MASTER OF SCIENCE IN TECHNICAL EDUCAITON

A Study to Compare the Results of Technical and Pedagogical Subjects in the Undergraduate Programme in the Department of Technical and Vocational Education at the Islamic University of Technology (IUT), Dhaka.

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by

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RECOMMENDATION OF THE BOARD OF EXAMINER

The thesis titled "**A Study to Compare the Results of Technical and Pedagogical Subjects in the Undergraduate Programme in the Department of Technical and Vocational Education at the Islamic University of Technology (IUT), Dhaka."** Submitted by **Nsangou Moluh,** Student **No 103610** of academic year **2010-2012** has been found satisfactory and accepted as partial fulfillment of the requirement for the degree of Master of Science in Technical Education (M.Sc.T.E).on October 2012.

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This is to certify that the work presented in this thesis is the outcome of the investigation carried out by **Nsangou Moluh** under the supervision of **Prof. Dr Khushi Muhammad** in the department of Technical and Vocational Education (TVE), Islamic University of Technology (IUT), Gazipur, Bangladesh. It is hereby declared that this thesis/report or any part of it has not been submitted elsewhere for the award of any Degree or Diploma.

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DEDICATED TO MY PARENTS

WHO BROUGHT ME INTO THIS NICE WORLD

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N.M.A

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ABSTRACT

The objective of the study was to compare the results of the undergraduate students between the technical and pedagogical subjects. There was a feeling that the evaluation in the TVE department was not in line with other departments. The pedagogical subjects were taught by the teachers of TVE department, whereas technical courses were taught by teachers of engineering department including Mechanical, Electrical and Computer science. From this study, the administration of IUT may get a clear picture of grades, given by its four departments, hence, it will be easier for them to identify, if there is any deviation from the expected standard. It will also help the particular department specially (TVE) in maintaining a standard of grading system, in line with other departments. The study followed descriptive research methodology. The population was the graduated students of the last five years (2006-2010), in the one year B.Sc.T.E. programme. As the population was of small size, all the students over the last five years were considered as sample in this study. The tool of research was documents of the results in term of achievement of the undergraduate students over the last five academic years. The data was collected from the IUT administration by the researcher himself. One sample paired t-test was done to compare the results of technical and pedagogical subjects at 0.05 level of significance. The study was delimited to only the last five years students who completed the Bachelor of Science in Technical education in one year programme. The null hypothesis was tested, meaning that there is no difference of results between pedagogical and technical subjects in the undergraduate program. The data was collected from the IUT Registrar Office by the researcher himself. For analyzing the data, one sample paired t-test was done to compare the results of technical and pedagogical subjects at 0.05 level of significance. The study found that during the academic year 2006 there was no significant difference in results between pedagogical and technical subjects in B.Sc.T.E one year programme. Results for the academic year 2007 to 2010 and combined results from 2006 to 2010, showed significant difference in results between pedagogical and technical subjects in B.Sc.T.E

CHAPTER I

INTRODUCTION

1.1. Background

Islamic University of technology (IUT) is a subsidiary organ of Organization of Islamic Cooperation (OIC), previously named Organization of Islamic Conference. It is a fairly representation of Islamic countries over the world since fifty seven countries spread over four continents which are Asia, Africa, Europe and South America are member of this organization. The objective of OIC lies in the development of human resources of the Islamic Community in the fields of engineering, technology and technical education.

The resolution of the 9th Islamic Conference of Foreign Ministers (ICMF) held in Dakar, Senegal in 1978 gave birth to Islamic Centre for Technical and Vocational Training and Research (ICTVTR). The building infrastructure started on 27 March 1981 on a piece of 30 acres donated by the government of the People's Republic of Bangladesh to the OIC.

Then, ICTVR has been renamed as Islamic Institute of Technology (IIT) during the 7th Islamic summit and the twenty-second ICFM held in Casablanca, Kingdom of Morocco in December 1994. The institute was renamed as Islamic University of Technology during the 28th session of the ICFM held in the late June 2001 in Bamako, republic of Mali.

The academic programme of the institute started in 1986 with only 3 departments and 65 students taking higher diplomas programme in Mechanical and Electrical Engineering and Diploma in Technical and Vocational Education. Nowadays, IUT has five academic departments, Mechanical and Chemical Engineering, Electrical and Electronic Engineering, Civil and Environmental Engineering, Computer Science and Engineering, and Technical and Vocational Education, offering Higher Diploma, Bachelor, Postgraduate Diploma, Masters and PhD programmes. The student enrolment has increased tremendously to almost 1000 coming from more than 20 member states. The mission of IUT has also changed from producing low level to mid level to high level engineers and technologists. Besides the regular academic programmes, IUT offers short courses and organizes seminars, workshops

and conferences as part of its statutory , obligations, with the objective of assisting the member states in developing appropriate human resources in the area of modern and emerging technologies, upgrading and updating the knowledge and skills of the professionals. IUT attaches due importance to the creation of knowledge besides dissemination of knowledge.

In the department of TVE various programmes offered are:

i. Diploma in Technical Education (DTE)
ii. Bachelor of Science in Technical education(BScTE)
iii. Postgraduate Diploma in Technical Education(PGDTE)
iv. Master of Science in Technical Education(MScTE)

The main objectives of the programs offered in technical and vocational education are to impart to technical teachers' skills aggregating technical and pedagogical knowledge so that:

a. The graduate students who are in-service and pre-service in the field of vocational and

technical education should be aware and efficient in the classroom and school.

b. Teachers are equipped with relevant skills, attitudes and competencies in

various areas either in theoretical or practical fields.

c. It is an asset for producing graduate teachers with intellectual and professional

background which are required for teaching technical subjects in polytechnic institutes.

d. Once graduated students will be efficient in their skills, they assume leadership roles as

administrators, curriculum developers, researchers, planner, in the academic setting, as well as in the industry in the related specialization.

These objectives are justifiable since technical and vocational education emphasizes professional (pedagogical), technical and general education components.

Teaching-learning results into the competence of the learners. In order to assess their competence, it is imperative to compare their performance. This study aims to compare the results of undergraduate students between pedagogical and technical subjects in TVE Department and the engineering departments.

1.2. Statement of the Problem

A study to compare the results of technical and pedagogical subjects in the undergraduate programme in the Department of Technical and Vocational Education at the Islamic University of Technology (IUT), Dhaka.

1.3. Objective of the Study

The objective of the study was to:

- Compare the results of the undergraduate students in the technical and pedagogical subjects.

1.4. Significance of the Study

There is a feeling that the evaluation in the TVE department is not in line with other departments. The pedagogical subjects are taught by the teachers of TVE department, whereas technical courses are taught by teachers of engineering department including Mechanical, Electrical and Computer science. From this study, the administration of IUT may get a clear picture of grades, given by its four departments, hence, it will be easier for them to identify, if there is any deviation from the expected standard. It will also help the particular department specially (TVE) in maintaining a standard of grading system, in line with other departments.

1.5. The Hypothesis

Following null hypothesis was tested:

- There is no difference of results between pedagogical and technical subjects in the undergraduate program.

1.6. Delimitations

The study was s delimited to:

i. Only the results for the last five years of students who completed the Bachelor of Science in Technical Education in one year programme.

1.7. Assumption

The administration of IUT will provide the results of the undergraduate students for the last five years.

1.8. Definition Terms & Abbreviations

CSE: Computer Science and Engineering.

EEE: Electrical and Electronic Engineering.

MCE: Mechanical and Chemical Engineering.

Pedagogical courses: Courses offered by the TVE department for the undergraduate students irrespective of their specialization.

Technical courses: Engineering courses which are offered by the EEE, CSE, and MCE department of IUT.

TVE: Technical and Vocational Education

Undergraduate: students who after completing higher diploma have completed BSCTE one year program.

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1 Introduction

In this chapter, literature has been reviewed on works related to the present study under the following headings:

1. **Teaching-learning Process**
2. **Evaluation process**
3. **Objectives and Functions IUT**
4. **Academic Regulations**
5. **Pedagogical and Technical Subjects in Bachelor of Science in Technical Education 1-Year Programme**

2.2 Teaching-Learning Process

Teaching and learning are two processes which are concomitantly found during a study period. In the educational field, they are likely to take place either in formal situation or in informal one. Since the body of knowledge on which, it is based increasingly grow bigger, with various perceptions this process is becoming formal and systematic. In order to enhance the quality of learning which is originated, the professional resorts to various methods and strategies called pedagogy. Most of the actors involved in this field have been concerned with the issue of increasing of the efficiency of learning experience.

According to Burton (1963) teaching is the stimulation, guidance, direction and encouragement of learning. On other hand Crow and Crow (1973) define learning as the acquisition of the knowledge and attitudes. It involves new ways of doing things and it operates on an individual's attempt to overcome obstacles or to adjust to new situation. Not far from this definition we can alongside understand that, teaching helps in imparting knowledge, developing understanding and skills.

The teaching can take place in various conditions, so far as the acquisition of knowledge is concerned. When the teaching is conducted within family, or through peer interaction it is known as informal education. Whereas in specific setting and conducted by specialists which enforce systematically and methodologically skills accompanying the process, it is known as formal education.

On other hand, the learning involves the change in behavior. This change involves new ways to adjust oneself to new situations. Accordingly to formal and informal teaching, we can understand that, reciprocally, formal learning happens in educational and training institutions. The acknowledgment of the skills is through diplomas and qualifications. Whereas in the informal side, the outcome gained from the training is not formalized by the certificate.

2.2.1 Contribution of teacher in teaching-learning process

In the constructivism theory the teaching-learning process, the body of knowledge transmitted to the students, is embodied by the social interaction and meaning the students and the teacher construct together.

We can understand that during the interaction, the teacher is likely to state a concept, in this concept the student will interact by asking question, by answering questions underlying the aforementioned concepts. Through the personal experience, example the teacher can attempt to immerse the student, in the concept.

According to Thanasoulas (2002), the process cannot be considered as a linear process, where as something is immediately stated, it is considered as a granted. That means the teacher is more knowledgeable, and is supposed to act, among other things as a mediator, influencing and being influenced by the students, who do not obviously own his knowledge.

We should recognize that this process is quite difficult rather than it appears, since there are hosts factors which affects the educational outcomes, for instance the students' abilities, the classroom environment, infrastructure, in short the set of elements which has a direct effect on teaching-learning process Here, we will only examine the role of the teacher and his/her

contribution to (language) learning. In fact every teacher comes with his/her inborn abilities such as his mindset, all his shapes and sizes, he can present a wide range of different personalities, beliefs and ways of thinking and working. Accordingly, we cannot say that when someone uses methods and models of teaching, he/she differs from someone using the ones informed by research is necessarily an unskilled teacher.

2.2.2 Teachers' beliefs

Regarding this issue Thanasoulas (2002) asserts that, beliefs cannot be accurately measured, defined or evaluated, but there are a number of indicators regarding it, that we should know. Beliefs are inborn inherited conviction and are culturally bound and, since they are formed early in life, they are pretty rigid to changes. Even though they are quite difficult to measure, we almost always have to make the inference of held people's beliefs from the ways in which they are responsive rather than from what they respectively claim their held beliefs.

2.2.3 Beliefs about learners

From Thanasoulas (2002) standpoint, teachers hold any or a combination of beliefs about their students. According to Roland Meighan (1990) there are at least seven different ways in which teachers mould learners and that such evaluative constructions have a profound influence on their classroom practice. So, according to him, learners may be shaped as:

- resisters
- receptacles
- raw material
- clients
- partners
- individual explorers
- democratic explorers

These constructs are perceived in terms of a continuum which shows the nature of the teacher-learner efficient and effective relationship. So the first three constructs shows that the teacher is dominated, whereas the latter involves learner participation.

More specifically, the concept of learners as resisters considers trainees as refractory individuals who do not wish to learn. This assumption, however, gives rise to the assertion that punishment is the most appropriate way of overcoming such "reluctance."

An even more common conception of learners is one in which they are viewed as receptacles to be filled with knowledge. The teacher is seen as having a "jug" of knowledge which he pours into the learners' "mugs." This is what Freire (1970) describes as the "banking" concept of education, where learners are like bank accounts where deposits are made and drawn upon.

Even though we have not dwelled upon Meighan**'s** (1990) theory in detail, it should be apparent by now that constructivism fits more comfortably with the latter end of the abovementioned continuum.

2.2.4 Beliefs about learning

From Thanasoulas (2002) view point teaching is not separable from learning. We can be good teachers only if we know what we mean by learning because only then can we know what we expect our learners to achieve. In case we want to prepare our students to pass an exam, then this will affect the way in which we teach. If we see foreign language learning as a perennial process which has social and cultural implications, then we will take a different approach to teaching it. Gow and Kember (1993) suggest that most approaches to learning can be subsumed under any of the following points:

- a quantitative increase in knowledge
- memorization
- the acquisition of facts and procedures which can be retained and / or used in practice
- the abstraction of meaning
- an interpretative process aimed at the understanding of reality
- some form of personal change

2.2.5 Teachers' beliefs about themselves

For humanistic teachers, teaching is essentially a personal expression of the self, which has particular implications with regard to teachers' views of themselves, since a teacher who lacks self-esteem will not be able to build the self-esteem of others. The teacher who does not accept his learners for who they are makes it difficult for them to accept themselves. By the same token, the language teacher needs to impart a sense of self-confidence in using the language, while at the same time respecting learners' attempts to communicate in the foreign language.

There is no such thing as Thanasoulas (2002) "the perfect teacher." Thanasoulas (2002) giving a discourse on what "good teachers" do appears to be unhelpful and unrewarding to those who want to improve their own practices. A far more helpful approach seems to be the study of teachers' beliefs, which inform and shape their actions. Constructivism lies at the heart of this endeavor, as it offers valuable insights into the cognitive as well as affective aspects of the relationship between teachers and their self-images, and teachers and students. Teaching is not merely information or knowledge, but mainly an expression of values and attitudes. What teachers usually get back from their students is what they themselves have brought to the teaching-learning process.

2.2.6 The relationship between Critical pedagogy and assessment in Teacher Education

The training of teachers is subject to an important attention and critique and the practices along the assessment of students' teacher are important to show their readiness to give positive outcome. Trainees educators who intend to the introduction of elements of critical pedagogy in their respective tasks and assessment, will gain from a detailed examination of the critical pedagogy literature and analysis of its worth in academic setting. The literature of critical pedagogy is however importantly broad and the content often dense and confusing. Consequently, the development of critical literature throughout the history will be thoroughly

looked into by some of basic critics within it and directed towards it. We intend to identify the central issues that potentially affects on teacher education and the underlying philosophies and practices of qualified teachers. It is an assertion that the insertion of critical pedagogy in the training of student teacher will contribute in overhaul for ongoing change. Before seep into ins and outs of critical pedagogy, it is pretty important to examine the fundamental gist of the terms themselves. Pedagogy is a set of combined characters which has had short history in English language writing concerning education. Nonetheless, there is nowadays a relevant and growing literature concerning the definition of pedagogy in present educational contexts. Watkins and Mortimore (1999: 8) suggest that "a suitably complex model is in sight … [which]

… specifies relations between its elements; the teacher, the classroom or other context, content, the view of learning and learning about learning". In this model, pedagogy comes into view as a fairly technical concept that mirrors a predefined mutual relationship between different components of an academic setting. Per se, it can be considered as an educational model and may be as opposed to a practitioner's model of pedagogy. In this latter model, less definitions of special features and more acknowledgment of the dynamic inter-relationships between all the actors in the training context and different effects on their learning.

Despite the potential discrepancies in methodology and usage, pedagogy may be described as "a deliberate attempt to influence how and what knowledge and indentities are produced within and among particular sets of social relations" (Giroux & Simon, 1989: 239). In any context of training, so there is a hope that some kind of exchange will take place, then the practice of pedagogy concerns the production of knowledge. Therefore, in investigating pedagogy, questions must be raised about the final issues of education and the drills of the classroom or other situational training. If knowledge will be produced, the pedagogue must automatically reproduce on the role of the teacher in relation to the learners and must also scrutinize that critical aspects like the social milieu that affects and is successively affected by the learning experience.

According to Keesing-Styles (2003), **i**n the literature and in practice, there are strong ties between approaches to learning and the practices of assessment. Therefore critical pedagogy shares much in practices with other ways of learning. It is important to recognize, therefore, that the processes utilized in the learning context of critical classrooms may be familiar to

excellent educators who do not forcefully advocate or practice critical pedagogy. So it is favorably advisable to conceal critical pedagogy with general excellence. In the attempt of compressing a critical pedagogical approach to assessment, number of topics must be integrated.

2.3 Evaluation Process

According to Ebel & Frisbie(2009**),** the purpose of the evaluation is to make a judgment about the quality or worth of something. It may be an educational program, worker performance or proficiency, or students' attainments. The purpose of the evaluation does not consist of describing what the students can do but rather to seek the goodness of their achievement, their performance, the extent of the mastery over the teaching received. These vision of the purpose of the evaluation about the value, lead us to understand that it is the matter of the exercise of judgment. So we can simply define the evaluation as the process of making value judgments understates the complexity and difficulty of the effort required. Once it has been determined that evaluation is necessary, the assessor must decide what kind of information we need, so the information will be collected and synthesized in order to sustain the outcome which is the value judgment. The evaluation is concerned with information gathered and making decision. So it has a dual connotation.

2.3.1 Evaluation: Formative and Summative

Nowadays, those terms are fairly popular in the educational setting jargon, since their introduction by Scriven in the early 1960s. Their use is quite helpful to describe the roles of the evaluation in curriculum development and instruction.

Formative evaluation is conducted to monitor the instructional process, to determine whether learning is taking place as planned. Whereas summative evaluation on order hand, is conducted at the end of an instructional segment to warrant moving the learner to the next segment of instruction. The distinctions between these two types of evaluation have implications for test development and use in the classroom and in the evaluation of educational programs. But it is worth noting that information gathered for the summative purposes can be used for the formative purpose as well.

The major function of formative evaluation is to provide the feedback to the teacher and to the students about the actual process. Such feedback furnishes the possibility on the side of the teacher to modify his instructional methods or materials in order to make easier the learning when feedback indicated things are not going well. Formative evaluation requires the gathering of fairly detailed information on frequent occasions. Information is obtained through teacher observation, classroom oral questioning, homework assignments, and quizzes or informal inventories. Mostly from what teacher does in order to lead class discussions or answering student questions should be considered as formative evaluation. The role of test in this side is likely to be quite small. In the exception of systematized programs of individualized instruction test are used mainly for formative evaluation.

Therefore, in the formal setting of learning such as classrooms, test like unit tests or final examinations are mainly used tools of summative evaluation. The major function of summative evaluation in the classroom is to determine the status of achievement at the end of an instructional segment, to determine the improvements. Contrarily to the formative, the information gathered in this process is less detailed in nature but broader in scope of content or skills assessed.

It obviously appears that both types of evaluation are necessary components of classroom instruction. Seldom, information gathered for summative purposes may be useful in a formative sense. For instance, the scores used on a unit test may be used to evaluate achievement at the end of that unit. At the same time the scores reflect progress in the course and in the broader instructional program. In such circumstances the tests should be used to produce useful information for summative evaluation purposes, but the scores is likely to be used unwillingly as gross indicators of progress in the broader context.

2.5 Academic Regulations of IUT

From the Website of Islamic university of technology (http://www.iutoic-dhaka.edu/), the following informations had been collected regarding the ongoing process over here.

2.5.1 Medium of Instructions

The official languages of the university are Arabic, English and French. Medium of instructions and examinations at present is English. A crash English language is arranged for Arabic and French speaking students when needed. 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.

2.5.2 Admission Requirement

Undergraduate Programmes

(i) Engineering and Technology

The 4-Year B.Sc. Engineering programmes comprise eight consecutive semesters of sixteen weeks duration each, spread over four academic years. The total contact hours in classes, laboratories and workshops are 25-30 hours per week.

The Course curricula contain engineering courses of high level and include components for hands-on-experience to produce graduates of international standard having relevance to the developing needs of the Member States. In addition, some basic courses in science, social science, humanities, and mathematics and general studies are also included in the above Programmes.

Each provisionally selected candidate under the above Programmes must deposit US $ 6000 to IUT Account to facilitate issuing of the final letter offering admission. Final letter offering admission will not be issued unless the payment is credited to IUT Account. In addition to the initial payment, each candidate selected under the self-financing scheme will have to deposit a sum of US $ 3500 at the beginning of each of the subsequent academic years till his graduation.

Any student failing and requiring more than 4 years for graduation will have to pay additional sum of money for additional year(s) as per rule as decided for each extra year.

(ii) Higher Diploma Programmes

Higher Diploma in Engineering (HDE) programme is of three years duration. On successful completion of three years of study they will be awarded Higher Diploma in Mechanical Engineering or Electrical & Electronic Engineering or Computer Science and Engineering. There are specializations in Automotive for Higher Diploma in Mechanical Engineering, Power System Technology for Higher Diploma in Electrical and Electronic Engineering and Web Technology for Higher Diploma in Computer Science and Engineering. The HDE graduates may continue to complete the respective remaining courses of B.Sc. Engineering programmes on payment of a sum of **US$ 6500** to be deposited to IUT in the form of Demand Draft/Pay Order favoring Islamic University of Technology before registration in the B.Sc. Engineering Programme.

Minimum Entry Requirements

Higher / Upper Secondary School Certificate (science background) from a Board / University or its equivalent. The candidates are required to have good grades (minimum grade 'B' or equivalent) in Mathematics, Physics, Chemistry and English. The year of passing should be the current year or one year earlier.

(iii)Technical Education

The University will offer the following undergraduate Programmes in the field of Technical and vocational Education:

Bachelor of Science in Technical Education

Having specialization in

(a) Automotive Technology (For HDME group)
(b) Computer Science and Engineering (For HDCSE group)
(c) Instrumentation & Control (for HDEE group)

Diploma in Technical Education

Having specialization in

(d) Automotive Technology (For HDME group)
(e) Computer Science and Engineering (For HDCSE group)
(f) Instrumentation & Control (for HDEE group)

Minimum Entry requirements

Bachelor of Science in Technical Education:

Diploma in Technical Education* /Higher Diploma in Engineering from IUT or its equivalent with a minimum CGPA of 3 out of 5 or 2.5 out of 4.00.

Diploma in Technical Education

Diploma in Engineering in the relevant field awarded by a Board of Technical Education or its equivalent.

Postgraduate Programmes

(i) Engineering and Technology

For Doctor of Philosophy Programme the total requirement is 54 credit hours including a thesis of 42 credit hours which may normally be completed in 3 academic years.

For either Master of Science or Master of Engineering degree, the total credit requirement is 36 credit hours which may be normally completed in three semesters each consisting of 16 weeks. The Master of Science programme contains 18 credit hours of thesis work while the master of Engineering programme is primarily based on course work and includes a project of 6 credits hours only. Master of Engineering programme is primarily based on course work while a great part of Master of Science programme contains thesis work. On the other hand, total credit requirement for Post-Graduate Diploma is 24 credit hours mainly based on course work which may normally be completed in two semesters.

The selected candidates of the above post-graduate programmes are to be fully self-financed for all the expenses including the expenses for food, accommodation, tuition, normal medicare, etc., as mentioned in the paragraph on “Financing the Educational Cost”. Normally a sum of US$ 3200* per year (of two semesters) per candidate is to be deposited to IUT in the form of Demand Draft/Pay Order favoring Islamic University of Technology before reporting to the University for registration. However, some scholarships in the form of tuition waiver are available for meritorious students in each Department. A limited number of teaching / research assistantships may also be available to meritorious students on the recommendation of the Head of the Department for full time postgraduate students. A postgraduate student in any field of Engineering may opt to become non-resident. In that case the student is required to pay tuition fee only at the rate of US $50 per credit-hour. This type of student is not entitled to receive other facilities as mentioned in the paragraph on "Financing the Educational Cost"

Minimum Entry Requirements

For admission to Ph.D programme the candidate should have a Masters Degree with a CGPA of 3 out of 5 or 2.5 out of 4.

For admission to the courses leading to M.Sc. Engg./ M.Engg./ Postgraduate Diploma in any branch, a candidate must have obtained B.Sc.Engg. in any branch Engineering with a minimum CGPA of 3 out of 5 or 2.5 out of 4. For admission to the course leading to M.Sc. /Postgraduate Diploma in Computer Science and Applications, a candidate must have 4-year B.Sc. degree or its equivalent with sufficient background of Mathematics and Computer.

(ii) Technical Education:

The University will offer the following Postgraduate Programmes in the field of Technical and Vocational Education:

Master of Science / Postgraduate Diploma in Technical Education

having specialization in:

(a) Mechanical Engineering

(b) Electrical and Electronic Engineering

(c) Computer Science & Engineering

Master of Science in Technical Education may need one year or two years depending on the entry qualification.

Minimum Entry Requirements

For 2-year Master of Science in Technical Education (M.Sc.T.E.), the entry requirement is Bachelor of Science in Technical Education/Engineering or its equivalent.

For 1-year M.Sc.T.E, the entry requirement is Postgraduate Diploma in Technical Education or its equivalent.

Preference will be given to those candidates having teaching experience in Technical / Vocational Education. For admission to the above programmes, the minimum CGPA is 3 out of 5 or 2.5 out of 4.

2.4.3 Examination, Grading and Award

a) Post Graduate Programmes in Engineering and Technology

The minimum duration of the M.Sc. Engg., M.Sc. and M. Engg. programmes shall normally be three semesters each consisting of 16 weeks and for PGDE, PGD shall be two semesters. A candidate for the Masters Degree must complete all requirements for the Degree within a maximum period of three calendar years from the date of his admission. For the case of PGDE/PGD this limit is two calendar years.

Academic progress shall be measured in terms of credit hours earned by a student. One credit hour subject shall require one hour of lecture per week for one semester, while one credit hour for thesis/project/laboratory/sessional/seminar/special studies should normally require two hours of work per week for one semester. The number of credit hours for each subject shall be as specified in the syllabus of the respective Department. The number of subjects to

be offered per semester will be decided by PGC but a student cannot register for more than 12 credit hours per semester.

For the Degree of M.Sc.Engg./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.Sc. (CSA) a student must earn a minimum total of 36 credit hours including a Thesis of 18 credit hours or a Project of 6 credit hours.

For the Degree of M. Engg. 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.

For the Post-Graduate Diploma in Engineering and Post-graduate Diploma of CIT or CSA, a student must earn a minimum total of 24 credit hours out of which a maximum of 6 credit hours may be assigned for a project.

The course curriculum and subject of study of the different departments shall be as recommended by the respective PGC, checked by the Committee for Advanced Studies and Research (CASR) and approved by the Academic Council. Departmental Post Graduate Committee (PGC) may review the curriculum from time to time and recommend any changes as may be considered necessary and get it finally approved by the Academic Council. For any particular semester the courses to be offered will be decided by the PGC.

The details of the rules are available in a separate publication on rules for postgraduate programmes**.**

b) Undergraduate Programmes in Engineering and Technology and All Programmes of Technical Education

IUT follows the Semester System for the purpose of conduct of instructions and examinations. An academic year consists of two semesters each of sixteen weeks of instruction. All students pursuing the programme under CIT, EEE and MCE are required to have industrial attachment or special assignment or attend practical training between the semesters or during the academic year.

Each period of instruction per week in a theory subject or theoretical part of a subject constitutes one "unit" or 1.00 Credit Hour and carries 100 marks. Three periods per week in a sessional subject or sessional part of a subject or tutorial part of a subject constitutes 1.50 Credit Hour and carries 150 marks. Two periods per week in a sessional subject or tutorial part of a subject constitute 1.00 Credit Hour and carries 100 marks.

Examination in a theory course / theoretical part of a course consists of the following three parts.

- Four quizzes are held and distributed evenly over the semester. The best three quiz results are considered, which carry 15% of the total marks of the course.
- Mid-Semester Examinations, usually around the middle of the semester on the portion of the syllabuses covered by then, carrying 25% of the total marks in the subject.
- Semester Final Examinations covering the entire syllabus and carrying 50% of the total marks in the subject.

Final grade in theoretical / theoretical part of a course shall be on the basis of the total aggregate of marks secured by the student in the quizzes, the mid-semester and the semester final examinations. A student missing any quiz or the mid-semester or the semester final examinations shall be considered to have got zero in that quiz or the examination of the course.

The tutorial part of a course shall be assessed continuously throughout the semester in the form of quizzes, homework and library assignments. Marks so obtained shall be added with that of corresponding theoretical or sessional course.

The sessional or sessional part of a course shall be assessed continuously throughout the semester. In addition a final examination may be conducted. If a student fails in any sessional or practical class he is not allowed to sit in the written Semester Final Examination.

Final grades in all courses are recorded in letter grades on the basis of aggregate marks secured in the quizzes, the mid-semester and the final examination. For any course a student must secure 45% or above of the total aggregate marks to pass the course.

Total grade points secured divided by the total Credit Hours taken shall be computed as Grade Point Average (GPA). A student is declared to have passed the semester examinations when he passes in all the courses of the semester having minimum GPA of 2.00 for all undergraduate programmes. The required minimum GPA for passing a semester in the postgraduate programmes is 2.50.

A student failing in not more than two theoretical courses may be allowed to sit for Referred Examination on the course or courses to be held normally within two weeks from the commencement of the next semester. The Referred Examinations will cover the entire syllabus of the course(s). Those failing in any sessional course will not be eligible for Semester Final or Referred Examinations.

A student who passes the Referred Examinations shall be declared to have passed the relevant Semester Examination in the **B** grade in that subject if marks obtained is 60% or above, the **C** grade in that subject if marks obtained is 50% or above, but below 60% or **D** grade if marks obtained is 45% and above but below 50%. If he fails in the Referred Examinations he may seek re-admission as per rules. A re-admitted student may be exempted from repeating the subject in which he secured minimum of **C** grade in the examinations in which he failed.

Results of examinations of the successful candidates and of those eligible for referred examinations are announced by the Registrar in anticipation of the approval of the Academic Council after it has been considered by the Examination Committee and endorsed by the Vice Chancellor. A student is eligible for award of Certificate, Diploma, Higher Diploma, Bachelor Degree, Postgraduate Diploma, Master Degree for which he was admitted when he passes the prescribed subjects of all the semesters and successfully completes approved industrial attachment, special assignments, practical training and remedial courses as the case

may be. The details are given in the publication on Academic Rules as approved by the Academic Council.

The awards are classified as

- First Class or First Division with Distinction,
- First Class or First Division
- Second Class or Second Division.

Grading System

As per decision and approval of the 51st Academic council the grading system for students admitted for the Academic Year 2006-2007 and onwards will be as follows:

Numerical Grade (in percentage)	Letter Grade	Grade Point
80 & Above	A+	4.00
75 to <80	A	3.75
70 to <75	A-	3.50
65 to <70	B+	3.25
60 to <65	B	3.00
55 to <60	B-	2.75
50 to <55	C+	2.50
45 to <50	C	2.25
40 to <45	D	2.00
Less than 40	F	0.0
		1.0

2.5.4 Department of Technical and Vocational Education (TVE)

The Department of Technical and Vocational Education (TVE) offers teacher education programmes to cater to the needs of professionally trained teachers and other educational personnel in the field of Vocational and Technical Education in the OIC countries. The programmes provide for five categories of entrants i.e. Certificate in Trade, Diploma Engineers. Higher Diploma Engineers and Graduate Engineers.

2.6 Pedagogical and Technical Subjects in Bachelor of Science in Technical Education 1-Year Programme

From IUT Academic Calendar handbook(Islamic University of Technology, 2011), it is found that, the students admitted in this programme should attend the core curriculum courses which are made up of pedagogical subjects, the technical subjects are done accordingly to the specialization of the higher diploma programme.

2.5.1 Pedagogical Subjects

For the first semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
TVE 3125	Methods and techniques of teaching	3-0-0	3.00
TVE 3126	Methods and techniques of teaching Lab	0-0-2	1.00
TVE 3139	Principles of Technical and Vocational Education	3-0-0	3.00
TVE 4111	Occupational Analysis and Course Construction	3-0-0	3.00
TVE 4143	Comparative Education	3-0-0	3.00
Technical courses	Two Technical Courses from the respective specialization	6-0-9*	10.50
	Total L-T-P	18-0-11*	
	Total Hours	29*	23.50*

*There may be slight deviation for different specialization

For the second semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
TVE 4229	Methods and techniques of teaching	3-0-0	3.00
TVE 4230	Instructional Technology and Communication skill Lab (1 hour for Instructional Tech. Practice and 2 hours for CAI Lab)	0-0-3	1.00
TVE 4203	Psychology of Teaching-Learning	2-0-0	3.00
TVE 4251	Sociology of Education	3-0-0	3.00
TVE 4235	Educational Measurement and statistics	3-0-0	3.00
TVE 4258	Observation and Practice	0-1-4	
Technical courses	Two Technical Courses from the respective specialization	6-0-9*	10.50*
	Total L-T-P	17-1-16*	
	Total Hours	34*	25.50*

There may be slight deviation for different specialization

2.5.2 Technical subjects

a. Electrical and Electronic Engineering (Instrumentation and Control technology)

For the first semester the courses are:

L= Lecture P=Practical/Workshop T= Tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
EEE 4700T	Related Project and Report	0-0-6	3.00
EEE 4705	Control System Engineering	3-0-0	3.00
EEE 4706	Control System Engineering Lab	0-0-3/2	0.75
EEE 4733	Advanced Electronics I	3-0-0	3.00
EEE 4734	Advanced Electronics I Lab	0-0-3/2	0.75
	Total L-T-P	6-0-9	
	Total Hours	15	10.50

For the second semester the courses are:

L= Lecture P=Practical/Workshop T= Tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
EEE 4800T	Related Project and Report	0-0-6	3.00
EEE 4833	Advanced Electronics II	3-0-0	3.00
EEE 4834	Advanced Electronics II Lab	0-0-3/2	0.75
EEE 4835	Medical Electronics	2-0-0	2.00
EEE 4836	Medical Electronics Lab	0-0-3/2	0.75
	Total L-T-P	5-0-9	
	Total Hours	14	9.50

b. Mechanical And Chemical Engineering Department (Automotive Technology)

For the first semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
MCE 4700	Project and Thesis I	0-0-6	3.00
MCE 4705	Thermodynamics III	3-0-0	3.00
MCE 4785	Automotive Engineering I	3-0-0	3.00
	Total L-T-P	6-0-6	
	Total Hours	12	9.00

For the second semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
MCE 4800	Project and Thesis II	0-0-6	3.00
MCE 4803	Dynamics of Machines	3-0-0	3.00
MCE 4885	Automotive Engineering II	3-0-0	3.00
	Total L-T-P	6-0-6	
	Total Hours	12	9.00

c. Computer Science and Engineering Department

For the first semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
CSE 4700	Project and Thesis	0-0-6	3.00
CSE 4761	IT Project Management	3-0-0	3.00
CSE 4762	IT Project Management lab.	0-0-3/2	0.75
CSE 4763	AI and Expert Systems	3-0-0	3.00
CSE 4764	AI and Expert Systems Lab.	0-0-3/2	0.75
	Total L-T-P	6-0-9	
	Total Hours	15	10.50

For the second semester the courses are:

L= Lecture P=Practical/Workshop T= tutorial

Course No	Course Title	Contact Hours	Credit Hours
		L-T-P	
CSE 4700	Project and Thesis	0-0-6	3.00
CSE 4861	Wireless and Mobile Communication	3-0-0	3.00
CSE 4862	Wireless and Mobile Communication Lab.	0-0-3/2	0.75
CSE 4863	Object Technology and UML	3-0-0	3.00
CSE 4864	Object Technology and UML Lab.	0-0-3/2	0.75
	Total L-T-P	6-0-9	
	Total Hours	15	10.50

CHAPTER III

METHOD AND PROCEDURE

3.1 Introduction

This chapter deals with the procedure adopted in conducting the study. It includes a description of the design of the study, and population. It also described the method of data collection, and data analysis.

3.2 Design of the Study

The study followed descriptive research methodology.

3.3 Population

The population of the study was the undergraduate students of the last five years (2006-2010), in the one year B.Sc.T.E. programme.

3.4 Sampling

As the population was of small size, all the students over the last five years were taken as sample in this study. The total sample was year wise as follows:

a. In 2006, we had 8 students.
b. In 2007, we had 16 students.
c. In 2008, we had 15 students.
d. In 2009, we had 15 students.
e. In 2010, we had 32 students.
f. As a whole, from 2006 to 2010, we had 86 students.

3.5 Tools of research

Documents of the results in term of their achievement test in the undergraduate programme over the last five academic years.

3.6 Data Collection Procedure

The data was collected from the IUT Registrar Office by the researcher himself.

3.7 Data Analysis Technique

One sample paired t-test was done to compare the results of technical and pedagogical subjects at 0.05 level of significance.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

This chapter presented the analysis and interpretation of data regarding the results obtained from the IUT administration. Results are tabulated and interpreted year wise as well as combined for five years. Detailed results are presented in the following pages.

4.2 Analysis of Data

Table 1: Comparison of results between technical and pedagogical subjects in the year 2006

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.54363	8	.326685	.115501
	GPA in Pedagogical subjects	3.59188	8	.298299	.105465

It is found in the table 1:

1. The mean GPA of technical subjects is 3.54, with a standard deviation of .32.
2. The mean GPA of pedagogical subjects is 3.59, with a standard deviation of .29.
3. Hence the mean GPA of pedagogical subjects is greater than the mean GPA of technical subjects.

Table 2:

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subject	-.048250	.238928	.084474	-.247999	.151499	-.571	7	.586

It is found in the table 1 that the mean of pedagogical subjects is greater than the mean of technical subjects and the $\mathbf{t_{obs}}$ is **-.571.**

The value of $\mathbf{t_{crit}}$ is greater than the value of $\mathbf{t_{obs}}$, hence the null hypothesis is accepted**,** which means there is no significant difference between the two groups at **0.05 level of significance.**

Table 3: Comparison of results between technical and pedagogical subjects in the year 2007

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.44531	16	.290228	.072557
	GPA in Pedagogical subjects	3.68700	16	.192194	.048048

1. The mean GPA of technical subjects is 3.44, with a standard deviation of .29.
2. The mean GPA of pedagogical subjects is 3.68, with a standard deviation of .19.
3. Hence the mean GPA of pedagogical subjects is greater than the mean GPA of technical subjects.

Table 4

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subject	-.241688	.157981	.039495	-.325870	-.157505	-6.119	15	.000

It is found in the table 3 that the mean of pedagogical subjects is greater than the mean of technical subjects and the $\mathbf{t_{obs}}$ is **-6.119.**

The value of $\mathbf{t_{crit}}$ is lower than the value of $\mathbf{t_{obs,}}$ hence the null hypothesis is not accepted**,** which means there is significant difference between the two groups at **0.05 level of significance.**

Table 5: Comparison of results between technical and pedagogical subjects in the year 2008

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.32780	15	.406709	.105012
	GPA in Pedagogical subjects	3.63380	15	.421685	.108879

1. The mean GPA of technical subjects is 3.32, with a standard deviation of .406.
2. The mean GPA of pedagogical subjects is 3.63, with a standard deviation of .421.
3. Hence the mean GPA of pedagogical subjects is greater than the mean GPA of technical subjects.

Table 6

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subjects	-.306000	.273195	.070539	-.457290	-.154710	-4.338	14	.001

It is found in the table 5 that the mean of pedagogical subjects is greater than the mean of technical subjects and the $\mathbf{t_{obs}}$ is **-4.338.**

The value of $\mathbf{t_{crit}}$ is lower than the value of $\mathbf{t_{obs,}}$ hence the null hypothesis is not accepted**,** which means there is significant difference between the two groups at **0.05 level of significance.**

Table 9: Comparison of results between technical and pedagogical subjects in the year 2010

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.32572	32	.365734	.064653
	GPA in Pedagogical subjects	3.52831	32	.321237	.056787

1. The mean GPA of technical subjects is 3.32, with a standard deviation of .36.
2. The mean GPA of pedagogical subjects is 3.52, with a standard deviation of .32.
3. Hence the mean GPA of pedagogical subjects is greater than the mean GPA of technical subjects.

Table 10:

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subjec	-.202594	.277491	.049054	-.302640	-.102548	-4.130	31	.000

It is found in the table 10 that the mean of pedagogical subjects is greater than the mean of technical subjects and the $\mathbf{t_{obs}}$ is **-4.13.**

The value of $\mathbf{t_{crit}}$ is lower than the value of $\mathbf{t_{obs}}$, hence the null hypothesis is not accepted**,** which means there is significant difference between the two groups at **0.05 level of significance.**

Table 11: Comparison of results between technical and pedagogical subjects from the year 2006 to 2010.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.36471	86	.344837	.037185
	GPA in Pedagogical subjects	3.60455	86	.315892	.034064

1. The mean GPA of technical subjects is 3.36, with a standard deviation of .34.
2. The mean GPA of pedagogical subjects is 3.60, with a standard deviation of .31.
3. Hence the mean GPA of pedagogical subjects is greater than the mean GPA of technical subjects.

Table 12:

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subject	-.239837	.249520	.026906	-.293334	-.186340	-8.914	85	.000

It is found in the table 11 that the mean of pedagogical is greater than the mean of technical subject and the $\mathbf{t_{obs}}$ is **-8.914.**

The value of $\mathbf{t_{crit}}$ is lower than the value of $\mathbf{t_{obs}}$, hence the null hypothesis is not accepted**,** which means there is significant difference between the two groups at **0.05 level.**

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The objective of this study was to compare the results of technical and pedagogical subjects in the undergraduate programme in the department of technical and vocational education at the Islamic University of Technology (IUT), Dhaka. The comparison had been undertaken to find out whether, the evaluation done in TVE department is in line with other department. Since the pedagogical subjects are taught by the teachers of TVE department, whereas technical courses are taught by teachers of engineering department including Mechanical, Electrical and Computer science. The outcome of this study will provide the insight to IUT administration with respect to grading system of its four departments, hence it would be easy to identify, if there is any deviation from the expected standard. It would also help the department specially (TVE) in maintaining a grading system, in line with other departments. The study followed descriptive research methodology. As the population was of small size, all the students over the last five years (2006-2010) were taken as sample in this study. The tool of the research was documents of the results in term of their achievement in the undergraduate programme students over the last five academic years. The data was collected from the IUT Registrar office by the researcher himself. One sample paired test was done to compare the results of technical and pedagogical subjects at 0.05 level of significance.

5.2 Findings

Based on the study the following findings emerged:

1. In 2006 there was no significant difference of results between Pedagogical and Technical subjects.
2. From 2007-2010 there was significant difference of results between Pedagogical and Technical subjects. Students performed better in Pedagogical subjects than the Technical subjects.
3. In combined results for five years 2006-2010, there was significant difference of results between Pedagogical and Technical subjects as students performance was better in pedagogical subjects.

5.3 Conclusions

Based on the findings the followings conclusions were drawn:

1. In 2006 there was no significant difference of results between the pedagogical subjects and technical subjects of the graduated students of B.S.c.T.E one year programme of the department of Technical and Vocational Education, which indicates students performed equally in both subjects.
2. Between 2007 to 2010, the students performed significantly better in pedagogical subjects than technical subjects. It may be concluded that performance in Pedagogical subjects was better than in Technical subjects
3. When combined for five years (2006-2010) there was significant difference in the Pedagogical subjects as compared to Technical subjects, as the students performed better in Pedagogical subjects, it is concluded that results in Pedagogical subjects are better than in Technical subjects.

5.4 Recommendations

In the light of the findings and conclusions, following recommendations are made:

1. The discrepancies in the student's achievement if any between technical and pedagogical subjects should be looked into.
2. Further studies can be done to investigate other aspects like teaching learning process, teachers' qualifications, experience, professional training, methods of evaluation.

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APPENDIX-A

Meaning of the table headers

Data Obtained From the Administration representing the administration of IUT, it is found in the table header various abbreviations.

SID: Student ID

Tec_GPA: GPA in technical subject

Ped_GPA :GPA in pedagogical subject

Results of the last from 2006 to 2010

SID	Tec_GPA	Ped_GPA
103406	3.125	3.573
103411	3.209	3.925
103412	3.292	3.8885
103417	3.083	3.64
103421	2.917	3.656
103422	2.917	3.8055
103423	3.125	3.3825
103424	3.292	3.6055
103425	3.208	3.3245
103433	3.167	3.1505
103436	3.000	3.0315
103438	3.125	3.619
103410	3.919	3.9875
103413	3.928	4
103414	3.964	3.9335
103415	3.955	3.7605
103416	3.768	3.843
103418	4.000	4
103426	3.009	3.224
103427	3.018	3.294

103430	3.741	3.5825
103431	3.116	2.9355
103435	3.241	3.3325
103437	3.036	3.315
103439	3.285	3.4435
103440	2.848	3.172
103402	3.268	3.2285
103409	4.000	4
103428	3.214	3.141
103429	3.072	3.1065
103432	3.161	3.4545
103434	3.420	3.542
093405	3.375	4
093419	3.084	3.743
093420	3.125	3.6105
093422	3.209	3.751
093403	3.456	3.8755
093407	3.741	3.971
093416	3.839	3.9415
093417	3.554	3.7925
093418	3.205	3.3355
093402	3.277	3.867
093406	3.589	3.868
093414	2.812	3.0135
093415	3.089	3.2825
093421	3.214	3.4865
093423	2.982	3.3325
083414	3.333	4
083419	3.209	3.868
083418	3.363	3.41
083421	3.255	3.2785
083424	2.453	2.451
083403	3.580	3.913
083404	3.643	3.958
083405	3.393	3.3245
083407	3.840	4
083409	3.473	3.892
083410	3.678	3.8615
083412	3.723	3.954

083420	3.295	3.6275
083422	3.241	3.6355
083423	2.438	3.3305
073424	3.085	3.3075
073409	3.607	3.755
073410	3.339	3.651
073416	3.187	3.6395
073419	3.723	3.8135
073420	3.848	3.8345
073422	3.554	3.7595
073423	3.777	3.826
073426	3.277	3.6105
073408	3.380	3.6175
073412	3.717	3.7885
073413	3.388	3.8385
073414	3.086	3.6355
073417	3.836	4
073418	3.400	3.664
073421	2.921	3.246
063417	3.209	3.5565
063411	2.941	3.1455
063413	3.707	3.744
063407	3.804	3.7845
063408	3.625	3.714
063412	3.670	3.9585
063415	3.464	3.1405
063416	3.929	3.6885

Whole Results of the paired t-tests presented by SPSS

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.36471	86	.344837	.037185
	GPA in Pedagogical subjects	3.60455	86	.315892	.034064

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GPA in Technical Subjects & GPA in Pedagogical subjects	86	.718	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subject	-.239837	.249520	.026906	-.293334	-.186340	-8.914	85	.000

Appendix-B

Results per Year

Results of 2006

SID	Tec_GPA	Ped_GPA
063417	3.209	3.557
063411	2.941	3.146
063413	3.707	3.744
063407	3.804	3.785
063408	3.625	3.714
063412	3.670	3.959
063415	3.464	3.141
063416	3.929	3.689

Appendix-C

Results of 2007

SID	Tec_GPA	Ped_GPA
073424	3.085	3.308
073409	3.607	3.755
073410	3.339	3.651
073416	3.187	3.640
073419	3.723	3.814
073420	3.848	3.835
073422	3.554	3.760
073423	3.777	3.826
073426	3.277	3.611
073408	3.380	3.618
073412	3.717	3.789
073413	3.388	3.839
073414	3.086	3.636
073417	3.836	4.000
073418	3.400	3.664
073421	2.921	3.246

Results of paired sample test in 2007

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.44531	16	.290228	.072557
	GPA in Pedagogical subjects	3.68700	16	.192194	.048048

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GPA in Technical Subjects & GPA in Pedagogical subjects	16	.862	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subjects	-.241688	.157981	.039495	-.325870	-.157505	-6.119	15	.000

Appendix-D

Results of 2008

SID	Tec_GPA	Ped_GPA
083414	3.333	4.000
083419	3.209	3.868
083418	3.363	3.410
083421	3.255	3.279
083424	2.453	2.451
083403	3.580	3.913
083404	3.643	3.958
083405	3.393	3.325
083407	3.840	4.000
083409	3.473	3.892
083410	3.678	3.862
083412	3.723	3.954
083420	3.295	3.628
083422	3.241	3.636
083423	2.438	3.331

Results of paired t-test in 2008

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.32780	15	.406709	.105012
	GPA in Pedagogical subjects	3.63380	15	.421685	.108879

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GPA in Technical Subjects & GPA in Pedagogical subjects	15	.783	.001

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subjects	-.306000	.273195	.070539	-.457290	-.154710	-4.338	14	.001

Appendix-E

Results of 2009

SID	Tec_GPA	Ped_GPA
093405	3.375	4.000
093419	3.084	3.743
093420	3.125	3.611
093422	3.209	3.751
093403	3.456	3.876
093407	3.741	3.971
093416	3.839	3.942
093417	3.554	3.793
093418	3.205	3.336
093402	3.277	3.867
093406	3.589	3.868
093414	2.812	3.014
093415	3.089	3.283
093421	3.214	3.487
093423	2.982	3.333

Results of paired t-test in 2009

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.30340	15	.286497	.073973
	GPA in Pedagogical subjects	3.65833	15	.300132	.077494

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GPA in Technical Subjects & GPA in Pedagogical subjects	15	.801	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subject	-.354933	.185454	.047884	-.457634	-.252233	-7.412	14	.000

Appendix-F

Results of 2010

SID	Tec_GPA	Ped_GPA
103406	3.125	3.573
103411	3.209	3.925
103412	3.292	3.889
103417	3.083	3.640
103421	2.917	3.656
103422	2.917	3.806
103423	3.125	3.383
103424	3.292	3.606
103425	3.208	3.325
103433	3.167	3.151
103436	3.000	3.032
103438	3.125	3.619
103410	3.919	3.988
103413	3.928	4.000
103414	3.964	3.934
103415	3.955	3.761
103416	3.768	3.843
103418	4.000	4.000
103426	3.009	3.224
103427	3.018	3.294
103430	3.741	3.583
103431	3.116	2.936
103435	3.241	3.333
103437	3.036	3.315
103439	3.285	3.444
103440	2.848	3.172
103402	3.268	3.229
103409	4.000	4.000
103428	3.214	3.141
103429	3.072	3.107
103432	3.161	3.455
103434	3.420	3.542

Results of paired t-test in 2010

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	GPA in Technical Subjects	3.32572	32	.365734	.064653
	GPA in Pedagogical subjects	3.52831	32	.321237	.056787

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	GPA in Technical Subjects & GPA in Pedagogical subjects	32	.681	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	GPA in Technical Subjects - GPA in Pedagogical subjec	-.202594	.277491	.049054	-.302640	-.102548	-4.130	31	.000