of achievement.

The quality of the medium of instruction is the next issue that may weaken IUT education services. In terms of the language environment, Bangla serves as the main language used on campus and in programs in some department, although the curriculum and assessment are stipulated as being in English. According to our FGDs data with local and international students, there were a widely shared concern about the inadequate English Proficiency of some faculty members and of some local students in IUT. This language issue is perceived as a hindering factor in the process of student achievement. The widespread use of Bangla, the local language, in a limited English learning environment is inevitably inhibiting international students' participation in their campus life, both academically and socially. The unique and compulsively learning style means here learning by memorization certainly is a disadvantage for international students to realize better performance in IUT, though their learning style is critical thinking and enquiry based.

Objective three

The objective was to compare academic achievement of male and female engineering students at the department and university level of the university.

Another two-way between-groups analysis of variance was conducted to investigate the impact of gender (male, female) and department (MCE, CSE, EEE) on the achievement of the students. There was a statistically significant main effect for department [$F(2,161) = 7.538$, sig. = .001] and gender [$F(1,161) = 8.610$, sig. = .004] while effect sizes were medium (Eta Squared = .086 and .051). Post-hoc comparisons using the Tukey HSD test indicate that the mean score for only department EEE

($M=2.7780$, $SD=.40468$) was significantly different from one another department. MCE ($M=3.3580$, $SD=.39058$) did not differ significantly from CSE ($M=3.4509$, $SD=.49132$). The main effect [$F(2,161) = 7.538$, $sig. = .001$] along with the interaction effect [$F(2,161) = 3.673$, $sig. = .028$] had reached statistically difference. Male and female students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different according to gender. The achievement for male students may increase with both CSE and MCE departments while for female, it may raise only for CSE. In addition, there is a difference in scores between departments (MCE, EEE, and CSE). Consequently the gender or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher level of achievement. Female performed higher than male students. Mean scores for male decrease drastically in EEE department while female had a medium change. Indeed, Female achievement scores have a peak in CSE whereas male achievement highs appear both in CSE and MCE. Overall, it is clear that EEE is responsible for low means achievement both male and female.

5.3 Conclusions

The purpose of the study was to find out the IUT first year engineering student learning experience regarding its multicultural institution characteristic. The following conclusion could be made:

1. The respondents have opinion that their learning experience in terms of quality of teaching-learning, learning resources, curriculum structure, Student support, extra-curriculum activities are nearly average good. Nevertheless, many efforts should be made to give foundation supports such as a full training in English language though it is the medium of instruction. In addition the laboratory and workshop should be equipped so that international students could be able to perform their practical work by their own hand. The community of teachers and administration should maintain the multicultural competency environment and communication as far as they form assignment and workshop group, where they would involve together international, local and female students. The extra-curricular activities such as IUT annual competitions should reflect the multicultural and international in terms of diversity in the team arrangement.

2. Consequently, Local and International students do differ in terms of their achievement scores. It had been found that the influence of the department on achievement is different for local to international students. The achievement for local students may increase with department while for international, it may decrease. In addition there is a difference in scores within department (MCE, EEE, and CSE). Therefore, the status or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher levels of achievement. The quality of the medium of instruction is an issue that may weaken IUT education services. In terms of the language environment, Bangla serves as the main language used on campus and in programs in some department, although the curriculum and assessment are stipulated as being in English. According to our FGDs data with international students, there was a widely shared concern about the inadequate English Proficiency of some faculty members and of some local students in IUT. The unique and compulsively learning style imposed by the administration and academicians means here learning by memorization certainly would be a major disadvantage for international students to realize better performance in IUT, though their learning style is critical thinking and enquiry based.

3. Male and female students do differ in terms of their achievement scores. We found that the influence of the department on achievement is different according to gender. The achievement for male students may increase with both CSE and MCE departments while for female, it may raise only for CSE. In addition, there is a difference in scores between departments (MCE, EEE, and CSE). Consequently the gender or the department had significant effects on the achievement of the students. The department of EEE which has lowest mean score would be mostly responsible for the mean difference (effect) whereas CSE department reported higher level of achievement. Female performed higher than male students. Mean scores for male decrease drastically in EEE department while female had a medium change. Indeed, Female achievement scores have a peak in CSE whereas male achievement highs appear both in CSE and MCE. Overall, it is clear that EEE is responsible for low means achievement for both male and female.

5.4 Recommendations

IUT requires two aspects of internationalization as counteractive measures. First, as many scholars (e.g. Knight, 2004; Ng & Tang, 2008; Gopal, 2011) have advocated, the integration of an international, intercultural or global dimension into the purposes and functions of IUT. Second, a whole-campus approach must be in place to promote multicultural awareness and provide social support to international students. Academic and administrative staff, support service providers and local students on campus must nurture the multicultural perspective (Croese, 2011). Discussions and debates about the aims of internationalizing of IUT and the associated strategies at different levels should contribute to enhancing local and international students' learning experiences and education quality. IUT need to recruit a devoted English teacher's team to give language foundation to both local and international students.

IUT students cannot be expected to recognize the importance of multicultural issues without institutional leadership. A broad range of stakeholders in needed to fully address the relationship between internationalization and multiculturalism in the IUT curriculum. Administrators (Deans, Heads of Department, Provosts) and faculty should both be involved in the conversation regarding the overlap between the internationalization and multiculturalism efforts. The need of International IUT faculty are a unique position to help bridge the multicultural and internationalization gap due to their extensive education, training and experience in cross-cultural communication.

Students' recognition of their own areas of difference and diversity can be used as an avenue to consider perspectives of others. The biggest dissatisfactions of international students came from (a) thoughtless comments from students and, less frequently, faculty, that felt like ethnic stereotypes and (b) international students feeling their opinions weren't valued in group work. This requires an approach that sees the first-year experience as holistic and evolving and that attempts to match changing student expectations with their experience. It is important to take first-year student perspectives seriously and evaluate the students' satisfaction with their total experience

The present study had its limitations, which was confined within the Islamic University of Technology (IUT). Future researchers may explore this study further by selecting multiple universities like IUT and examine what benefits may be achieved in a more representative sample.

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APPENDIX-A

15 July 2017

QUESTIONNAIRE

Dear respondent,

I am a student of Master of Science in Technical Education with specialization in Mechanical Engineering of the Islamic University of Technology (IUT). As a partial requirement of this Degree, I should complete and submit a thesis on the topic titled “*first year learning experiences from student’s perspective in a multicultural setting: The case of Islamic University of Technology*”. In this connection, I need the information/data as mentioned in the attached questionnaire. Your idea and response to the questionnaire will be highly appreciated. Your information will be used for research purpose only and will remain confidential. Thanks for your cooperation.

NOTE:

It is under ethical requirement that all your personal information will be kept confidential.

Section: A (Background Information)

Pseudonym:

Sex/Gender: Male Female

Type of student: Local International

If international write your nationality:

CGPA:

Department:

Please read the questionnaire in the next page and onwards and put a tick mark (✓) expressing your opinion to each statement of the questionnaire.

Thank you.

Yours faithfully

Mbei Lissouck Emmanuel Georges
Student Researcher
MScTE Student, TVE Dept., IUT

Dr Md Aktaruzzaman
MSc Thesis Supervisor
Assistant Professor, TVE Dept., IUT

Section B: The following rating scale gives the weighted average of the opinion.

Opinion	Rating
Strongly Agree (SA)	5
Agree(A)	4
Undecided(U)	3
Disagree (D)	2
Strongly Disagree (SD)	1

Please put a tick mark (✓) expressing your opinion in different areas of teaching-learning.

Table 1 –Teaching Quality

Please put a tick mark (✓) in the boxes

SL. No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	You would rate the quality of the teaching you have experienced in your discipline					
2	You do practical work by your own hand					
3	During 2017, lecturer provided clear explanations on coursework and assessment					
4	Lecturer engaged you actively in learning and stimulated you intellectually					
5	Lecturer commented on your work in ways that help you learn					
6	You would give good rate in the quality of your entire educational experience this year					

- Describe your experience of getting quality teaching-learning at IUT.

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Table 2 – Learning Resources

Please put a tick mark (✓) in the boxes

SL. No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	Teaching spaces (e.g. lecture theatres, tutorial rooms, laboratories) are Good					
2	Student spaces and common areas are Good					
3	Assigned books, notes and resources are relevant					
4	Library resources and facilities are Good					
5	Laboratory or studio equipment are well equipped					
6	Computing / IT resources are Excellent					

- Comment about learning resources

.....

Table 3 – Curriculum structure

Please put a tick mark (✓) in the boxes

SL. No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	Your course curriculum is periodically reviewed and updated					
2	The course assisted me in developing my problem-solving skills.					
3	The course helped me develop my ability to work as a team member.					
4	I usually had a clear idea of where I was going and what was expected of me in this course structure.					
5	Overall, I was satisfied with the quality of this course contents					
6	As a result of my course, I feel confident about tackling unfamiliar problems.					

Table 4 –Student Support

Please put a tick mark (✓) in the boxes

SL. No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	You have found administrative staff or systems (e.g. online administrative services, frontline staff, enrolment systems) to be helpful					
2	You have found academic advisors to be helpful					
3	You received appropriate English language skill support					
4	You felt induction/orientation activities were relevant and helpful					
5	You experienced efficient enrolment and admissions processes					
6	You have found support services such as financial/legal advisors and health services to be helpful					

- Your opinion about student support at IUT

.....

Table 5- Learning Engagement

Please put a tick mark (✓) in the boxes

SL. No	Statements	Response				
		Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1	You have had a sense of belonging to IUT					
2	You often interacted with students who are very different from you					
3	You frequently interacted with students outside study requirements					
4	You have never been given opportunities to interact with local / international students					
5	Sometimes you have worked with other students as part of your study					
6	You have felt very little prepared for your study					

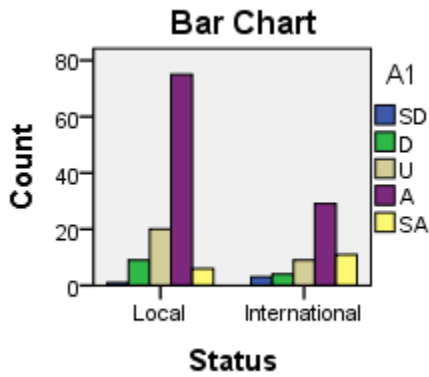
- Your opinion about learning engagement at IUT

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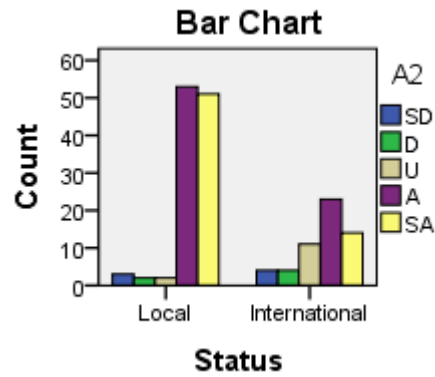
APPENDIX-B

Objective 1. Bars Chart Statements Presentation

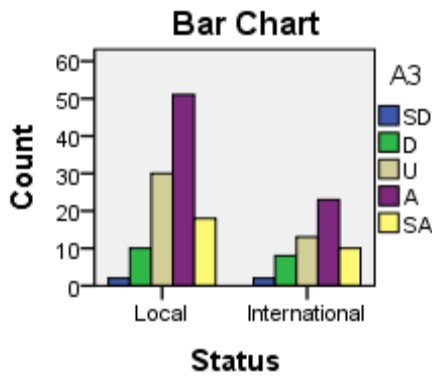
1.1 Analysis of the of teaching-learning quality



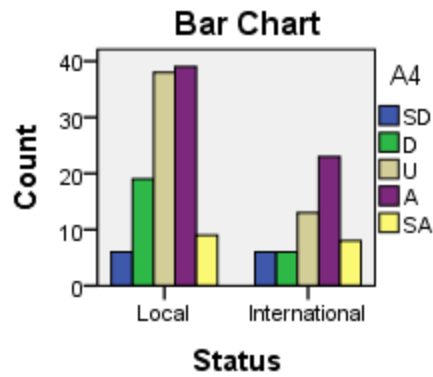
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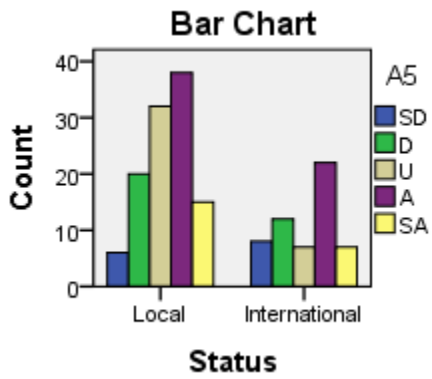
Bar chart statement 2.



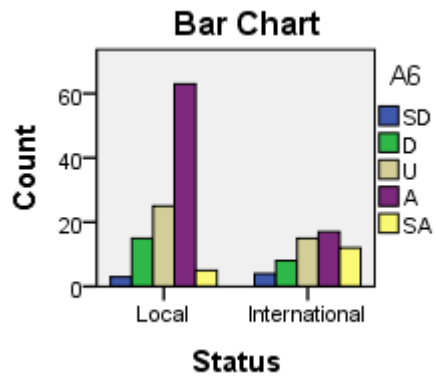
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Bar chart statement 4

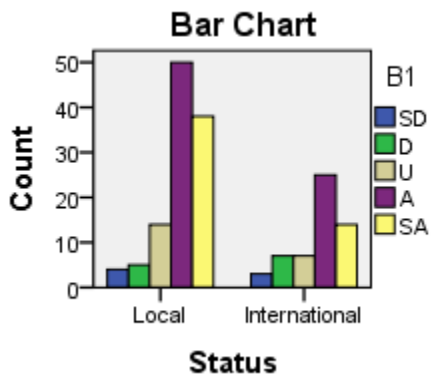


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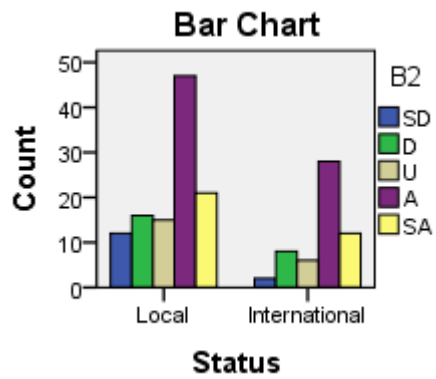


Bar chart statement 6

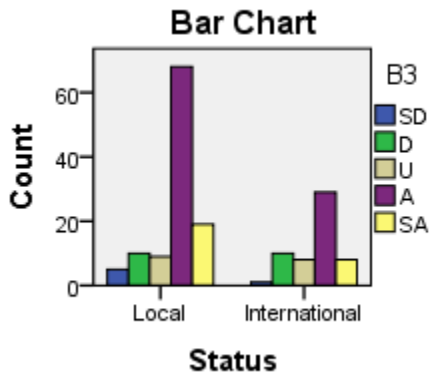
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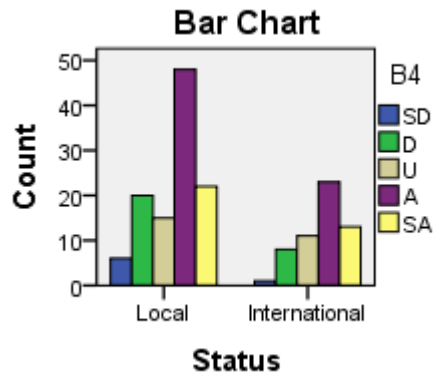
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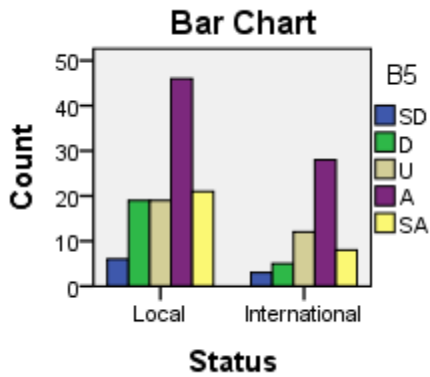
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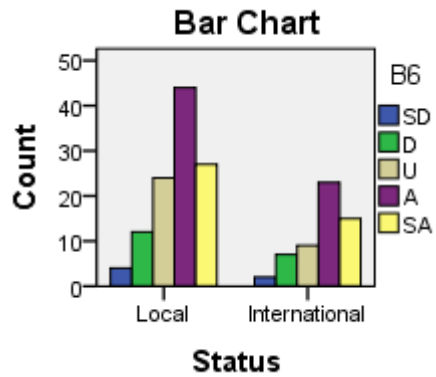
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Bar chart statement 4

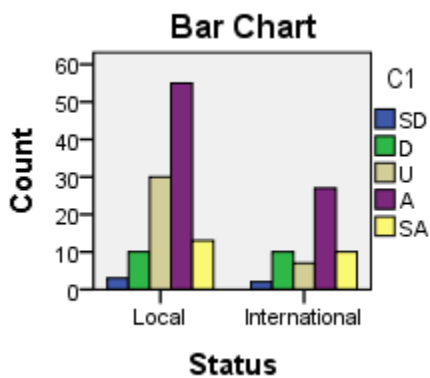


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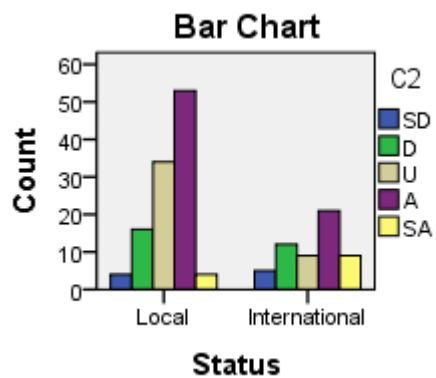


Bar chart statement 6

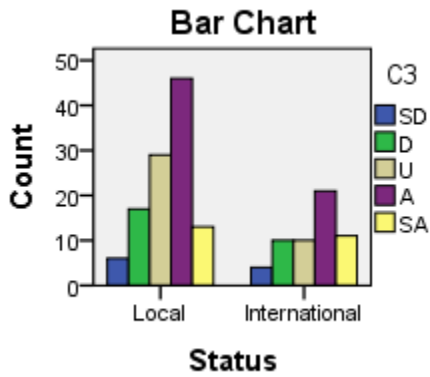
1.3 Analysis of Curriculum structure



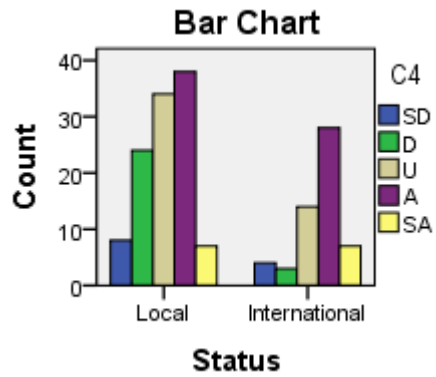
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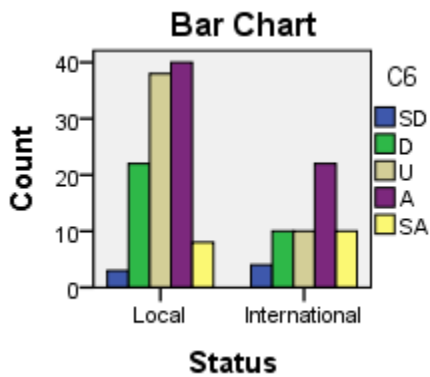
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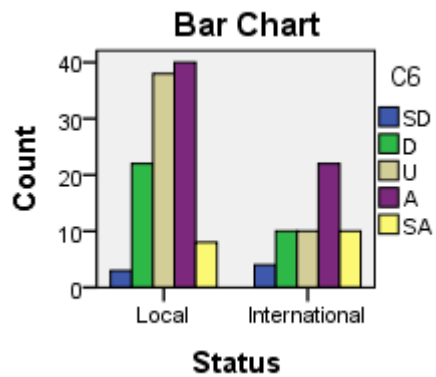
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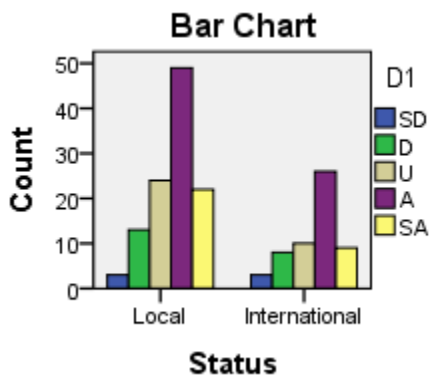


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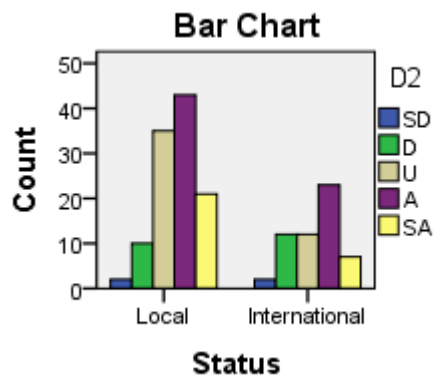


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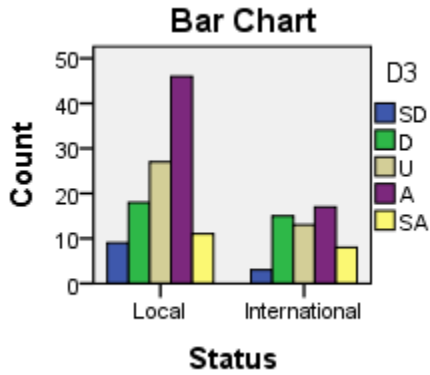
Analysis of Student Support



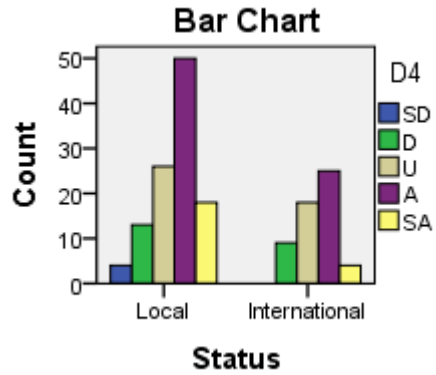
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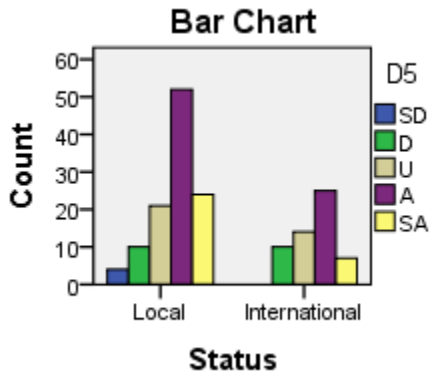
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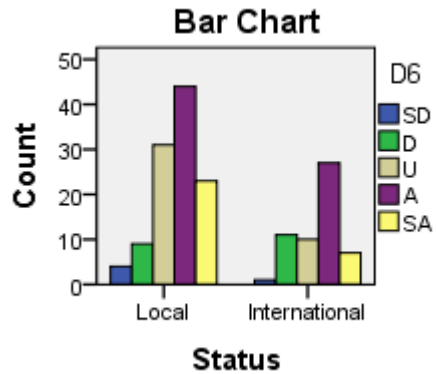
Bar chart statement 3



Bar chart statement 4

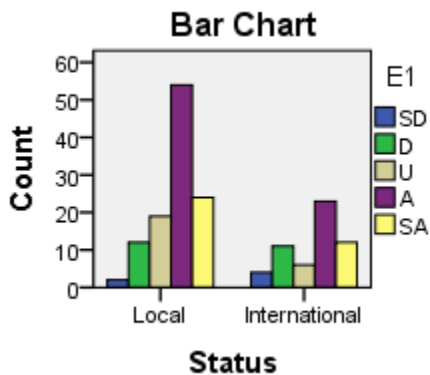


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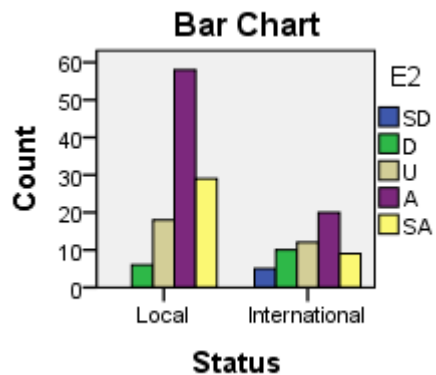


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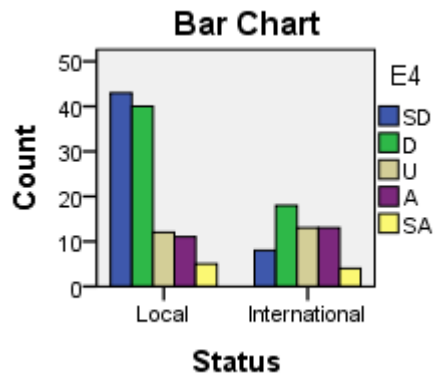
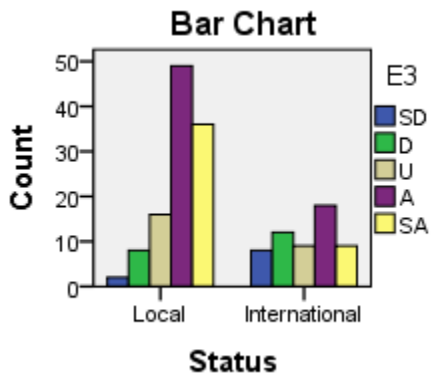
1.4 Analysis of Learning Engagement



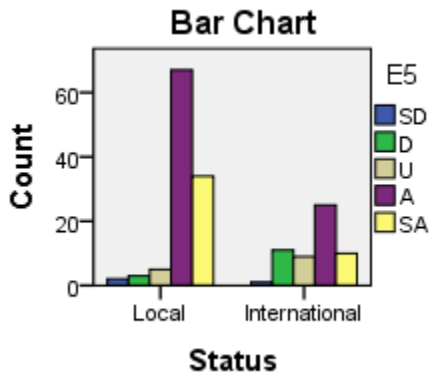
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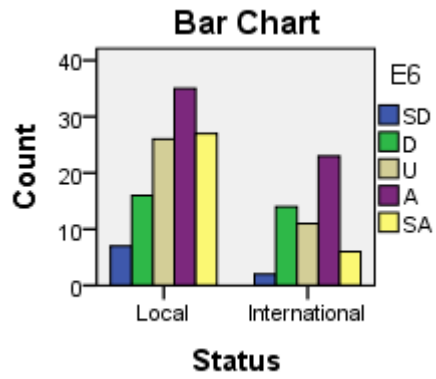
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Bar chart statement 3



Bar chart statement 4



Bar chart statement 5

Bar chart statement 6