# 學生人口縮減對台灣某大學新生英語能力變化的影響

# The Impact of the Shrinking Student Population on Changes in the English Language Ability of Freshmen from 2012 to 2016 at a University in Taiwan


**by**

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**The Impact of the Shrinking Student Population on Changes in the English Language Ability of Freshmen from 2012 to 2016 at a University in Taiwan**

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## ABSTRACT

The purpose of the study is to examine the impact of the shrinking population on changes in the English language ability of non-English major freshmen in 2016 at a university located in central Taiwan. The enrolled non-English major freshmen's English language performance on reading, listening, grammar, and total scores of the New English Placement Exam (the NEPE) are examined to verify whether there are any significant differences between the years of 2016 and the time period (2012-2015) before the drop of the student population as they related to gender, admission pathways, majors, and geographical locations.

A total of approximately 14,000 non-English major freshmen enrolled from 2012 to 2016 at a private university located in central Taiwan are the subjects in this study. All the subjects had received at least eight years of compulsory English language education in their elementary and secondary education. The NEPE is the instrument used to measure the freshmen's English language ability across the four years. The subjects' demographic information of gender, admission pathway, major, and geographical location is provided by the university's Office of Academic Affairs, and the NEPE scores are provided by the English Language Center. The collected data of the students' information and their scores on the NEPE are analyzed by using the

statistical software SPSS 15.0 for Windows. An ANOVA procedure and a post hoc test-Tukey's HSD Test are conducted to verify the statistical differences for the subjects' NEPE scores for the years from 2012 to 2015. Then the independent samples t-test is conducted to verify the statistical differences in the NEPE score between 2015 and 2016. All the level of significance set for hypothesis testing at $\alpha = .01$.

The results of data analysis indicated that (1) non-English major freshmen's English language ability as measured by the NEPE was consistent or followed a consistent trend of increase or decrease for the four years from 2012 to 2015; (2) non-English major freshmen's English grammar and reading abilities were consistent but their listening ability declined in 2016; (3) both male and female freshmen's grammar and reading abilities were consistent but the listening ability declined in 2016; (4) the freshmen's grammar and reading abilities were consistent as they related to admission pathway between 2015 and 2016, but both Examination & Placement and Personal Application admissions' listening ability declined in 2016; (5) few changes in freshmen's grammar and reading abilities as they related to 33 majors between 2015 and 2016 but the listening ability declined in 2016 for freshmen from 8 out of 33 departments, (6) few changes in freshmen's reading and grammar abilities between 2015 and 2016 as they related to geographical locations but the listening ability declined in 2016 for freshmen from Northern, Central, and Southern Taiwan.

In conclusion, non-English major freshmen's grammar and reading abilities were relatively consistent before and after the drop of the student population. However, the listening ability was not progressing as expected rather than regressing in 2016. This decline in listening ability resulted in the decline in overall English ability as measured by the NEPE. Therefore, the shrinking student population might not have an effect on enrolling students with statistical different English grammar and reading abilities but it

might have an effect on enrolling students with worse English listening ability at this university in in 2016.

Key words: Shrinking student population, English language ability, the NEPE, listening ability, grammar ability, reading ability, admission pathways, gender, geographical location, majors

# 學生人口縮減對台灣某大學新生英語能力變化的影響

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## 中文摘要

本論文研究目的在研究本國學生人口縮減對台灣中部一所私立大學 2016 學年度入學非英語主修新生之英語程度的影響。本研究藉由比較新生入學受測的新英語分級測驗(the New English Placement Exam - the NEPE)總成績以及其分項：文法、閱讀及聽力成績來分析入學的新生(依照性別、入學管道、主修系別以及居住地來分組)在學生人口縮減的 2016 學年度和縮減前四年(2012-2015 學年度) 英語程度上是否有重大差異。

本研究對象包含台灣中部某私立大學在 2012 至 2016 學年度入學等新生共約 14,000 人。每年研究對象人數大致相似並且都經歷九年國民義務教育中至少五年以及高中三年共計八年等英語課程。研究者採用新英語分級測驗(NEPE)來比較分析四年以來新生英語能力的變化。本研究資料來源包含教務處所提供的學生個人基本資料以及英語中心所提供的新生入學應試的新英語分級測驗之文法、閱讀、聽力及總成績。學生個人基本資料以及成績資料以電腦統計軟體 SPSS 15.0 for Windows 來做以下分析：(一)、ANOVA 和/或 Tukey's HSD tests：檢視在 2012 至 2015 年間入學新生新英語分級測驗成績是否有顯著性差異。 (二)、獨立樣本 t 檢定：檢定 2015 和 2016 年間入學新生新英語分級測驗成績是否有顯著性差異。以上所述之檢定方法均以 $\alpha = .01$ 作為決定統計結果顯著與否之標準。

本研究結果顯示：(一)、2012 至 2015 年間入學新生在文法、閱讀、聽力方面及 NEPE 總分具一致性或者呈現逐年遞增或遞減的趨勢。(二)、2015 和 2016 年間入學新生之文法及閱讀能力並無顯著差異，然而在聽力方面則有顯著退步；也因

此 NEPE 總分受到聽力成績影響而部分呈現顯著差異。(三)、2015 和 2016 年間入學男性及女性新生之閱讀及文法能力無顯著差別，但在 2016 年男女新生在聽力表現上皆有顯著退步。(四)、2015 和 2016 年間由個人申請、繁星推薦及指考管道入學的新生其閱讀及文法能力無顯著差別，但在 2016 年個人申請及考試入學(指考)等新生其聽力表現有顯著退步。(五)、2015 和 2016 年間入學的 33 個科系新生之在兩年間的閱讀及文法能力大致無顯著差別，但有 8 個科系新生在 2016 年的聽力表現呈現顯著退步。(六)、2015 和 2016 年間來自北部、中部及南部的新生之閱讀及文法能力在兩年間無顯著差異，但 2016 年則聽力表現呈現顯著退步，而這兩年間來自東部的新生之英文閱讀、文法及聽力則表現一致。

總而言之， 2016 學年度在中部一所私立大學入學的新生之文法及閱讀能力在學生人口縮減前後並無顯著差異而呈現一致性。然而，原本在學生人口縮減前四年持續進步的聽力在學生人口縮減的 2016 年並不如預期的持續進步反而呈現顯著退步。此外 NEPE 總成績也受到聽力退步影響而部分呈現顯著退步。因此學生人口縮減可能影響這所學校在 2016 年招收與之前四年不同英語聽力能力的學生。

**關鍵字：**學生人口縮減，新英語分級測驗，英語聽力，文法能力，閱讀能力，入學管道，性別，地理區域，主修

## TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| **1** | ALM | Audio Lingual Method |
| **2** | AST | Advanced Subjects Test |
| **3** | BCT | Basic Competence Test for Junior High School Students |
| **4** | BECT | The Basic English Competency Test |
| **5** | CALL | Computer Assisted Language Learning |
| **6** | CAP | Compressive Assessment Program for Junior High School Students |
| **7** | CEAP | The Comprehensive English Assessment Program |
| **8** | CEEC | College Entrance Examination Center |
| **9** | CFA | Confirmatory Factor Analysis |
| **10** | CFI | Comparative Fit Index |
| **11** | ELE | English Language Education |
| **12** | EFL | English as Foreign Language |
| **13** | E & P | Examination & Placement |
| **14** | FENM | Freshmen English for Non-majors |
| **15** | FL | Foreign Language |
| **16** | GEPT | General English Proficiency Test |
| **17** | GFI | Goodness of Fir Index |
| **18** | GSAT | The General Scholastic Ability Test |
| **19** | GT | Grammar-Translation |
| **20** | HEI | Higher Education Institution |
| **21** | IELTS | International English Language Testing System |
| **22** | MOE | Ministry of Education |
| **23** | NEPE | New English Placement Exam |
| **24** | PA | Personal Application |
| **25** | RMSEA | The Root Square Error Approximation |
| **26** | SP | Stars Program |
| **27** | TELC | The Test of English Listening Comprehension |
| **28** | TFR | Total Fertility Rate |
| **29** | TOEIC | Test of English for International Communication |
| **30** | TOFEL CBT | Computer-based Test of the Test of English as a Foreign Language |
| **31** | TOFEL iBT | Internet-based Test of the Test of English as a Foreign Language |
| **32** | TOFEL PBT | Paper-based Test of the Test of English as a Foreign Language |
| **33** | TPG | Total Population Growth |
| **34** | UAC | University Admission Committee |

# CHAPTER 1

# INTRODUCTION

Over the last two decades, a shrinking population has emerged as a global phenomenon in many advanced societies, and low birth rate has become a focus of many researchers' concerns. Specifically in East Asia, the low birth rate has been a focus of public attention. For example, in Taiwan, President Ma Ying-Jeou called for national security level counter-measures to address the issue in 2011. The low birth rate has profound influence directly on the educational system such as the shortage of student enrollment which has affected teaching and learning. In the fall of 2016, the "college-entering-age" proportion of the population (18-year olds) decreased by approximately 54,000 students from the previous year, this large decrease in student population might influence the academic quality of students enrolled in colleges and universities with the result of significant changes in their English language ability. This study examined whether this steep shrinking student population had an impact on changes in the English language ability of incoming freshmen at a university in central Taiwan as they related to admission pathways, majors, gender, and geographical locations.

## Background and Rationale of the Study

Currently, most regions of the world are experiencing a rapid demographic transition from "baby boom" to "baby bust" (Bongaarts, 2009). In Taiwan, the number of births in 1980 was approximately 410,000 while it was approximately half of that in 2016 (MOI, 2016). These demographic transitions have had a profound influence on education. During the time period of population increase, the educational system expanded classes, schools, and more teachers were hired in order to meet the needs of

the increasing student population (Wang, 2004). However, over the past two decades, the shrinking student population caused the shortage in student enrollments, and this has been a pressing challenge for every level of education (Yang, 2010).

The competitiveness of Higher Education Institutions (HEIs) enrolling students has increased as the student population has decreased. But the competiveness of students entering HEIs has decreased (S. H. Lin, 2011). For the purpose of raising human capital as well as reducing college entrance pressure, the number of HEIs expanded to increase university entrance opportunities. Yet the population decline was overlooked during this expansion (Hsueh, 2004). Between school years 1979 and 2009, the number of HEIs increased from 101 to 164 colleges and universities, but the number of HEIs has slightly decreased to 158 colleges and universities in 2015 (MOE, 2016a). Although the number of HEIs stopped increasing in 2010 and was followed a slight decrease, the speed of mergers or closures of universities and colleges has not matched the decline in student population. This can be demonstrated by the higher admission rate at colleges and universities in the fall of 2016 in comparison with the previous years.

The admission rates of Examination & Placement (one of the college admission pathways in Taiwan) had increased from approximately 88% to 97% across the years from 2012 to 2016 according to the Joint Board, College Recruitment Commission (2016) and the University Admissions Committee (2016). The college-entering-age student population (18-year olds) decreased drastically by approximate 54,000 students in 2016. Many mass media organizations (Liberty Times Net, China Times, and North America Intellectual Property) reported this might have an effect on the closures of HEIs (F. Y. Chu, C. C. Lin, & C. H. Hu, 2013; B. U. Wu, 2016; B. S. Wu, G. B. Chen, A. C. Chang, M. S. Huang, W. C. Liu & Y. T. Chiu, 2016). Many researchers had predicted that the student quality of incoming freshmen would decrease because of the higher

admission rates and less competitiveness to get into universities (Chi, 2012; Hsu, 2006; T. Z. Huang, 2015; S. H. Lin, 2011; Lwo, 2007; M. J. Tsai, 2008, 2012; Yung, 2009).

However, few quantitative studies had been conducted to identify any changes of incoming freshmen's academic performances as the student population had declined. Thus, the study aimed to fill this gap in the literature by investigating any significant changes in incoming freshmen's English language ability before and after the dramatic drop of 54,000 college entering age student population in the fall of 2016. In other words, this study compared students' English language ability before the significant drop in student population with students' English scores after this drop at a private university in central Taiwan. These comparisons gave some indications of the effect of the shrinking student population on the English language ability of students at this university.

The importance of English in social development and economic globalization has made English a focus of many nations in Asia (EF Education First Ltd., 2016). More and more people are learning English around the world with the largest increase in Asia (Schneider, 2014). Over the past two decades, many Asian countries initiated English language reforms which have focused on lowering compulsory English language education, and implementing more communicative curricula (Baldauf Jr, Kaplan, Kamwangamalu, & Bryant, 2011).

In Taiwan, English is the major foreign language taught at schools according to Chern (2010). Even though English is used by only approximately 2-4% among the total population on a daily basis, the importance of English for social and economic development is undisputable according to S. C. Chen and Y. C. Tsai (2012).

The reform of English language education in Grade 1-9 Curriculum and Curriculum Guidelines for Senior High School English have been implemented for

approximate two decades (V. W. Chang, 2006). The objectives of the English curricula are to develop students' English as Foreign Language (EFL) reading, listening, writing, and speaking abilities as well as the application of integrating these four skills (MOE, 2006). Accordingly, English language teaching instructions have transferred from a traditional grammar-translation approach to a more communicative approach with the purpose of equally developing the four skills (S. C. Chen, 2014; Y. S. Cheng, Yeh, & S. F. Su, 2011; Chern, 2010; MOE, 2006). However, teaching instructions are deeply affected by class time, class size, and the washback effects of national entrance examinations according to Daly (2011) and Y. S. Cheng et al. (2011).

For instance, in elementary level, English language teaching was prone to an Audio Lingual Method which emphasized the oral behaviors through repetitive drills in listening and speaking rather than Communicative Language Teaching due to limited class time and a large class size (Lai, 2008). Moreover, teaching and learning English in secondary level were more test-oriented due to the washback effects of large-scale and high-stakes national entrance examinations (V. W. Chang, 2006; Daly, 2011). Although teachers have held positive perceptions toward the curricula, there have been limitations for communicative language teaching instructions (Y. S. Cheng et al., 2011).

Teaching instructions may not have matched the curriculum objectives over the past two decades; however, some researchers reported that the English language education policy focused on communicative abilities may be paying dividends. Some researchers have examined the changes in English language ability of all citizens or college freshmen by means of questionnaires (S. C. Chen, 2014; Sims, 2012), placement examinations (Sims & J. Liu, 2013), criterion references (T. L. Chiang, 2014), and the yearly TOFEL (MOE, 2016b). The results showed a positive significant increase in listening ability (S. C. Chen, 2014; MOE, 2016b; Sims, 2012; Sims & Liu, 2013), and

speaking ability (S. C. Chen, 2014; MOE, 2016b). Additionally, the frequency of citizens' English language use in public domains has been increased from 2003 to 2013 according to S. C. Chen (2014).

Shrinking student population and students' English language ability are the major issues that are of concerned in Taiwan as well as developed countries in Asia. However, concrete and detailed statistical studies of these issues as they related to university students were nonexistent. This study investigated these issues by examining the scores of the New English Placement Exam (NEPE) to assess the English language abilities as they related to reading, listening, and grammar at a university. Thus, the researcher conducted a study by adopting the New English Placement Exam (NEPE) to measure the overall English language ability with the components of reading, listening, and grammar. The scores before the significant drop (2012-2015) in student population were compared with those after the drop (2016) in order to investigate the effect of the shrinking student population on the English language ability of students at this university. The study also investigated factors such as admission pathways, gender, majors and geographic locations as they related to the shrinking student population. Not only did this study provide a better understanding of current students' English language ability, but it also identified the possible effects of shrinking student population on the incoming freshmen's English language ability at universities in Taiwan.

## Statement of the Problems

Taiwan is facing with a shrinking student population. However, few studies had investigated the effect of this shrinking student population on the English language ability of incoming university freshmen. This study aimed to fill this gap in the literature. Additionally, few studies investigated the changes in the English language ability of freshmen across years as they related to gender, admission pathways, majors, and geographical locations. This study was different from many of the previous research which compared the statistical differences in students' English language ability between the abovementioned factors in the same year.

## Purpose of the Study

The present study was exploratory in nature with the purpose of examining the impact of the shrinking population on changes in the English language ability of non-major freshmen in 2016 at a university located in central Taiwan. The freshmen's English language performance on the NEPE from 2012 to 2015 was taken as a baseline to compare with that of incoming students in 2016. In order to identify specific components of their language ability affected by the significant drop in the student population, the study investigated the significant differences in terms of their grammar, reading, listening and total scores as measured by the NEPE. Moreover, the significant differences in changes of the English language ability as they related to gender (males and females), three primary admission pathways (Stars Program, Personal Application, and Examination & Placement), majors (33 departments), and geographical locations (Northern, Central, Southern, and Eastern Taiwan) were examined. In order to identify if each of these factors were possibly affected by the shrinking student population, the present study sought to answer the following research questions.

## Research Questions

1. Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores from 2012 to 2015 measured by the NEPE as related to gender, admission pathways, majors, and geographical locations?
2. Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 as measured by the NEPE?
3. Are there any statistical differences in university freshmen's English language performance for the males and females in terms of grammar, reading, listening, and total scores between 2015 and 2016 as measured by the NEPE?
4. Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to admission pathways?
5. Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to majors?
6. Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to geographical locations?

## Significance of the Study

This study expected to make the following contributions. First, it was hoped that the present study would provide a better understanding of the impact of the shrinking population on changes in the English language ability of incoming freshmen. It was also hoped that the results would provide useful information for policy makers, educators, and researchers who are facing the challenges of the shrinking student population. Moreover, it was expected that the indications of the students' English grammar, reading, and listening ability would provide the information for further invention of more suitable English curricula for administrator for HEIs as well as English language teachers. Lastly, it was hoped that teachers would take advantages on instructing students in class.

## Definition of the Terms

1. *English language ability:* English language ability is a general term which refers to the knowledge of using a language appropriately. According to Brown (2010), "a test measures performance, but the results imply the test-take's ability or competence. Most language tests measure one's ability to perform language, that is, to speak, write, read, or listen to a subset of language" (p. 4). In other words, through performance-based tests, test administrators infer students general English language ability by sampling test-takers' actual use of language. In order to quantify the students' English language ability, the participants' English language ability is measured by the NEPE which will be explained next.
2. *The New English Placement Exam (the NEPE):* In this study, the NEPE is the instrument applied to measure the participants' English language ability each year from 2012 to 2016. The NEPE refers to an English proficiency test which

non-major freshmen take in Tunghai University. Based on their scores perform on the NEPE, they are placed into different levels of English class. The NEPE includes three sections of grammar, reading, and listening, and was reported with appropriate validity and reliability. For more details related to the test construct and content, please refer to the instrument in this study and Sims (2015).

3. *Shrinking student population:* In Taiwan, the dominant cause of the shrinking student population is due to the decline in the birth population (X. H. Lin, 2015). For more literature related to the causalities and statistics of shrinking student population, please refer to the second chapter in this study.
4. *Admission Pathways:* The multiple pathways to college admission were launched since 2002. For secondary graduates to continue their education in universities or independent colleges, there are three options: (1) Stars Program, (2) Personal Application, and (3) Admission by Examination & Placement. For further requirements of these admission pathways, please refer to Appendix B (MOE, 2011).
5. *Admission rate:* Based on the statistics retrieved from the Joint Board, College Recruitment Commission (2016), the admission rates were calculated by the number of admissions divided by the number registered for each admission pathway.
6. *Geographical locations:* For this study, geographical location is divided into four regions of Taiwan (Notrhern, Central, Southern, and Eastern Taiwan), and is based on the participants' residential addresses. Northern Taiwan includes Keelung, Taipei, New Taipei, Taoyuan, Hsinchu, Yilan, Kinmen, and Lienchiang. Central Taiwan includes Miaoli, Taichung, Changhua, Yilin and Nantou. Southern Taiwan

includes Chiayi, Tainan, Kaohsiung, Pingtung, and Penghu. And Eastern Taiwan includes Hualian and Taitung.

# CHAPTER 2

# REVIEW OF THE LITERATURE

This chapter is divided into three sections. The first section which reviewed the phenomenon of the shrinking student population included an introduction to the decline in birth population, and the impact of the shrinking student population on education in Taiwan. The second section presented the literature related to English language education in Taiwan. The third section explored the literature related to the changes in the English language ability, and possible influences of the shrinking student population on the incoming university students' English language ability in Taiwan.

Kachru (1990) made the distinction among English language societies into three concentric circles: the Inner Circle (first language societies, e.g., the United Kingdom and the United States), the Outer Circle (English-as-a-second-language societies), and the Expanding Circle (English-as-a-foreign-language societies). Asian countries in Outer Circle were historically former colonies of Anglophone colonial power such as Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka, Brunei, Hong Kong, Malaysia, the Philippines, and Singapore. And the countries in Expanding Circle include nonnative English language users such as China, Japan, South Korea, Taiwan, and Thailand (Bolton, 2008). According to Nunan (2003), in recent decades, globalization has increased the popularity of English language in Asia.

More and more speakers of other languages are learning English around the world (EF Education First Ltd., 2016). The number of English speakers is increasing most rapidly in Asia (Schneider, 2014). South Asia, Southeast Asia, and East Asia were the greatest concentration of 'outer-circle' English using societies with many of the most

populous English-learning and English-knowing nations (Bolton, 2008). More than a decade ago, under the pressure of global competitiveness as well as parents' expectation of children's future success, many Asian countries initiated English language reforms. The reforms focused on lowering the compulsory ELE to younger ages and the implementation of a more communicative curriculum compared to the traditional translation and grammar curriculum (Baldauf Jr, Kaplan, Kamwangamalu, & Bryant, 2011). The compulsory English language education (ELE) was lowered to grade 3 or below at the primary level in many Southeast and East Asian countries, such as Vietnam in 2010, Taiwan in 2001, Korea in 1997, Japan in 2002, and China in 2001. The ELE aimed at enhancing the communicative ability accompanied with the balance of the four skills: listening, reading, writing, and speaking (Baldauf et al., 2011).

However, in Asia, implementing the English education reforms met the challenges as follows. First of all, the reforms have changed the language ecology, endangered the local languages, and raised the concerns for hegemonic threats of English (Baldauf et al., 2011; Kirkpatrick, 2012b; McKay, 2011; Schneider, 2014). Secondly, students' English language performance differed a lot between the urban and rural areas as well as between the poor and the wealthy families due to insufficient and unequal distributions of public resources (Baldauf et al.; Kirkpatrick, 2012a; McKay). Thirdly, the appropriately trained English teachers were insufficient to carry out the communicative curricula (Baldauf et al). Therefore, the development of English language proficiency in Asian societies was reported not as satisfied as anticipated after masses investment of public and private resources according to Baldauf et al. and Kirkpatrick (2012a, 2012b). The suggested countermeasures to above-mentioned challenges included the development of learners' intercultural competence in Asian cultures, the postponement of ELE to the secondary level, and the focus on communication intelligibility rather

than correcting phonological and grammar errors which may not hinder comprehensibility (Baldauf et al.; Hamid & Nguyen, 2016; Jenkins, 2006; Kirkpatrick, 2012a, 2012b; McKay; Schneider). Additionally, according to Hamid & Nguyen (2016), the policymakers should also take teacher professional development into account while making policies.

Despite abovementioned challenges in English language education in Asia, current EF English Proficiency Index reported that increasing countries weighted English as a catalyst for development rather than a threat to national culture (EF Education First Ltd., 2016). To accelerate globalization, the investment in English for Asian societies made Asia de facto a story of number of English language users because of their large proportion of population among world population (Schneider, 2014).

United Nations (2016) reported that sixty percent of world population lives in Asia. However, the rapid decline in birth population has made Asian children a portion of smaller than 24% among Asian population. At present, 21 economies have below-replacement fertility (the estimated average births per woman has during her life time is fewer than 2.1), especially in East and South-East Asia, some countries such as Singapore, Taiwan, Japan, and South Korea even experienced the lowest–low fertility (the estimated average births per woman has during her life time is 1.3) over the past two decades in Asia (Ogawa, Mason, S. Lee, Tung & Matsukura, 2015).

The declining birth population impacted not only on the socio-economic development but also on education with its shrinking student population (Zhang, 2015). The following sections will explore more literature related to the shrinking student population as well as its impact on education, especially higher education.

## Shrinking Student Population

The dominant cause of the current shrinking student population in Taiwan is due to the decline in the birth rate (X. H. Lin, 2015). This section introduces this decline in birth population and the impact of the shrinking student population on education in Taiwan.

### *Introduction to the Decline in Birth Population*

The following literature related to the background of the decline in birth population around the world and in Taiwan includes: (1) first demographic transition, (2) second demographic transition, (3) general causes of decline in the Total Fertility Rate, (4) decline in the Total Fertility Rate in Taiwan, and (5) shrinking student population in Taiwan.

#### *First Demographic Transition*

Kirk (1996) presented a demographic transition theory based on the notion that as a society experiences modernization, it will progress from high birth and mortality rates to low birth and mortality rates. This process is known as the first demographic transition. The total population growth (TPG) of such a society will increase drastically during this period of low mortality rate and high birth rate (Bongaartz, 2009; Cohen, 2003; R. Lee, 2003). As the birth rate declines, the TPG will decelerate. When the total fertility rate (TFR- the estimated births per woman has during her life time) reaches the replacement level of TFR 2.1, a society has completed the first demographic transition (Van de Kaa, 2002). Western developed countries completed this first demographic transition in approximately 200 years (1750-1950), while Taiwan approximately did it in 70 years from 1920s to 1980s (Chien, 2007).

In the mid-20th century, the population in most Asian countries was in a period of high growth potential (Atoh, Kandiah, & Ivanov, 2004). According to Atoh et al., at this time, women in Asia averaged more than five children each. There was a fear of a population explosion in the region. Therefore, some Asian societies promoted family planning programs to control births. Within a short period of time, specifically many East Asian countries such as Japan, South Korea, Singapore, and Taiwan experienced a rapid birth rate decline. Among the four countries in East Asia, Japan was the first country that met the replacement-level fertility in 1949, and the other three countries followed suit in 1970s and 1980s (Ogawa et al., 2015; Suzuki, 2013; Wesley, Choe, & Retherford, 2010).

***Second Demographic Transition***

According to Lesthaeghe (2010, 2014) and Van de Kaa (2002), the second demographic transition occurs when the TFR of a society falls below the replacement level (TFR=2.1) to the lowest-low level (TFR=1.3). The lowest-low fertility started to spread in Eastern Asian advanced countries such as Japan, Taiwan, and South Korea during the decade of the 2000s (Suzuki, 2013). This decreased the birth population in East Asian countries. Table 2.1 shows the birth population of these countries from 1990 to 2010 (Statistics Bureau, Ministry of Internal Affairs and Communications, Japan; Wikipedia; Ministry of Interior, R. O. C., 2016). During this time period, South Korea and Japan decreased more in the number of births than Taiwan did (Japan: 167,710; South Korea: 179,567; Taiwan: 166,670). However, the proportion of births decreased to total births for the twenty years (from 1990 to 2010) was highest in Taiwan (Japan: 7%; South Korea: 16%; Taiwan: 35%).

Table 2.1

*Birth Population Decrease in Japan, South Korea, and Taiwan from 1990-2010*

| Year | Japan | South Korea | Taiwan |
|---|---|---|---|
| 1990 | 1,213,685 | 649,738 | 323,952 |
| 2010 | 1,045,975 | 470,171 | 157,282 |
| Births Decreased | 167,710 | 179,567 | 166,670 |
| Total Births | 3,523,345 | 1, 119, 909 | 481, 234 |
| Births Decreased/ Total Births | 7% | 16% | 35% |

### *General Causes of the Decline in the Total Fertility Rates*

According to Lesthaeghe (2014), general causes of the decline in the TFR were related to modernization, and the limited resources of the earth. Lesthaeghe suggested that urbanization, industrialization, and the spread of education lead to modernization. Massive education not only raised the quality of the workforce and preceded the progress of the industries but also women workforce participation. Thus, people's marriage and childbearing attitudes in modern societies were no longer the same as in traditional agriculture societies (Van de Kaa, 2002). Additionally, the implementation of the family-planning programs and the availability of contraception also contributed to the birth decline (Coale, 1984). Moreover, bearing and rearing children is not only time intensive but also costly. Reflecting the quality-quantity trade-off, parents with fewer children were able to invest more in each child (R. Lee, 2003). In addition to the above mentioned causes of the low birth rate, the rising of higher order needs, needs that are satisfied internally, such as social esteem, and self-actualization for individuals were also influential reasons to the sustained low TFRs (Lesthaeghe, 2014).

***Decline in the Total Fertility Rates in Taiwan***

The TFR has decreased in most modern societies including Taiwan. Taiwan is one of the countries which have extremely low TFRs. And this is very true that this issue has received a tremendous amount of attention from the whole society. According to Hsueh (2004), M. Lee (2009) and Y. H. Chen (2012), Taiwan had processed the rapid demographic transition of decline in fertility rates during 1951-1984 from the TFR of 7.040 to 2.055 (see Figure 2.1). Regardless of the rapid decline in birth population, a stronger policy for further reduction of population was announced by the government in 1983 (M. Lee). The TFR kept falling even though the government reversed its policies from one that discouraged births (anti-natal) to one that encouraged them (pro-natal) in 1992 (Y. H. Chen). The TFR fell below the lowest-low level in 2003, and Taiwan reported the world's lowest record of TFR 0.895 in 2010 (MOI, 2016). Since 2010, the TFR has slightly increased. However, it is still below the lowest-low level in 2015 (MOI, 2016).

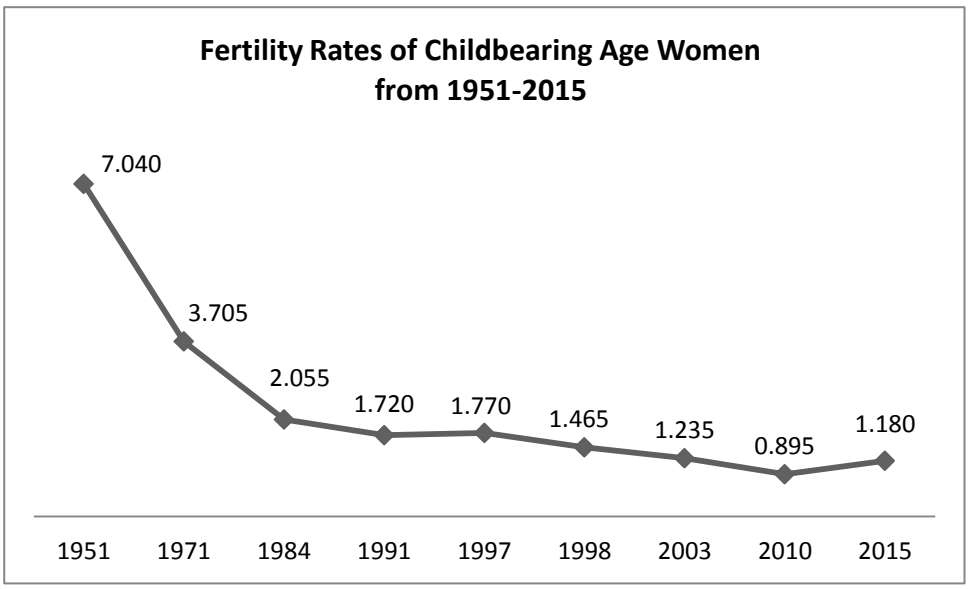


Figure 2.1 TFR in Taiwan from 1951-2015

***Shrinking Student Population in Taiwan***

According to X. H. Lin (2015), the dominant cause of the shrinking student population is the decline in the birth population in Taiwan. Y. Z. Huang (2011) proposed two stages in the decline in birth population that influenced the education by a shrinking student population in Taiwan. The first stage occurred during 1982-1986. During these five years, the number of births decreased by approximately 105,000 (25%) from 405,263 to 309,203 (see Figure 2.2). This decline made the student population shrink from the end of 1980s to the 1990s.

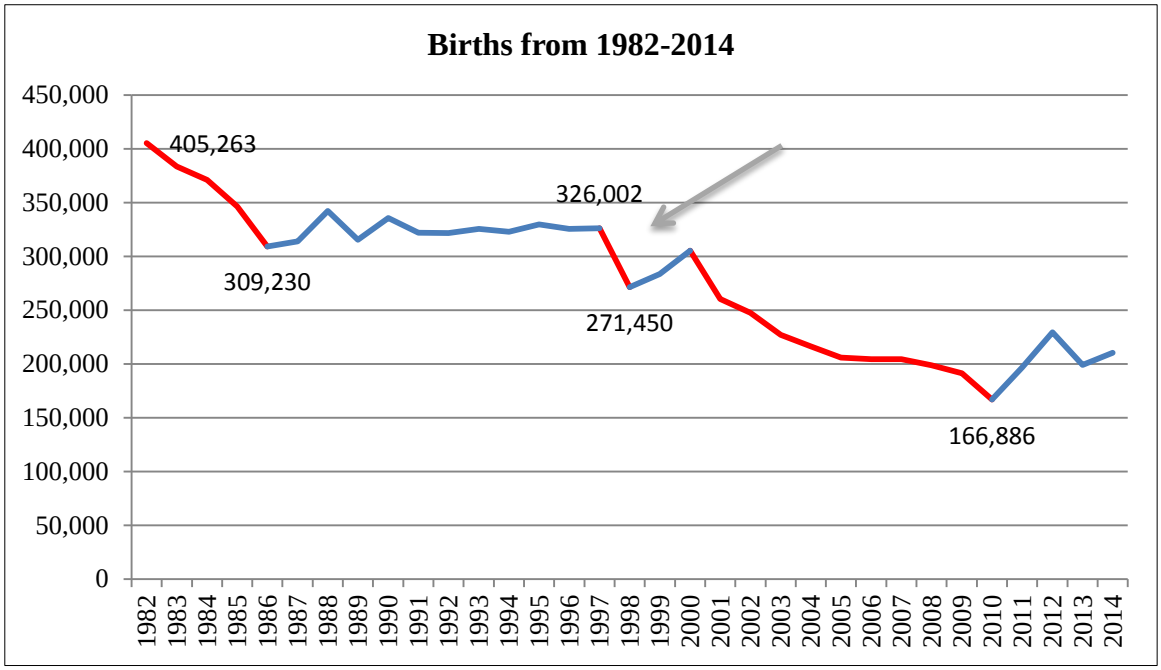


Figure 2.2 Distribution of Birth Number from 1982-2014 in Taiwan

The second decline in birth population occurred after 1998 until the present. And this decline has affected the student population over the past two decades, and it is still affecting the student population. The number of births decreased approximately by 16.7% from 326,002 in 1997 to 271,450 in 1998. That is to say that there was an approximately 54,500 decrease in student population when this shrinking student population entering every level of education (see Table 2.2). Moreover, from 1997 to

2010, there was a decrease of 160,000 births. The lowest ever birth population of only 166,866 births (TFR = 0.895) occurred in 2010 (see Figure 2.2). And the birth population in 2010 is approximately half of that in 1997. In other words, the student population decreased drastically as well, and this shrinking student population has some major effects on education (M. J. Tsai, 2012).

Table 2.2

*Number of Births and the Year Entering Each Education Level*

| Birth Year | Elementary | Junior High | Senior High | University | Births (n) |
|---|---|---|---|---|---|
| 1981 | 1987 | 1993 | 1996 | 1999 | 413,000 |
| 1988 | 1994 | 2000 | 2003 | 2006 | 342,031 |
| 1997 | 2003 | 2009 | 2012 | 2015 | 326,002 |
| 1998 | 2004 | 2010 | 2013 | 2016 | 271,450 |
| 1999 | 2005 | 2011 | 2014 | 2017 | 283,661 |
| 2000 | 2006 | 2012 | 2015 | 2018 | 305,312 |
| 2001 | 2007 | 2013 | 2016 | 2019 | 260,345 |
| 2002 | 2008 | 2014 | 2017 | 2020 | 247,530 |
| 2003 | 2009 | 2015 | 2018 | 2021 | 227,070 |
| 2004 | 2010 | 2016 | 2019 | 2022 | 216,419 |
| 2005 | 2011 | 2017 | 2020 | 2023 | 205,854 |
| 2006 | 2012 | 2018 | 2021 | 2024 | 204,459 |
| 2007 | 2013 | 2019 | 2022 | 2025 | 204,414 |
| 2008 | 2014 | 2020 | 2013 | 2026 | 198,733 |
| 2009 | 2015 | 2021 | 2024 | 2027 | 191,310 |
| 2010 | 2016 | 2022 | 2025 | 2028 | 166,886 |
| 2011 | 2017 | 2013 | 2026 | 2029 | 196,627 |
| 2012 | 2018 | 2024 | 2027 | 2030 | 229,481 |
| 2013 | 2019 | 2025 | 2028 | 2031 | 199,113 |
| 2014 | 2020 | 2026 | 2029 | 2032 | 210,383 |

### *Impact of the Shrinking Student Population on Education in Taiwan*

The impact of the shrinking student population on education includes: (1) educational policies in response to the demographic transitions, (2) positive and negative effects of the shrinking student population on education, and (3) higher admission rates in higher education.

#### *Educational Policies in Response to the Demographic Transitions*

Demography is a major factor to be taken into account while establishing educational policies (Wang, 2004). Before 2000s, three major policies in response to the increase in population were as follows. Firstly, the Nine Year Compulsory Education was implemented in 1968. Due to the population growth, the government aimed at raising human capital and promoting economic growth. Secondly, in the 1990s, the government executed the expansion of senior high schools and universities for the purpose of reducing the entrance pressure to higher level educational institutions. Thirdly, in order to maintain sufficient teachers at the elementary level, the Teacher Education Act was announced in 1994 by the government to provide a legislative base for diversified teacher training systems (Li, 2013).

According to W. S. Lin (2013), these educational policies were countermeasures to the population growth. However, W. S. Lin indicated that the student population declined so drastically that the government had to reverse these educational policies from expansion to reduction at every level of education. Table 2.3 shows the countermeasures raised by the Control Yuan in 2011 in response to the shrinking student population at every level of education (W. S. Lin).

Table 2.3

*Educational Policies in Response to the Shrinking Student Population*

| **Levels** | **Countermeasures** |
|---|---|
| Early Childhood Education | 1. Merge kindergartens and daycare systems<br>2. Tuition free for age 5 preschool education |
| Elementary& Secondary Education | 1. Make good use of abandoned infrastructures after school mergers or closures<br>2. Reduce class size<br>3. Control the number of senior high and vocational schools<br>4. Increase teacher-counselors<br>5. Eliminate incompetent teachers<br>6. Implement 12-year Compulsory Education |
| Higher Education | 1. Promote mergers in HEIs<br>2. Insure the quality of HEIs<br>3. Promote the internationalization in HEIs |
| Teacher Education | 1. Adjust the quota for teacher education<br>2. Evaluate the teacher education systems<br>3. Promote teacher evaluation<br>4. Raise and develop teachers' professional proficiency<br>5. Eliminate incompetent teachers |

### *Positive and Negative Effects of Shrinking Student Population on Education*

The literature on the effects of the shrinking student population on education is enormous. This section is going to point out a few of the key points presented in this extensive literature. Before and after the government responded to the shrinking student population, researchers have examined the effects of the shrinking student population on education. Y. Z. Huang (2011) indicated that the first decrease in birth population during 1982-1986 facilitated in reducing the large number of students per class and balancing the teacher-student ratio at the elementary and junior high school levels. However, the second decrease after 1998 caused a shortfall in enrollments and oversupply of teachers

at every level of education. In addition, M. J. Tsai (2008) reported that there were both positive and negative effects of the shrinking student population on education after 1998. According to M. J. Tsai (2008), the positive effects included: (1) a decrease in expenditures for raising children, (2) an increase in parent-child accompany and interaction, (3) a decrease in class size, (4) a refinement in education, (5) a reduction in pressure for entering a higher level educational institutions, and (6) a decrease in consumption of exhaustible resources. However, many researchers indicated that there were more negatives effects (see Table 2.4) of the shrinking student population on education (Chi, 2012; G. B. Chang & Yuan, 2014; Hsu, 2006; Hsueh, 2004; Lwo, 2007; M. J. Tsai, 2008, 2012; S. H. Lin, 2011; Zhang, 2015).

Table 2.4

*Negatives Effects of the Shrinking Student Population on Education*

| | |
|---|---|
| 1. | shortfalls in admissions at every school level |
| 2. | shortages in educational funds |
| 3. | difficulties in school administration |
| 4. | oversupplies of teachers and a low turnover rate |
| 5. | development crises in normal university educational system |
| 6. | high admission rates and lower quality of students enrolled in higher education |
| 7. | unused spaces and facilities in some schools |
| 8. | widen urban-rural gaps |
| 9. | overprotective parents |
| 10. | challenges in counseling students |
| 11. | fading relationship between schools and communities |
| 12. | a greater range in diversifications of students' performances within the same class |

### *Higher Admission Rates in Higher Education*

According to the researchers (Chi, 2012; Hsu, 2006; T. Z. Huang, 2015; S. H. Lin, 2011; Lwo, 2007; M. J. Tsai, 2008, 2012; Yung, 2009) the higher admission rates has major effects on higher education. These researchers indicated that the academic performance of students enrolled in higher education institutions (HEIs) might have declined due to the higher admission rates. S. H. Lin indicated that the overexpansion of HEIs before 2010 and the decline in student population had raised the admission rates in college entrance examination.

Moreover, according to MOE (2016a), the total numbers of HEIs increased from 116 in 1989 to 164 in 2009 (see Table 2.5). In fact, the accelerated number of the universities contributed to most of the total increase in the number of HEIs (S. H. Lin, 2011).

Table 2.5
*No. of Higher-Education Institutions in Taiwan*

| Year | University | College | Junior College | Total |
|---|---|---|---|---|
| 1969 | 9 | 13 | 69 | 91 |
| 1979 | 11 | 15 | 75 | 101 |
| 1989 | 21 | 20 | 75 | 116 |
| 1999 | 44 | 61 | 36 | 141 |
| 2009 | 105 | 44 | 14 | 164 |
| 2010 | 112 | 36 | 15 | 163 |
| 2011 | 116 | 32 | 15 | 163 |
| 2012 | 120 | 28 | 14 | 163 |
| 2013 | 122 | 25 | 14 | 162 |
| 2014 | 124 | 21 | 14 | 159 |
| 2015 | 126 | 19 | 13 | 158 |

According to Lwo (2007), the government's policy in expanding universities freely without taking the shrinking student population into account was inappropriate. Although the Control Yuan (2011) had raised countermeasures in response to the shrinking student population by mergers or closures in HEIs, the slightly decrease in the number of HEIs had not matched the drastic drop of student population. This could be demonstrated by the higher admission rate and the increasing shortage of enrollments through Examination & Placement in comparison with the previous years (University Admissions Committee, 2016). Based on the University Admissions Committee (UAC), the admission rate in students enrolled through Examination & Placement in 2016 was approximately 2 percentages higher than those in the previous years (see Table 2.6).

Table 2.6

*Admission Rates through Examination & Placement from 2012-2016*

| **Year** | **No. of Registration** | **No. of Admission** | **Admission Rate (%)** |
|---|---|---|---|
| 2012 | 67,833 | 59,696 | 88.0% |
| 2013 | 58,592 | 55,307 | 94.4% |
| 2014 | 54,955 | 52,608 | 95.7% |
| 2015 | 50,779 | 48,537 | 95.6% |
| 2016 | 44,958 | 43,659 | 97.1% |

Additionally, there was approximately a shortage of 2,000 enrollments in 2016 in comparison with the previous four years (see Table 2.7). As reported by the UAC, there was a shortage in enrollments in 10 more HEIs (2015: 14; 2016: 23) which included at least 150 more departments in the fall of 2016.

Table 2.7

*No. of Schools and Departments with a Shortage of Enrollments through Examination & Placement*

| Year | No. of University | No. of Department | No. of Shortage |
|---|---|---|---|
| 2012 | 10 | 23 | 59 |
| 2013 | 17 | 46 | 217 |
| 2014 | 11 | 28 | 301 |
| 2015 | 14 | 46 | 522 |
| 2016 | 23 | 203 | 2953 |

Moreover, due to the decline in 18 year old segment of populations in 2016, the proportion of the admissions to this population in this past fall increased drastically by approximately 5% than the previous four years (see Table 2.8) according to MOE (2016a) and MOI (2016).

Table 2.8

*Proportion of Admissions via All the Pathways among 18 Age Population*

| Year | Total Admissions (A) | 18 Age Population (B) | (A) / (B) % |
|---|---|---|---|
| 2012 | 107,496 | 322,938 (1994) | 33.3 |
| 2013 | 108,163 | 329,581 (1995) | 32.8 |
| 2014 | 107,984 | 325,545 (1996) | 33.2 |
| 2015 | 108,035 | 326,002 (1997) | 33.1 |
| 2016 | 104,168 | 271,450 (1998) | 38.4 |

Based on the educational and demographic statistics, there was a higher opportunity for entering HEIs due to the shrinking student population. Thus, many researchers (Chi, 2012; Hsu, 2006; T. Z. Huang, 2015; S. H. Lin, 2011; Lwo, 2007; M. J. Tsai, 2008, 2012; Yung, 2009) indicated the effect of enrolling lower academic quality freshmen in HEIs. In other words, the students' quality might decrease because of a higher admission rate and less competitiveness for entering universities. Yet few studies

had been conducted to identify any changes of incoming freshmen's abilities as the student population had declined. In order to have a better understanding of the changes in students' language ability, this study compared students' English language ability before and after the drastic decline in student population. The following section reviewed the literatures related to the English language education in Taiwan as well as changes in the English language ability of students in Taiwan.

## English Language Education in Taiwan

This section introduces: (1) an overview of English language education in Taiwan, (2) challenges in English language education, and (3) research on skills development.

### *An Overview of English Language Education in Taiwan*

In this part, the focus is on the English language education (ELE) at the elementary and secondary levels. The introduction of the ELE in Taiwan can be traced back more than fifty years ago. After WW Ⅱ, English was the only foreign language taught in senior secondary school. Additionally, English was designated as one of the subjects and the only foreign language to be assessed in Joint College Entrance Examination since 1954 (M. H. Wu, 2011). Since 1968, English was classified as a mandatory subject in junior high schools of the national nine-year compulsory education system in Taiwan (Tseng, 2008).

According to M. H. Wu (2011), after the lifting of martial law in 1987, many private English education institutions hired foreign teachers as instructors. At that time, learning English was popular because English teachers in these private institutions applied more communicative instructions. This trend of learning English in private

sectors was an influential cause of pressing the policy makers to make curriculum reform (M. H. Wu). In 1993 and 1994, the MOE launched a new English curriculum which focused on a more communicative oriented instruction for secondary schools (Su, 2006).

Additionally, according to V. W. Chang (2006), with the popularity of learning English at private institutions, many parents worried that their children would fall behind because they might not able to offer private English education earlier for their children at elementary level. Parents expected the policy makers to lower the ELE to elementary level.

Moreover, according to Butler (2015), due to the globalization, bilingual and multilingual language proficiencies are increasingly considered important. Second language (L2) and foreign language (FL) education for younger learners gained great attention. By the onset of the 21st century, many East Asian countries such as Japan, China, and South Korea began to actively reform their English language teaching. Taiwan is no exception to this trend.

With the encouragement of parents' expectation (Chern, 2010) and globalization (Butler, 2015), the MOE initiated a plan of developing and implementing Grade 1-9 Curriculum at Elementary and Junior High School Education since the mid-1990s. There have been numerous reforms in ELE over the past two decades. According to Butler, the biggest reform in ELE might be the start point at introducing English as a foreign language to the elementary level.

English language teaching and learning was nationally introduced to Grade 5 and Grade 6 at elementary schools in 2001. The students receive at least one class period (40 minutes) per week. In 2005, English language teaching extended to Grade 3 for two class periods per week. However, the target grade levels were inconsistent. For example,

the local government of Taipei City started offering ELE in elementary schools earlier in 1998 (M. H. Wu, 2011). It was also found in 2003 that 70% of elementary schools taught first and second graders English under the guidance of their local governments (Chou, 2003 as cited in S. C. Chen, 2010).

The Grade 1-9 Curriculum was revised in 2003 and 2008 respectively. The English curriculum divided the core-ability into two stages of elementary and junior secondary with regard to three objectives. These objectives include: (1) language ability as it relates to the skills of listening, speaking, reading, writing, and the application of integrating the four skills, (2) learning interests and strategies, and (3) culture and customs (MOE, 2006). In other words, the specified guidelines of ELE at elementary and junior high school levels are developing students' basic communication skills in English, cultivating students' interests and correct habits in learning English, and promoting students' awareness of local and foreign cultures and customs (Chern, 2010).

In order to be consistent with the Grade 1-9 Curriculum, the MOE implemented the "95 Guidelines" at the senior high school level in 2006 (K. C. Li, 2010). The present "99 Guidelines" of senior high school curriculum was implemented in 2010. According to MOE (2010), the objectives of English curriculum at the senior high school level are to: (1) enhance students' English language ability in listening, reading writing, and speaking as well as their ability in real life communication, (2) develop students' ability to think, analyze, make sound judgement, and innovate in English, (3) help students acquire effective learning strategies and reinforce autonomous learning for the purpose of lifelong learning, (4) nurture students' interests and motivations toward English learning, and (5) foster students' respects to divergent cultures and their understanding of global sustainable development.

In addition to the changes in the curriculum guidelines, Chern (2010) also pointed out more changes in English language teaching at the elementary and secondary levels as well. These changes include: (1) an open market for textbook selection, (2) multi-channels for teachers to become certificated, (3) advocacies of a communicative approach for instruction, and (4) the replacement of the annual achievement-based senior school entrance examination with the Basic English Competency Test (BECT). These reforms in ELE over the past two decades were mainly to develop a better ELE environment. However, the implementation of the new English language curricula had met some challenges as follows.

### *Challenges in English Language Education*

As English language education related to the changes in abovementioned policies and curricula, V. W. Chang (2006) pointed out that some of the challenges the students, teachers, and the administrators met included: (1) lack of qualified English teachers at the elementary level, (2) differences in students' English language ability at the elementary and secondary levels, (3) inconsistent learning contents between the elementary and junior high school levels, and (4) washback effects of national entrance examinations. Although there might be countermeasures raised for those challenges, the effects were under investigated.

#### *Lack of Qualified English Teachers*

At the onset of implementing the Grade 1-9 Curriculum, qualified English language teachers were insufficient at many elementary schools (National Academy for Educational Research, 2005). In 2004, an investigation conducted by Citigroup Inc. at a Yearly Conference of National Teachers' Association R.O.C. revealed that 44.2% of

elementary schools had insufficient qualified English teachers. According to S. T. Huang (2011), most qualified teachers chose to work in urban areas; therefore, the MOE hired native English speaking teachers to solve the temporary problem in rural areas in 2003. However, this would not solve the needs for qualified and professional domestic teachers in the long run. Although the educational system met the challenge of oversupply of teachers caused by the shrinking student population in the early 2010s; the qualified and professional English teachers are still insufficient at the elementary level (S. T. Huang, 2011). In 2011, the MOE took a further step to certificate elementary English teachers to enhance their specialty in the fields of both education and English language proficiency (S. T. Huang). However, few studies investigated the effectiveness of this policy.

***Differences in Students' English Language Ability***

According to V. W. Chang (2006), it was common that students' English language ability was at different levels within the same class (V. W. Chang, 2006). These individual variations can be partly contributed to individual differences in participating private ELE courses at cram schools (Buxibans). Through a questionnaire survey, Y. F. Chang (2008) showed that 41.3% out of 489 second grader parents responded that their children attended cram schools to learn English. Due to different pupils' socioeconomic backgrounds, the divergent exposure to English contributed to the differences in their English language ability (Price, 2014). Additionally, according to A. H. Chen (2013), the variations in starting points and textbooks at different districts or even different schools influenced students' learning, specifically, for those who transferred from one school to another. These variations also caused difficulties in instructing students for English teachers in a class (Y. C. Su, 2006). Moreover, V. W. Chang indicated that

students might lose their confidence and interests in learning English when they fell behind due to these differences (V. W. Chang, 2006).

In order to help students left behind, in 2006, the government developed English language remedial instruction program at the elementary level. This remedial program was reported to be a special teaching program which was seldom used in other countries (MOE, 2012). According to S. C. Chen (2014) and S. C. Chen & Y. C. Tsai (2012), the effectiveness of this English remedial program was reported moderately positive. However, according to V. W. Chang, the differences in students' English language ability still existed at the secondary level.

V. W. Chang (2006) indicated that junior high school graduates' English performance on the Basic Competence Test for Junior High School Students (BECT) showed an obvious bipolar distribution. According to V. W. Chang, the reasons included: (1) differences in educational resources between urban and rural areas, and (2) differences in socioeconomic backgrounds among students. These reasons might influence the students' motivation and interests in learning English. V. W. Chang pointed out that the average score of the BECT in 2002 was higher in Taipei than that of other major cities, not to mention the rural areas such as Penghu and Taitung. This bipolar distribution was revealed not only between cities and counties, but also among schools in the same location as well as among students in the same class.

***Inconsistent Learning Contents between the Elementary and Junior High School Levels***

According to V. W. Chang (2006), the learning contents and learning objectives between the elementary level and the junior high school level were inconsistent. This

could have hindered the students' learning motivation and interests and influenced teaching instruction at the junior high school level.

V. W. Chang (2006) and Lai (2008) indicated that, at the elementary level, teachers emphasized on teaching listening and speaking rather than writing and reading due to time limitations and large class sizes. Lai reported that most elementary English instructions focused on developing the students' listening and speaking abilities by applying an Audio Lingual Method (ALM) approach. However, according to V. W. Chang, after students entered junior high schools, the learning contents and teaching approaches were more different than at the elementary level. Although the Grade 1-9 Curriculum Guidelines declared the continuity between the two stages (Grade 3-6 and Grade 7-9), the textbook contents were lack of connectivity. For examples, the number of vocabulary size leapt from 200 to 1500 words, and the sentence structures were much more complicated at the junior high school level (V. W. Chang).

V. W. Chang (2006) indicated that the learning objectives were different between the two education levels. At the elementary level, teachers focused on developing students' speaking and listening skills while teachers focused more on test-oriented skills such as reading, listening, and writing at junior high schools. Teaching instructions at junior high schools are more test-oriented due to the washback effects of entrance examination. According to V. W. Chang, a more important teaching goal at this level was to enhance students' ability in gaining higher scores on the Basic Competence Test for Junior High School Students (BCT) or the Comprehensive Assessment Program for Junior High School Students (CAP).

### *Washback Effects of National Entrance Examinations*

According to Brown (2010), high stakes examinations may have washback effects on teaching. V. W. Chang (2006), Choi (2016) and Daly (2011) indicated that the educational system in Taiwan was test-oriented, and this influenced teaching at the secondary level. According to Daly (2011), the high stakes national entrance examinations were criticized to be inconsistent with the curricula which aim at more student-centered and four-skill performance-oriented instructions. Specifically, the test objectives of the national entrance examinations were far away from those of the curricula in strengthening the communicative ability. In addition to Daly's study, Y. S. Cheng, Yeh & F. S. Su (2011) also pointed out teachers encountered difficulties in implementing the communicative approach curricula due to this washback effect of national entrance examinations on teaching. This washback effect of national entrance examinations on teaching was also noted in Japan and Korea. According to Choi (2016), both Japan and Korea initiated ELE reforms for the purpose of increasing speaking and listening ability. But, teaching instructions were affected by high stakes entrance examinations. However, few studies examined the validity of these examinations to see their representativeness of English language learning or ELE curricula. According to Daly, although the MOE guidelines echoed global trends in fostering students' communicative ability, they had little impact on teaching in most Taiwanese classrooms. Specifically the testing role, format and content of these examinations were unlikely to reflect these guidelines. The following is a brief introduction to the specifications of these entrance examinations.

***Senior High School Entrance Examinations:*** The BCT and the CAP are the past and the present senior high school entrance examinations respectively. The BCT was administered from 2001 to 2013. Since 2014, the CAP replaced the BCT. The Basic

English Competence Test (BECT) was a two part 45-question reading test. The test included 18 sentence cloze questions and 27 paragraph cloze questions assessing vocabulary, grammar and reading comprehension (Daly, 2011). The Comprehensive English Assessment Program (CEAP) was composed of 40-45 reading items and 20-30 listening items (Comprehensive Assessment Program for Junior High School Students, 2014).

***College Entrance Examinations:*** The college entrance examinations include the General Scholastic Ability Test (GSAT) and the Advanced Subjects Test (AST). The GSAT was held for the first time in 1994, and the AST was first implemented in 2002. The English subject tests of both the GSAT and the AST was composed of 20% writing, 8% translation, and 72% multiple choices. The multiple choices generally assessed the students' reading comprehension, grammar, and vocabulary. For more details of the GSAT English and the AST English, please refer to Appendix D and Appendix F. Since 2015, many departments request the personal applicants to submit their scores of the Test of English Listening Comprehension (TELC).

According to Daly (2011), the test constructs of the BCT and the SAT primarily tested grammatical competence which was inferred from testing results of students' grammatical and linguistic knowledge. Daly indicated that the test constructs were underrepresented on the curricula objectives which focused on developing students' communicative ability. In order to help students get higher scores on these high stakes entrance examinations, teaching in high school classrooms focused on repetition and practical application (Daly, 2011). Teaching instruction tended to be teacher-centered with little student pair work or collaboration, and the opportunities to hear students using or speaking English were scarce. Daly also pointed out that the dominant teaching method was the Grammar-Translation (GT) method which focused on reading as well as

its subskills of vocabulary and sentence pattern recognition and translation. As a result, the teaching purpose was to enhance linguistic awareness and declarative knowledge. Daly, thus, argued that students' English ability was limited by the test contents of these entrance examinations.

### *Research on Skills Development*

S. C. Chen & Y. C. Tsai (2012) reviewed a total of 641 articles published in journals during the years of 2004-2009 as they related to English teaching and learning in Taiwan. S. C. Chen & Y. C. Tsai found that among 523 research related to reading (n=138), speaking (n=47), writing (n=222), and listening (n=47) skills development, few of them were related to learning strategy instructions at the elementary and secondary levels. Additionally, practical teaching instructions in enhancing students' communicative ability were also seldom found during this time period (S. C. Chen & Y. C. Tsai). Moreover, classroom-based findings in this review were mostly on college students rather than the elementary and secondary students (S. C. Chen & Y. C. Tsai). All in all, according to S. C. Chen & Y. C. Tsai, ELE at the elementary and secondary levels over the past two decades showed a lack of learning strategy instructions, and more communicative instructions. Additionally, more research on English teaching and learning at the elementary and secondary levels will be needed.

#### *Reading*

According to S. C. Chen & Y. C. Tsai (2012), research on reading skills development can be divided into two categories: research on vocabulary learning through extensive reading, and research on the use of reading strategies. The first category included experimental and classroom-based research. For example, remedial

teaching instruction in training the students' phonological awareness to help students pronounce real and pseudo words for slower learners showed positive effectiveness according to H. M. Chu, Y. Y. Yu, H. T. A. Chang, Ting, C. Yu & Hu (2007) as cited in S. C. Chen & Y. C. Tsai. Additionally, for senior high school students, reading plus vocabulary-enhancement activities were reported to be efficient in learning and retention vocabulary according to Min & Hsu (2008) as cited in S. C. Chen & Y. C. Tsai. However, the participants of these studies were limited to a few classes. There is a lack of literature related to the practicality or popularity of these reading skills development instructions in other classes. The second category was research on the use of reading strategies. According to S. C. Chen & Y. C. Tsai, there had been little research on reading instruction in Taiwan. Specifically, most of the research was limited to classes taught by the researchers at the college level. For example, according to Y. L Chang (2005) as cited in S. C. Chen & Y. C. Tsai, the students of Accounting Department at a university were reported not able to use reading strategies due to their low motivation and over-dependence on dictionaries. S. C. Chen & Y. C. Tsai indicated that research on reading-strategy instruction had rarely been practiced in elementary or secondary schools due to the reasons such as the limitations of time constraints, unwillingness to make extra efforts, and lack of required knowledge in learning strategies.

### *Writing*

Following by the education reforms over the past two decades, general and academic writing in Taiwan has begun to receive more attention (W. C. Chang, Joe, Liaw, H. N. Yeh, C. L. Chern, You, & C. C. Huang, 2009 as cited in S.C. Chen & Y. C. Tsai). According to S. C. Chen & Y. C. Tsai's review, research related to writing skills development inspired by process-based theory showed the positive effectiveness of peer

feedback to college students. Specifically Computer Assisted Language Learning (CALL) has been gradually integrated into the development of writing skills, and students favored the use of technology to facilitate collaborative writing. However, the process-oriented approaches have not been widely put into practice at all school levels. Writing activities with product-oriented features were more common writing process of teaching instructions.

***Listening***

S. C. Chen & Y. C. Tsai indicated that little published research related to the aspects of listening skills development has been explored during 2004-2009 as it related to: (1) factors that influence listening outcomes, (2) strategies used by learners, (3) technology or multimedia used for listening practice, and (4) pedagogical approaches. However, some researchers found that English listening practices increased over the past decade. For example, at the elementary level, Lai (2008) reported that an Audio Lingual Method approach was adopted to strengthen students' listening and speaking ability. According to Shen (2006), users of English teaching magazines had been growing for senior high school and college students due to its cost and accessibility. Additionally, increase chances in exposure to English through multimedia in nowadays society might also facilitate students' listening practices. Moreover, in recent years, the request of the TELC scores for some departments, and the preparation of including listening section in the total score of the CEAP in the near future might motivate students to practice listening according to the College Entrance Examination Center (CEEC, 2016). To sum up, although research related to listening skills instructions on learning strategies were seldom found, students' listening practices might generally

increase due to the gradual inclusion of listening assessment in national entrance examinations.

***Speaking***

**S**peaking skill is important in communication; however, speaking instruction has been marginalized in Taiwan (S. C. Chen & Y. C. Tsai). According to S. C. Chen & Y. C. Tsai, speaking skill received more attention than before due to the introduction of the Internet-Based Test of the Test of English as a Foreign Language (TOFEL iBT), and General English Proficiency Test (GEPT). However, an investigation conducted by Hsieh (2010) reported that speaking ability was not really necessary for many students who were not using English for their future careers and in their daily life. According to S. C. Chen & Y. C. Tsai, the studies examined the effectiveness of speaking instruction showed that the pronunciation practices and the direct approach to English conversation instruction were helpful in raising students' conversational abilities. In addition, students at the elementary level received more conversational practices related to their daily life. In addition to students with some special needs in developing their speaking ability, English speaking tended to be a skill which was easy to be ignored because the assessment on students' speaking ability were seldom required at the secondary level.

In short, in this section, the general factors affected students' English language ability before the higher education level in Taiwan in terms of reading, writing, listening and speaking was explored according to S. C. Chen & Y. C. Tsai. Over the last two decades, despite the individual learning styles and learning out of school, students' English language learning was led by the curriculum regulated by the MOE, and then shaped by teachers' instructions under the dominant influences of high stakes national

entrance examinations. The four skills development outlined in the curricula should be equally stressed. Yet, teaching instructions at the elementary level focused more on listening and speaking skills and then integrated writing and reading skills gradually. Additionally, due to test-oriented teaching (V. W. Chang, 2006), after students entered junior high schools, students focused more on vocabulary memorizing, sentence structure practices, and reading. Students' English language learning at the senior high school level focused on more translation and paragraph writing practices as they related to the AST and GSAT English test contents. Of great concern has been the gap between the official curricula and the practicality of curricula. In addition to the bottom up exploration of the various factors to students' English ability, the following section will review the literature related to the top down investigation to students' English language ability and changes in their English language ability.

## Changes in the English Language Ability

This section first reviewed the studies examined changes in the English language ability. Secondly, the possible influences of the shrinking student population on the incoming university students' English language ability in Taiwan were also explored.

The research examined changes in the English language ability was different in four dimensions: (1) measurements had been utilized, (2) components of ability had been investigated, (3) factors had been explored, and (4) results in changes in the English language ability were presented. The various measurements had been utilized included questionnaire, placement test, criterion references, yearly report of TOFEL test, and GSAT. The components of ability or learning practicality which had been investigated included communicative ability, grammar, listening, speaking, writing, reading, learning attitudes, and the overall ability as well as language use and learning

hours. The various factors which had been explored included the comparisons between years, admission pathways, gender, and geographical locations (Asia, the world, and Taiwan). The general results were presented included the changes in English language ability as well as the distribution of students' performance on the tests. Table 2.9 shows a sketch of the literature which will be reviewed in this section.

Table 2.9

*Research Investigated the Changes in English Language Ability*

| **Author** | **Measurement & Participants** | **Components of Ability** | **Factor** | **Result** |
|---|---|---|---|---|
| S. C. Chen (2014) | self-rated questionnaire/ age 10 to 65 citizens | communicative ability/ language use/ learning hours | between the years of 2003 & 2013/ domains | progress in the communicative ability of age 12 to 29 citizens |
| Sims (2012) | teacher perception questionnaire/ 18 FENM teachers | grammar/ reading/ listening / speaking/ writing/ learning/ attitudes | a decade of 2000s | progress only in listening, speaking |
| Sims & J. Liu (2013) | placement test/ college freshmen | reading/ listening/ grammar | 12 years from 1998 to 2010 | progress in listening |
| T. L. Chiang (2014) | criterion references/ college freshmen | overall ability | majors/ across years (2005-2008) | progress for students of certain majors |
| T. L. Chiang (2014) | GSAT/college freshmen | overall ability | 2005&2014 | bimodal distribution |
| | criterion references/ college freshmen | overall ability | all students (2005-2008 ) majors/ admission pathways/ gender | Personal application admissions have better overall ability/ Females have better overall ability |
| MOE (2016b) | yearly report of TOFEL test/ test takers | reading/ listening/ speaking/ writing | the years of 2007&2015/ Asia, the world &Taiwan | progress in speaking and listening |

***Studies Conducted by Questionnaires***

S. C. Chen (2014) conducted a study examined the changes in the overall English language ability of Taiwan citizens. S. C. Chen also investigated the frequencies of English language use in different domain as well as their learning hours as they related to different age groups. 2055 and 7343 respondents' self-rated questionnaire received from overall Taiwan in 2003 and 2013 respectively were analyzed according to three dimensions: (1) English communicative ability, (2) English language use in different domains, and (3) time spent in learning English out of class. The degree of self-rated English language ability from a 1 to 5 points Likert scale referred to: (1) unable to understand English at all, (2) able to understand through listening but cannot speak English, (3) can communicate in English but with difficulties, (4) can communicate in English, and (5) can communicate in English fluently. S. C. Chen indicated that the results showed a slightly decline across the past decade in all citizens' English communicative ability. However, the English communicative ability of the age groups below 29 was remarkably progressing. Specifically, there was an increase for age 12-29 respondents who could communicate in English from 2003 to 2013. Additionally, their English language use increased in different domains (home, religion, friendship, school/government, work), and their time spent in English listening, speaking, reading, and writing out of class increased as well. S. C. Chen concluded that the positive English language learning outcome represented the success of ELE from 2003 to 2013. However, the respondents' self-rated report based on their own knowledge of English communicative ability with little additional personal information showed less reliability of the results. Additionally, the numbers of participants were inconsistent in 2003 and 2013, so were the numbers of each age group. Although the study has its own limitation in representing the changes in English communicative ability, the increasing learning

time and English language use in different domains represented the popularity of English for age 12-29 group.

Sims (2012) investigated the changes in university freshmen's English language ability by means of a questionnaire. The questionnaire measured 18 ten-year experienced freshmen-English-for-non-major (FENM) teachers' perceptions of students' English language ability (reading, listening, speaking, writing and grammar) in comparing with that of the students' a decade ago. The results indicated that their grammar, reading and writing abilities had a slight decline or remained stable without any significant differences. On the contrary, their listening and speaking abilities had improved. The teachers also perceived that the present students were more willing to use, listen to, and speak in English. Although the teachers' perceptions might be criticized to be subjective, the experienced teachers' language knowledge background performed better reliability in perceiving the changes in students' English language ability and their learning attitudes. Additionally, the results of changes in freshmen's English language ability were in line with that of Sims & Liu's (2013) research.

***Study Conducted by Placement Test***

Sims & Liu (2013) investigated possible changes in the English language ability of freshmen at a university located in central Taiwan from 1998-2010 by means of a placement test. Approximately 3000 freshmen each year took the same exam (English Placement Examination) which was composed of reading, grammar and listening sections. After analyzed the scores by using an ANOVA analysis, the results identified the students' total scores across the 12 years remained relatively consistent but there were changes in listening, grammar, and reading scores. The listening scores increased significantly, while the reading and grammar scores showed a tendency of decline

across the 12 years. When comparing with studies measuring students' English language ability conducted by questionnaires, the placement test performed better reliability in measuring students' English language ability with its valid test specifications. However, due to the practicality and feasibility, there was a lack of speaking and writing assessment.

***Study Conducted by Criterion References and the GSAT***

T. L. Chiang (2014) investigated the National Chiao Tung University students' English language ability across 2005-2008 and in 2011. The instrument T. L. Chiang applied was a dichotomy criterion which categorized the freshmen into two categories of the students took Advanced English course (students with below intermediate English ability) and those who did not (students with advanced English language ability). The criterion references of those who didn't have to take Advanced English course included: (1) English native speakers; (2) freshmen who was certificated by TOFEL PBT (Paper-based Test) scored 580 or above, the TOFEL CBT (Computer-based Test) scored 273 or above, the TOFEL iBT scored 92 or above, and the International English Language Testing System (IELTS) leveled 6.5 or above; or (3) freshmen who had passed the first stage of the Intermediate GEPT. The data was analyzed by applying the contingency tables showing the frequencies. T. L. Chiang compared the freshmen's English language ability within the years of 2005-2008 as it related to students' majors, admission pathways, and gender. Additionally, T. L. Chiang also investigated the distribution of the test takers' English level scores at General Scholastic Ability Test (GSAT) from 2005 to 2014. More descriptions were as follows.

***Majors:*** The result of the comparisons in the English language ability of freshmen across the four years from 2005-2008 for each department indicated that English

language ability was better year by year of students in the departments of Electronics Engineering, Electrical and Computer Engineering, Applied Chemistry, and Industrial Engineering & Management. Additionally, Chiang also compared the freshmen's English language ability among categories as they related to admission pathways and gender.

***Admission pathways:*** The comparisons of freshmen's English language ability for the four years (2005-2008) among categories of Examination & Placement, Stars Program and Personal Application were conducted via adopting the Chi-square test to show the P-values of each category. The P-value showed significant differences in the participants' English language ability for the four years between the three admission pathways. The English language ability of students admitted through Personal Application had better English language ability than those who admitted through Stars Program and Examination & Placement, and the students passed through Stars Program were not necessary students with educational resources disadvantages. The results were in line with H. H. Tien & F. F. Tien (2008) that students admitted through Personal Application and Stars Program outperformed students' admitted through Examination & Placement in their English performance. However, the changes in each pathway admissions' English performance across the four years were not examined.

***Gender:*** The P-value of cross-comparisons between female and male students' English performance presented a significant difference. The females outperformed the males in the four years from 2005-2008. This result was in line with Gu (2002) that female students outperformed male students in both vocabulary test and general proficiency test. Yet according to Gu, empirical studies on gender differences in English language ability have produced inconsistent results. However, instead of the

comparisons between male and females English ability, the changes in the English ability for male or female students across the years were under investigation.

***GSAT:*** T. L. Chiang also investigated the distribution in the test takers' English level scores at the General Scholastic Ability Test (GSAT) from 2005 to 2014. The purpose was to compare the changes in the distribution of students' English language ability across the years. The bimodal distribution of the level scores began to be more vivid in 2008, and it was even more distinct after 2011. Although the GSAT English may not be reliable instrument comparing the test takers' English performance within years (T. Y. Cheng, 2013), there is room for interpretation by looking at the scores each year. A bimodal distribution may indicate that the instrument was not reliable, or the more heterogeneous of the testees' performance was. According to T. L. Chiang, this bimodal distribution showed heterogeneity of the testees' English language ability. T. L. Chiang's study was informative; however, the dichotomy criterion adopted to define students' English language ability was limited in representing more details in how students' ability was as it related to other subskills.

### *Yearly Report of TOFEL Scores*

According to MOE (2016b), the analysis of the global average scores of the Test of English as a Foreign Language (TOFEL) showed that all the testees performed 3 points higher in 2015 than those in 2007. Additionally, a comparison between the average scores of Taiwanese testees and Asian testees showed a lower average score of Taiwanese testees in 2007. However, Taiwanese testees' performed a higher average score than that of Asian testees in 2015. Moreover, while analyzing the development of the four skills, Taiwanese testees' performance on writing was better than that of speaking, listening and reading in 2007. However, Taiwanese testees' performance on

these four skills was more balanced in 2015. The analysis report indicated that the English language ability of Taiwanese testees as measured by TOFEL was progressing from 2007 to 2015 with a more balanced development in the four skills. However, the data which provided insufficient personal background of these testees might not represent the general English language ability of all citizens.

### *Possible Influences of the Shrinking Student Population on Changes in the English Language Ability*

Based on the literature related to the changes in the English ability, the students' English language ability over the past two decades showed a distinct bimodal distribution. In other words, this bimodal distribution represented heterogeneity of university freshmen's English language ability (V. W. Chang, 2006; T. L. Chiang, 2014). Additionally, the English listening ability of University freshmen (Sims, 2012; Sims & Liu, 2013) and the communicative ability of age 12-29 citizens (S. C. Chen, 2014) had a positive tendency of improvement. Moreover, Taiwanese averagely not only performed progressively on the TOFEL test, they also developed the four skills more equally (MOE, 2016b). According to S. C. Chen (2014), in general, Taiwanese citizens' English language ability was making progress because of more time spent in learning English as well as increased chances in using English in different domains (S. C. Chen, 2014). According to the above mentioned research results, the ELE policy focused on the development of communicative ability might pay dividends. However, little literature examined the impact of the shrinking student population on changes in college freshmen's English language ability across years as they related to admission pathways, gender, majors, and geographical locations (northern, central, southern, and eastern Taiwan).

According to H. H. Tien & F. F. Tien's (2008), over the past two decades, the Multiple Pathways to College Admission was an important education reform. The student population enrolled through the three primary pathways has changed year by year. These changes in student populations through each pathway might also be a factor affects students' English language ability. The comparisons between students' English language ability through from 2012 to 2016 for each pathway were examined in this study. Figure 2.3 shows the number of students admitted through each admission pathway through the years of 2012-2016. During the year of 2012-2015, the students enrolled through Personal Application increased slightly, but in 2016, the number admitted through Personal Application showed a slight decrease. This slight decrease might contribute to the shrinking student population in the fall of 2016. Additionally, the students enrolled through Stars Program increased slightly through the five years, and the number admitted was not affected by the shrinking student population in 2016. On the contrary, the students enrolled through Examination & Placement decreased from 2012 to 2016. Yet the changes in the numbers enrolled through each pathway might bbe contributed mostly to educational policies.

To sum up, when the factor of the shrinking student population came into play, students' English language ability might decline due to less competitiveness of entering colleges with higher admission rates. Yet, this was not in line with some of the literature examined the changes in English language ability. The reform of ELE and the investment of resources on ELE which might help enhance students' English language ability shall not be overlooked, while the shrinking student population which might hinder the English language ability of students' enrolled in a university in Taiwan shall also be considered. Since few statistical research investigated changes in the English

language ability had been done as it related to the drastic shrinking student population in the fall of 2016, this study aimed to fill this gap.

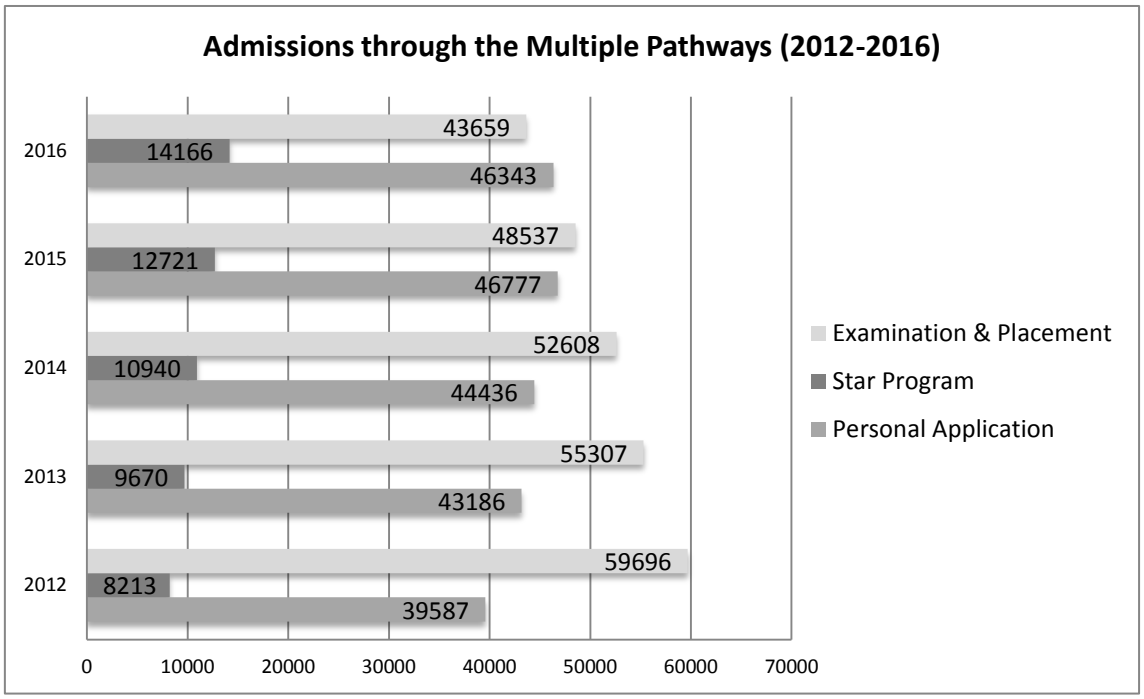


Figure 2.3 Admissions through the Multiple Pathways

# CHAPTER THREE

# METHOD

Chapter three presents the research method used to conduct the study. It is divided into four sections: subjects, instrument, data collection and data analysis.

## Subjects

The subjects in this study were non-English major freshmen at Tunghai University passed through three primary admission pathways (Examination & Placement, Stars Program, and Personal Application) from the 2012 to 2016 academic years. The majority of the subjects had started their formal compulsory English language education before or by the start of the fifth grade of elementary school. They shared similar English language learning background as reviewed in the second section of Chapter Two. Tunghai University is located in central Taiwan with most students recruited from every part of Taiwan through multiple pathways. Based on data from the College Entrance Examination Center (CEEC) from 2012 to 2016, the students attending Tunghai University scored in the middle range of the Advanced Subject Test (AST) for each year. The range of scores on the AST was relatively consistent each year. This means Tunghai got students who scored from the middle range of the AST and this was true for each year. In other words, students' scores on the AST did not fluctuate during the time frame of the study.

The subjects were: (1) citizens of Taiwan; (2) students enrolled between the 2012-2016 academic years; (3) from three primary admission pathways; and (4) non-English majors. Thus, international students were excluded. In addition, the International College students were not included because the college was not

established until 2014. Moreover, students enrolled with specific identifications such as adults, students with disabilities, and vocational school applicants with talent skills in technology were excluded because they are an insignificant portion of less than 0.9 % of the total student population.

There were approximately 2,800 subjects each year from 2012 to 2016. In total, there were 6,324 males, 7,827 females, and 61 subjects who did not indicate gender. The numbers of male subjects were relatively consistent each year, and so were the numbers of females. The total number of subjects in the study is 14,212 (see Table 3.1).

Table 3.1

*Number of Male and Female Subject from 2012 to 2016*

| **Academic Year** | **Male** | **Female** | **Not Indicated** | **Total** |
|---|---|---|---|---|
| 2012 | 1,287 | 1,572 | 11 | 2,870 |
| 2013 | 1,221 | 1,642 | 20 | 2,883 |
| 2014 | 1,254 | 1,571 | 17 | 2,842 |
| 2015 | 1,299 | 1,516 | 13 | 2,828 |
| 2016 | 1,263 | 1,526 | 0 | 2,789 |
| Total | 6,324 | 7,827 | 61 | 14, 212 |

This study included freshmen recruited through three primary admission pathways: (1) Stars Program, (2) Personal Application, and (3) Examination & Placement. The number of students from the Stars Program increased slightly while those from the Personal Application process and the Examination & Placement process fluctuated each year (see Table 3.2).

Table 3.2

*Number of Subject through Each Admission Pathway from 2012 to 2016*

| Academic Year | Stars Program | Personal Application | Examination & Placement |
|---|---|---|---|
| 2012 | 201 | 1,278 | 1,391 |
| 2013 | 261 | 1,342 | 1,280 |
| 2014 | 317 | 1,166 | 1,359 |
| 2015 | 360 | 1,297 | 1,171 |
| 2016 | 414 | 1,184 | 1,191 |
| Total | 1,553 | 6,267 | 6,392 |

All of the subjects were from thirty-three departments in eight different colleges, including Arts, Science, Engineering, Agriculture, Management, Social Science, Law, Fine Arts and Creative Design. Basically, the number of the participants enrolled in each department was relatively consistent each year (see Appendix A).

For this study, the subjects from each geographic location were relatively consistent each year, the participants from Northern and Southern Taiwan increased slightly while those from Central Taiwan decreased slightly in 2016 (see Table 3.3).

Table 3.3

*Number of the Subject from Each Geographical Location from 2012 to 2016*

| Academic Year | Northern Taiwan | Central Taiwan | Southern Taiwan | Eastern Taiwan |
|---|---|---|---|---|
| 2012 | 833 | 1,100 | 888 | 49 |
| 2013 | 820 | 1,072 | 964 | 27 |
| 2014 | 854 | 1,038 | 907 | 43 |
| 2015 | 899 | 1,044 | 841 | 44 |
| 2016 | 931 | 940 | 879 | 39 |
| Total | 4,337 | 5,194 | 4,479 | 202 |

## Instrument

The New English Placement Exam (NEPE) was the instrument used to compare and analyze the freshmen's English ability across the five years.

Developed by the Freshman English for Non-Majors (FENM) faculty and a coordinating committee through a rigorous process, the NEPE has appropriate validity and reliability for this study (Sims, 2015). The test items were selected based on item difficulty, item discrimination, and distractor analysis from the previous administration's test bank of FENM midterm and final exams at Tunghai University. The teachers in the FENM program, according to the test specifications, created items and then reviewed and revised each item. Three procedures used to argue the validity of the test were content validity, construct validity, and concurrent validity. The report of the test construct, specification, validity, and reliability of the NEPE are presented in the following paragraphs.

### *The Construct of the New English Placement Exam (NEPE)*

The NEPE is composed of three sections: Grammar, Reading, and Listening with a total of 60 multiple-choice questions (see Table 3.4). The Grammar section which accounts for 20% of the total score is composed of two cloze paragraphs with 10 multiple-choice questions each. The reading section which accounts for 40% of the total score is composed of two short passages with five questions per passage and one longer passage with 10 questions. The listening section which accounts for 40% of the total score is composed of three parts: Short Dialogues, Short Passages, and Appropriate Response with a total of 20 questions.

Table3.4

*Construct of the NEPE*

| Section | % of the NEPE | Item Type | Number of Questions | Order of Items |
|---|---|---|---|---|
| Grammar | 20% | 2 cloze paragraphs | 20 | 1-20 |
| Reading | 40% | 2 short passages | 10 | 21-30 |
| | | one long passage | 10 | 31-40 |
| Listening | 40% | short dialogues | 7 | 41-47 |
| | | shore passages | 7 | 48-54 |
| | | appropriate response | 6 | 55-60 |

***The Test Specifications of the NEPE***

The specification guidelines used in constructing the multiple choice items are: (1) each item measures a specific objective; (2) both the question and distractors are stated simply and directly; (3) the intended answer is the only correct answer; and (4) the answer and distractors are lexically and grammatically correct, in a parallel grammatical structure, and in pairs of equal lengths. The objectives and description for each section of grammar, reading, and listening are presented below.

***Grammar Section***

The grammar section of the NEPE was designed to measure students' ability to recognize the appropriate use of standard-written English. As the test objectives show in Table 3.5, the grammar points focus on proper verb tense, subject-verb agreement, adjectives of comparison, count versus non-count nouns, object pronouns, possessive pronouns, relative clauses, conjunctions, and passive voice. See Sims (2015) for more details.

Table 3.5

*Objectives of Each Section in the NEPE*

| Section | Objectives | Items |
|---|---|---|
| Grammar | (1) proper verb tense | 1-20 |
| | (2) subject-verb agreement | |
| | (3) adjectives of comparison | |
| | (4) count versus non-count nouns | |
| | (5) object pronouns | |
| | (6) possessive pronouns | |
| | (7) relative clauses | |
| | (8) conjunctions | |
| | (9) passive voice | |
| Reading | (1) main idea | 21-40 |
| | (2) reading for inferences | |
| | (3) vocabulary-in-context | |
| | (4) comprehension/details | |
| Listening | (1) processing realistic spoken language automatically | 41-60 |
| | (2) comprehending the main idea | |
| | (3) understanding information | |
| | (4) drawing inferences | |

***Reading Section***

Based on those of Alderson (2000), Brown (2010), and Hughes (2003), the reading section of the NEPE contains both macro-skill questions and micro-skills questions. The macro-skill questions test for the main idea of articles, paragraphs and making conclusive inference of a passage. The micro-skill questions test for the understanding of a specific detail, identifying the appropriate paraphrase of a passage, and finding the synonym of the vocabulary in context (see Table 3.5).

The reading section is comprised of two short passages of approximately 240-300 words and a longer passage of 560 words. The reading passages have a clear, straightforward introduction, a unified and coherent body, and a clear conclusion. As suggested by Alderson (2000), the reading content is factual, informative and

descriptive like a magazine or a textbook text rather than in conversational English. For more details, refer to Sims (2015).

### *Listening Section*

The listening section of the NEPE contains three components: short dialogues, short passages, and appropriate response. The short dialogues and short passages are designed to measure the general comprehension of concise listening texts. The appropriate response section is designed to measure the students' immediate listening skills in recognizing the pertinent response according to what they heard. The three componests consist of questions which can assess the students' ability to: (1) process realistic spoken language automatically; (2) comprehend the main idea; (3) understand information; and (4) draw inferences (seeTable 3.5). The listening texts have a beginning, middle, and end, and are constructed on topics that the students are familiar with. See Sims (2015) for more details.

## *The Validity and the Reliability of the NEPE*

Brown (2008) suggested that test validity is the degree to which a test measures what it claims to measure, and test reliability is the extent of consistency among test results. The empirical evidence of the validity and reliability of the NEPE are stated as follows.

### *Validity of the NEPE*

Sims (2015) used three methods to investigate the validity of the NEPE. First, a content validity study was conducted to examine the consistency between the test specifications and all the test items on the NEPE. Second, a construct validity study

consisting in factor analysis was conducted to investigate the validity of the test items in each section on grammar, reading and listening. Third, a concurrent validity study was conducted by means of a cross-comparison correlation analysis between the NEPE and the standardized exam, TOEIC.

***Content Validity:*** Based on Alderson, Clapham & Wall (1995), content validity involves experts making judgements systematically. As Hughes (2003) suggested, a comparison of test specification and test content was conducted to judge the content validity of the NEPE. The comparisons were made by three FENM teachers. These expert teachers concluded that the exam items were appropriate measures for the desired test specification for grammar, reading, and listening.

***Construct Validity:*** The construct validity of the NEPE was examined by means of factor analysis. The factor analysis was composed of three steps. First, an exploratory factor analysis (EFA) was used to determine the best factor structure for the NEPE. Next, the best solution from EFA was evaluated by confirmatory factor analysis (CFA). Lastly, Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and the root square error approximation (RMSEA) were performed to determine any deviations of the derived model. The result from EFA showed that a three-factor solution which assessed the three constructs of grammar, reading and listening was supported. The result from CFA indicated that the three-factor model was the most suitable for the test structure. Moreover, the three fit indices, CFI, GFI, and RMSEA also indicated that the three-factor structure model performed well for the dataset. According to Sims (2015), "the test structure derived via factor analysis reflected that intended by the designers."

***Concurrent Validity:*** Based on Brown (2010), another widely accepted evidence of test validity is to examine the statistical correlation with a similar test that has been previously validated. A cross-comparison correlation analysis of 66 freshmen who took

both the NEPE and TOEIC showed that there were strong correlations of the total scores ($r$ = 0.89), listening scores ($r$ = 0.83), and the grammar/reading scores ($r$ = 0.83) between the two tests. According to Sims (2015), these correlation results indicated that concurrent validity of the NEPE might be similar to that of TOEIC.

***Reliability of the NEPE***

Reliability is the degree of the consistency of the test results. The reliability of the NEPE focused on the content reliability as measured by a split-half method, and the item variance reliability as measured by a Cronbach's alpha approach. Sims (2015) reported methods to support the reliability of the NEPE. The first was the Spearman-Brown split-half reliability coefficient which was $r$ = .873. The second was the Cronbach's alpha reliability coefficient which was $r$ = .868. These all indicated that the NEPE can be considered a reliable instrument with two strong reliability coeffecients for this study.

To sum up, because of the above mentioned validity and reliability studies, the NEPE could be considered an appropriate and consistent instrument for this study in measuring the participants' English language ability in terms of their grammar, reading, and listening across the years from 2012 to 2016.

## Data Collection Procedures

The subjects' demograpgic information of gender, admission pathway, major, and geographical location were provided by the university's Office of Academic Affairs. Due to the implementation of the Personal Protection Act, the participants' names and their student numbers were not presented in any part of this research.

The NEPE was the instrument used to collect data on the participants' English language ability. The NEPE scores were provided by the English Language Center which implemented test administration procedures consistently at the same time of the day, in the same location with facilities of even quality.

The subjects were informed of the purpose of the exam and took the NEPE during their freshman orientation the week before classes begin for the fall semester. All the participants had 70 minutes to finish the exam. The students began the grammar section and then the reading section. After 45 minutes, the students continued on to the listening section. Each student used a 2-B pencil to mark answers on a computer card. The results from the computer cards were scanned on a SCANMARK 2000 and scores were calculated using the same EXCEL program.

## Data Analysis Procedures

Descriptive and statistical results of the participants' infromation and the NEPE scores were analyzed by using SPSS 15.0 for windows. All the level of significance set for hypothesis testing as $\alpha = .01$.

Data ananysis procedures were as follows.

Firstly, to investigate the first research question, the descriptive statistics of means and standard deviations as well as the ANOVA and the Tukey's HSD tests were conducted to identify whether there was a significant difference between and within the years of 2012-2015 in terms of grammar, reading, listening and total scores as measured by the NEPE. Then the changes in the means were discussed to verify whethrer the means were consistent or followed certain consistent trends. There were totally 43 analyses for all subjects (1 analysis) and as the subjects related to gender (2 analyses), admission pathways (3 analyses), majors (33 analyses) and geographical locations (4 analyses).

Secondly, to answer research questions 2, 3, 4, 5, and 6. The independent samples t tests were conducted to investigate the statistical differences for the NEPE scores between the years of 2015 and 2016 in terms of grammar, reading, listening and total scores for all subjects (RQ2) and as the subjects related to gender (RQ3), admissions pathways (RQ4), majors (RQ5), and geographical locations (RQ6). Then the changes in the means were discussed to verify whethrer the means were consistent or followed the consistent trends as the previous four years (2012-2015).

# CHAPTER FOUR

# RESULTS AND DISCUSSION

This chapter is composed of seven major sections: (1) the results of descriptive statistics, the ANOVA tests and the Tukey's HSD tests for the NEPE scores from 2012 to 2015, (2) the results of the independent samples t test for all subjects' NEPE scores between 2015 and 2016, (3) the results of the independent samples t tests for the NEPE scores as they related to gender between 2015 and 2016, (4) the results of independent samples t tests for the NEPE scores as they related to admission pathways between 2015 and 2016, (5) the results of the independent samples t tests for the NEPE scores as they related to majors between 2015 and 2016, and (6) the results of the independent samples t tests for the NEPE scores as they related to geographical locations between 2015 and 2016, and (7) summary of the results from 2012 to 2016.

## 1. Results of Analyses for the NEPE Scores from 2012 to 2015

First of all, the results of the means and standard deviations, the ANOVA tests, and the Tukey's HSD tests for the NEPE scores of subjects from 2012 to 2015 in terms of grammar, reading, listening and total scores as they related to the factors of gender, admission pathways, majors, and geographical locations are presented to answer the first research question, "Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores from 2012 to 2015 measured by the NEPE as related to gender, admission pathways, majors, and geographical locations?" Some of the data analysis results presented significant differences for the ANOVA test and the Tukey's HSD test while the others did not. For those analysis results revealed significant differences for the ANOVA

and/or the Tukey's HSD tests, certain consistent trends were found for the means across the four years in terms of grammar, reading, listening and total scores as measured by the NEPE. For those analysis results revealed no significant differences for the ANOVA and/or the Tukey's HSD tests, the means were relatively consistent across the four years. The followings are the 43 analysis results for answering the first research question respectively and a summary to all the analysis results for the four years. For the results of each analysis, the descriptive statistics, the ANOVA test and/or the Tukey's HSD test were included.

### *1-1 Analyses for All Subjects' NEPE Scores (2012-2015)*

The results for all subjects' NEPE scores revealed statistical differences for the ANOVA test (Table 4.2) in grammar ($p$ = .002), listening ($p$ = .000) and total ($p$ = .000) means between the four years. Yet, there was no statistical difference between the four years for reading means ($p$ = .194). Further results of Tukey's HSD test (Table 4.3) for one-on-one group comparisons revealed statistical differences for grammar means between the years of 2012 and 2015 ($p$ = .004), for listening means between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), and for total means between the years of 2012 and 2013 ($p$ = .002) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000).

Table 4.1 shows the grammar means declined gradually year by year from 2012 (M=10.5286) to 2015 (M=10.2443). The reading means were relatively consistent for the four years. The means for listening scores increased gradually year by year from 2012 (M=26.4606) to 2015 (M=28.6471). The total means also increased gradually from 2012 (M=58.9125) to 2014 (M=61.0883) and then tapered in 2015 (M=60.8801). Therefore, as shown in Figure 4.1, the reading means across the four years were

relatively consistent. However, there were statistical differences in the means for the four years in terms of in terms of grammar, listening, and total scores. The grammar means had a tendency to decrease while the listening and total means had a tendency to increase from year to year. The grammar, listening and total scores followed certain consistent trends across the four years.

Table 4.1

*Means and Standard Deviations for All Subjects' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean (M) | Std. Deviation (SD) | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 2870 | 10.5286 | 3.20384 | .05980 | 10.4113 | 10.6458 |
| | 2013 | 2883 | 10.5002 | 3.09062 | .05756 | 10.3873 | 10.6130 |
| | 2014 | 2842 | 10.3529 | 3.22756 | .06054 | 10.2342 | 10.4716 |
| | 2015 | 2828 | 10.2443 | 3.05128 | .05738 | 10.1318 | 10.3568 |
| | Total | 11423 | 10.4073 | 3.14595 | .02943 | 10.3496 | 10.4650 |
| Reading | 2012 | 2870 | 21.9233 | 7.58948 | .14167 | 21.6456 | 22.2011 |
| | 2013 | 2883 | 22.1145 | 7.51474 | .13996 | 21.8400 | 22.3889 |
| | 2014 | 2842 | 22.3188 | 7.29282 | .13680 | 22.0506 | 22.5870 |
| | 2015 | 2828 | 21.9887 | 7.22863 | .13593 | 21.7222 | 22.2552 |
| | Total | 11423 | 22.0861 | 7.40954 | .06933 | 21.9502 | 22.2220 |
| Listening | 2012 | 2870 | 26.4606 | 7.99920 | .14932 | 26.1679 | 26.7534 |
| | 2013 | 2883 | 27.7891 | 8.06754 | .15025 | 27.4945 | 28.0837 |
| | 2014 | 2842 | 28.4166 | 7.87983 | .14781 | 28.1268 | 28.7064 |
| | 2015 | 2828 | 28.6471 | 7.79730 | .14662 | 28.3596 | 28.9346 |
| | Total | 11423 | 27.8239 | 7.98180 | .07468 | 27.6775 | 27.9703 |
| Total | 2012 | 2870 | 58.9125 | 15.98397 | .29836 | 58.3275 | 59.4976 |
| | 2013 | 2883 | 60.4037 | 15.93590 | .29679 | 59.8218 | 60.9857 |
| | 2014 | 2842 | 61.0883 | 15.49851 | .29072 | 60.5183 | 61.6584 |
| | 2015 | 2828 | 60.8801 | 15.22939 | .28638 | 60.3186 | 61.4417 |
| | Total | 11423 | 60.3173 | 15.68841 | .14679 | 60.0296 | 60.6051 |

Table 4.2

*ANOVA Test for All Subjects' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 150.578 | 3 | 50.193 | 5.077 | .002* |
| | Within Groups | 112893.087 | 11419 | 9.886 | | |
| | Total | 113043.665 | 11422 | | | |
| Reading | Between Groups | 259.059 | 3 | 86.353 | 1.573 | .194 |
| | Within Groups | 626824.177 | 11419 | 54.893 | | |
| | Total | 627083.236 | 11422 | | | |
| Listening | Between Groups | 8252.243 | 3 | 2750.748 | 43.660 | .000* |
| | Within Groups | 719433.371 | 11419 | 63.003 | | |
| | Total | 727685.615 | 11422 | | | |
| Total | Between Groups | 8270.351 | 3 | 2756.784 | 11.231 | .000* |
| | Within Groups | 2802982.283 | 11419 | 245.467 | | |
| | Total | 2811252.635 | 11422 | | | |

*Significant at $p < .01$

Table 4.3

*Tukey's HSD Test for All Subjects' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Grammar | 2012 | 2013 | .02840 | .08291 | .986 | -.2298 | .2866 |
| | 2012 | 2014 | .17565 | .08321 | .150 | -.0835 | .4348 |
| | 2012 | 2015 | .28423(*) | .08331 | .004* | .0248 | .5437 |
| | 2013 | 2014 | .14725 | .08311 | .287 | -.1116 | .4061 |
| | 2013 | 2015 | .25583 | .08322 | .011 | -.0033 | .5150 |
| | 2014 | 2015 | .10858 | .08351 | .563 | -.1515 | .3686 |
| Listening | 2012 | 2013 | -1.32848(*) | .20930 | .000* | -1.9802 | -.6767 |
| | 2012 | 2014 | -1.95598(*) | .21005 | .000* | -2.6101 | -1.3019 |
| | 2012 | 2015 | -2.18647(*) | .21031 | .000* | -2.8414 | -1.5316 |
| | 2013 | 2014 | -.62750 | .20981 | .015 | -1.2808 | .0258 |
| | 2013 | 2015 | -.85799(*) | .21008 | .000 | -1.5122 | -.2038 |
| | 2014 | 2015 | -.23049 | .21082 | .694 | -.8870 | .4260 |
| Total | 2012 | 2013 | -1.49120(*) | .41312 | .002* | -2.7776 | -.2048 |
| | 2012 | 2014 | -2.17577(*) | .41461 | .000* | -3.4668 | -.8847 |
| | 2012 | 2015 | -1.96758(*) | .41512 | .000* | -3.2603 | -.6749 |
| | 2013 | 2014 | -.68457 | .41414 | .349 | -1.9742 | .6050 |
| | 2013 | 2015 | -.47638 | .41466 | .659 | -1.7676 | .8148 |
| | 2014 | 2015 | .20819 | .41614 | .959 | -1.0876 | 1.5040 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for reading scores because the ANOVA test for reading scores revealed no significant difference among the four years.

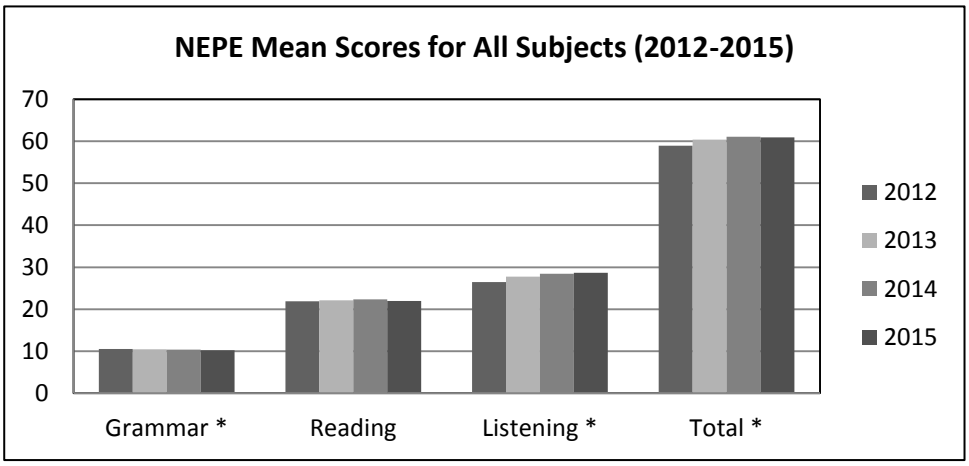

Figure 4.1 Means for All Subjects' NEPE Scores from 2012 to 2015

***1-2 Analyses for Male Subjects' NEPE Scores (2012-2015)***

The ANOVA test for male subjects' NEPE scores (Table 4.5) presented no statistical difference between the four years for grammar ($p$ = .504) and reading scores ($p$ = .215) while there were statistical differences between the years for listening ($p$ = .000) and total scores ($p$ = .000). Further results of the Tukey's HSD test (Table 4.6) for one-on-one group comparisons revealed statistical differences for listening means between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), and for the total means between the years of 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .001). Therefore, for female freshmen's NEPE scores, the means were relatively consistent in terms of grammar and reading. Yet, as shown in Table 4.4 and Figure 4.2, the listening and total means increased gradually from 2012 to 2014 and then tapered in 2015 with significant difference revealed for the four years. The listening and total means followed a consistent trend of increase from 2012 to 2015.

Table 4.4

*Means and Standard Deviations for Male Subjects' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 1287 | 10.1655 | 3.27816 | .09138 | 9.9862 | 10.3448 |
| | 2013 | 1221 | 10.1343 | 3.10684 | .08891 | 9.9599 | 10.3088 |
| | 2014 | 1254 | 10.0399 | 3.30445 | .09331 | 9.8568 | 10.2229 |
| | 2015 | 1299 | 9.9962 | 3.13450 | .08697 | 9.8255 | 10.1668 |
| | Total | 5061 | 10.0834 | 3.20742 | .04509 | 9.9950 | 10.1718 |
| Reading | 2012 | 1287 | 20.8034 | 7.79945 | .21741 | 20.3769 | 21.2299 |
| | 2013 | 1221 | 21.0483 | 7.89325 | .22589 | 20.6051 | 21.4915 |
| | 2014 | 1254 | 21.4354 | 7.51568 | .21224 | 21.0190 | 21.8518 |
| | 2015 | 1299 | 21.1624 | 7.40345 | .20541 | 20.7595 | 21.5654 |
| | Total | 5061 | 21.1112 | 7.65385 | .10759 | 20.9003 | 21.3222 |
| Listening | 2012 | 1287 | 25.3644 | 8.41332 | .23452 | 24.9043 | 25.8245 |
| | 2013 | 1221 | 26.8141 | 8.33690 | .23859 | 26.3460 | 27.2822 |
| | 2014 | 1254 | 27.5582 | 8.08846 | .22841 | 27.1101 | 28.0063 |
| | 2015 | 1299 | 27.5119 | 8.04104 | .22310 | 27.0742 | 27.9496 |
| | Total | 5061 | 26.8089 | 8.26627 | .11620 | 26.5811 | 27.0367 |
| Total | 2012 | 1287 | 56.3333 | 16.71944 | .46605 | 55.4190 | 57.2476 |
| | 2013 | 1221 | 57.9967 | 16.54963 | .47362 | 57.0675 | 58.9259 |
| | 2014 | 1254 | 59.0335 | 15.95996 | .45070 | 58.1493 | 59.9177 |
| | 2015 | 1299 | 58.6705 | 15.75401 | .43711 | 57.8130 | 59.5280 |
| | Total | 5061 | 58.0036 | 16.27606 | .22879 | 57.5550 | 58.4521 |

Table 4.5

*ANOVA Test for Male Subjects' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 24.105 | 3 | 8.035 | .781 | .504 |
| | Within Groups | 52030.708 | 5057 | 10.289 | | |
| | Total | 52054.812 | 5060 | | | |
| Reading | Between Groups | 261.962 | 3 | 87.321 | 1.491 | .215 |
| | Within Groups | 296160.409 | 5057 | 58.564 | | |
| | Total | 296422.370 | 5060 | | | |
| Listening | Between Groups | 4031.533 | 3 | 1343.844 | 19.887 | .000* |
| | Within Groups | 341724.703 | 5057 | 67.575 | | |
| | Total | 345756.236 | 5060 | | | |
| Total | Between Groups | 5498.375 | 3 | 1832.792 | 6.943 | .000* |
| | Within Groups | 1334947.561 | 5057 | 263.980 | | |
| | Total | 1340445.936 | 5060 | | | |

*Significant at $p < .01$

Table 4.6

*Tukey's HSD Test for Male Subjects' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.44967(*) | .32840 | .000* | -2.4726 | -.4268 |
| | 2012 | 2014 | -2.19380(*) | .32618 | .000* | -3.2098 | -1.1778 |
| | 2012 | 2015 | -2.14752(*) | .32330 | .000* | -3.1546 | -1.1405 |
| | 2013 | 2014 | -.74413 | .33050 | .110 | -1.7736 | .2853 |
| | 2013 | 2015 | -.69785 | .32766 | .144 | -1.7185 | .3228 |
| | 2014 | 2015 | .04628 | .32543 | .999 | -.9674 | 1.0599 |
| Total | 2012 | 2013 | -1.66339 | .64909 | .051 | -3.6852 | .3584 |
| | 2012 | 2014 | -2.70016(*) | .64469 | .000* | -4.7082 | -.6921 |
| | 2012 | 2015 | -2.33718(*) | .63901 | .001* | -4.3276 | -.3468 |
| | 2013 | 2014 | -1.03677 | .65323 | .386 | -3.0715 | .9979 |
| | 2013 | 2015 | -.67379 | .64762 | .726 | -2.6910 | 1.3434 |
| | 2014 | 2015 | .36298 | .64322 | .943 | -1.6405 | 2.3665 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and reading scores because the ANOVA test revealed no significant difference for these two sections among the four years.

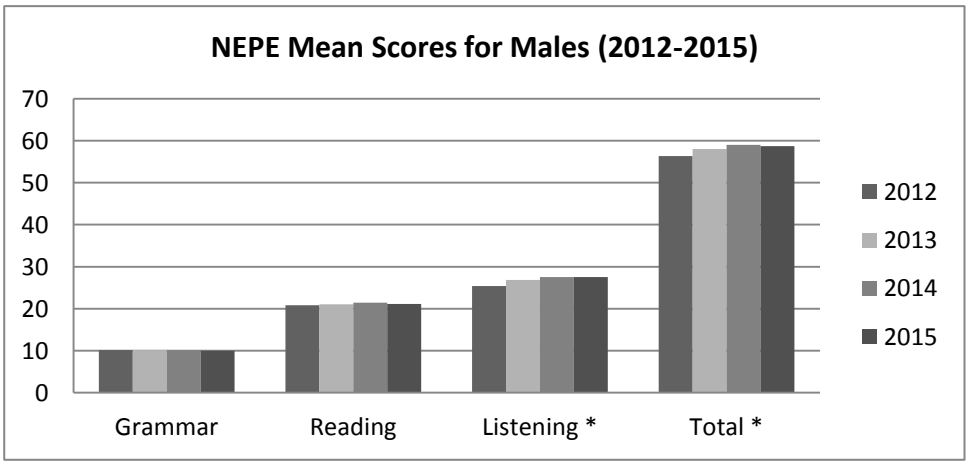


Figure 4.2 Means for Male Subjects' NEPE Scores from 2012 to 2015

### *1-3 Analyses for Female Subjects' NEPE Scores (2012-2015)*

For female subjects' NEPE scores for the four years, the results of the ANOVA test (Table 4.8) presented no statistical difference ($p$ = .624) between the years for reading scores while there were statistical differences between the years for grammar ($p$ = .002), listening ($p$ = .000) and total scores ($p$ = .004). Further results of the Tukey's HSD test (Table 4.9) for one-on-one group comparisons revealed statistical differences for grammar means between the years of 2012 and 2015 ($p$ = .003), for listening means between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000) / 2013 and 2015 ($p$ = .000), and for total means between the years of 2012 and 2013 ($p$ = .007) / 2012 and 2014 ($p$ = .009). Therefore, the reading means were relatively consistent across the four years without a significant difference. Yet, as shown in Table 4.7 and Figure 4.3, the grammar means decreased gradually from year to year while the listening and total means followed a consistent trend of increase for the four years.

Table 4.7

*Means and Standard Deviations for Female Subjects' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 1572 | 10.8346 | 3.09894 | .07816 | 10.6813 | 10.9879 |
| | 2013 | 1642 | 10.7686 | 3.04587 | .07517 | 10.6211 | 10.9160 |
| | 2014 | 1571 | 10.6003 | 3.14986 | .07947 | 10.4444 | 10.7561 |
| | 2015 | 1516 | 10.4512 | 2.95705 | .07595 | 10.3022 | 10.6002 |
| | Total | 6301 | 10.6667 | 3.06734 | .03864 | 10.5910 | 10.7425 |
| Reading | 2012 | 1572 | 22.8397 | 7.25333 | .18294 | 22.4809 | 23.1985 |
| | 2013 | 1642 | 22.8989 | 7.09925 | .17520 | 22.5553 | 23.2425 |
| | 2014 | 1571 | 23.0185 | 7.02799 | .17731 | 22.6707 | 23.3663 |
| | 2015 | 1516 | 22.6860 | 6.97901 | .17924 | 22.3344 | 23.0376 |
| | Total | 6301 | 22.8627 | 7.09104 | .08933 | 22.6876 | 23.0378 |
| Listening | 2012 | 1572 | 27.3690 | 7.49988 | .18916 | 26.9979 | 27.7400 |
| | 2013 | 1642 | 28.5030 | 7.76453 | .19161 | 28.1272 | 28.8789 |
| | 2014 | 1571 | 29.1267 | 7.63272 | .19257 | 28.7489 | 29.5044 |
| | 2015 | 1516 | 29.5950 | 7.45695 | .19152 | 29.2193 | 29.9707 |
| | Total | 6301 | 28.6383 | 7.63589 | .09620 | 28.4497 | 28.8269 |
| Total | 2012 | 1572 | 61.0433 | 14.94439 | .37692 | 60.3039 | 61.7826 |
| | 2013 | 1642 | 62.1705 | 15.16672 | .37429 | 61.4364 | 62.9047 |
| | 2014 | 1571 | 62.7454 | 14.92013 | .37643 | 62.0070 | 63.4837 |
| | 2015 | 1516 | 62.7322 | 14.48211 | .37195 | 62.0026 | 63.4618 |
| | Total | 6301 | 62.1678 | 14.89952 | .18770 | 61.7998 | 62.5357 |

Table 4.8

*ANOVA Test for Female Subjects' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 138.707 | 3 | 46.236 | 4.923 | .002* |
| | Within Groups | 59135.404 | 6297 | 9.391 | | |
| | Total | 59274.111 | 6300 | | | |
| Reading | Between Groups | 88.424 | 3 | 29.475 | .586 | .624 |
| | Within Groups | 316693.829 | 6297 | 50.293 | | |
| | Total | 316782.253 | 6300 | | | |
| Listening | Between Groups | 4325.107 | 3 | 1441.702 | 25.009 | .000* |
| | Within Groups | 363007.604 | 6297 | 57.648 | | |
| | Total | 367332.712 | 6300 | | | |
| Total | Between Groups | 2994.952 | 3 | 998.317 | 4.505 | .004* |
| | Within Groups | 1395578.735 | 6297 | 221.626 | | |
| | Total | 1398573.687 | 6300 | | | |

*Significant at $p < .01$

Table 4.9

*Tukey's HSD Test for Female Subjects' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Grammar | 2012 | 2013 | .06603 | .10814 | .929 | -.2708 | .4028 |
| | 2012 | 2014 | .23435 | .10932 | .140 | -.1061 | .5748 |
| | 2012 | 2015 | .38342(*) | .11031 | .003* | .0399 | .7270 |
| | 2013 | 2014 | .16832 | .10815 | .404 | -.1685 | .5052 |
| | 2013 | 2015 | .31739 | .10915 | .019 | -.0226 | .6573 |
| | 2014 | 2015 | .14907 | .11033 | .530 | -.1946 | .4927 |
| Listening | 2012 | 2013 | -1.13409(*) | .26792 | .000* | -1.9685 | -.2997 |
| | 2012 | 2014 | -1.75771(*) | .27086 | .000* | -2.6013 | -.9141 |
| | 2012 | 2015 | -2.22603(*) | .27331 | .000* | -3.0773 | -1.3748 |
| | 2013 | 2014 | -.62363 | .26796 | .092 | -1.4582 | .2109 |
| | 2013 | 2015 | -1.09194(*) | .27043 | .000* | -1.9342 | -.2497 |
| | 2014 | 2015 | -.46832 | .27335 | .317 | -1.3197 | .3830 |
| Total | 2012 | 2013 | -1.12727 | .52532 | .139 | -2.7634 | .5088 |
| | 2012 | 2014 | -1.70213(*) | .53109 | .007* | -3.3562 | -.0480 |
| | 2012 | 2015 | -1.68893(*) | .53589 | .009* | -3.3580 | -.0199 |
| | 2013 | 2014 | -.57486 | .52540 | .693 | -2.2112 | 1.0615 |
| | 2013 | 2015 | -.56167 | .53025 | .714 | -2.2131 | 1.0898 |
| | 2014 | 2015 | .01320 | .53597 | 1.000 | -1.6561 | 1.6825 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for reading scores because the ANOVA test for reading scores revealed no significant difference among the four years.

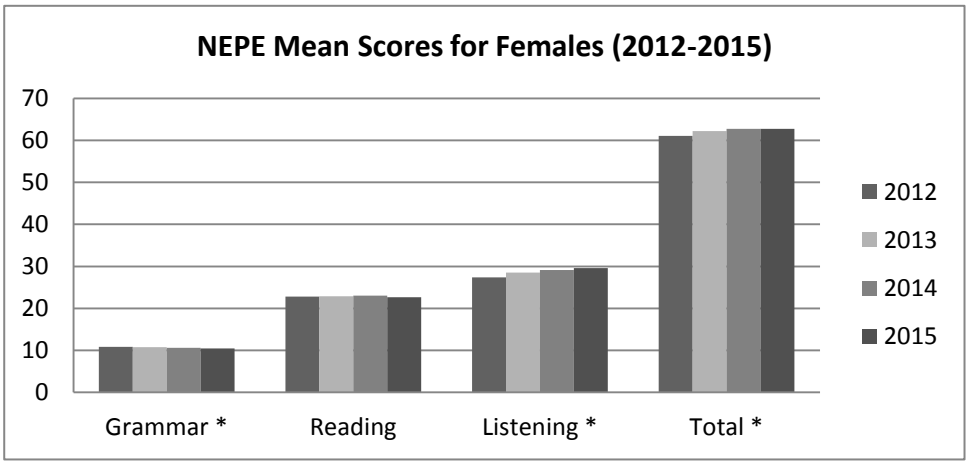


Figure 4.3 Means for Female Subjects' NEPE Scores from 2012 to 2015

### *1-4 Analyses of the NEPE Scores for Examination & Placement Admissions (2012-2015)*

For E & P admissions' NEPE scores, the results of the ANOVA test (Table 4.11) presented no statistical difference between the four years for total scores ($p$ = .174) while there were statistical differences between the years for grammar ($p$ = .000), reading ($p$ = .000) and listening scores ($p$ = .007). Further results of Tukey's HSD test (Table 4.12) for one-on-one group comparisons revealed statistical differences for grammar means between the years of 2012 and 2013 ($p$ = .005) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), for reading means between the years of 2012 and 2013 ($p$ = .001) / 2012 and 2015 ($p$ = .000), and for listening means between the years of 2012 and 2015 ($p$ = .009). Therefore, the total means were relatively consistent across the four years without a statistical difference revealed. Yet, as shown in Table 4.10 and Figure 4.4, the grammar and reading means decreased gradually while the listening means increased gradually across the four years. The grammar, reading and listening means followed certain consistent trends.

Table 4.10

*Means and Standard Deviations for E & P Admissions' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 1391 | 10.9015 | 3.16654 | .08490 | 10.7350 | 11.0681 |
| | 2013 | 1280 | 10.4969 | 3.12171 | .08725 | 10.3257 | 10.6681 |
| | 2014 | 1359 | 10.3260 | 3.27086 | .08873 | 10.1519 | 10.5000 |
| | 2015 | 1171 | 10.1392 | 3.00033 | .08768 | 9.9672 | 10.3112 |
| | Total | 5201 | 10.4799 | 3.15857 | .04380 | 10.3940 | 10.5658 |
| Reading | 2012 | 1391 | 23.1632 | 7.40804 | .19863 | 22.7735 | 23.5528 |
| | 2013 | 1280 | 22.0984 | 7.58458 | .21200 | 21.6825 | 22.5143 |
| | 2014 | 1359 | 22.4297 | 7.37812 | .20014 | 22.0371 | 22.8223 |
| | 2015 | 1171 | 21.7985 | 7.11568 | .20794 | 21.3905 | 22.2064 |
| | Total | 5201 | 22.4022 | 7.39509 | .10254 | 22.2012 | 22.6033 |
| Listening | 2012 | 1391 | 27.0927 | 7.77059 | .20835 | 26.6840 | 27.5015 |
| | 2013 | 1280 | 27.4047 | 7.96270 | .22256 | 26.9681 | 27.8413 |
| | 2014 | 1359 | 27.8411 | 8.03370 | .21792 | 27.4136 | 28.2686 |
| | 2015 | 1171 | 28.0786 | 7.81368 | .22834 | 27.6306 | 28.5266 |
| | Total | 5201 | 27.5870 | 7.90395 | .10960 | 27.3721 | 27.8019 |
| Total | 2012 | 1391 | 61.1574 | 15.47336 | .41488 | 60.3436 | 61.9713 |
| | 2013 | 1280 | 60.0000 | 15.90177 | .44447 | 59.1280 | 60.8720 |
| | 2014 | 1359 | 60.5968 | 15.76813 | .42773 | 59.7577 | 61.4358 |
| | 2015 | 1171 | 60.0162 | 14.98075 | .43778 | 59.1573 | 60.8751 |
| | Total | 5201 | 60.4691 | 15.55165 | .21564 | 60.0464 | 60.8919 |

Table 4.11

*ANOVA Test for E & P Admissions' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 415.752 | 3 | 138.584 | 13.995 | .000* |
| | Within Groups | 51462.398 | 5197 | 9.902 | | |
| | Total | 51878.150 | 5200 | | | |
| Reading | Between Groups | 1351.506 | 3 | 450.502 | 8.272 | .000* |
| | Within Groups | 283023.029 | 5197 | 54.459 | | |
| | Total | 284374.534 | 5200 | | | |
| Listening | Between Groups | 753.032 | 3 | 251.011 | 4.025 | .007* |
| | Within Groups | 324103.849 | 5197 | 62.364 | | |
| | Total | 324856.881 | 5200 | | | |
| Total | Between Groups | 1203.059 | 3 | 401.020 | 1.659 | .174 |
| | Within Groups | 1256436.238 | 5197 | 241.762 | | |
| | Total | 1257639.297 | 5200 | | | |

*Significant at $p < .01$

Table 4.12

*Tukey's HSD Test for E & P Admissions' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Grammar | 2012 | 2013 | .40463(*) | .12188 | .005* | .0250 | .7843 |
| | 2012 | 2014 | .57553(*) | .12002 | .000* | .2017 | .9494 |
| | 2012 | 2015 | .76231(*) | .12480 | .000* | .3736 | 1.1510 |
| | 2013 | 2014 | .17090 | .12257 | .503 | -.2109 | .5527 |
| | 2013 | 2015 | .35768 | .12725 | .026 | -.0387 | .7540 |
| | 2014 | 2015 | .18678 | .12547 | .444 | -.2040 | .5776 |
| Reading | 2012 | 2013 | 1.06475(*) | .28583 | .001* | .1745 | 1.9550 |
| | 2012 | 2014 | .73346 | .28147 | .045 | -.1432 | 1.6102 |
| | 2012 | 2015 | 1.36473(*) | .29267 | .000* | .4531 | 2.2763 |
| | 2013 | 2014 | -.33129 | .28743 | .657 | -1.2266 | .5640 |
| | 2013 | 2015 | .29997 | .29842 | .746 | -.6295 | 1.2295 |
| | 2014 | 2015 | .63126 | .29424 | .139 | -.2852 | 1.5478 |
| Listening | 2012 | 2013 | -.31195 | .30587 | .738 | -1.2647 | .6408 |
| | 2012 | 2014 | -.74832 | .30120 | .062 | -1.6865 | .1899 |
| | 2012 | 2015 | -.98583(*) | .31319 | .009* | -1.9614 | -.0103 |
| | 2013 | 2014 | -.43637 | .30759 | .488 | -1.3944 | .5217 |
| | 2013 | 2015 | -.67388 | .31934 | .150 | -1.6685 | .3208 |
| | 2014 | 2015 | -.23751 | .31487 | .875 | -1.2183 | .7433 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for total scores because the ANOVA test for total scores revealed no significant difference among the four years.

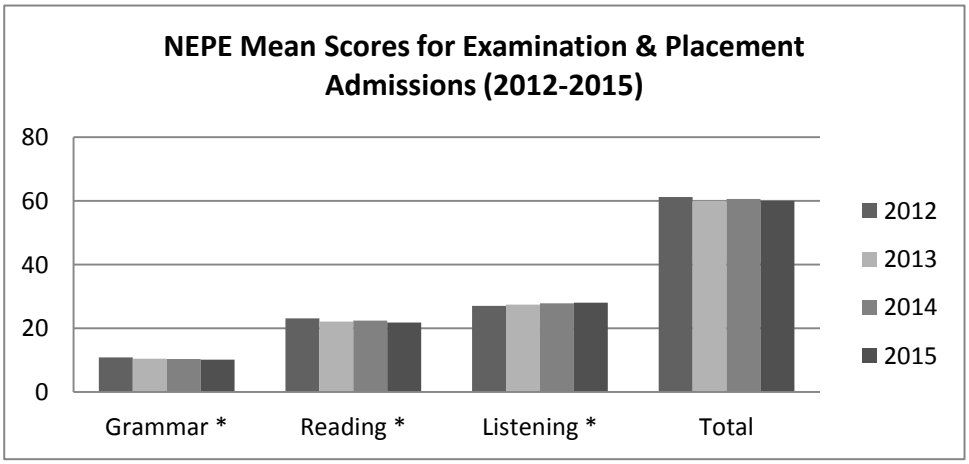


Figure 4.4 Means for E & P Admissions' NEPE Scores from 2012 to 2015

### *1-5 Analyses of the NEPE Scores for Stars Program Admissions (2012-2015)*

For SP admissions' NEPE scores, the results of the ANOVA test (Table 4.14) presented no statistical difference between the years for grammar means ($p$ = .775) but there were statistical differences between the years for reading ($p$ = .006), listening ($p$ = .000) and total means ($p$ = .000). Further results of the Tukey's HSD test (Table 4.15) for one-on-one group comparisons revealed no statistical difference for reading scores while there were statistical differences for listening means between the years of 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), and for total means between the years of 2012 and 2014 ($p$ = .001) / 2012 and 2015 ($p$ = .001). Therefore, the means for the four years were relatively consistent in terms of grammar and reading. However, as shown in Table 4.13 and Figure 4.5, the listening and total means increased gradually from 2012 to 2015. Both listening and total means followed a consistent trend.

Table 4.13

*Means and Standard Deviations for SP Admissions' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 201 | 9.7164 | 3.18970 | .22498 | 9.2728 | 10.1601 |
| | 2013 | 261 | 10.0115 | 3.05776 | .18927 | 9.6388 | 10.3842 |
| | 2014 | 317 | 9.9464 | 3.11392 | .17490 | 9.6023 | 10.2905 |
| | 2015 | 360 | 9.8972 | 3.07257 | .16194 | 9.5788 | 10.2157 |
| | Total | 1139 | 9.9052 | 3.09909 | .09183 | 9.7250 | 10.0854 |
| Reading | 2012 | 201 | 20.0398 | 7.17763 | .50627 | 19.0415 | 21.0381 |
| | 2013 | 261 | 20.8199 | 7.27814 | .45051 | 19.9328 | 21.7070 |
| | 2014 | 317 | 22.0694 | 7.15526 | .40188 | 21.2787 | 22.8601 |
| | 2015 | 360 | 21.8000 | 7.41781 | .39095 | 21.0312 | 22.5688 |
| | Total | 1139 | 21.3398 | 7.30117 | .21634 | 20.9153 | 21.7642 |
| Listening | 2012 | 201 | 23.9005 | 8.38511 | .59144 | 22.7342 | 25.0668 |
| | 2013 | 261 | 26.2759 | 8.15337 | .50468 | 25.2821 | 27.2696 |
| | 2014 | 317 | 27.0662 | 8.03072 | .45105 | 26.1788 | 27.9537 |
| | 2015 | 360 | 27.4500 | 8.44829 | .44526 | 26.5743 | 28.3257 |
| | Total | 1139 | 26.4478 | 8.33944 | .24710 | 25.9629 | 26.9326 |
| Total | 2012 | 201 | 53.6567 | 16.08964 | 1.13488 | 51.4189 | 55.8946 |
| | 2013 | 261 | 57.1073 | 15.87681 | .98275 | 55.1721 | 59.0424 |
| | 2014 | 317 | 59.0820 | 15.68982 | .88123 | 57.3482 | 60.8158 |
| | 2015 | 360 | 59.1472 | 16.32770 | .86055 | 57.4549 | 60.8396 |
| | Total | 1139 | 57.6927 | 16.11548 | .47751 | 56.7558 | 58.6296 |

Table 4.14

*ANOVA Test for SP Admissions' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 10.673 | 3 | 3.558 | .370 | .775 |
| | Within Groups | 10919.087 | 1135 | 9.620 | | |
| | Total | 10929.759 | 1138 | | | |
| Reading | Between Groups | 655.217 | 3 | 218.406 | 4.131 | .006* |
| | Within Groups | 60008.291 | 1135 | 52.871 | | |
| | Total | 60663.508 | 1138 | | | |
| Listening | Between Groups | 1794.785 | 3 | 598.262 | 8.779 | .000* |
| | Within Groups | 77348.857 | 1135 | 68.149 | | |
| | Total | 79143.642 | 1138 | | | |
| Total | Between Groups | 4737.075 | 3 | 1579.025 | 6.163 | .000* |
| | Within Groups | 290811.374 | 1135 | 256.221 | | |
| | Total | 295548.450 | 1138 | | | |

*Significant at $p < .01$

Table 4.15

*Tukey's HSD Test for SP Admissions' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | -.78012 | .68236 | .663 | -2.9092 | 1.3490 |
| | 2012 | 2014 | -2.02960 | .65561 | .011 | -4.0752 | .0160 |
| | 2012 | 2015 | -1.76020 | .64024 | .031 | -3.7579 | .2375 |
| | 2013 | 2014 | -1.24948 | .60775 | .168 | -3.1458 | .6468 |
| | 2013 | 2015 | -.98008 | .59113 | .347 | -2.8245 | .8644 |
| | 2014 | 2015 | .26940 | .56004 | .963 | -1.4780 | 2.0168 |
| Listening | 2012 | 2013 | -2.37536 | .77470 | .012 | -4.7926 | .0418 |
| | 2012 | 2014 | -3.16575(*) | .74433 | .000 | -5.4882 | -.8433 |
| | 2012 | 2015 | -3.54950(*) | .72688 | .000 | -5.8175 | -1.2815 |
| | 2013 | 2014 | -.79038 | .68999 | .661 | -2.9433 | 1.3625 |
| | 2013 | 2015 | -1.17414 | .67112 | .299 | -3.2682 | .9199 |
| | 2014 | 2015 | -.38375 | .63583 | .931 | -2.3677 | 1.6002 |
| Total | 2012 | 2013 | -3.45056 | 1.50214 | .099 | -8.1375 | 1.2364 |
| | 2012 | 2014 | -5.42530(*) | 1.44326 | .001 | -9.9286 | -.9221 |
| | 2012 | 2015 | -5.49051(*) | 1.40942 | .001 | -9.8882 | -1.0929 |
| | 2013 | 2014 | -1.97474 | 1.33789 | .452 | -6.1492 | 2.1997 |
| | 2013 | 2015 | -2.03994 | 1.30131 | .398 | -6.1003 | 2.0204 |
| | 2014 | 2015 | -.06520 | 1.23288 | 1.000 | -3.9120 | 3.7816 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar scores because the ANOVA test for this section revealed no significant difference among the four years.

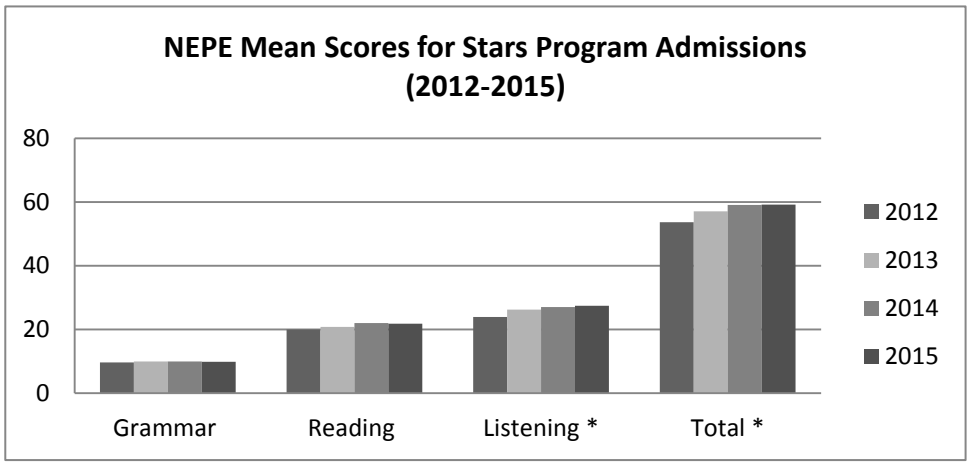

Figure 4.5 Means for SP Admissions' NEPE Scores from 2012 to 2015

***1-6 Analyses of the NEPE scores for Personal Application Admissions (2012-2015)***

For PA admissions' NEPE scores, the results of the ANOVA test (Table 4.17) presented no statistical difference between the years for grammar scores ($p$ = .038) but there were statistical differences for reading ($p$ = .000), listening ($p$ = .000) and total scores ($p$ = .000). Further results of the Tukey's HSD test (Table 4.18) for one-on-one group comparisons revealed statistical differences for reading scores between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), for listening scores between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000) / 2013 and 2014 ($p$ = .007) / 2013 and 2015 ($p$ = .003), and for total scores between the years of 2012 and 2013 ($p$ = .000) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000). Therefore, the grammar means were relatively consistent across the four years. And the reading mean increased from 2012 to 2013, and the means were consistent for the years of 2013, 2014 and 2015 with no significant difference revealed for the Tukey's HSD test. Yet, as shown in Table 4.16 and Figure 4.6, the listening and total means increased gradually from 2012 to 2015. They followed a consistent trend.

Table 4.16

*Means and Standard Deviations for PA Admissions' NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 1278 | 10.2504 | 3.19699 | .08943 | 10.0749 | 10.4258 |
| | 2013 | 1342 | 10.5984 | 3.06024 | .08354 | 10.4345 | 10.7622 |
| | 2014 | 1166 | 10.4949 | 3.19945 | .09370 | 10.3110 | 10.6787 |
| | 2015 | 1297 | 10.4356 | 3.08006 | .08552 | 10.2678 | 10.6034 |
| | Total | 5083 | 10.4456 | 3.13395 | .04396 | 10.3594 | 10.5318 |
| Reading | 2012 | 1278 | 20.8701 | 7.63295 | .21351 | 20.4512 | 21.2890 |
| | 2013 | 1342 | 22.3815 | 7.47198 | .20397 | 21.9814 | 22.7816 |
| | 2014 | 1166 | 22.2573 | 7.23338 | .21183 | 21.8417 | 22.6729 |
| | 2015 | 1297 | 22.2128 | 7.27572 | .20203 | 21.8165 | 22.6091 |
| | Total | 5083 | 21.9300 | 7.43286 | .10425 | 21.7256 | 22.1343 |
| Listening | 2012 | 1278 | 26.1753 | 8.09153 | .22634 | 25.7312 | 26.6193 |
| | 2013 | 1342 | 28.4501 | 8.09268 | .22091 | 28.0167 | 28.8834 |
| | 2014 | 1166 | 29.4545 | 7.53208 | .22058 | 29.0218 | 29.8873 |
| | 2015 | 1297 | 29.4927 | 7.50505 | .20839 | 29.0839 | 29.9015 |
| | Total | 5083 | 28.3746 | 7.93141 | .11125 | 28.1565 | 28.5927 |
| Total | 2012 | 1278 | 57.2958 | 16.13651 | .45138 | 56.4102 | 58.1813 |
| | 2013 | 1342 | 61.4300 | 15.88735 | .43369 | 60.5792 | 62.2807 |
| | 2014 | 1166 | 62.2067 | 15.05131 | .44078 | 61.3419 | 63.0715 |
| | 2015 | 1297 | 62.1411 | 15.04569 | .41777 | 61.3215 | 62.9607 |
| | Total | 5083 | 60.7501 | 15.67795 | .21990 | 60.3190 | 61.1813 |

Table 4.17

*ANOVA Test for PA Admissions' NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 82.975 | 3 | 27.658 | 2.819 | .038 |
| | Within Groups | 49830.735 | 5079 | 9.811 | | |
| | Total | 49913.709 | 5082 | | | |
| Reading | Between Groups | 1937.886 | 3 | 645.962 | 11.766 | .000* |
| | Within Groups | 278829.180 | 5079 | 54.898 | | |
| | Total | 280767.067 | 5082 | | | |
| Listening | Between Groups | 9170.631 | 3 | 3056.877 | 49.999 | .000* |
| | Within Groups | 310524.165 | 5079 | 61.139 | | |
| | Total | 319694.796 | 5082 | | | |
| Total | Between Groups | 20853.207 | 3 | 6951.069 | 28.743 | .000* |
| | Within Groups | 1228293.480 | 5079 | 241.838 | | |
| | Total | 1249146.687 | 5082 | | | |

*Significant at $p < .01$

Table 4.18

*Tukey's HSD Test for SP Admissions' NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | -1.51141(*) | .28959 | .000* | -2.4134 | -.6094 |
| | 2012 | 2014 | -1.38718(*) | .30007 | .000* | -2.3218 | -.4525 |
| | 2012 | 2015 | -1.34269(*) | .29203 | .000* | -2.2523 | -.4331 |
| | 2013 | 2014 | .12423 | .29663 | .975 | -.7997 | 1.0482 |
| | 2013 | 2015 | .16872 | .28851 | .937 | -.7299 | 1.0674 |
| | 2014 | 2015 | .04449 | .29901 | .999 | -.8869 | .9759 |
| Listening | 2012 | 2013 | -2.27480(*) | .30561 | .000* | -3.2267 | -1.3229 |
| | 2012 | 2014 | -3.27927(*) | .31666 | .000* | -4.2656 | -2.2929 |
| | 2012 | 2015 | -3.31740(*) | .30819 | .000* | -4.2773 | -2.3575 |
| | 2013 | 2014 | -1.00447(*) | .31304 | .007* | -1.9795 | -.0294 |
| | 2013 | 2015 | -1.04260(*) | .30446 | .003* | -1.9909 | -.0943 |
| | 2014 | 2015 | -.03813 | .31555 | .999 | -1.0210 | .9448 |
| Total | 2012 | 2013 | -4.13418(*) | .60781 | .000* | -6.0274 | -2.2410 |
| | 2012 | 2014 | -4.91091(*) | .62979 | .000* | -6.8726 | -2.9492 |
| | 2012 | 2015 | -4.84532(*) | .61294 | .000* | -6.7545 | -2.9361 |
| | 2013 | 2014 | -.77673 | .62259 | .596 | -2.7160 | 1.1625 |
| | 2013 | 2015 | -.71114 | .60553 | .643 | -2.5972 | 1.1750 |
| | 2014 | 2015 | .06559 | .62759 | 1.000 | -1.8892 | 2.0204 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar scores because the ANOVA test for this section revealed no significant difference among the four years.

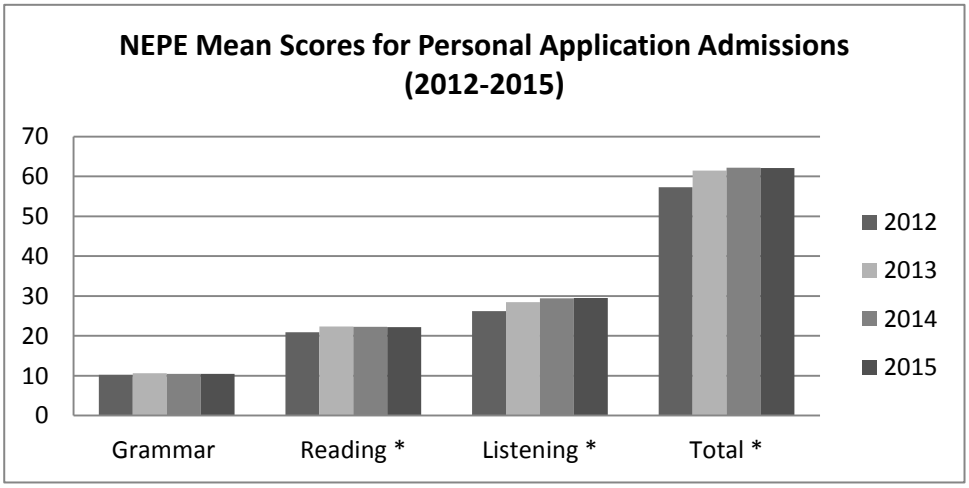


Figure 4.6 Means for PA Admissions' NEPE Scores from 2012 to 2015

### *1-7 Analyses of the NEPE Scores for Chinese Literature Department Freshmen (2012-2015)*

For Chinese Literature Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.20) presented no statistical difference between the years for grammar ($p$ = .165), reading ($p$ = .585), listening ($p$ = .469) and total scores ($p$ = .441). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means for the four years (Table 4.19 and Figure 4.7) were relatively consistent in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.19

*Means and Standard Deviations for Chinese Literature Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 102 | 9.0196 | 2.80021 | .27726 | 8.4696 | 9.5696 |
| | 2013 | 102 | 9.3235 | 2.88788 | .28594 | 8.7563 | 9.8908 |
| | 2014 | 98 | 9.7449 | 2.92980 | .29595 | 9.1575 | 10.3323 |
| | 2015 | 105 | 8.9143 | 2.80835 | .27407 | 8.3708 | 9.4578 |
| | Total | 407 | 9.2432 | 2.86344 | .14194 | 8.9642 | 9.5223 |
| Reading | 2012 | 102 | 18.3922 | 6.88255 | .68147 | 17.0403 | 19.7440 |
| | 2013 | 102 | 18.3137 | 6.79397 | .67270 | 16.9793 | 19.6482 |
| | 2014 | 98 | 19.4286 | 6.74728 | .68158 | 18.0758 | 20.7813 |
| | 2015 | 105 | 19.1238 | 6.91667 | .67500 | 17.7853 | 20.4624 |
| | Total | 407 | 18.8108 | 6.82801 | .33845 | 18.1455 | 19.4761 |
| Listening | 2012 | 102 | 24.4510 | 6.83559 | .67682 | 23.1083 | 25.7936 |
| | 2013 | 102 | 25.0392 | 8.14585 | .80656 | 23.4392 | 26.6392 |
| | 2014 | 98 | 25.7551 | 8.08851 | .81706 | 24.1335 | 27.3767 |
| | 2015 | 105 | 26.0571 | 8.60884 | .84014 | 24.3911 | 27.7232 |
| | Total | 407 | 25.3268 | 7.94618 | .39388 | 24.5525 | 26.1011 |
| Total | 2012 | 102 | 51.8627 | 13.32759 | 1.31963 | 49.2450 | 54.4805 |
| | 2013 | 102 | 52.6765 | 14.70715 | 1.45622 | 49.7877 | 55.5652 |
| | 2014 | 98 | 54.9286 | 15.21479 | 1.53693 | 51.8782 | 57.9789 |
| | 2015 | 105 | 54.0952 | 15.02019 | 1.46582 | 51.1885 | 57.0020 |
| | Total | 407 | 53.3808 | 14.57763 | .72259 | 51.9604 | 54.8013 |

Table 4.20

*ANOVA Test for Chinese Literature Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 41.784 | 3 | 13.928 | 1.708 | .165 |
| | Within Groups | 3287.135 | 403 | 8.157 | | |
| | Total | 3328.919 | 406 | | | |
| Reading | Between Groups | 90.767 | 3 | 30.256 | .647 | .585 |
| | Within Groups | 18837.665 | 403 | 46.744 | | |
| | Total | 18928.432 | 406 | | | |
| Listening | Between Groups | 160.660 | 3 | 53.553 | .847 | .469 |
| | Within Groups | 25474.878 | 403 | 63.213 | | |
| | Total | 25635.538 | 406 | | | |
| Total | Between Groups | 574.021 | 3 | 191.340 | .900 | .441 |
| | Within Groups | 85703.950 | 403 | 212.665 | | |
| | Total | 86277.971 | 406 | | | |

*Significant at $p < .01$

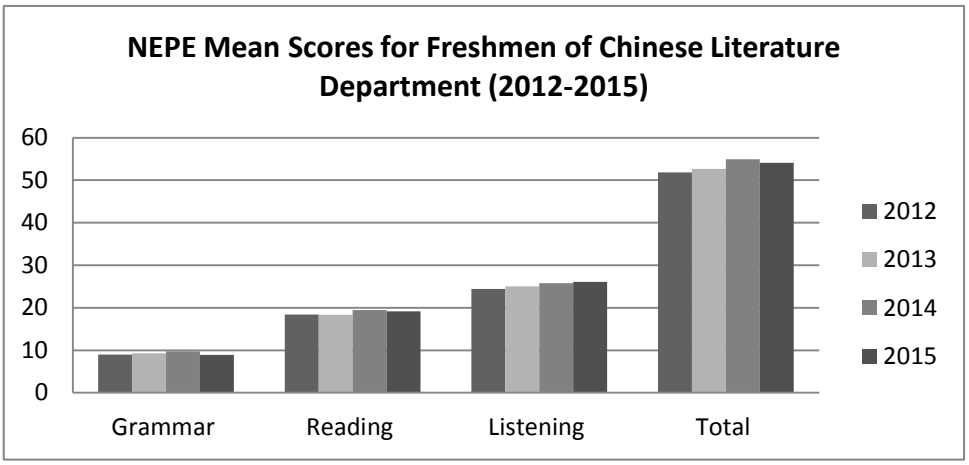


Figure 4.7 Means for Chinese Literature Department Freshmen's NEPE Scores from 2012 to 2015

### *1-8 Analyses of the NEPE Scores for Japanese Department Freshmen (2012-2015)*

For Japanese Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.22) presented no statistically significant difference between the years for grammar ($p = .068$), reading ($p = .911$), listening ($p = .015$) and total scores ($p = .665$). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means for the

four years (Table 4.21 and Figure 4.8) were relatively consistent in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.21

*Means and Standard Deviations for Japanese Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 89 | 12.2584 | 2.75734 | .29228 | 11.6776 | 12.8393 |
| | 2013 | 93 | 11.7634 | 3.01229 | .31236 | 11.1431 | 12.3838 |
| | 2014 | 96 | 11.7188 | 3.04252 | .31053 | 11.1023 | 12.3352 |
| | 2015 | 98 | 11.1122 | 2.92477 | .29545 | 10.5259 | 11.6986 |
| | Total | 376 | 11.6995 | 2.95524 | .15240 | 11.3998 | 11.9991 |
| Reading | 2012 | 89 | 25.6854 | 5.91530 | .62702 | 24.4393 | 26.9315 |
| | 2013 | 93 | 25.4409 | 6.26492 | .64964 | 24.1506 | 26.7311 |
| | 2014 | 96 | 26.0208 | 5.92227 | .60444 | 24.8209 | 27.2208 |
| | 2015 | 98 | 25.9592 | 6.41506 | .64802 | 24.6730 | 27.2453 |
| | Total | 376 | 25.7819 | 6.11754 | .31549 | 25.1616 | 26.4023 |
| Listening | 2012 | 89 | 29.1685 | 6.53528 | .69274 | 27.7919 | 30.5452 |
| | 2013 | 93 | 32.0215 | 6.23102 | .64613 | 30.7382 | 33.3048 |
| | 2014 | 96 | 31.3750 | 7.03263 | .71776 | 29.9501 | 32.7999 |
| | 2015 | 98 | 31.9388 | 7.16494 | .72377 | 30.5023 | 33.3753 |
| | Total | 376 | 31.1596 | 6.83021 | .35224 | 30.4670 | 31.8522 |
| Total | 2012 | 89 | 67.1124 | 12.48493 | 1.32340 | 64.4824 | 69.7423 |
| | 2013 | 93 | 69.2258 | 12.93641 | 1.34144 | 66.5616 | 71.8900 |
| | 2014 | 96 | 69.1146 | 13.32498 | 1.35998 | 66.4147 | 71.8145 |
| | 2015 | 98 | 69.0102 | 13.90653 | 1.40477 | 66.2221 | 71.7983 |
| | Total | 376 | 68.6410 | 13.16708 | .67904 | 67.3058 | 69.9762 |

Table 4.22

*ANOVA Test for Japanese Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 62.016 | 3 | 20.672 | 2.393 | .068 |
| | Within Groups | 3213.023 | 372 | 8.637 | | |
| | Total | 3275.040 | 375 | | | |
| Reading | Between Groups | 20.206 | 3 | 6.735 | .179 | .911 |
| | Within Groups | 14013.911 | 372 | 37.672 | | |
| | Total | 14034.117 | 375 | | | |
| Listening | Between Groups | 485.864 | 3 | 161.955 | 3.542 | .015 |
| | Within Groups | 17008.562 | 372 | 45.722 | | |
| | Total | 17494.426 | 375 | | | |
| Total | Between Groups | 274.665 | 3 | 91.555 | .526 | .665 |
| | Within Groups | 64739.864 | 372 | 174.032 | | |
| | Total | 65014.529 | 375 | | | |

*Significant at $p < .01$

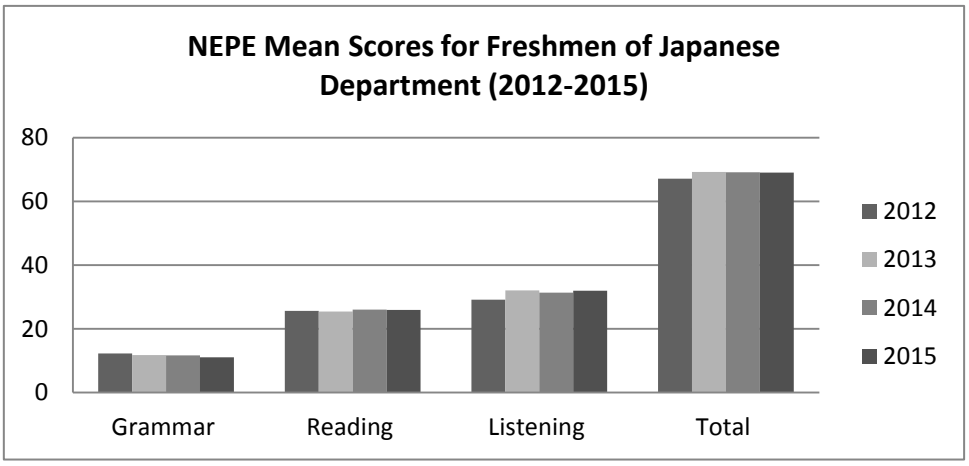


Figure 4.8 Means for Japanese Department Freshmen's NEPE Scores from 2012 to 2015

***1-9 Analyses of the NEPE Scores for History Department Freshmen (2012-2015)***

For History Department freshmen's NEPE scores, the results of ANOVA test (Table 4.24) presented no statistical difference between the years for grammar ($p$ = .051), reading ($p$ = .019), listening ($p$ = .306) and total scores ($p$ = .127). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means were relatively consistent for the four years (Table 4.23 and Figure 4.9) in terms of grammar, reading, listening and total scores.

Table 4.23

*Means and Standard Deviations for History Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 54 | 9.7963 | 2.70834 | .36856 | 9.0571 | 10.5355 |
| | 2013 | 50 | 8.8400 | 2.50192 | .35382 | 8.1290 | 9.5510 |
| | 2014 | 54 | 8.6111 | 2.82453 | .38437 | 7.8402 | 9.3821 |
| | 2015 | 54 | 9.6852 | 2.66227 | .36229 | 8.9585 | 10.4118 |
| | Total | 212 | 9.2406 | 2.71098 | .18619 | 8.8735 | 9.6076 |
| Reading | 2012 | 54 | 20.6296 | 6.14079 | .83566 | 18.9535 | 22.3057 |
| | 2013 | 50 | 18.3200 | 4.82104 | .68180 | 16.9499 | 19.6901 |
| | 2014 | 54 | 17.7407 | 6.65082 | .90506 | 15.9254 | 19.5561 |
| | 2015 | 54 | 20.4444 | 5.48984 | .74707 | 18.9460 | 21.9429 |
| | Total | 212 | 19.3019 | 5.93195 | .40741 | 18.4988 | 20.1050 |
| Listening | 2012 | 54 | 24.7037 | 7.17603 | .97653 | 22.7450 | 26.6624 |
| | 2013 | 50 | 26.1200 | 8.18570 | 1.15763 | 23.7936 | 28.4464 |
| | 2014 | 54 | 25.5556 | 7.71831 | 1.05033 | 23.4489 | 27.6622 |
| | 2015 | 54 | 27.4074 | 7.19150 | .97864 | 25.4445 | 29.3703 |
| | Total | 212 | 25.9434 | 7.57876 | .52051 | 24.9173 | 26.9695 |
| Total | 2012 | 54 | 55.1296 | 12.90465 | 1.75610 | 51.6073 | 58.6519 |
| | 2013 | 50 | 53.2800 | 12.05437 | 1.70474 | 49.8542 | 56.7058 |
| | 2014 | 54 | 51.9074 | 14.60585 | 1.98760 | 47.9208 | 55.8940 |
| | 2015 | 54 | 57.5370 | 11.70182 | 1.59242 | 54.3431 | 60.7310 |
| | Total | 212 | 54.4858 | 12.96495 | .89044 | 52.7306 | 56.2411 |

Table 4.24

*ANOVA Test for History Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 56.770 | 3 | 18.923 | 2.635 | .051 |
| | Within Groups | 1493.961 | 208 | 7.183 | | |
| | Total | 1550.731 | 211 | | | |
| Reading | Between Groups | 345.503 | 3 | 115.168 | 3.384 | .019 |
| | Within Groups | 7079.176 | 208 | 34.035 | | |
| | Total | 7424.679 | 211 | | | |
| Listening | Between Groups | 208.411 | 3 | 69.470 | 1.213 | .306 |
| | Within Groups | 11910.910 | 208 | 57.264 | | |
| | Total | 12119.321 | 211 | | | |
| Total | Between Groups | 956.822 | 3 | 318.941 | 1.922 | .127 |
| | Within Groups | 34510.136 | 208 | 165.914 | | |
| | Total | 35466.958 | 211 | | | |

*Significant at $p < .01$

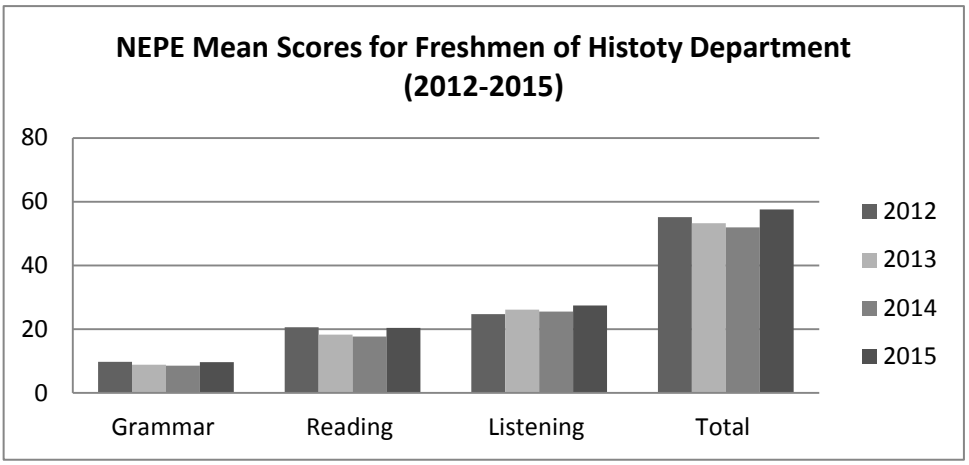


Figure 4.9 Means for History Department Freshmen's NEPE Scores from 2012 to 2015

***1-10 Analyses of the NEPE Scores for Philosophy Department Freshmen (2012-2015)***

For Philosophy Department Freshmen's NEPE scores, the results of the ANOVA test (Table 4.26) presented no statistical differences between the years for grammar ($p$ = .141) and listening ($p$ = .137) scores while there were statistical differences for reading ($p$ = .001) and total scores ($p$ = .004). Further results of Tukey's HSD test (see Table 4.27) for one-on-one group comparisons revealed statistical differences for reading scores between the years of 2012 and 2014 ($p$ = .007) / 2014 and 2015 ($p$ = .004), and for total scores between the years of 2014 and 2015 ($p$ = .009). Therefore, the means were relatively consistent for the four years in terms of grammar and listening. Yet, as shown in Table 4.25 and Figure 4.10, the means for reading and total scores decreased gradually year by year from 2012 to 2014 and then increased in 2015.

Table 4.25

*Means and Standard Deviations for Philosophy Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 45 | 9.8444 | 2.83609 | .42278 | 8.9924 | 10.6965 |
| | 2013 | 42 | 9.2619 | 2.82031 | .43518 | 8.3830 | 10.1408 |
| | 2014 | 50 | 8.5200 | 2.45149 | .34669 | 7.8233 | 9.2167 |
| | 2015 | 48 | 9.1458 | 2.90992 | .42001 | 8.3009 | 9.9908 |
| | Total | 185 | 9.1730 | 2.77260 | .20385 | 8.7708 | 9.5751 |
| Reading | 2012 | 45 | 19.3778 | 6.36499 | .94884 | 17.4655 | 21.2900 |
| | 2013 | 42 | 17.0476 | 6.25067 | .96450 | 15.0998 | 18.9955 |
| | 2014 | 50 | 15.3600 | 4.70241 | .66502 | 14.0236 | 16.6964 |
| | 2015 | 48 | 19.5000 | 6.43792 | .92923 | 17.6306 | 21.3694 |
| | Total | 185 | 17.7946 | 6.16274 | .45309 | 16.9007 | 18.6885 |
| Listening | 2012 | 45 | 25.5111 | 6.06264 | .90376 | 23.6897 | 27.3325 |
| | 2013 | 42 | 24.2857 | 7.38583 | 1.13966 | 21.9841 | 26.5873 |
| | 2014 | 50 | 23.2800 | 7.66396 | 1.08385 | 21.1019 | 25.4581 |
| | 2015 | 48 | 26.4167 | 6.72826 | .97114 | 24.4630 | 28.3704 |
| | Total | 185 | 24.8649 | 7.04551 | .51800 | 23.8429 | 25.8868 |
| Total | 2012 | 45 | 54.7333 | 11.82716 | 1.76309 | 51.1801 | 58.2866 |
| | 2013 | 42 | 50.5952 | 13.79477 | 2.12858 | 46.2965 | 54.8940 |
| | 2014 | 50 | 47.1600 | 10.32208 | 1.45976 | 44.2265 | 50.0935 |
| | 2015 | 48 | 55.0625 | 13.00639 | 1.87731 | 51.2858 | 58.8392 |
| | Total | 185 | 51.8324 | 12.58964 | .92561 | 50.0063 | 53.6586 |

Table 4.26

*ANOVA Test for Philosophy Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 41.976 | 3 | 13.992 | 1.845 | .141 |
| | Within Groups | 1372.489 | 181 | 7.583 | | |
| | Total | 1414.465 | 184 | | | |
| Reading | Between Groups | 572.192 | 3 | 190.731 | 5.381 | .001* |
| | Within Groups | 6416.003 | 181 | 35.448 | | |
| | Total | 6988.195 | 184 | | | |
| Listening | Between Groups | 274.059 | 3 | 91.353 | 1.866 | .137 |
| | Within Groups | 8859.563 | 181 | 48.948 | | |
| | Total | 9133.622 | 184 | | | |
| Total | Between Groups | 2035.354 | 3 | 678.451 | 4.527 | .004* |
| | Within Groups | 27128.452 | 181 | 149.881 | | |
| | Total | 29163.805 | 184 | | | |

*Significant at $p < .01$

Table 4.27

*Tukey's HSD Test for Philosophy Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | 2.33016 | 1.27738 | .265 | -1.7028 | 6.3631 |
| | 2012 | 2014 | 4.01778(*) | 1.22339 | .007* | .1553 | 7.8802 |
| | 2012 | 2015 | -.12222 | 1.23540 | 1.000 | -4.0226 | 3.7782 |
| | 2013 | 2014 | 1.68762 | 1.24617 | .530 | -2.2468 | 5.6220 |
| | 2013 | 2015 | -2.45238 | 1.25797 | .211 | -6.4240 | 1.5192 |
| | 2014 | 2015 | -4.14000(*) | 1.20310 | .004* | -7.9384 | -.3416 |
| Total | 2012 | 2013 | 4.13810 | 2.62665 | .395 | -4.1547 | 12.4309 |
| | 2012 | 2014 | 7.57333 | 2.51561 | .016 | -.3689 | 15.5156 |
| | 2012 | 2015 | -.32917 | 2.54032 | .999 | -8.3494 | 7.6911 |
| | 2013 | 2014 | 3.43524 | 2.56246 | .538 | -4.6549 | 11.5254 |
| | 2013 | 2015 | -4.46726 | 2.58672 | .313 | -12.6340 | 3.6995 |
| | 2014 | 2015 | -7.90250(*) | 2.47389 | .009* | -15.7130 | -.0920 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and listening scores because the ANOVA test revealed no significant difference for these two sections among the four years.

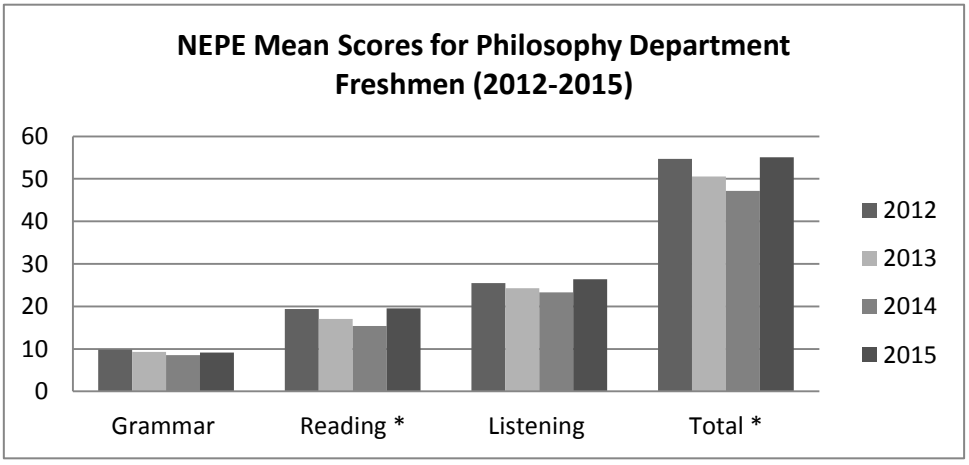


Figure 4.10 Means for Philosophy Department Freshmen's NEPE Scores from 2012 to 2015

### *1-11 Analyses of the NEPE Scores for Applied Physics Department Freshmen (2012-2015)*

For Applied Physics Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.29) presented no statistical difference between the years for grammar ($p$ = .258), reading ($p$ = .025) and total scores ($p$ = .016) but a significant difference for listening scores ($p$ = .002). Further results of the Tukey's HSD test (Table 4.30) for one-on-one group comparisons revealed a significant difference for listening scores between the years of 2012 and 2015 ($p$ = .007). Therefore, the means were relatively consistent across the four years in terms of grammar, reading and total scores as measured by the NEPE. Yet, as shown in Table 4.28 and Figure 4.11, the listening means increased gradually from 2012 to 2015.

Table 4.28

*Means and Standard Deviations for Applied Physics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 87 | 8.3908 | 3.36658 | .36094 | 7.6733 | 9.1083 |
| | 2013 | 82 | 7.8780 | 2.86482 | .31637 | 7.2486 | 8.5075 |
| | 2014 | 76 | 8.2500 | 2.90803 | .33357 | 7.5855 | 8.9145 |
| | 2015 | 78 | 8.8333 | 2.94282 | .33321 | 8.1698 | 9.4968 |
| | Total | 323 | 8.3344 | 3.04107 | .16921 | 8.0015 | 8.6673 |
| Reading | 2012 | 87 | 15.8851 | 6.67767 | .71592 | 14.4619 | 17.3083 |
| | 2013 | 82 | 14.2927 | 6.40310 | .70710 | 12.8858 | 15.6996 |
| | 2014 | 76 | 16.9474 | 7.22569 | .82884 | 15.2962 | 18.5985 |
| | 2015 | 78 | 17.1538 | 6.07759 | .68815 | 15.7836 | 18.5241 |
| | Total | 323 | 16.0372 | 6.67050 | .37116 | 15.3070 | 16.7673 |
| Listening | 2012 | 87 | 20.0920 | 7.76341 | .83232 | 18.4373 | 21.7466 |
| | 2013 | 82 | 21.1220 | 7.95107 | .87805 | 19.3749 | 22.8690 |
| | 2014 | 76 | 20.9474 | 8.43152 | .96716 | 19.0207 | 22.8741 |
| | 2015 | 78 | 24.1795 | 8.34444 | .94482 | 22.2981 | 26.0609 |
| | Total | 323 | 21.5418 | 8.22135 | .45745 | 20.6418 | 22.4418 |
| Total | 2012 | 87 | 44.3678 | 14.41746 | 1.54571 | 41.2950 | 47.4406 |
| | 2013 | 82 | 43.2927 | 14.41577 | 1.59196 | 40.1252 | 46.4602 |
| | 2014 | 76 | 46.1447 | 14.32639 | 1.64335 | 42.8710 | 49.4185 |
| | 2015 | 78 | 50.1667 | 14.55078 | 1.64755 | 46.8860 | 53.4474 |
| | Total | 323 | 45.9133 | 14.59511 | .81209 | 44.3156 | 47.5110 |

Table 4.29

*ANOVA Test for Applied Physics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 37.312 | 3 | 12.437 | 1.349 | .258 |
| | Within Groups | 2940.576 | 319 | 9.218 | | |
| | Total | 2977.889 | 322 | | | |
| Reading | Between Groups | 411.785 | 3 | 137.262 | 3.147 | .025 |
| | Within Groups | 13915.770 | 319 | 43.623 | | |
| | Total | 14327.554 | 322 | | | |
| Listening | Between Groups | 766.864 | 3 | 255.621 | 3.884 | .009* |
| | Within Groups | 20997.322 | 319 | 65.822 | | |
| | Total | 21764.186 | 322 | | | |
| Total | Between Groups | 2186.126 | 3 | 728.709 | 3.501 | .016 |
| | Within Groups | 66405.447 | 319 | 208.168 | | |
| | Total | 68591.573 | 322 | | | |

*Significant at $p < .01$

Table 4.30

*Tukey's HSD Test for Applied Physics Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.03000 | 1.24872 | .843 | -4.9485 | 2.8885 |
| | 2012 | 2014 | -.85541 | 1.27384 | .908 | -4.8528 | 3.1420 |
| | 2012 | 2015 | -4.08753(*) | 1.26509 | .007* | -8.0575 | -.1176 |
| | 2013 | 2014 | .17458 | 1.29182 | .999 | -3.8792 | 4.2284 |
| | 2013 | 2015 | -3.05754 | 1.28319 | .082 | -7.0843 | .9692 |
| | 2014 | 2015 | -3.23212 | 1.30765 | .066 | -7.3356 | .8714 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test for revealed no significant difference for these sections among the four years

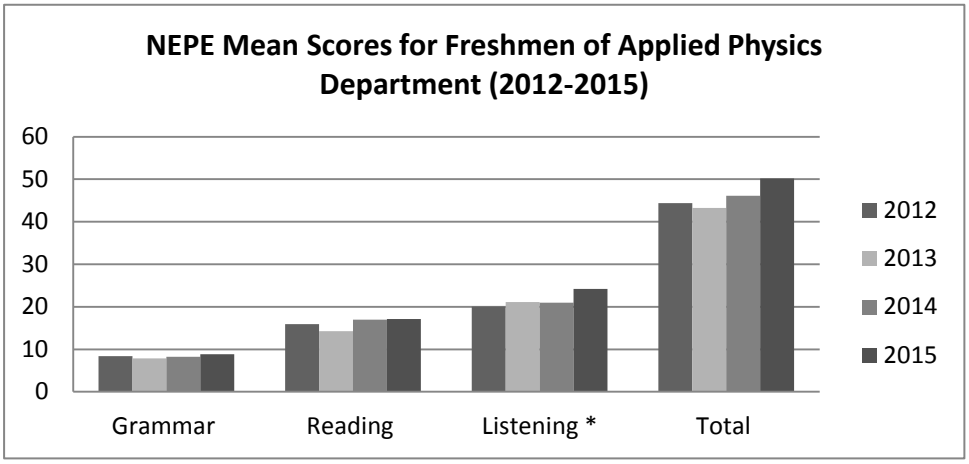


Figure 4.11 Means for Applied Physics Department Freshmen's NEPE Scores from 2012 to 2015

***1-12 Analyses of the NEPE Scores for Chemistry Department Freshmen (2012-2015)***

For Chemistry Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.32) presented no statistical difference between the years for grammar ($p$ = .854), reading ($p$ = .284), listening ($p$ = .015) and total scores ($p$ = .056). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means for the four years were relatively consistent in terms of grammar, reading, listening and total scores (Table 4.31 and Figure 4.12).

Table 4.31

*Means and Standard Deviations for Chemistry Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 86 | 9.5233 | 3.24573 | .35000 | 8.8274 | 10.2191 |
| | 2013 | 87 | 9.5172 | 2.86463 | .30712 | 8.9067 | 10.1278 |
| | 2014 | 81 | 9.8272 | 3.07730 | .34192 | 9.1467 | 10.5076 |
| | 2015 | 81 | 9.8025 | 2.72681 | .30298 | 9.1995 | 10.4054 |
| | Total | 335 | 9.6627 | 2.97740 | .16267 | 9.3427 | 9.9827 |
| Reading | 2012 | 86 | 19.1628 | 7.02577 | .75761 | 17.6565 | 20.6691 |
| | 2013 | 87 | 18.1379 | 6.46128 | .69272 | 16.7608 | 19.5150 |
| | 2014 | 81 | 19.8272 | 6.17412 | .68601 | 18.4620 | 21.1924 |
| | 2015 | 81 | 19.9012 | 6.96349 | .77372 | 18.3615 | 21.4410 |
| | Total | 335 | 19.2358 | 6.67563 | .36473 | 18.5184 | 19.9533 |
| Listening | 2012 | 86 | 23.2326 | 7.34475 | .79200 | 21.6578 | 24.8073 |
| | 2013 | 87 | 23.3333 | 7.79783 | .83602 | 21.6714 | 24.9953 |
| | 2014 | 81 | 25.0617 | 7.59004 | .84334 | 23.3834 | 26.7400 |
| | 2015 | 81 | 26.6420 | 8.54299 | .94922 | 24.7530 | 28.5310 |
| | Total | 335 | 24.5254 | 7.91337 | .43235 | 23.6749 | 25.3759 |
| Total | 2012 | 86 | 51.9186 | 14.41830 | 1.55477 | 48.8273 | 55.0099 |
| | 2013 | 87 | 50.9885 | 13.17193 | 1.41218 | 48.1812 | 53.7958 |
| | 2014 | 81 | 54.7160 | 13.95818 | 1.55091 | 51.6296 | 57.8025 |
| | 2015 | 81 | 56.3457 | 15.22347 | 1.69150 | 52.9795 | 59.7119 |
| | Total | 335 | 53.4239 | 14.29541 | .78104 | 51.8875 | 54.9603 |

Table 4.32

*ANOVA Test for Chemistry Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 7.286 | 3 | 2.429 | .272 | .845 |
| | Within Groups | 2953.597 | 331 | 8.923 | | |
| | Total | 2960.884 | 334 | | | |
| Reading | Between Groups | 169.514 | 3 | 56.505 | 1.271 | .284 |
| | Within Groups | 14714.856 | 331 | 44.456 | | |
| | Total | 14884.370 | 334 | | | |
| Listening | Between Groups | 653.544 | 3 | 217.848 | 3.559 | .015 |
| | Within Groups | 20261.991 | 331 | 61.214 | | |
| | Total | 20915.534 | 334 | | | |
| Total | Between Groups | 1537.600 | 3 | 512.533 | 2.543 | .056 |
| | Within Groups | 66718.209 | 331 | 201.566 | | |
| | Total | 68255.809 | 334 | | | |

*Significant at $p < .01$

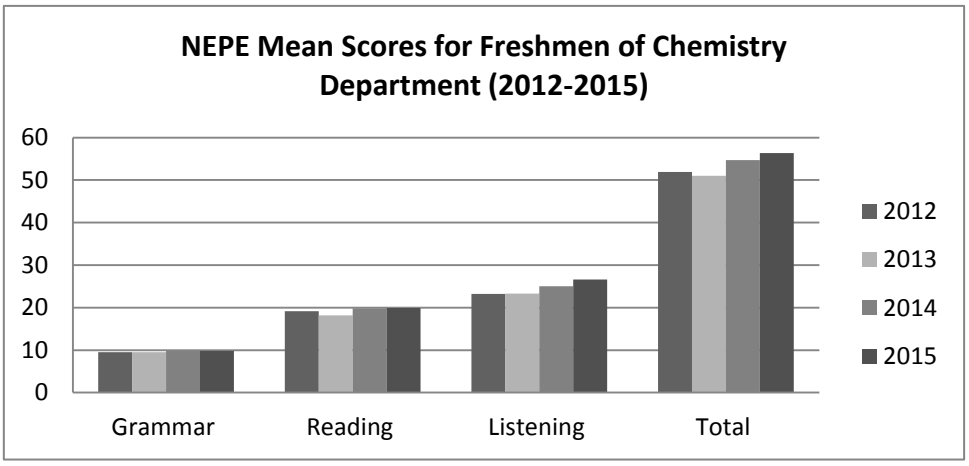


Figure 4.12 Means for Chemistry Department Freshmen's NEPE Scores from 2012 to 2015

### *1-13 Analyses of the NEPE Scores for Life Science Department Freshmen (2012-2015)*

For Life Science Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.34) presented no statistical difference between the years for grammar ($p$ = .098), reading ($p$ = .037), listening ($p$ = .017) and total scores ($p$ = .015). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means for the four years were relatively consistent in terms of grammar, reading, listening and total scores (Table 4.33 and Figure 4.13) as measured by the NEPE.

Table 4.33

*Means and Standard Deviations for Life Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 77 | 11.2597 | 2.96205 | .33756 | 10.5874 | 11.9320 |
| | 2013 | 77 | 10.9221 | 3.22721 | .36778 | 10.1896 | 11.6546 |
| | 2014 | 79 | 10.3291 | 3.28837 | .36997 | 9.5926 | 11.0657 |
| | 2015 | 76 | 11.5000 | 2.79762 | .32091 | 10.8607 | 12.1393 |
| | Total | 309 | 10.9968 | 3.09430 | .17603 | 10.6504 | 11.3431 |
| Reading | 2012 | 77 | 23.6883 | 6.85999 | .78177 | 22.1313 | 25.2453 |
| | 2013 | 77 | 23.6364 | 6.96402 | .79362 | 22.0557 | 25.2170 |
| | 2014 | 79 | 22.0000 | 6.31644 | .71066 | 20.5852 | 23.4148 |
| | 2015 | 76 | 25.2895 | 7.74048 | .88789 | 23.5207 | 27.0582 |
| | Total | 309 | 23.6375 | 7.04517 | .40079 | 22.8489 | 24.4262 |
| Listening | 2012 | 77 | 28.2338 | 7.67068 | .87416 | 26.4927 | 29.9748 |
| | 2013 | 77 | 29.6623 | 7.49317 | .85393 | 27.9616 | 31.3631 |
| | 2014 | 79 | 29.1392 | 7.75049 | .87200 | 27.4032 | 30.8753 |
| | 2015 | 76 | 31.8421 | 5.67345 | .65079 | 30.5457 | 33.1385 |
| | Total | 309 | 29.7087 | 7.29209 | .41483 | 28.8925 | 30.5250 |
| Total | 2012 | 77 | 63.1818 | 14.55003 | 1.65813 | 59.8794 | 66.4843 |
| | 2013 | 77 | 64.2208 | 14.99002 | 1.70827 | 60.8185 | 67.6231 |
| | 2014 | 79 | 61.4684 | 14.03552 | 1.57912 | 58.3246 | 64.6121 |
| | 2015 | 76 | 68.6316 | 13.30849 | 1.52659 | 65.5905 | 71.6727 |
| | Total | 309 | 64.3430 | 14.41180 | .81986 | 62.7298 | 65.9563 |

Table 4.34

*ANOVA Test for Life Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 60.216 | 3 | 20.072 | 2.119 | .098 |
| | Within Groups | 2888.781 | 305 | 9.471 | | |
| | Total | 2948.997 | 308 | | | |
| Reading | Between Groups | 419.435 | 3 | 139.812 | 2.868 | .037 |
| | Within Groups | 14867.969 | 305 | 48.747 | | |
| | Total | 15287.405 | 308 | | | |
| Listening | Between Groups | 539.200 | 3 | 179.733 | 3.461 | .017 |
| | Within Groups | 15838.587 | 305 | 51.930 | | |
| | Total | 16377.786 | 308 | | | |
| Total | Between Groups | 2155.581 | 3 | 718.527 | 3.545 | .015 |
| | Within Groups | 61816.056 | 305 | 202.676 | | |
| | Total | 63971.638 | 308 | | | |

*Significant at $p < .01$

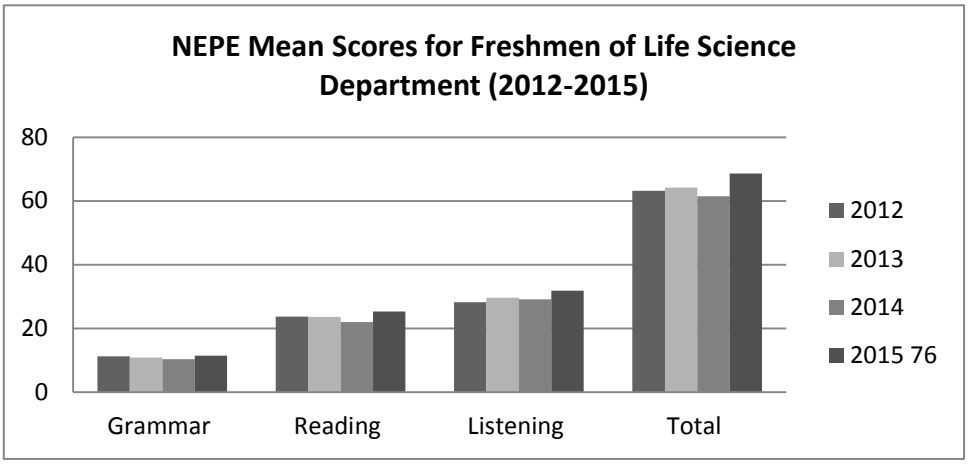


Figure 4.13 Means for Life Science Department Freshmen's NEPE Scores from 2012 to 2015

***1-14 Analyses of the NEPE Scores for Freshmen of Applied Mathematics Department (2012-2015)***

For Applied Mathematics Department freshmen's NEPE scores, the results for the ANOVA test (Table 4.36) presented no statistical difference between the years for grammar ($p$ = .800) and reading scores ($p$ = .110) but there were statistical differences for listening ($p$ = .001) and total scores ($p$ = .008). Further results of the Tukey's HSD test (Table 4.37) for one-on-one group comparisons revealed a significant difference for listening scores between the years of 2012 and 2015 ($p$ = .001). But there was no significant difference revealed for the total means. Therefore, the means were relative consistent across the four years in terms of grammar, reading and total scores. Yet, as shown in Table 4.35 and Figure 4.14, the listening means increased gradually from 2012 to 2015. The listening means followed a consistent trend.

Table 4.35

*Means and Standard Deviations for Applied Mathematics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 77 | 11.2597 | 2.96205 | .33756 | 10.5874 | 11.9320 |
| | 2013 | 77 | 10.9221 | 3.22721 | .36778 | 10.1896 | 11.6546 |
| | 2014 | 79 | 10.3291 | 3.28837 | .36997 | 9.5926 | 11.0657 |
| | 2015 | 76 | 11.5000 | 2.79762 | .32091 | 10.8607 | 12.1393 |
| | Total | 309 | 10.9968 | 3.09430 | .17603 | 10.6504 | 11.3431 |
| Reading | 2012 | 77 | 23.6883 | 6.85999 | .78177 | 22.1313 | 25.2453 |
| | 2013 | 77 | 23.6364 | 6.96402 | .79362 | 22.0557 | 25.2170 |
| | 2014 | 79 | 22.0000 | 6.31644 | .71066 | 20.5852 | 23.4148 |
| | 2015 | 76 | 25.2895 | 7.74048 | .88789 | 23.5207 | 27.0582 |
| | Total | 309 | 23.6375 | 7.04517 | .40079 | 22.8489 | 24.4262 |
| Listening | 2012 | 77 | 28.2338 | 7.67068 | .87416 | 26.4927 | 29.9748 |
| | 2013 | 77 | 29.6623 | 7.49317 | .85393 | 27.9616 | 31.3631 |
| | 2014 | 79 | 29.1392 | 7.75049 | .87200 | 27.4032 | 30.8753 |
| | 2015 | 76 | 31.8421 | 5.67345 | .65079 | 30.5457 | 33.1385 |
| | Total | 309 | 29.7087 | 7.29209 | .41483 | 28.8925 | 30.5250 |
| Total | 2012 | 77 | 63.1818 | 14.55003 | 1.65813 | 59.8794 | 66.4843 |
| | 2013 | 77 | 64.2208 | 14.99002 | 1.70827 | 60.8185 | 67.6231 |
| | 2014 | 79 | 61.4684 | 14.03552 | 1.57912 | 58.3246 | 64.6121 |
| | 2015 | 76 | 68.6316 | 13.30849 | 1.52659 | 65.5905 | 71.6727 |
| | Total | 309 | 64.3430 | 14.41180 | .81986 | 62.7298 | 65.9563 |

Table 4.36

*ANOVA Test for Applied Mathematics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 7.514 | 3 | 2.505 | .335 | .800 |
| | Within Groups | 1389.455 | 186 | 7.470 | | |
| | Total | 1396.968 | 189 | | | |
| Reading | Between Groups | 246.819 | 3 | 82.273 | 2.040 | .110 |
| | Within Groups | 7503.076 | 186 | 40.339 | | |
| | Total | 7749.895 | 189 | | | |
| Listening | Between Groups | 1071.277 | 3 | 357.092 | 5.517 | .001* |
| | Within Groups | 12038.702 | 186 | 64.724 | | |
| | Total | 13109.979 | 189 | | | |
| Total | Between Groups | 2434.585 | 3 | 811.528 | 4.064 | .008* |
| | Within Groups | 37144.025 | 186 | 199.699 | | |
| | Total | 39578.611 | 189 | | | |

*Significant at $p < .01$

Table 4.37

*Tukey's HSD Test for Applied Mathematics Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -3.06997 | 1.60301 | .225 | -8.1290 | 1.9891 |
| | 2012 | 2014 | -5.04167 | 1.67911 | .016 | -10.3409 | .2576 |
| | 2012 | 2015 | -6.36389(*) | 1.66935 | .001* | -11.6323 | -1.0954 |
| | 2013 | 2014 | -1.97170 | 1.64080 | .627 | -7.1500 | 3.2066 |
| | 2013 | 2015 | -3.29392 | 1.63081 | .184 | -8.4407 | 1.8529 |
| | 2014 | 2015 | -1.32222 | 1.70567 | .866 | -6.7053 | 4.0609 |
| Total | 2012 | 2013 | -3.89976 | 2.81572 | .510 | -12.7862 | 4.9866 |
| | 2012 | 2014 | -7.96023 | 2.94941 | .038 | -17.2685 | 1.3481 |
| | 2012 | 2015 | -9.18194 | 2.93226 | .011 | -18.4361 | .0722 |
| | 2013 | 2014 | -4.06046 | 2.88210 | .495 | -13.1563 | 5.0354 |
| | 2013 | 2015 | -5.28218 | 2.86455 | .256 | -14.3227 | 3.7583 |
| | 2014 | 2015 | -1.22172 | 2.99606 | .977 | -10.6772 | 8.2338 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and reading scores because the ANOVA test revealed no significant difference for these two sections among the four years.

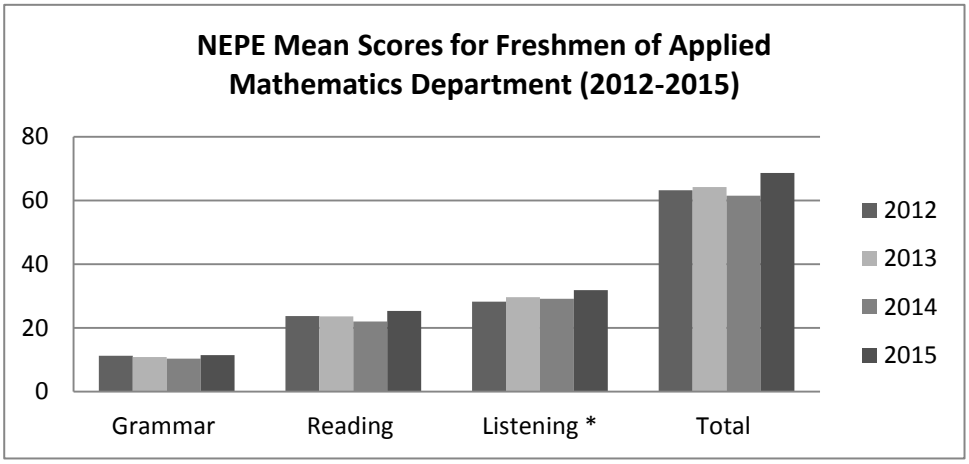


Figure 4.14 Means for Applied Mathematics Department Freshmen's NEPE Scores from 2012 to 2015

### *1-15 Analyses of the NEPE Scores for Freshmen of Chemical and Materials Engineering Department (2012-2015)*

For Chemical and Materials Engineering Department freshmen's NEPE scores, The results of the ANOVA test (Table 4.39) presented no statistical difference between the years for grammar ($p$ = .521), reading ($p$ = .305) and total scores ($p$ = .034) but there was a statistical difference for listening scores ($p$ = .003). Further results of the Tukey's HSD test (Table 4.40) for one-on-one group comparisons revealed a statistical difference for listening scores between the years of 2012 and 2015 ($p$ = .004). Therefore, the means were relatively consistent across the four years in terms of grammar, reading and total scores. Yet, as shown in Table 4.38 and Figure 4.15, the listening means increased from year to year. The listening means followed a consistent trend.

Table 4.38

*Means and Standard Deviations for Chemical and Materials Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 110 | 8.1909 | 2.80725 | .26766 | 7.6604 | 8.7214 |
| | 2013 | 105 | 8.7333 | 2.58794 | .25256 | 8.2325 | 9.2342 |
| | 2014 | 111 | 8.6036 | 3.25654 | .30910 | 7.9910 | 9.2162 |
| | 2015 | 115 | 8.6261 | 2.78297 | .25951 | 8.1120 | 9.1402 |
| | Total | 441 | 8.5374 | 2.86976 | .13666 | 8.2688 | 8.8060 |
| Reading | 2012 | 110 | 16.1091 | 7.42837 | .70827 | 14.7053 | 17.5129 |
| | 2013 | 105 | 17.0857 | 6.71410 | .65523 | 15.7864 | 18.3851 |
| | 2014 | 111 | 17.8739 | 7.08021 | .67202 | 16.5421 | 19.2057 |
| | 2015 | 115 | 17.0261 | 6.29322 | .58685 | 15.8636 | 18.1886 |
| | Total | 441 | 17.0249 | 6.89280 | .32823 | 16.3799 | 17.6700 |
| Listening | 2012 | 110 | 20.8545 | 7.83527 | .74706 | 19.3739 | 22.3352 |
| | 2013 | 105 | 22.0000 | 7.57018 | .73877 | 20.5350 | 23.4650 |
| | 2014 | 111 | 23.7658 | 7.76350 | .73688 | 22.3054 | 25.2261 |
| | 2015 | 115 | 24.3826 | 7.95997 | .74227 | 22.9122 | 25.8530 |
| | Total | 441 | 22.7800 | 7.88838 | .37564 | 22.0418 | 23.5183 |
| Total | 2012 | 110 | 45.1545 | 15.12043 | 1.44168 | 42.2972 | 48.0119 |
| | 2013 | 105 | 47.8190 | 14.46533 | 1.41167 | 45.0196 | 50.6184 |
| | 2014 | 111 | 50.2432 | 15.03464 | 1.42702 | 47.4152 | 53.0713 |
| | 2015 | 115 | 50.0348 | 13.91700 | 1.29777 | 47.4639 | 52.6056 |
| | Total | 441 | 48.3424 | 14.73272 | .70156 | 46.9636 | 49.7212 |

Table 4.39

*ANOVA Test for Chemical and Materials Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 18.628 | 3 | 6.209 | .753 | .521 |
| | Within Groups | 3605.005 | 437 | 8.249 | | |
| | Total | 3623.633 | 440 | | | |
| Reading | Between Groups | 172.650 | 3 | 57.550 | 1.213 | .305 |
| | Within Groups | 20732.075 | 437 | 47.442 | | |
| | Total | 20904.726 | 440 | | | |
| Listening | Between Groups | 874.917 | 3 | 291.639 | 4.808 | .003* |
| | Within Groups | 26504.748 | 437 | 60.652 | | |
| | Total | 27379.664 | 440 | | | |
| Total | Between Groups | 1877.069 | 3 | 625.690 | 2.920 | .034 |
| | Within Groups | 93626.228 | 437 | 214.248 | | |
| | Total | 95503.297 | 440 | | | |

*Significant at $p < .01$

Table 4.40

*Tukey's HSD Test for Chemical and Materials Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.14545 | 1.06255 | .703 | -4.4726 | 2.1817 |
| | 2012 | 2014 | -2.91122 | 1.04775 | .029 | -6.1921 | .3696 |
| | 2012 | 2015 | -3.52806(*) | 1.03864 | .004* | -6.7804 | -.2757 |
| | 2013 | 2014 | -1.76577 | 1.06021 | .343 | -5.0856 | 1.5541 |
| | 2013 | 2015 | -2.38261 | 1.05121 | .108 | -5.6743 | .9091 |
| | 2014 | 2015 | -.61684 | 1.03625 | .933 | -3.8617 | 2.6280 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

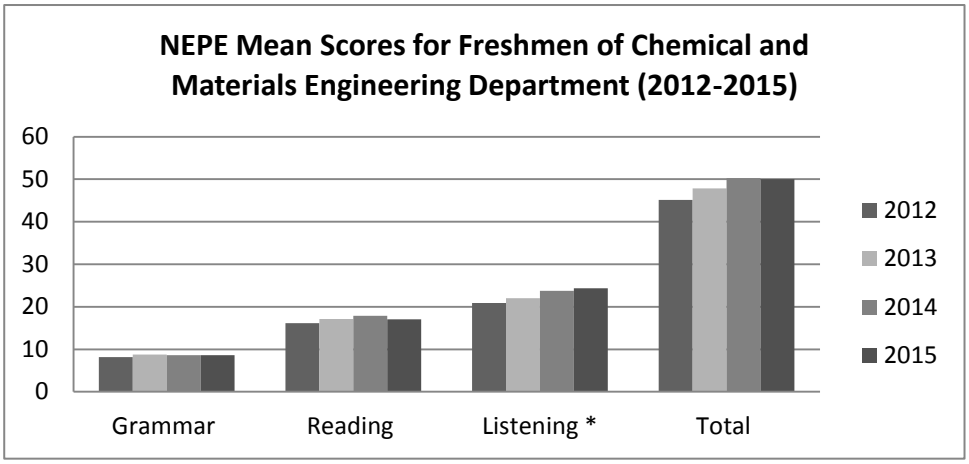


Figure 4.15 Means for Chemical and Materials Engineering Department Freshmen's NEPE Scores from 2012 to 2015

### *1-16 Analyses of the NEPE Scores for Freshmen of Environment Science and Engineering Department (2012-2015)*

For Environment Science and Engineering Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.42) presented no statistical difference between the years for grammar ($p$ = .827), reading ($p$ = .135), listening ($p$ = .040) and total scores ($p$ = .079). No Tukey's HSD Test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means (Table 4.41 and Figure 4.16) were relatively consistent across the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.41

*Means and Standard Deviations for Environment Science and Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 86 | 9.5930 | 2.99952 | .32345 | 8.9499 | 10.2361 |
| | 2013 | 81 | 9.7531 | 2.65297 | .29477 | 9.1665 | 10.3397 |
| | 2014 | 78 | 9.8462 | 3.10457 | .35152 | 9.1462 | 10.5461 |
| | 2015 | 82 | 9.4512 | 2.71781 | .30013 | 8.8541 | 10.0484 |
| | Total | 327 | 9.6575 | 2.86487 | .15843 | 9.3458 | 9.9692 |
| Reading | 2012 | 86 | 19.0000 | 6.58519 | .71010 | 17.5881 | 20.4119 |
| | 2013 | 81 | 20.7407 | 6.13551 | .68172 | 19.3841 | 22.0974 |
| | 2014 | 78 | 21.3333 | 6.44390 | .72963 | 19.8805 | 22.7862 |
| | 2015 | 82 | 19.9756 | 7.55878 | .83473 | 18.3148 | 21.6365 |
| | Total | 327 | 20.2324 | 6.73202 | .37228 | 19.5000 | 20.9648 |
| Listening | 2012 | 86 | 24.3256 | 7.88064 | .84979 | 22.6360 | 26.0152 |
| | 2013 | 81 | 25.1852 | 7.52846 | .83650 | 23.5205 | 26.8499 |
| | 2014 | 78 | 27.5897 | 7.68442 | .87009 | 25.8572 | 29.3223 |
| | 2015 | 82 | 26.5854 | 8.18000 | .90333 | 24.7880 | 28.3827 |
| | Total | 327 | 25.8838 | 7.89027 | .43633 | 25.0254 | 26.7422 |
| Total | 2012 | 86 | 52.9186 | 14.53209 | 1.56704 | 49.8029 | 56.0343 |
| | 2013 | 81 | 55.6790 | 13.12805 | 1.45867 | 52.7762 | 58.5819 |
| | 2014 | 78 | 58.7692 | 14.52175 | 1.64426 | 55.4951 | 62.0434 |
| | 2015 | 82 | 56.0122 | 15.03534 | 1.66038 | 52.7086 | 59.3158 |
| | Total | 327 | 55.7737 | 14.41000 | .79687 | 54.2060 | 57.3414 |

Table 4.42

*ANOVA Test for Environment Science and Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 7.363 | 3 | 2.454 | .297 | .827 |
| | Within Groups | 2668.276 | 323 | 8.261 | | |
| | Total | 2675.639 | 326 | | | |
| Reading | Between Groups | 251.496 | 3 | 83.832 | 1.864 | .135 |
| | Within Groups | 14522.840 | 323 | 44.962 | | |
| | Total | 14774.336 | 326 | | | |
| Listening | Between Groups | 515.704 | 3 | 171.901 | 2.807 | .040 |
| | Within Groups | 19779.880 | 323 | 61.238 | | |
| | Total | 20295.584 | 326 | | | |
| Total | Between Groups | 1406.335 | 3 | 468.778 | 2.284 | .079 |
| | Within Groups | 66286.919 | 323 | 205.223 | | |
| | Total | 67693.254 | 326 | | | |

*Significant at $p < .01$

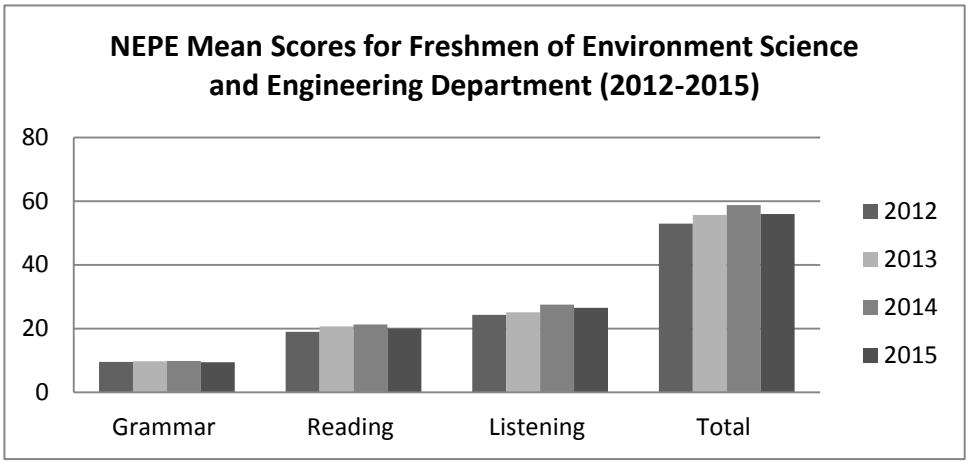


Figure 4.16 Means for Environment Science and Engineering Department Freshmen's NEPE Scores from 2012 to 2015

***1-17 Analyses of the NEPE Scores for Freshmen of Computer Science Department (2012-2015)***

For Computer Science Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.44) presented no statistical difference between the years for grammar ($p$ = .974), reading ($p$ = .762), listening ($p$ = .318) and total scores ($p$ = .851). No Tukey's HSD test was conducted. Therefore, the means (Table 4.43 and Figure 4.17) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.43

*Means and Standard Deviations for Computer Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 103 | 10.0971 | 3.05991 | .30150 | 9.4991 | 10.6951 |
| | 2013 | 110 | 10.0091 | 2.81378 | .26828 | 9.4774 | 10.5408 |
| | 2014 | 104 | 9.9038 | 3.10189 | .30417 | 9.3006 | 10.5071 |
| | 2015 | 111 | 10.0000 | 2.78633 | .26447 | 9.4759 | 10.5241 |
| | Total | 428 | 10.0023 | 2.92970 | .14161 | 9.7240 | 10.2807 |
| Reading | 2012 | 103 | 20.4466 | 6.69757 | .65993 | 19.1376 | 21.7556 |
| | 2013 | 110 | 20.6182 | 7.68053 | .73231 | 19.1668 | 22.0696 |
| | 2014 | 104 | 20.3846 | 6.87236 | .67389 | 19.0481 | 21.7211 |
| | 2015 | 111 | 21.2973 | 6.77776 | .64332 | 20.0224 | 22.5722 |
| | Total | 428 | 20.6963 | 7.00961 | .33882 | 20.0303 | 21.3622 |
| Listening | 2012 | 103 | 25.9029 | 7.34782 | .72400 | 24.4669 | 27.3390 |
| | 2013 | 110 | 26.7818 | 8.03248 | .76587 | 25.2639 | 28.2997 |
| | 2014 | 104 | 27.8846 | 7.97972 | .78248 | 26.3328 | 29.4365 |
| | 2015 | 111 | 26.5045 | 7.76692 | .73720 | 25.0435 | 27.9655 |
| | Total | 428 | 26.7664 | 7.79549 | .37681 | 26.0257 | 27.5070 |
| Total | 2012 | 103 | 56.4466 | 14.18072 | 1.39727 | 53.6751 | 59.2181 |
| | 2013 | 110 | 57.4091 | 15.29544 | 1.45836 | 54.5187 | 60.2995 |
| | 2014 | 104 | 58.1731 | 15.02001 | 1.47283 | 55.2521 | 61.0941 |
| | 2015 | 111 | 57.8018 | 14.35829 | 1.36283 | 55.1010 | 60.5026 |
| | Total | 428 | 57.4650 | 14.68630 | .70989 | 56.0696 | 58.8603 |

Table 4.44

*ANOVA Test for Computer Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 1.939 | 3 | .646 | .075 | .974 |
| | Within Groups | 3663.058 | 424 | 8.639 | | |
| | Total | 3664.998 | 427 | | | |
| Reading | Between Groups | 57.289 | 3 | 19.096 | .387 | .762 |
| | Within Groups | 20923.225 | 424 | 49.347 | | |
| | Total | 20980.514 | 427 | | | |
| Listening | Between Groups | 214.480 | 3 | 71.493 | 1.178 | .318 |
| | Within Groups | 25734.156 | 424 | 60.694 | | |
| | Total | 25948.636 | 427 | | | |
| Total | Between Groups | 171.903 | 3 | 57.301 | .264 | .851 |
| | Within Groups | 91926.571 | 424 | 216.808 | | |
| | Total | 92098.474 | 427 | | | |

*Significant at $p < .01$

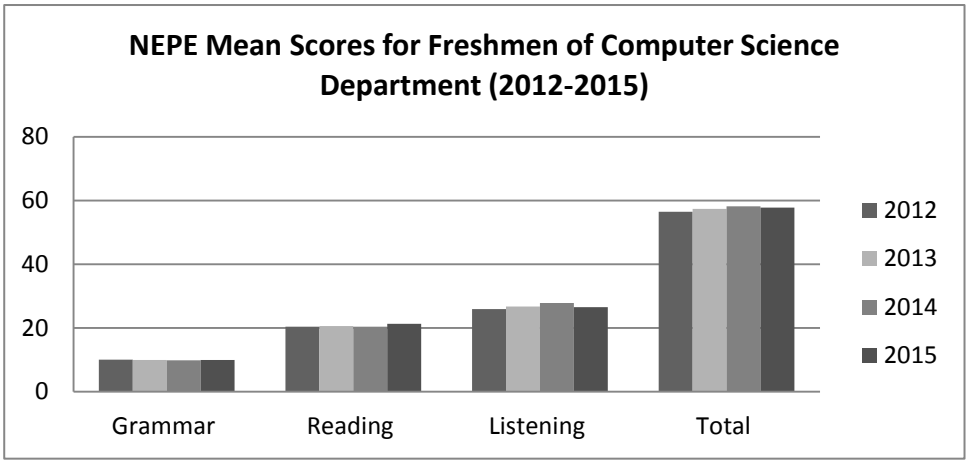


Figure 4.17 Means for Computer Science Department Freshmen's NEPE Scores from 2012 to 2015

### *1-18 Analyses of the NEPE Scores for Freshmen of Industrial Engineering and Enterprise Information Department (2012-2015)*

For Industrial Engineering and Enterprise Information Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.46) presented no statistical difference between the years for grammar ($p$ = .174), reading ($p$ = .878), listening ($p$ = .027) and total scores ($p$ = .379). No Tukey's HSD test was conducted. Accordingly, the means (Table 4.45 and Figure 4.18) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.45

*Means and Standard Deviations for Industrial Engineering and Enterprise Information Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 112 | 10.1696 | 2.66065 | .25141 | 9.6715 | 10.6678 |
| | 2013 | 114 | 9.9825 | 2.80954 | .26314 | 9.4611 | 10.5038 |
| | 2014 | 115 | 10.1652 | 2.66205 | .24824 | 9.6735 | 10.6570 |
| | 2015 | 115 | 9.4609 | 2.94478 | .27460 | 8.9169 | 10.0049 |
| | Total | 456 | 9.9430 | 2.77846 | .13011 | 9.6873 | 10.1987 |
| Reading | 2012 | 112 | 20.3750 | 6.70904 | .63394 | 19.1188 | 21.6312 |
| | 2013 | 114 | 19.9123 | 7.13158 | .66793 | 18.5890 | 21.2356 |
| | 2014 | 115 | 20.4000 | 6.72883 | .62747 | 19.1570 | 21.6430 |
| | 2015 | 115 | 20.6435 | 6.84437 | .63824 | 19.3791 | 21.9078 |
| | Total | 456 | 20.3333 | 6.83837 | .32024 | 19.7040 | 20.9627 |
| Listening | 2012 | 112 | 27.4643 | 6.91770 | .65366 | 26.1690 | 28.7596 |
| | 2013 | 114 | 27.5789 | 7.75954 | .72675 | 26.1391 | 29.0188 |
| | 2014 | 115 | 29.5826 | 6.60938 | .61633 | 28.3617 | 30.8035 |
| | 2015 | 115 | 29.5478 | 7.30806 | .68148 | 28.1978 | 30.8978 |
| | Total | 456 | 28.5526 | 7.21121 | .33770 | 27.8890 | 29.2163 |
| Total | 2012 | 112 | 58.0089 | 13.07669 | 1.23563 | 55.5604 | 60.4574 |
| | 2013 | 114 | 57.4737 | 14.94190 | 1.39944 | 54.7011 | 60.2462 |
| | 2014 | 115 | 60.1478 | 12.22468 | 1.13996 | 57.8896 | 62.4061 |
| | 2015 | 115 | 59.6522 | 13.59698 | 1.26793 | 57.1404 | 62.1639 |
| | Total | 456 | 58.8289 | 13.49682 | .63205 | 57.5869 | 60.0710 |

Table 4.46

*ANOVA Test for Industrial Engineering and Enterprise Information Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 38.341 | 3 | 12.780 | 1.663 | .174 |
| | Within Groups | 3474.176 | 452 | 7.686 | | |
| | Total | 3512.518 | 455 | | | |
| Reading | Between Groups | 31.978 | 3 | 10.659 | .227 | .878 |
| | Within Groups | 21245.355 | 452 | 47.003 | | |
| | Total | 21277.333 | 455 | | | |
| Listening | Between Groups | 476.638 | 3 | 158.879 | 3.098 | .027 |
| | Within Groups | 23184.099 | 452 | 51.292 | | |
| | Total | 23660.737 | 455 | | | |
| Total | Between Groups | 562.672 | 3 | 187.557 | 1.030 | .379 |
| | Within Groups | 82321.986 | 452 | 182.128 | | |
| | Total | 82884.658 | 455 | | | |

*Significant at $p < .01$

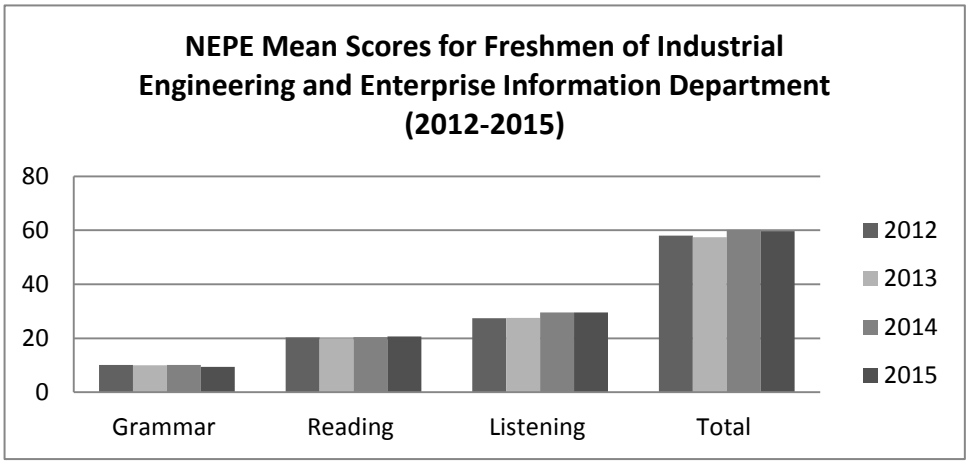


Figure 4.18 Means for Industrial Engineering and Enterprise Information Department freshmen's NEPE Scores from 2012 to 2015

***1-19 Analyses of the NEPE Scores for Freshmen of Electrical Engineering Department (2012-2015)***

For Electrical Engineering Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.48) presented no statistical difference between the years for grammar ($p$ = .500), reading ($p$ = .738), listening ($p$ = .418) and total scores ($p$ = .780). No Tukey's HSD test was conducted. Therefore, the means (Table 4.47 and Figure 4.19) were relatively consistent across the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.47

*Means and Standard Deviations for Electrical Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 55 | 9.8000 | 3.09958 | .41795 | 8.9621 | 10.6379 |
| | 2013 | 55 | 9.7091 | 2.76668 | .37306 | 8.9612 | 10.4570 |
| | 2014 | 62 | 9.0484 | 2.99413 | .38026 | 8.2880 | 9.8088 |
| | 2015 | 60 | 9.3167 | 3.14880 | .40651 | 8.5032 | 10.1301 |
| | Total | 232 | 9.4526 | 3.00467 | .19727 | 9.0639 | 9.8413 |
| Reading | 2012 | 55 | 19.8545 | 7.84908 | 1.05837 | 17.7326 | 21.9764 |
| | 2013 | 55 | 18.7636 | 6.30686 | .85042 | 17.0587 | 20.4686 |
| | 2014 | 62 | 19.8710 | 6.12301 | .77762 | 18.3160 | 21.4259 |
| | 2015 | 60 | 20.1000 | 7.35930 | .95008 | 18.1989 | 22.0011 |
| | Total | 232 | 19.6638 | 6.90623 | .45342 | 18.7704 | 20.5572 |
| Listening | 2012 | 55 | 25.6727 | 8.44822 | 1.13916 | 23.3889 | 27.9566 |
| | 2013 | 55 | 24.6545 | 8.12909 | 1.09613 | 22.4569 | 26.8521 |
| | 2014 | 62 | 27.0000 | 7.20428 | .91494 | 25.1705 | 28.8295 |
| | 2015 | 60 | 25.1333 | 8.34320 | 1.07710 | 22.9781 | 27.2886 |
| | Total | 232 | 25.6466 | 8.02567 | .52691 | 24.6084 | 26.6847 |
| Total | 2012 | 55 | 55.3273 | 16.77526 | 2.26198 | 50.7923 | 59.8623 |
| | 2013 | 55 | 53.1273 | 14.35793 | 1.93602 | 49.2458 | 57.0088 |
| | 2014 | 62 | 55.9194 | 13.85558 | 1.75966 | 52.4007 | 59.4380 |
| | 2015 | 60 | 54.5500 | 15.61771 | 2.01624 | 50.5155 | 58.5845 |
| | Total | 232 | 54.7629 | 15.10138 | .99145 | 52.8095 | 56.7164 |

Table 4.48

*ANOVA Test for Electrical Engineering Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 21.495 | 3 | 7.165 | .791 | .500 |
| | Within Groups | 2063.984 | 228 | 9.053 | | |
| | Total | 2085.478 | 231 | | | |
| Reading | Between Groups | 60.644 | 3 | 20.215 | .421 | .738 |
| | Within Groups | 10957.131 | 228 | 48.058 | | |
| | Total | 11017.776 | 231 | | | |
| Listening | Between Groups | 183.538 | 3 | 61.179 | .949 | .418 |
| | Within Groups | 14695.479 | 228 | 64.454 | | |
| | Total | 14879.017 | 231 | | | |
| Total | Between Groups | 250.296 | 3 | 83.432 | .363 | .780 |
| | Within Groups | 52429.665 | 228 | 229.955 | | |
| | Total | 52679.961 | 231 | | | |

*Significant at $p < .01$

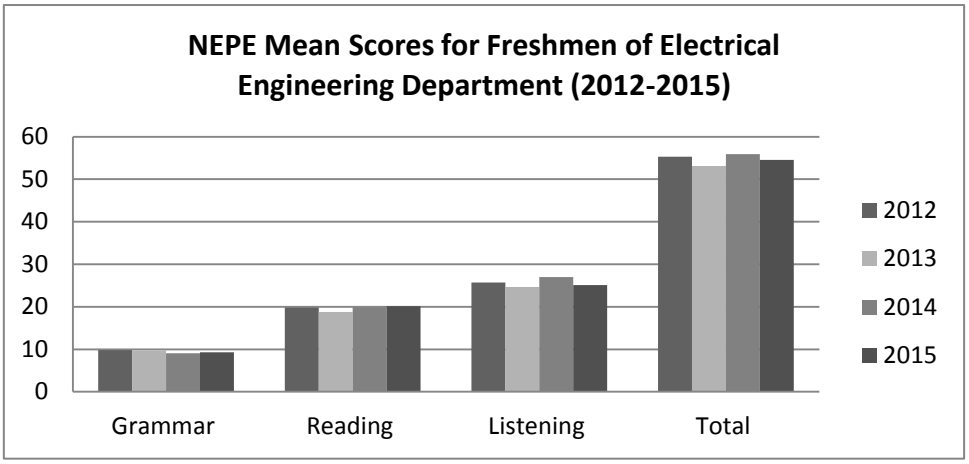


Figure 4.19 Means for Electrical Engineering Department Freshmen's NEPE Scores from 2012 to 2015

***1-20 Analyses of the NEPE Scores for Freshmen of Business Administration Department (2012-2015)***

For Business Administration Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.50) presented no statistical difference between the years for grammar ($p$ = .018), reading ($p$ = .019), listening ($p$ = .514) and total scores ($p$ = .270). No Tukey's HSD test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means (Table 4.49 and Figure 4.20) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.49

*Means and Standard Deviations for Business Administration Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 165 | 11.4545 | 2.94762 | .22947 | 11.0014 | 11.9076 |
| | 2013 | 168 | 10.9881 | 2.73804 | .21124 | 10.5710 | 11.4051 |
| | 2014 | 153 | 10.8497 | 3.02353 | .24444 | 10.3667 | 11.3326 |
| | 2015 | 148 | 10.4122 | 2.96678 | .24387 | 9.9302 | 10.8941 |
| | Total | 634 | 10.9416 | 2.93339 | .11650 | 10.7129 | 11.1704 |
| Reading | 2012 | 165 | 24.5455 | 6.33751 | .49337 | 23.5713 | 25.5196 |
| | 2013 | 168 | 23.2976 | 6.91138 | .53322 | 22.2449 | 24.3503 |
| | 2014 | 153 | 24.4706 | 6.38981 | .51659 | 23.4500 | 25.4912 |
| | 2015 | 148 | 22.5405 | 6.66637 | .54797 | 21.4576 | 23.6235 |
| | Total | 634 | 23.7287 | 6.61958 | .26290 | 23.2125 | 24.2450 |
| Listening | 2012 | 165 | 28.2182 | 6.65168 | .51783 | 27.1957 | 29.2407 |
| | 2013 | 168 | 28.6190 | 7.74118 | .59724 | 27.4399 | 29.7982 |
| | 2014 | 153 | 29.3725 | 7.17257 | .57987 | 28.2269 | 30.5182 |
| | 2015 | 148 | 29.0270 | 7.19594 | .59150 | 27.8581 | 30.1960 |
| | Total | 634 | 28.7918 | 7.19998 | .28595 | 28.2303 | 29.3533 |
| Total | 2012 | 165 | 64.2182 | 12.58971 | .98011 | 62.2829 | 66.1534 |
| | 2013 | 168 | 62.9048 | 14.12063 | 1.08943 | 60.7539 | 65.0556 |
| | 2014 | 153 | 64.6928 | 13.16259 | 1.06413 | 62.5904 | 66.7952 |
| | 2015 | 148 | 61.9797 | 13.54934 | 1.11375 | 59.7787 | 64.1808 |
| | Total | 634 | 63.4621 | 13.37971 | .53138 | 62.4187 | 64.5056 |

Table 4.50

*ANOVA Test for Business Administration Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 86.555 | 3 | 28.852 | 3.391 | .018 |
| | Within Groups | 5360.286 | 630 | 8.508 | | |
| | Total | 5446.841 | 633 | | | |
| Reading | Between Groups | 434.435 | 3 | 144.812 | 3.341 | .019 |
| | Within Groups | 27302.903 | 630 | 43.338 | | |
| | Total | 27737.338 | 633 | | | |
| Listening | Between Groups | 119.096 | 3 | 39.699 | .765 | .514 |
| | Within Groups | 32695.421 | 630 | 51.897 | | |
| | Total | 32814.517 | 633 | | | |
| Total | Between Groups | 703.469 | 3 | 234.490 | 1.312 | .270 |
| | Within Groups | 112614.123 | 630 | 178.753 | | |
| | Total | 113317.591 | 633 | | | |

*Significant at $p < .01$

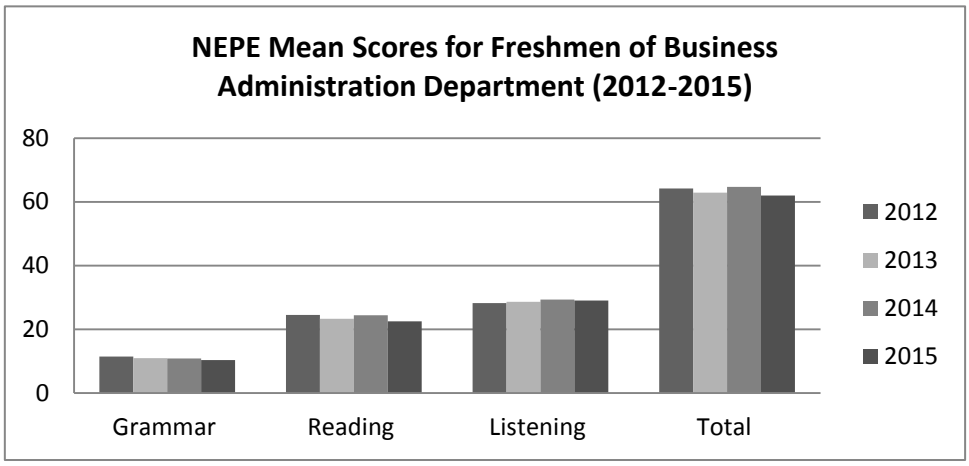


Figure 4.20 Means for Business Administration Department Freshmen's NEPE Scores from 2012 to 2015

***1-21 Analyses of the NEPE Scores for Freshmen of International Business Department (2012-2015)***

For International Business Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.52) presented no statistical difference between the years for grammar ($p$ = .002), reading ($p$ = .002), listening ($p$ = .002) and total scores ($p$ = .002). No Tukey's HSD test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means (Table 4.51 and Figure 4.21) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.51

*Means and Standard Deviations for International Business Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 173 | 12.0347 | 2.91527 | .22164 | 11.5972 | 12.4722 |
| | 2013 | 173 | 12.3584 | 2.89123 | .21982 | 11.9245 | 12.7923 |
| | 2014 | 158 | 11.6772 | 3.02699 | .24081 | 11.2016 | 12.1529 |
| | 2015 | 158 | 11.9051 | 2.94923 | .23463 | 11.4416 | 12.3685 |
| | Total | 662 | 12.0030 | 2.94786 | .11457 | 11.7781 | 12.2280 |
| Reading | 2012 | 173 | 26.6474 | 6.78897 | .51616 | 25.6286 | 27.6662 |
| | 2013 | 173 | 26.8555 | 6.16884 | .46901 | 25.9297 | 27.7812 |
| | 2014 | 158 | 26.4430 | 5.71343 | .45454 | 25.5452 | 27.3408 |
| | 2015 | 158 | 25.8861 | 6.24446 | .49678 | 24.9048 | 26.8673 |
| | Total | 662 | 26.4713 | 6.24814 | .24284 | 25.9945 | 26.9481 |
| Listening | 2012 | 173 | 31.3642 | 6.15972 | .46832 | 30.4398 | 32.2885 |
| | 2013 | 173 | 32.0231 | 6.19448 | .47096 | 31.0935 | 32.9527 |
| | 2014 | 158 | 32.5443 | 6.14329 | .48873 | 31.5790 | 33.5096 |
| | 2015 | 158 | 32.7342 | 5.78315 | .46008 | 31.8254 | 33.6429 |
| | Total | 662 | 32.1450 | 6.08687 | .23657 | 31.6805 | 32.6095 |
| Total | 2012 | 173 | 70.0462 | 12.39505 | .94238 | 68.1861 | 71.9064 |
| | 2013 | 173 | 71.2370 | 12.39450 | .94234 | 69.3770 | 73.0970 |
| | 2014 | 158 | 70.6646 | 11.31968 | .90055 | 68.8858 | 72.4433 |
| | 2015 | 158 | 70.5253 | 12.50717 | .99502 | 68.5600 | 72.4907 |
| | Total | 662 | 70.6193 | 12.15446 | .47240 | 69.6918 | 71.5469 |

Table 4.52

*ANOVA Test for International Business Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 40.308 | 3 | 13.436 | 1.550 | .200 |
| | Within Groups | 5703.686 | 658 | 8.668 | | |
| | Total | 5743.994 | 661 | | | |
| Reading | Between Groups | 85.139 | 3 | 28.380 | .726 | .537 |
| | Within Groups | 25719.815 | 658 | 39.088 | | |
| | Total | 25804.955 | 661 | | | |
| Listening | Between Groups | 188.088 | 3 | 62.696 | 1.698 | .166 |
| | Within Groups | 24301.991 | 658 | 36.933 | | |
| | Total | 24490.079 | 661 | | | |
| Total | Between Groups | 124.539 | 3 | 41.513 | .280 | .840 |
| | Within Groups | 97525.534 | 658 | 148.215 | | |
| | Total | 97650.073 | 661 | | | |

*Significant at $p < .01$

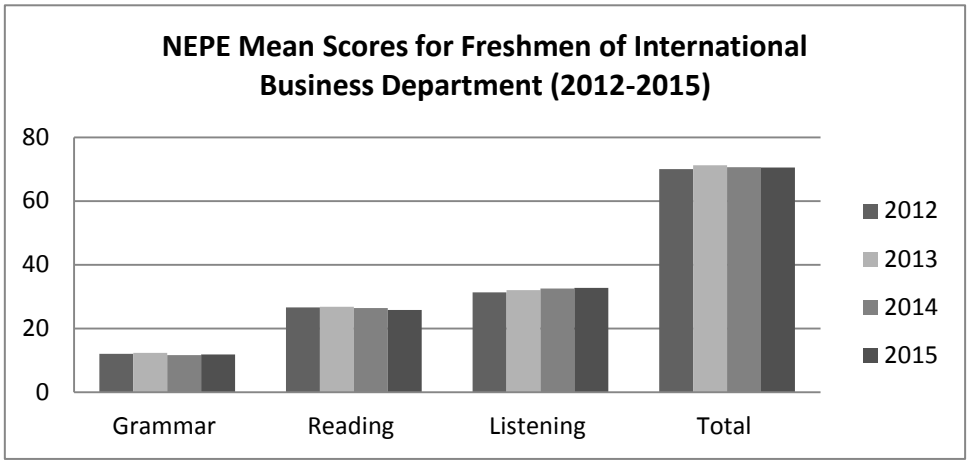


Figure 4.21 Means for International Business Department Freshmen's NEPE Scores from 2012 to 2015

***1-22 Analyses of the NEPE Scores for Freshmen of Accounting Department (2012-2015)***

For Accounting Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.54) presented no statistical differences between the years for grammar ($p$ = .309), listening ($p$ = .465) and total scores ($p$ = .090) while there were statistical significant difference for reading scores ($p$ = .003). Further results of Tukey's HSD test (see Table 4.55) for one-on-one group comparisons only revealed a statistical difference for reading means between the years of 2012 and 2015 ($p$ = .004). Therefore, the means were relatively consistent for the four years in terms of grammar, listening and total scores. Yet, as shown in Table 4.53 and Figure 4.22, the reading means decreased from 2012 to 2015. The reading means followed a consistent trend.

Table 4.53

*Means and Standard Deviations for Accounting Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 118 | 11.9746 | 2.84188 | .26162 | 11.4565 | 12.4927 |
| | 2013 | 117 | 11.5214 | 2.79654 | .25854 | 11.0093 | 12.0334 |
| | 2014 | 119 | 11.7311 | 2.93344 | .26891 | 11.1986 | 12.2636 |
| | 2015 | 115 | 11.2957 | 2.86532 | .26719 | 10.7663 | 11.8250 |
| | Total | 469 | 11.6333 | 2.86182 | .13215 | 11.3736 | 11.8929 |
| Reading | 2012 | 118 | 26.1525 | 6.93884 | .63877 | 24.8875 | 27.4176 |
| | 2013 | 117 | 25.5556 | 6.15384 | .56892 | 24.4287 | 26.6824 |
| | 2014 | 119 | 25.7311 | 6.18322 | .56681 | 24.6086 | 26.8535 |
| | 2015 | 115 | 23.2000 | 6.90182 | .64360 | 21.9250 | 24.4750 |
| | Total | 469 | 25.1727 | 6.63180 | .30623 | 24.5710 | 25.7745 |
| Listening | 2012 | 118 | 30.1017 | 6.77273 | .62348 | 28.8669 | 31.3365 |
| | 2013 | 117 | 30.3077 | 6.93127 | .64080 | 29.0385 | 31.5769 |
| | 2014 | 119 | 31.3613 | 6.68382 | .61270 | 30.1480 | 32.5747 |
| | 2015 | 115 | 30.2783 | 6.62736 | .61800 | 29.0540 | 31.5025 |
| | Total | 469 | 30.5160 | 6.75188 | .31177 | 29.9033 | 31.1286 |
| Total | 2012 | 118 | 68.2288 | 13.34961 | 1.22893 | 65.7950 | 70.6626 |
| | 2013 | 117 | 67.3846 | 12.91674 | 1.19415 | 65.0194 | 69.7498 |
| | 2014 | 119 | 68.8235 | 12.59112 | 1.15423 | 66.5378 | 71.1092 |
| | 2015 | 115 | 64.7739 | 13.35353 | 1.24522 | 62.3071 | 67.2407 |
| | Total | 469 | 67.3220 | 13.10317 | .60505 | 66.1330 | 68.5109 |

Table 4.54

*ANOVA Test for Accounting Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 29.458 | 3 | 9.819 | 1.200 | .309 |
| | Within Groups | 3803.463 | 465 | 8.179 | | |
| | Total | 3832.921 | 468 | | | |
| Reading | Between Groups | 615.073 | 3 | 205.024 | 4.774 | .003* |
| | Within Groups | 19967.938 | 465 | 42.942 | | |
| | Total | 20583.011 | 468 | | | |
| Listening | Between Groups | 116.869 | 3 | 38.956 | .854 | .465 |
| | Within Groups | 21218.261 | 465 | 45.631 | | |
| | Total | 21335.130 | 468 | | | |
| Total | Between Groups | 1112.454 | 3 | 370.818 | 2.176 | .090 |
| | Within Groups | 79239.930 | 465 | 170.408 | | |
| | Total | 80352.384 | 468 | | | |

*Significant at $p < .01$

Table 4.55

*Tukey's HSD Test for Accounting Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | .59699 | .85495 | .898 | -2.0792 | 3.2732 |
| | 2012 | 2014 | .42145 | .85133 | .960 | -2.2434 | 3.0863 |
| | 2012 | 2015 | 2.95254(*) | .85867 | .004* | .2647 | 5.6404 |
| | 2013 | 2014 | -.17554 | .85316 | .997 | -2.8461 | 2.4950 |
| | 2013 | 2015 | 2.35556 | .86048 | .032 | -.3380 | 5.0491 |
| | 2014 | 2015 | 2.53109 | .85689 | .017 | -.1512 | 5.2134 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, listening and total scores because the ANOVA test revealed no significant differences for these sections among the four years.

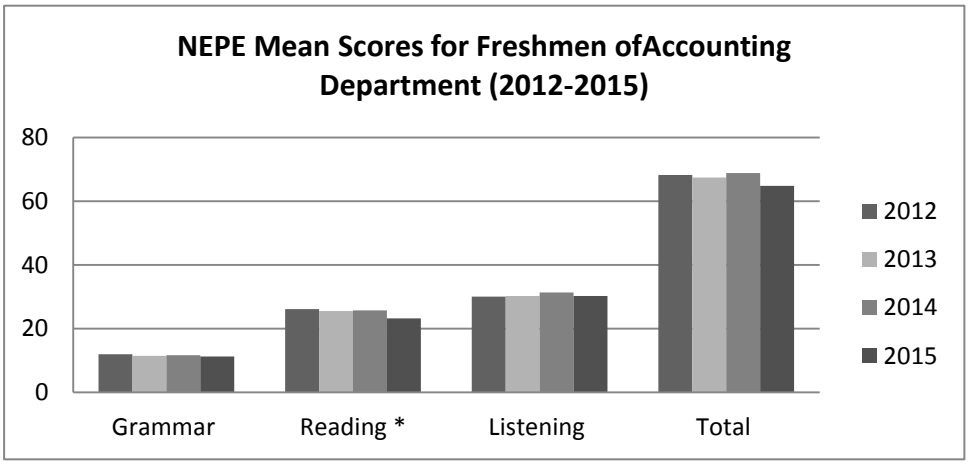


Figure 4.22 Means for Accounting Department Freshmen's NEPE Scores from 2012 to 2015

### *1-23 Analyses of the NEPE Scores for Freshmen of Statistics Department (2012-2015)*

For Statistics Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.57) presented no statistical difference between the years for grammar ($p$ = .069), reading ($p$ = .093), listening ($p$ = .112) and total scores ($p$ = .144). No Tukey's HSD test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, the means (Table 4.56 and

Figure 4.23) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.56

*Means and Standard Deviations for Statistics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 102 | 9.1765 | 3.15416 | .31231 | 8.5569 | 9.7960 |
| | 2013 | 107 | 9.4206 | 2.76104 | .26692 | 8.8914 | 9.9498 |
| | 2014 | 97 | 9.0000 | 2.88314 | .29274 | 8.4189 | 9.5811 |
| | 2015 | 104 | 8.4135 | 2.56038 | .25107 | 7.9155 | 8.9114 |
| | Total | 410 | 9.0049 | 2.85937 | .14121 | 8.7273 | 9.2825 |
| Reading | 2012 | 102 | 18.6863 | 7.33631 | .72640 | 17.2453 | 20.1273 |
| | 2013 | 107 | 20.0935 | 6.32684 | .61164 | 18.8808 | 21.3061 |
| | 2014 | 97 | 19.0103 | 7.11292 | .72221 | 17.5767 | 20.4439 |
| | 2015 | 104 | 17.7500 | 6.28567 | .61636 | 16.5276 | 18.9724 |
| | Total | 410 | 18.8927 | 6.79804 | .33573 | 18.2327 | 19.5527 |
| Listening | 2012 | 102 | 21.3529 | 8.45330 | .83700 | 19.6926 | 23.0133 |
| | 2013 | 107 | 23.9065 | 8.05352 | .77856 | 22.3630 | 25.4501 |
| | 2014 | 97 | 23.4021 | 8.58858 | .87204 | 21.6711 | 25.1330 |
| | 2015 | 104 | 23.5192 | 7.77097 | .76201 | 22.0080 | 25.0305 |
| | Total | 410 | 23.0537 | 8.24455 | .40717 | 22.2533 | 23.8541 |
| Total | 2012 | 102 | 49.2157 | 16.00224 | 1.58446 | 46.0725 | 52.3588 |
| | 2013 | 107 | 53.4206 | 13.42346 | 1.29770 | 50.8478 | 55.9934 |
| | 2014 | 97 | 51.4124 | 15.44395 | 1.56810 | 48.2997 | 54.5250 |
| | 2015 | 104 | 49.6827 | 13.16605 | 1.29104 | 47.1222 | 52.2432 |
| | Total | 410 | 50.9512 | 14.57323 | .71972 | 49.5364 | 52.3660 |

Table 4.57

*ANOVA Test for Statistics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 57.871 | 3 | 19.290 | 2.383 | .069 |
| | Within Groups | 3286.119 | 406 | 8.094 | | |
| | Total | 3343.990 | 409 | | | |
| Reading | Between Groups | 295.762 | 3 | 98.587 | 2.151 | .093 |
| | Within Groups | 18605.516 | 406 | 45.826 | | |
| | Total | 18901.278 | 409 | | | |
| Listening | Between Groups | 407.179 | 3 | 135.726 | 2.012 | .112 |
| | Within Groups | 27393.641 | 406 | 67.472 | | |
| | Total | 27800.820 | 409 | | | |
| Total | Between Groups | 1147.661 | 3 | 382.554 | 1.812 | .144 |
| | Within Groups | 85715.364 | 406 | 211.122 | | |
| | Total | 86863.024 | 409 | | | |

*Significant at $p < .01$

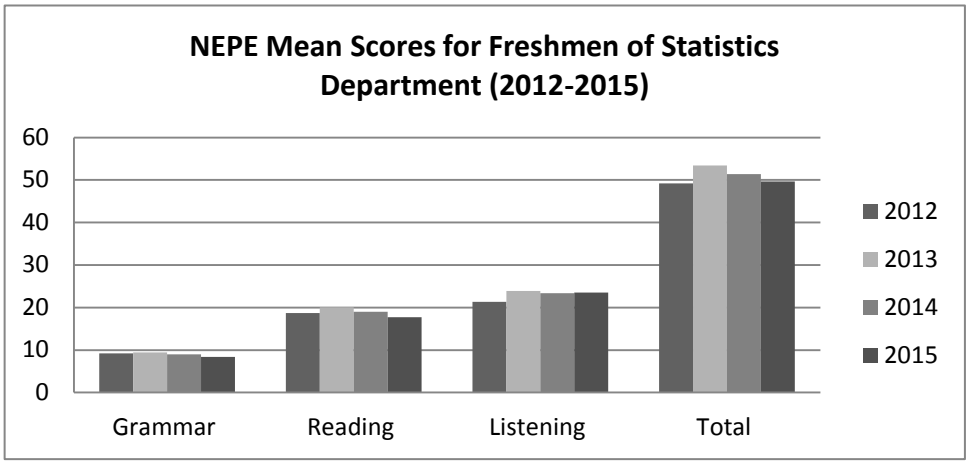


Figure 4.23 Means for Statistics Department Freshmen's NEPE Scores from 2012 to 2015

***1-24 Analyses of the NEPE Scores for Freshmen of Finance Department (2012-2015)***

For Finance Department freshmen's NEPE scores, the results of the ANOVA test (Table 4.59) presented no statistical difference between the years for reading ($p$ = .648), listening ($p$ = .042) and total scores ($p$ = .075) while there was a statistical difference for grammar scores ($p$ = .006). However, further Tukey's HSD test revealed no statistical difference for one-on-one group comparisons for grammar scores (Table 4.60). Therefore, the means (Table 4.58 and Figure 4.24) were relatively consistent for the four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.58

*Means and Standard Deviations for Finance Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 115 | 11.9130 | 2.96933 | .27689 | 11.3645 | 12.4616 |
| | 2013 | 115 | 11.8783 | 2.60616 | .24303 | 11.3968 | 12.3597 |
| | 2014 | 115 | 10.8348 | 3.17316 | .29590 | 10.2486 | 11.4210 |
| | 2015 | 111 | 11.0541 | 2.77927 | .26380 | 10.5313 | 11.5768 |
| | Total | 456 | 11.4232 | 2.92143 | .13681 | 11.1544 | 11.6921 |
| Reading | 2012 | 115 | 25.6522 | 7.37117 | .68736 | 24.2905 | 27.0138 |
| | 2013 | 115 | 26.4174 | 6.00874 | .56032 | 25.3074 | 27.5274 |
| | 2014 | 115 | 25.6000 | 5.94832 | .55468 | 24.5012 | 26.6988 |
| | 2015 | 111 | 25.3874 | 6.49359 | .61634 | 24.1659 | 26.6088 |
| | Total | 456 | 25.7675 | 6.47079 | .30302 | 25.1720 | 26.3630 |
| Listening | 2012 | 115 | 29.7565 | 7.52608 | .70181 | 28.3662 | 31.1468 |
| | 2013 | 115 | 31.8609 | 6.19973 | .57813 | 30.7156 | 33.0061 |
| | 2014 | 115 | 29.4609 | 6.75029 | .62947 | 28.2139 | 30.7078 |
| | 2015 | 111 | 30.2162 | 7.10110 | .67401 | 28.8805 | 31.5519 |
| | Total | 456 | 30.3246 | 6.94974 | .32545 | 29.6850 | 30.9641 |
| Total | 2012 | 115 | 67.3217 | 14.58342 | 1.35991 | 64.6278 | 70.0157 |
| | 2013 | 115 | 70.1565 | 11.79696 | 1.10007 | 67.9773 | 72.3358 |
| | 2014 | 115 | 65.8957 | 12.60282 | 1.17522 | 63.5676 | 68.2238 |
| | 2015 | 111 | 66.6577 | 13.15398 | 1.24852 | 64.1834 | 69.1319 |
| | Total | 456 | 67.5154 | 13.12994 | .61487 | 66.3070 | 68.7237 |

Table 4.59

*ANOVA Test for Finance Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 106.351 | 3 | 35.450 | 4.242 | .006* |
| | Within Groups | 3776.963 | 452 | 8.356 | | |
| | Total | 3883.314 | 455 | | | |
| Reading | Between Groups | 69.365 | 3 | 23.122 | .551 | .648 |
| | Within Groups | 18981.995 | 452 | 41.996 | | |
| | Total | 19051.360 | 455 | | | |
| Listening | Between Groups | 395.624 | 3 | 131.875 | 2.762 | .042 |
| | Within Groups | 21580.341 | 452 | 47.744 | | |
| | Total | 21975.965 | 455 | | | |
| Total | Between Groups | 1189.875 | 3 | 396.625 | 2.321 | .075 |
| | Within Groups | 77250.017 | 452 | 170.907 | | |
| | Total | 78439.893 | 455 | | | |

*Significant at $p < .01$

Table 4.60

*Tukey's HSD Test for Finance Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Grammar | 2012 | 2013 | .03478 | .38121 | 1.000 | -1.1587 | 1.2283 |
| | 2012 | 2014 | 1.07826 | .38121 | .025 | -.1152 | 2.2717 |
| | 2012 | 2015 | .85899 | .38463 | .116 | -.3452 | 2.0632 |
| | 2013 | 2014 | 1.04348 | .38121 | .033 | -.1500 | 2.2370 |
| | 2013 | 2015 | .82421 | .38463 | .141 | -.3800 | 2.0284 |
| | 2014 | 2015 | -.21927 | .38463 | .941 | -1.4235 | .9849 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for reading, listening and total scores because the ANOVA test revealed no significant differences for these sections among the four years

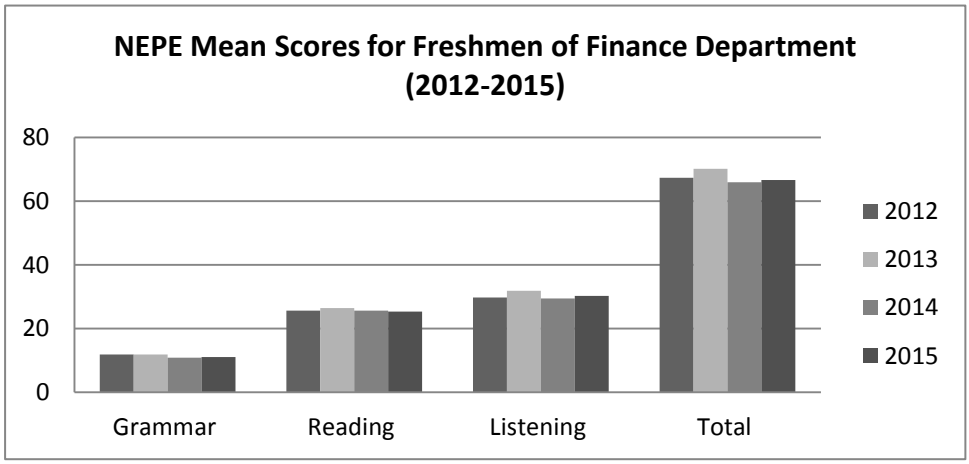


Figure 4.24 Means for Finance Department Freshmen's NEPE Scores from 2012 to 2015

### *1-25 Analyses of the NEPE Scores for Freshmen of Information Management Department (2012-2015)*

For Information Management Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.62) presented no statistical difference between the years for listening ($p = .702$) and total scores ($p = .025$) while there were statistical differences for grammar ($p = .003$) and reading scores ($p = .000$). Further results of Tukey's HSD test (Table 4.63) for one-on-one group comparisons revealed

statistical differences for grammar means between the years of 2013 and 2015 ($p$ = .003), and for reading means between the years of 2012 and 2015 ($p$ = .002) as well as 2013 and 2015 ($p$ = .001). Therefore, the means were relatively consistent in terms of listening and total scores while the grammar and reading means has a tendency to decrease for the four years as shown in Table 4.61 and Figure 4.25.

Table 4.61

*Means and Standard Deviations for Information Management Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 52 | 11.0385 | 3.39528 | .47084 | 10.0932 | 11.9837 |
| | 2013 | 52 | 11.8654 | 3.12503 | .43336 | 10.9954 | 12.7354 |
| | 2014 | 56 | 11.4107 | 3.07350 | .41071 | 10.5876 | 12.2338 |
| | 2015 | 53 | 9.7170 | 2.80369 | .38512 | 8.9442 | 10.4898 |
| | Total | 213 | 11.0094 | 3.18456 | .21820 | 10.5793 | 11.4395 |
| Reading | 2012 | 52 | 24.5000 | 8.48413 | 1.17654 | 22.1380 | 26.8620 |
| | 2013 | 52 | 24.8846 | 7.40337 | 1.02666 | 22.8235 | 26.9457 |
| | 2014 | 56 | 23.0357 | 5.90828 | .78953 | 21.4535 | 24.6180 |
| | 2015 | 53 | 19.3962 | 7.02287 | .96467 | 17.4605 | 21.3320 |
| | Total | 213 | 22.9390 | 7.50478 | .51422 | 21.9253 | 23.9526 |
| Listening | 2012 | 52 | 28.1154 | 7.15557 | .99230 | 26.1233 | 30.1075 |
| | 2013 | 52 | 29.8077 | 7.61072 | 1.05542 | 27.6889 | 31.9265 |
| | 2014 | 56 | 29.0714 | 6.96969 | .93136 | 27.2049 | 30.9379 |
| | 2015 | 53 | 28.9057 | 7.40650 | 1.01736 | 26.8642 | 30.9471 |
| | Total | 213 | 28.9765 | 7.25703 | .49724 | 27.9964 | 29.9567 |
| Total | 2012 | 52 | 63.6538 | 15.68674 | 2.17536 | 59.2866 | 68.0211 |
| | 2013 | 52 | 66.5577 | 15.46586 | 2.14473 | 62.2520 | 70.8634 |
| | 2014 | 56 | 63.5179 | 12.10108 | 1.61707 | 60.2772 | 66.7585 |
| | 2015 | 53 | 58.0189 | 14.82785 | 2.03676 | 53.9318 | 62.1059 |
| | Total | 213 | 62.9249 | 14.76942 | 1.01198 | 60.9300 | 64.9197 |

Table 4.62

*ANOVA Test for Information Management Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 135.692 | 3 | 45.231 | 4.693 | .003* |
| | Within Groups | 2014.289 | 209 | 9.638 | | |
| | Total | 2149.981 | 212 | | | |
| Reading | Between Groups | 989.291 | 3 | 329.764 | 6.294 | .000* |
| | Within Groups | 10950.916 | 209 | 52.397 | | |
| | Total | 11940.207 | 212 | | | |
| Listening | Between Groups | 75.255 | 3 | 25.085 | .473 | .702 |
| | Within Groups | 11089.627 | 209 | 53.060 | | |
| | Total | 11164.883 | 212 | | | |
| Total | Between Groups | 2009.239 | 3 | 669.746 | 3.164 | .025 |
| | Within Groups | 44235.559 | 209 | 211.653 | | |
| | Total | 46244.798 | 212 | | | |

*Significant at $p < .01$

Table 4.63

*Tukey's HSD Test for Information Management Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Grammar | 2012 | 2013 | -.82692 | .60884 | .527 | -2.7455 | 1.0917 |
| | 2012 | 2014 | -.37225 | .59787 | .925 | -2.2563 | 1.5118 |
| | 2012 | 2015 | 1.32148 | .60596 | .132 | -.5880 | 3.2310 |
| | 2013 | 2014 | .45467 | .59787 | .872 | -1.4293 | 2.3387 |
| | 2013 | 2015 | 2.14840(*) | .60596 | .003* | .2389 | 4.0579 |
| | 2014 | 2015 | 1.69373 | .59493 | .025 | -.1810 | 3.5685 |
| Reading | 2012 | 2013 | -.38462 | 1.41960 | .993 | -4.8581 | 4.0889 |
| | 2012 | 2014 | 1.46429 | 1.39402 | .720 | -2.9286 | 5.8572 |
| | 2012 | 2015 | 5.10377(*) | 1.41289 | .002* | .6514 | 9.5561 |
| | 2013 | 2014 | 1.84890 | 1.39402 | .547 | -2.5440 | 6.2418 |
| | 2013 | 2015 | 5.48839(*) | 1.41289 | .001* | 1.0360 | 9.9407 |
| | 2014 | 2015 | 3.63949 | 1.38718 | .046 | -.7319 | 8.0108 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for listening and total scores because the ANOVA test revealed no significant difference for these two sections among the four years.

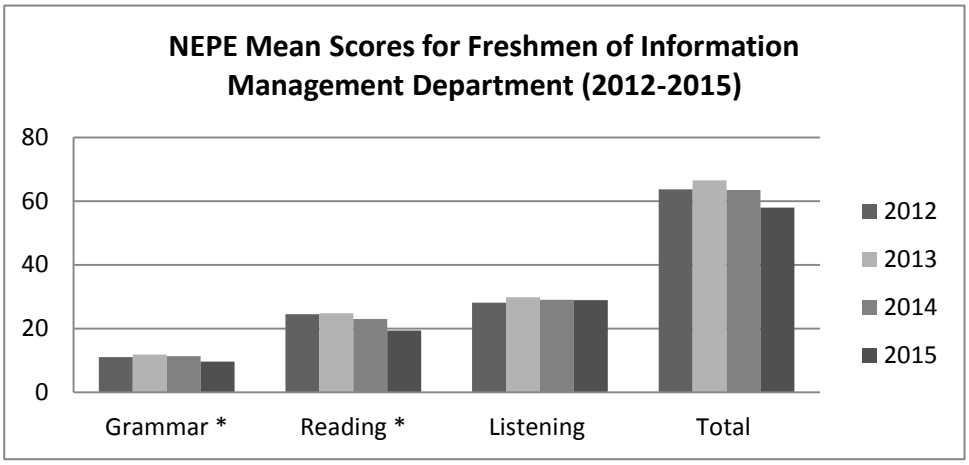


Figure 4.25 Means for Information Management Department Freshmen's NEPE Scores from 2012 to 2015

### *1-26 Analyses of the NEPE Scores for Freshmen of Economics Department (2012-2015)*

Foe Economics Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.65) presented no statistical difference between the years for grammar ($p$ = .364), reading ($p$ = .833), listening ($p$ = .058) and total scores ($p$ = .477). No Tukey's HSD test was conducted because the ANOVA test for the NEPE scores revealed no significant difference among the four years. Therefore, as shown in Table 4.64 and Figure 4.26, the means were relatively consistent for all four years in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.64

*Means and Standard Deviations for Economics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 173 | 9.9249 | 2.89950 | .22045 | 9.4897 | 10.3600 |
| | 2013 | 173 | 9.7283 | 2.70898 | .20596 | 9.3218 | 10.1349 |
| | 2014 | 166 | 9.8855 | 3.15539 | .24491 | 9.4020 | 10.3691 |
| | 2015 | 156 | 9.4103 | 2.71168 | .21711 | 8.9814 | 9.8391 |
| | Total | 668 | 9.7440 | 2.87606 | .11128 | 9.5255 | 9.9625 |
| Reading | 2012 | 173 | 20.8786 | 6.71100 | .51023 | 19.8715 | 21.8857 |
| | 2013 | 173 | 20.6243 | 6.27869 | .47736 | 19.6820 | 21.5665 |
| | 2014 | 166 | 21.1928 | 6.52075 | .50611 | 20.1935 | 22.1921 |
| | 2015 | 156 | 20.6154 | 6.51595 | .52169 | 19.5848 | 21.6459 |
| | Total | 668 | 20.8293 | 6.49767 | .25140 | 20.3357 | 21.3230 |
| Listening | 2012 | 173 | 25.5491 | 7.34563 | .55848 | 24.4468 | 26.6515 |
| | 2013 | 173 | 27.3642 | 6.70216 | .50956 | 26.3584 | 28.3699 |
| | 2014 | 166 | 27.4337 | 7.46010 | .57902 | 26.2905 | 28.5770 |
| | 2015 | 156 | 27.0000 | 7.59796 | .60832 | 25.7983 | 28.2017 |
| | Total | 668 | 26.8263 | 7.29912 | .28241 | 26.2718 | 27.3809 |
| Total | 2012 | 173 | 56.3526 | 13.72095 | 1.04318 | 54.2935 | 58.4117 |
| | 2013 | 173 | 57.7168 | 11.81769 | .89848 | 55.9433 | 59.4902 |
| | 2014 | 166 | 58.5120 | 13.46094 | 1.04477 | 56.4492 | 60.5749 |
| | 2015 | 156 | 57.0256 | 13.79151 | 1.10420 | 54.8444 | 59.2069 |
| | Total | 668 | 57.3997 | 13.19990 | .51072 | 56.3969 | 58.4025 |

Table 4.65

*ANOVA Test for Economics Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 26.403 | 3 | 8.801 | 1.064 | .364 |
| | Within Groups | 5490.823 | 664 | 8.269 | | |
| | Total | 5517.226 | 667 | | | |
| Reading | Between Groups | 36.762 | 3 | 12.254 | .289 | .833 |
| | Within Groups | 28123.783 | 664 | 42.355 | | |
| | Total | 28160.545 | 667 | | | |
| Listening | Between Groups | 398.195 | 3 | 132.732 | 2.508 | .058 |
| | Within Groups | 35137.661 | 664 | 52.918 | | |
| | Total | 35535.856 | 667 | | | |
| Total | Between Groups | 434.294 | 3 | 144.765 | .830 | .477 |
| | Within Groups | 115781.986 | 664 | 174.370 | | |
| | Total | 116216.280 | 667 | | | |

*Significant at $p < .01$

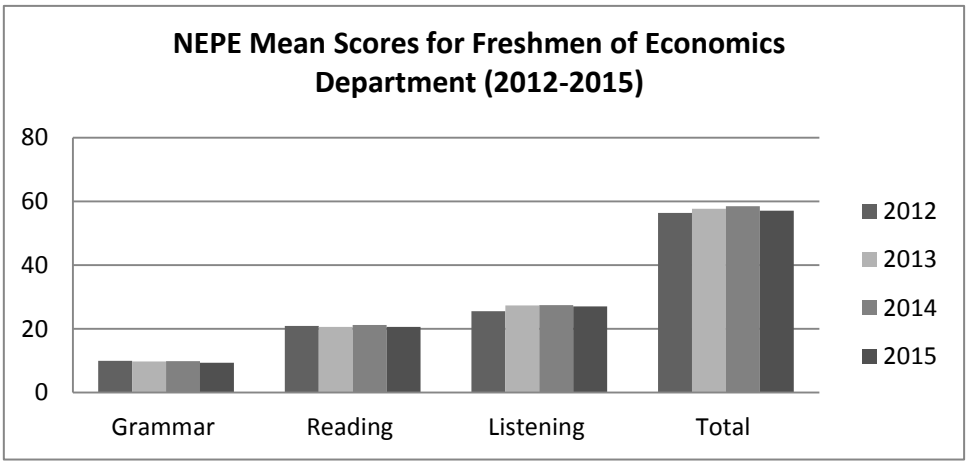


Figure 4.26 Means for Economics Department Freshmen's NEPE Scores from 2012 to 2015

### *1-27 Analyses of the NEPE Scores for Freshmen of Political Science Department (2012-2015)*

For Political Science Department freshmen's NEPE scores for the four years, the results of the ANOVA test (see Table 4.67) presented no statistical differences between the four years for grammar ($p$ = .254) and reading scores ($p$ = .037) while there were statistical differences for listening ($p$ = .008) and total scores ($p$ = .009). However, further results of Tukey's HSD test for one-on-one group comparisons revealed no statistical difference for listening and total scores between the years (see Table 4.68). Therefore, as shown in Table 4.66 and Figure 4.27, the means were relatively consistent for all four years in terms of grammar, reading, listening and total scores as measures by the NEPE.

Table 4.66

*Means and Standard Deviations for Political Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 93 | 10.0645 | 2.79287 | .28961 | 9.4893 | 10.6397 |
| | 2013 | 95 | 10.8211 | 3.08731 | .31675 | 10.1921 | 11.4500 |
| | 2014 | 106 | 10.1981 | 3.06880 | .29807 | 9.6071 | 10.7891 |
| | 2015 | 98 | 10.5816 | 2.68990 | .27172 | 10.0423 | 11.1209 |
| | Total | 392 | 10.4133 | 2.92229 | .14760 | 10.1231 | 10.7035 |
| Reading | 2012 | 93 | 20.2796 | 5.92410 | .61430 | 19.0595 | 21.4996 |
| | 2013 | 95 | 22.6526 | 7.94364 | .81500 | 21.0344 | 24.2708 |
| | 2014 | 106 | 22.9623 | 6.80745 | .66120 | 21.6512 | 24.2733 |
| | 2015 | 98 | 22.4694 | 7.49873 | .75749 | 20.9660 | 23.9728 |
| | Total | 392 | 22.1276 | 7.13581 | .36041 | 21.4190 | 22.8361 |
| Listening | 2012 | 93 | 26.6667 | 7.83711 | .81267 | 25.0526 | 28.2807 |
| | 2013 | 95 | 28.9684 | 7.37369 | .75652 | 27.4663 | 30.4705 |
| | 2014 | 106 | 29.9623 | 7.49848 | .72832 | 28.5181 | 31.4064 |
| | 2015 | 98 | 29.8571 | 7.34005 | .74146 | 28.3856 | 31.3287 |
| | Total | 392 | 28.9133 | 7.59678 | .38370 | 28.1589 | 29.6676 |
| Total | 2012 | 93 | 57.0108 | 13.29228 | 1.37835 | 54.2732 | 59.7483 |
| | 2013 | 95 | 62.4421 | 15.27389 | 1.56707 | 59.3307 | 65.5536 |
| | 2014 | 106 | 63.1226 | 14.76012 | 1.43363 | 60.2800 | 65.9653 |
| | 2015 | 98 | 62.9082 | 14.09035 | 1.42334 | 60.0832 | 65.7331 |
| | Total | 392 | 61.4541 | 14.54767 | .73477 | 60.0095 | 62.8987 |

Table 4.67

*ANOVA Test for Political Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 34.794 | 3 | 11.598 | 1.362 | .254 |
| | Within Groups | 3304.257 | 388 | 8.516 | | |
| | Total | 3339.051 | 391 | | | |
| Reading | Between Groups | 429.097 | 3 | 143.032 | 2.849 | .037 |
| | Within Groups | 19480.525 | 388 | 50.208 | | |
| | Total | 19909.622 | 391 | | | |
| Listening | Between Groups | 673.630 | 3 | 224.543 | 3.980 | .008* |
| | Within Groups | 21891.421 | 388 | 56.421 | | |
| | Total | 22565.051 | 391 | | | |
| Total | Between Groups | 2431.174 | 3 | 810.391 | 3.915 | .009* |
| | Within Groups | 80318.000 | 388 | 207.005 | | |
| | Total | 82749.173 | 391 | | | |

*Significant at $p < .01$

Table 4.68

*Tukey's HSD Test for Political Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -2.30175 | 1.09571 | .155 | -5.7353 | 1.1318 |
| | 2012 | 2014 | -3.29560 | 1.06722 | .012 | -6.6399 | .0487 |
| | 2012 | 2015 | -3.19048 | 1.08738 | .019 | -6.5979 | .2170 |
| | 2013 | 2014 | -.99384 | 1.06122 | .785 | -4.3193 | 2.3316 |
| | 2013 | 2015 | -.88872 | 1.08150 | .844 | -4.2777 | 2.5003 |
| | 2014 | 2015 | .10512 | 1.05262 | 1.000 | -3.1934 | 3.4036 |
| Total | 2012 | 2013 | -5.43135 | 2.09878 | .049 | -12.0081 | 1.1454 |
| | 2012 | 2014 | -6.11189 | 2.04420 | .016 | -12.5176 | .2939 |
| | 2012 | 2015 | -5.89741 | 2.08282 | .025 | -12.4242 | .6294 |
| | 2013 | 2014 | -.68054 | 2.03270 | .987 | -7.0503 | 5.6892 |
| | 2013 | 2015 | -.46606 | 2.07155 | .996 | -6.9575 | 6.0254 |
| | 2014 | 2015 | .21448 | 2.01623 | 1.000 | -6.1036 | 6.5326 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and reading scores because the ANOVA test revealed no significant difference for these two sections among the four years.

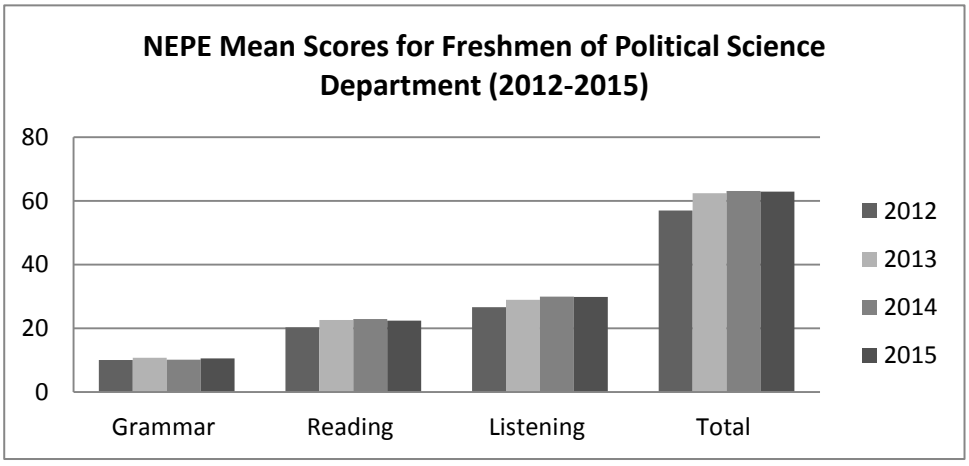


Figure 4.27 Means for Political Science Department Freshmen's NEPE Scores from 2012 to 2015

### *1-28 Analyses of the NEPE Scores for Freshmen of Public Administration Department (2012-2015)*

For Public Administration Department freshmen's NEPE scores for the four years, the results of the ANOVA test (see Table 4.70) presented no statistical difference between the years for grammar ($p$ = .595), reading ($p$ = .378), listening ($p$ = .012) and total scores ($p$ = .039). No Tukey's HSD test was conducted. Therefore, as shown in Table 4.69 and Figure 4.28, the means were relatively consistent for all four years in terms of grammar, reading, listening and total scores as measures by the NEPE.

Table 4.69

*Means and Standard Deviations for Public Administration Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 62 | 10.4677 | 3.22245 | .40925 | 9.6494 | 11.2861 |
| | 2013 | 57 | 10.1053 | 2.92577 | .38753 | 9.3290 | 10.8816 |
| | 2014 | 56 | 10.5714 | 2.41101 | .32219 | 9.9258 | 11.2171 |
| | 2015 | 59 | 10.8136 | 2.59625 | .33800 | 10.1370 | 11.4901 |
| | Total | 234 | 10.4915 | 2.80900 | .18363 | 10.1297 | 10.8532 |
| Reading | 2012 | 62 | 22.1290 | 7.11379 | .90345 | 20.3225 | 23.9356 |
| | 2013 | 57 | 22.1053 | 6.12280 | .81099 | 20.4807 | 23.7299 |
| | 2014 | 56 | 23.3214 | 7.12769 | .95248 | 21.4126 | 25.2302 |
| | 2015 | 59 | 23.7966 | 5.20868 | .67811 | 22.4392 | 25.1540 |
| | Total | 234 | 22.8291 | 6.44660 | .42143 | 21.9988 | 23.6594 |
| Listening | 2012 | 62 | 25.9032 | 7.43432 | .94416 | 24.0153 | 27.7912 |
| | 2013 | 57 | 26.5263 | 8.22476 | 1.08940 | 24.3440 | 28.7086 |
| | 2014 | 56 | 29.2500 | 8.24676 | 1.10202 | 27.0415 | 31.4585 |
| | 2015 | 59 | 29.6610 | 6.14932 | .80057 | 28.0585 | 31.2635 |
| | Total | 234 | 27.8034 | 7.67666 | .50184 | 26.8147 | 28.7921 |
| Total | 2012 | 62 | 58.5000 | 15.20111 | 1.93054 | 54.6396 | 62.3604 |
| | 2013 | 57 | 58.7368 | 14.18315 | 1.87860 | 54.9735 | 62.5001 |
| | 2014 | 56 | 63.1429 | 14.32154 | 1.91380 | 59.3075 | 66.9782 |
| | 2015 | 59 | 64.2712 | 10.00832 | 1.30297 | 61.6630 | 66.8794 |
| | Total | 234 | 61.1239 | 13.74436 | .89850 | 59.3537 | 62.8941 |

Table 4.70

*ANOVA Test for Public Administration Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 15.016 | 3 | 5.005 | .631 | .595 |
| | Within Groups | 1823.467 | 230 | 7.928 | | |
| | Total | 1838.483 | 233 | | | |
| Reading | Between Groups | 129.053 | 3 | 43.018 | 1.036 | .378 |
| | Within Groups | 9554.110 | 230 | 41.540 | | |
| | Total | 9683.162 | 233 | | | |
| Listening | Between Groups | 637.607 | 3 | 212.536 | 3.733 | .012 |
| | Within Groups | 13093.350 | 230 | 56.928 | | |
| | Total | 13730.957 | 233 | | | |
| Total | Between Groups | 1564.335 | 3 | 521.445 | 2.825 | .039 |
| | Within Groups | 42451.071 | 230 | 184.570 | | |
| | Total | 44015.406 | 233 | | | |

*Significant at $p < .01$

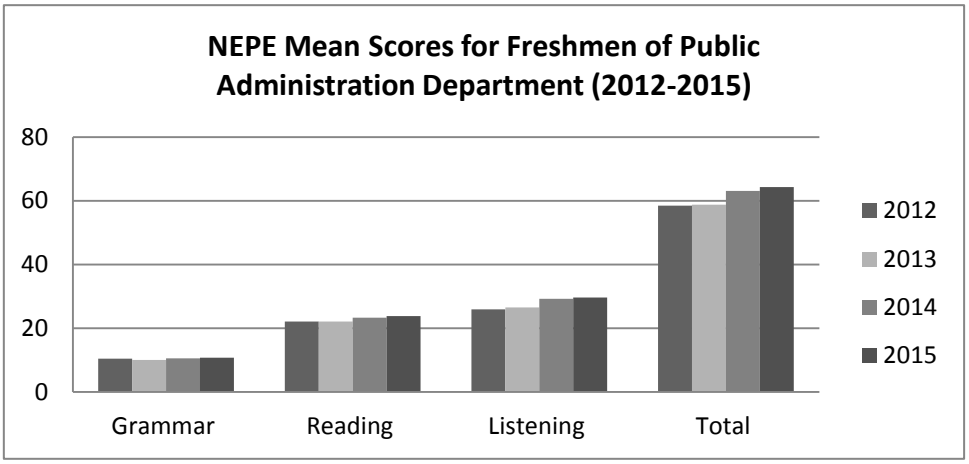


Figure 4.28 Means for Public Administration Department Freshmen's NEPE Scores from 2012 to 2015

### *1-29 Analyses of the NEPE Scores for Freshmen of Social Work Department (2012-2015)*

For Social Work Department freshmen's NEPE scores for the four years, the results of the ANOVA test (see Table 4.72) presented no statistical differences between the years for grammar ($p = .094$), reading ($p = .705$) and total scores ($p = .264$) while there was a statistical difference for listening scores ($p = .005$). Further results of

Tukey's HSD test (see Table 4.73) for one-on-one group comparisons only revealed statistical differences for listening means between the years of 2012 and 2015 ($p$ = .004). Therefore, the means were relatively consistent for the four years in terms of grammar, reading and total scores (Table 4.71 and Figure 4.29). Yet, the listening means increased significantly from 2012 (M= 25.96) to 2015 (M= 29.12). Although there were statistical significant differences for listening scores among the four years, the means followed the consistent trend of increase from 2012 to 2015.

Table 4.71

*Means and Standard Deviations for Social Work Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 115 | 10.9130 | 3.01332 | .28099 | 10.3564 | 11.4697 |
| | 2013 | 118 | 10.5932 | 2.85021 | .26238 | 10.0736 | 11.1129 |
| | 2014 | 121 | 10.0331 | 3.04941 | .27722 | 9.4842 | 10.5819 |
| | 2015 | 119 | 10.2269 | 2.64715 | .24266 | 9.7464 | 10.7074 |
| | Total | 473 | 10.4355 | 2.90466 | .13356 | 10.1731 | 10.6980 |
| Reading | 2012 | 115 | 21.6522 | 6.01321 | .56073 | 20.5414 | 22.7630 |
| | 2013 | 118 | 22.2203 | 6.81769 | .62762 | 20.9774 | 23.4633 |
| | 2014 | 121 | 21.5702 | 6.59902 | .59991 | 20.3825 | 22.7580 |
| | 2015 | 119 | 22.3529 | 5.67867 | .52056 | 21.3221 | 23.3838 |
| | Total | 473 | 21.9493 | 6.28537 | .28900 | 21.3814 | 22.5171 |
| Listening | 2012 | 115 | 25.9652 | 7.15729 | .66742 | 24.6431 | 27.2874 |
| | 2013 | 118 | 28.2881 | 7.47543 | .68817 | 26.9253 | 29.6510 |
| | 2014 | 121 | 28.4298 | 7.26272 | .66025 | 27.1225 | 29.7370 |
| | 2015 | 119 | 29.1261 | 6.52317 | .59798 | 27.9419 | 30.3102 |
| | Total | 473 | 27.9704 | 7.18809 | .33051 | 27.3210 | 28.6199 |
| Total | 2012 | 115 | 58.5304 | 13.37668 | 1.24738 | 56.0594 | 61.0015 |
| | 2013 | 118 | 61.1017 | 13.50681 | 1.24340 | 58.6392 | 63.5642 |
| | 2014 | 121 | 60.0331 | 13.40394 | 1.21854 | 57.6204 | 62.4457 |
| | 2015 | 119 | 61.7059 | 11.81880 | 1.08343 | 59.5604 | 63.8514 |
| | Total | 473 | 60.3552 | 13.05662 | .60034 | 59.1755 | 61.5349 |

Table 4.72

*ANOVA Test for Social Work Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 53.937 | 3 | 17.979 | 2.146 | .094 |
| | Within Groups | 3928.347 | 469 | 8.376 | | |
| | Total | 3982.283 | 472 | | | |
| Reading | Between Groups | 55.595 | 3 | 18.532 | .467 | .705 |
| | Within Groups | 18591.188 | 469 | 39.640 | | |
| | Total | 18646.782 | 472 | | | |
| Listening | Between Groups | 658.759 | 3 | 219.586 | 4.340 | .005* |
| | Within Groups | 23728.826 | 469 | 50.595 | | |
| | Total | 24387.586 | 472 | | | |
| Total | Between Groups | 678.333 | 3 | 226.111 | 1.329 | .264 |
| | Within Groups | 79785.997 | 469 | 170.119 | | |
| | Total | 80464.330 | 472 | | | |

*Significant at $p < .01$

Table 4.73

*Tukey's HSD Test for Public Administration Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -2.32292 | .93205 | .062 | -5.2403 | .5945 |
| | 2012 | 2014 | -2.46453 | .92633 | .040 | -5.3640 | .4350 |
| | 2012 | 2015 | -3.16083(*) | .93012 | .004* | -6.0722 | -.2495 |
| | 2013 | 2014 | -.14162 | .92027 | .999 | -3.0222 | 2.7389 |
| | 2013 | 2015 | -.83791 | .92408 | .801 | -3.7304 | 2.0546 |
| | 2014 | 2015 | -.69630 | .91831 | .873 | -3.5707 | 2.1781 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

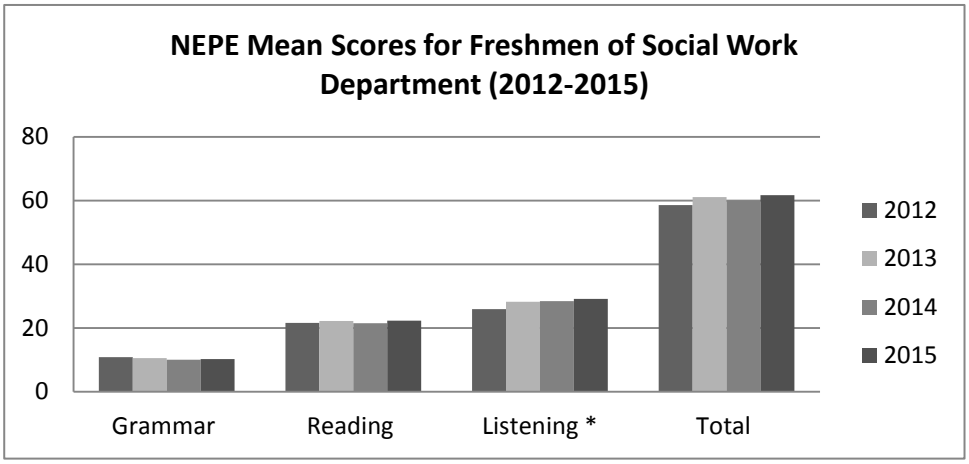


Figure 4.29 Means for Social Work Department Freshmen's NEPE Scores from 2012 to 2015

***1-30 Analyses of the NEPE Scores for Freshmen of Sociology Department (2012-2015)***

For Sociology Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.75) presented no statistical difference between the years for grammar ($p$ = .451), reading ($p$ = .304), listening ($p$ = .298) and total scores ($p$ = .254). No Tukey's HSD test was conducted. Therefore, the means were relatively consistent for the four years (Table 4.74 and Figure 4.30) in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.74

*Means and Standard Deviations for Sociology Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 115 | 10.1217 | 3.08405 | .28759 | 9.5520 | 10.6915 |
| | 2013 | 102 | 9.7745 | 2.71741 | .26906 | 9.2408 | 10.3083 |
| | 2014 | 110 | 9.5182 | 3.00987 | .28698 | 8.9494 | 10.0870 |
| | 2015 | 117 | 9.9487 | 2.77876 | .25690 | 9.4399 | 10.4575 |
| | Total | 444 | 9.8468 | 2.90387 | .13781 | 9.5760 | 10.1177 |
| Reading | 2012 | 115 | 20.7304 | 6.24264 | .58213 | 19.5772 | 21.8836 |
| | 2013 | 102 | 20.9216 | 7.25038 | .71789 | 19.4975 | 22.3457 |
| | 2014 | 110 | 19.6909 | 7.20951 | .68740 | 18.3285 | 21.0533 |
| | 2015 | 117 | 21.3846 | 6.79483 | .62818 | 20.1404 | 22.6288 |
| | Total | 444 | 20.6892 | 6.87606 | .32632 | 20.0479 | 21.3305 |
| Listening | 2012 | 115 | 26.3304 | 7.58082 | .70691 | 24.9300 | 27.7308 |
| | 2013 | 102 | 26.3725 | 7.69585 | .76200 | 24.8609 | 27.8842 |
| | 2014 | 110 | 26.1455 | 7.98948 | .76177 | 24.6357 | 27.6553 |
| | 2015 | 117 | 27.8803 | 7.85775 | .72645 | 26.4415 | 29.3192 |
| | Total | 444 | 26.7027 | 7.78909 | .36965 | 25.9762 | 27.4292 |
| Total | 2012 | 115 | 57.1826 | 13.60636 | 1.26880 | 54.6691 | 59.6961 |
| | 2013 | 102 | 57.0686 | 15.10049 | 1.49517 | 54.1026 | 60.0346 |
| | 2014 | 110 | 55.3545 | 15.11278 | 1.44095 | 52.4986 | 58.2105 |
| | 2015 | 117 | 59.2137 | 13.93200 | 1.28801 | 56.6626 | 61.7647 |
| | Total | 444 | 57.2387 | 14.44197 | .68539 | 55.8917 | 58.5857 |

Table 4.75

*ANOVA Test for Sociology Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 22.320 | 3 | 7.440 | .882 | .451 |
| | Within Groups | 3713.265 | 440 | 8.439 | | |
| | Total | 3735.586 | 443 | | | |
| Reading | Between Groups | 171.909 | 3 | 57.303 | 1.214 | .304 |
| | Within Groups | 20773.199 | 440 | 47.212 | | |
| | Total | 20945.108 | 443 | | | |
| Listening | Between Groups | 223.473 | 3 | 74.491 | 1.230 | .298 |
| | Within Groups | 26653.284 | 440 | 60.576 | | |
| | Total | 26876.757 | 443 | | | |
| Total | Between Groups | 850.178 | 3 | 283.393 | 1.362 | .254 |
| | Within Groups | 91546.516 | 440 | 208.060 | | |
| | Total | 80464.330 | 472 | | | |

*Significant at $p < .01$

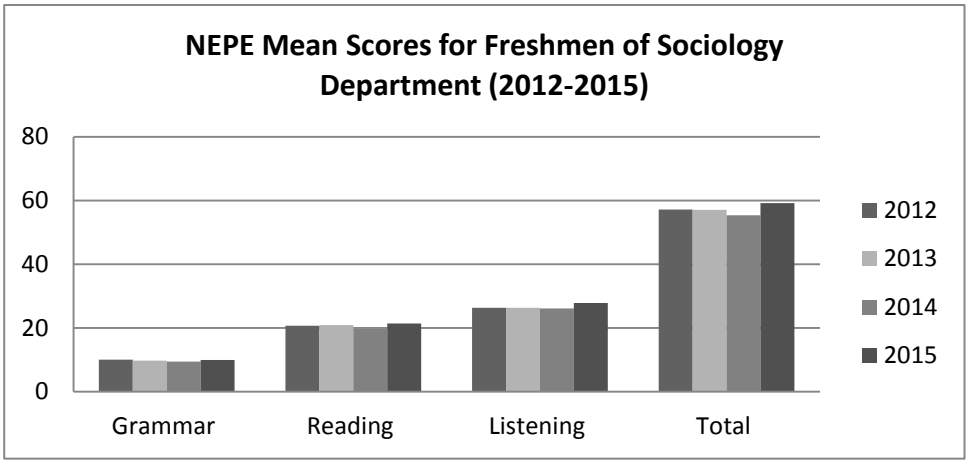


Figure 4.30 Means for Sociology Department Freshmen's NEPE Scores from 2012 to 2015

### *1-31 Analyses of the NEPE Scores for Freshmen of Animal Science Department (2012-2015)*

For Animal Science Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.77) presented no statistical difference between the years for grammar ($p$ = .168), reading ($p$ = .195) and total scores ($p$ = .349) while there was a significant difference for listening scores ($p$ = .001). Further results of Tukey's HSD test (see Table 4.78) for one-on-one group comparisons revealed a statistical difference for listening means between the years of 2012 and 2014 ($p$ = .001). Therefore, the means for the four years (Table 4.76 and Figure 4.31) were relatively consistent in terms of grammar, reading and total scores. Yet, the listening means increased gradually from 2012 (M= 24.7561) to 2014 (M= 29.2208) and tapered in 2015 (M= 28.1972). The listening means followed a consistent trend of increase from 2012 to 2015.

Table 4.76

*Means and Standard Deviations for Animal Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 82 | 10.5000 | 2.78111 | .30712 | 9.8889 | 11.1111 |
| | 2013 | 86 | 9.9419 | 3.07688 | .33179 | 9.2822 | 10.6015 |
| | 2014 | 77 | 9.4805 | 3.18140 | .36255 | 8.7584 | 10.2026 |
| | 2015 | 81 | 10.2593 | 2.99907 | .33323 | 9.5961 | 10.9224 |
| | Total | 326 | 10.0521 | 3.02101 | .16732 | 9.7230 | 10.3813 |
| Reading | 2012 | 82 | 20.9268 | 7.57641 | .83667 | 19.2621 | 22.5915 |
| | 2013 | 86 | 21.5814 | 7.17588 | .77380 | 20.0429 | 23.1199 |
| | 2014 | 77 | 19.2987 | 5.29912 | .60389 | 18.0959 | 20.5015 |
| | 2015 | 81 | 20.8642 | 7.16197 | .79577 | 19.2806 | 22.4478 |
| | Total | 326 | 20.6994 | 6.90341 | .38234 | 19.9472 | 21.4516 |
| Listening | 2012 | 82 | 24.7561 | 7.63126 | .84273 | 23.0793 | 26.4329 |
| | 2013 | 86 | 28.3721 | 8.09073 | .87245 | 26.6374 | 30.1067 |
| | 2014 | 77 | 29.2208 | 6.34247 | .72279 | 27.7812 | 30.6603 |
| | 2015 | 81 | 28.1728 | 7.91326 | .87925 | 26.4231 | 29.9226 |
| | Total | 326 | 27.6135 | 7.70440 | .42671 | 26.7740 | 28.4530 |
| Total | 2012 | 82 | 56.1829 | 15.14712 | 1.67272 | 52.8547 | 59.5111 |
| | 2013 | 86 | 59.8953 | 15.09346 | 1.62757 | 56.6593 | 63.1314 |
| | 2014 | 77 | 58.0000 | 11.61102 | 1.32320 | 55.3646 | 60.6354 |
| | 2015 | 81 | 59.2963 | 14.70582 | 1.63398 | 56.0446 | 62.5480 |
| | Total | 326 | 58.3650 | 14.26858 | .79026 | 56.8104 | 59.9197 |

Table 4.77

*ANOVA Test for Animal Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 46.128 | 3 | 15.376 | 1.696 | .168 |
| | Within Groups | 2919.986 | 322 | 9.068 | | |
| | Total | 2966.113 | 325 | | | |
| Reading | Between Groups | 224.413 | 3 | 74.804 | 1.578 | .195 |
| | Within Groups | 15264.127 | 322 | 47.404 | | |
| | Total | 15488.540 | 325 | | | |
| Listening | Between Groups | 943.259 | 3 | 314.420 | 5.518 | .001* |
| | Within Groups | 18348.042 | 322 | 56.981 | | |
| | Total | 19291.301 | 325 | | | |
| Total | Between Groups | 672.358 | 3 | 224.119 | 1.102 | .349 |
| | Within Groups | 65495.203 | 322 | 203.401 | | |
| | Total | 66167.561 | 325 | | | |

*Significant at $p < .01$

Table 4.78

*Tukey's HSD Test for Animal Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -3.61600 | 1.16511 | .011 | -7.2719 | .0399 |
| | 2012 | 2014 | -4.46468(*) | 1.19788 | .001* | -8.2234 | -.7059 |
| | 2012 | 2015 | -3.41674 | 1.18253 | .021 | -7.1273 | .2938 |
| | 2013 | 2014 | -.84869 | 1.18431 | .890 | -4.5648 | 2.8675 |
| | 2013 | 2015 | .19925 | 1.16878 | .998 | -3.4682 | 3.8667 |
| | 2014 | 2015 | 1.04794 | 1.20146 | .819 | -2.7220 | 4.8179 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

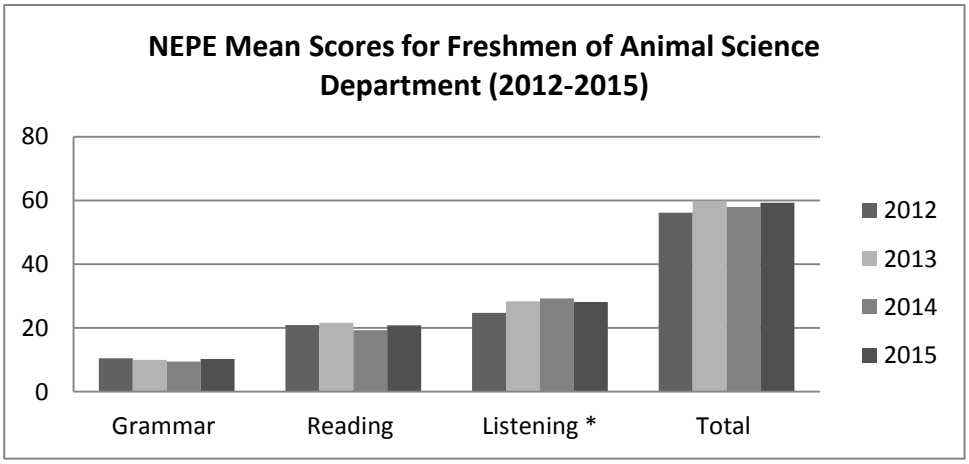


Figure 4.31 Means for Animal Science Department Freshmen's NEPE Scores from 2012 to 2015

### *1-32 Analyses of the NEPE Scores for Freshmen of Food Science Department (2012-2015)*

For Food Science Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.80) presented no statistical difference between the years for grammar scores ($p = .190$) while there were statistical differences for reading ($p = .004$), listening ($p = .000$) and total scores ($p = .000$). Further results of the Tukey's HSD test (Table 4.81) for one-on-one group comparisons revealed no statistical

difference for the reading means. Yet there were statistical differences for listening scores between the years of 2012 and 2013 ($p$ = .001) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), and for total scores between the years of 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000). Therefore, the means for the four years were relatively consistent in terms of grammar and reading scores. However, the listening and total means increased gradually year by year. Both listening and total means followed a consistent trend of increase.

Table 4.79

*Means and Standard Deviations for Food Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 97 | 9.8660 | 2.66782 | .27088 | 9.3283 | 10.4037 |
| | 2013 | 102 | 10.2549 | 2.86213 | .28339 | 9.6927 | 10.8171 |
| | 2014 | 97 | 10.7113 | 3.01717 | .30635 | 10.1032 | 11.3194 |
| | 2015 | 96 | 10.5208 | 2.86165 | .29207 | 9.9410 | 11.1007 |
| | Total | 392 | 10.3367 | 2.86149 | .14453 | 10.0526 | 10.6209 |
| Reading | 2012 | 97 | 20.1649 | 6.93824 | .70447 | 18.7666 | 21.5633 |
| | 2013 | 102 | 21.3529 | 6.65508 | .65895 | 20.0458 | 22.6601 |
| | 2014 | 97 | 23.1134 | 7.19357 | .73040 | 21.6636 | 24.5632 |
| | 2015 | 96 | 23.1042 | 5.75917 | .58779 | 21.9373 | 24.2711 |
| | Total | 392 | 21.9235 | 6.75052 | .34095 | 21.2531 | 22.5938 |
| Listening | 2012 | 97 | 22.2887 | 8.29653 | .84239 | 20.6165 | 23.9608 |
| | 2013 | 102 | 26.4902 | 7.58026 | .75056 | 25.0013 | 27.9791 |
| | 2014 | 97 | 29.1546 | 7.54340 | .76592 | 27.6343 | 30.6750 |
| | 2015 | 96 | 29.3750 | 7.62993 | .77873 | 27.8290 | 30.9210 |
| | Total | 392 | 26.8163 | 8.24230 | .41630 | 25.9979 | 27.6348 |
| Total | 2012 | 97 | 52.3196 | 14.83067 | 1.50583 | 49.3305 | 55.3086 |
| | 2013 | 102 | 58.0980 | 14.54015 | 1.43969 | 55.2421 | 60.9540 |
| | 2014 | 97 | 62.9794 | 15.05059 | 1.52816 | 59.9460 | 66.0127 |
| | 2015 | 96 | 63.0000 | 13.87159 | 1.41576 | 60.1894 | 65.8106 |
| | Total | 392 | 59.0765 | 15.16960 | .76618 | 57.5702 | 60.5829 |

Table 4.80

*ANOVA Test for Food Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 39.045 | 3 | 13.015 | 1.597 | .190 |
| | Within Groups | 3162.506 | 388 | 8.151 | | |
| | Total | 3201.551 | 391 | | | |
| Reading | Between Groups | 604.338 | 3 | 201.446 | 4.541 | .004* |
| | Within Groups | 17213.366 | 388 | 44.364 | | |
| | Total | 17817.704 | 391 | | | |
| Listening | Between Groups | 3158.187 | 3 | 1052.729 | 17.452 | .000* |
| | Within Groups | 23404.588 | 388 | 60.321 | | |
| | Total | 26562.776 | 391 | | | |
| Total | Between Groups | 7481.633 | 3 | 2493.878 | 11.730 | .000* |
| | Within Groups | 82494.071 | 388 | 212.614 | | |
| | Total | 89975.704 | 391 | | | |

*Significant at $p < .01$

Table 4.81

*Tukey's HSD Test for Food Science Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | -1.18799 | .94462 | .591 | -4.1481 | 1.7721 |
| | 2012 | 2014 | -2.94845 | .95641 | .012 | -5.9455 | .0486 |
| | 2012 | 2015 | -2.93922 | .95890 | .012 | -5.9441 | .0656 |
| | 2013 | 2014 | -1.76046 | .94462 | .246 | -4.7205 | 1.1996 |
| | 2013 | 2015 | -1.75123 | .94714 | .252 | -4.7192 | 1.2168 |
| | 2014 | 2015 | .00924 | .95890 | 1.000 | -2.9956 | 3.0141 |
| Listening | 2012 | 2013 | -4.20154(*) | 1.10148 | .001* | -7.6531 | -.7499 |
| | 2012 | 2014 | -6.86598(*) | 1.11523 | .000* | -10.3607 | -3.3713 |
| | 2012 | 2015 | -7.08634(*) | 1.11813 | .000* | -10.5901 | -3.5825 |
| | 2013 | 2014 | -2.66444 | 1.10148 | .075 | -6.1161 | .7872 |
| | 2013 | 2015 | -2.88480 | 1.10441 | .046 | -6.3456 | .5760 |
| | 2014 | 2015 | -.22036 | 1.11813 | .997 | -3.7242 | 3.2834 |
| Total | 2012 | 2013 | -5.77845 | 2.06793 | .028 | -12.2586 | .7017 |
| | 2012 | 2014 | -10.65979(*) | 2.09375 | .000* | -17.2208 | -4.0988 |
| | 2012 | 2015 | -10.68041(*) | 2.09919 | .000* | -17.2585 | -4.1023 |
| | 2013 | 2014 | -4.88134 | 2.06793 | .087 | -11.3615 | 1.5988 |
| | 2013 | 2015 | -4.90196 | 2.07344 | .086 | -11.3994 | 1.5954 |
| | 2014 | 2015 | -.02062 | 2.09919 | 1.000 | -6.5987 | 6.5575 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar scores because the ANOVA test for grammar scores revealed no significant difference among the four years.

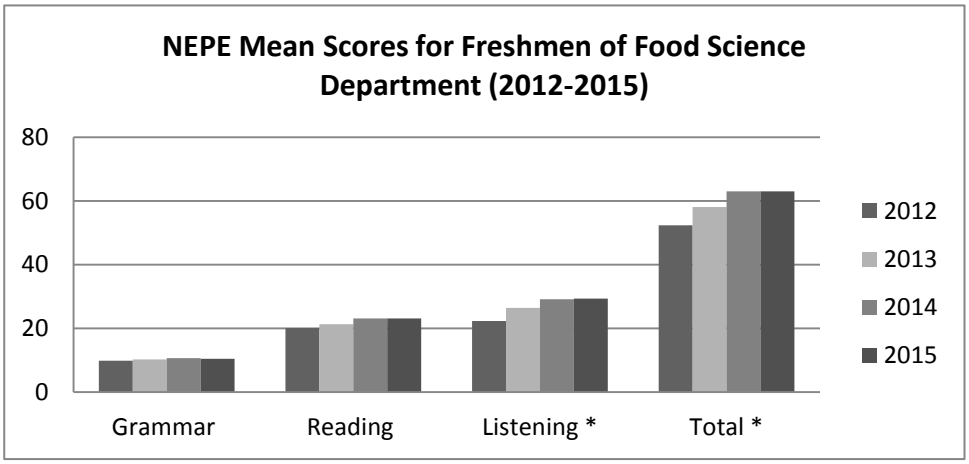


Figure 4.32 Means for Food Science Department Freshmen's NEPE Scores from 2012 to 2015

***1-33 Analyses of the NEPE Scores for Freshmen of Hospitality Management Department (2012-2015)***

For Hospitality Management Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.83) presented no statistical difference between the years for grammar ($p$ = .528), reading ($p$ = .779), listening ($p$ = .371) and total scores ($p$ = .913). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.82 and Figure 4.33) were relatively consistent in terms of grammar, reading and total scores as measured by the NEPE.

Table 4.82

*Means and Standard Deviations for Hospitality Management Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 53 | 11.5660 | 2.83189 | .38899 | 10.7855 | 12.3466 |
| | 2013 | 55 | 11.9818 | 3.07011 | .41397 | 11.1519 | 12.8118 |
| | 2014 | 54 | 11.1296 | 2.78165 | .37854 | 10.3704 | 11.8889 |
| | 2015 | 53 | 11.5283 | 3.23802 | .44478 | 10.6358 | 12.4208 |
| | Total | 215 | 11.5535 | 2.98057 | .20327 | 11.1528 | 11.9542 |
| Reading | 2012 | 53 | 26.0000 | 6.21413 | .85358 | 24.2872 | 27.7128 |
| | 2013 | 55 | 24.8364 | 6.48292 | .87416 | 23.0838 | 26.5889 |
| | 2014 | 54 | 24.8889 | 6.71430 | .91370 | 23.0562 | 26.7215 |
| | 2015 | 53 | 25.1698 | 6.63828 | .91184 | 23.3401 | 26.9995 |
| | Total | 215 | 25.2186 | 6.48677 | .44239 | 24.3466 | 26.0906 |
| Listening | 2012 | 53 | 29.8113 | 7.22458 | .99237 | 27.8200 | 31.8027 |
| | 2013 | 55 | 31.1273 | 7.19839 | .97063 | 29.1813 | 33.0733 |
| | 2014 | 54 | 31.2222 | 6.83406 | .93000 | 29.3569 | 33.0876 |
| | 2015 | 53 | 32.2264 | 6.87985 | .94502 | 30.3301 | 34.1227 |
| | Total | 215 | 31.0977 | 7.03959 | .48010 | 30.1514 | 32.0440 |
| Total | 2012 | 53 | 67.3774 | 13.33767 | 1.83207 | 63.7010 | 71.0537 |
| | 2013 | 55 | 67.9455 | 13.87833 | 1.87135 | 64.1936 | 71.6973 |
| | 2014 | 54 | 67.2407 | 13.03976 | 1.77449 | 63.6816 | 70.7999 |
| | 2015 | 53 | 68.9245 | 12.94047 | 1.77751 | 65.3577 | 72.4914 |
| | Total | 215 | 67.8698 | 13.23129 | .90237 | 66.0911 | 69.6484 |

Table 4.83

*ANOVA Test for Hospitality Management Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 19.834 | 3 | 6.611 | .742 | .528 |
| | Within Groups | 1881.301 | 211 | 8.916 | | |
| | Total | 1901.135 | 214 | | | |
| Reading | Between Groups | 46.393 | 3 | 15.464 | .364 | .779 |
| | Within Groups | 8958.332 | 211 | 42.457 | | |
| | Total | 9004.726 | 214 | | | |
| Listening | Between Groups | 156.110 | 3 | 52.037 | 1.051 | .371 |
| | Within Groups | 10448.839 | 211 | 49.521 | | |
| | Total | 10604.949 | 214 | | | |
| Total | Between Groups | 93.496 | 3 | 31.165 | .176 | .913 |
| | Within Groups | 37370.858 | 211 | 177.113 | | |
| | Total | 37464.353 | 214 | | | |

*Significant at $p < .01$

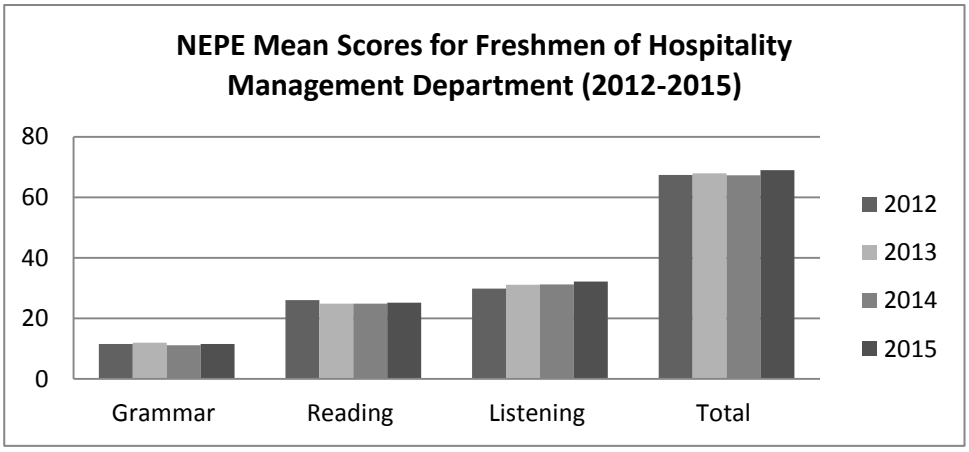


Figure 4.33 Means for Hospitality Management Department Freshmen's NEPE Scores from 2012 to 2015

***1-34 Analyses of the NEPE Scores for Freshmen of Fine Arts Department (2012-2015)***

For Fin Arts Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.85) presented no statistical difference between the years for grammar ($p$ = .058) and reading scores ($p$ = .031) while there were statistical differences for listening ($p$ = .000) and total scores ($p$ = .002). Further results of Tukey's HSD test (Table 4.86) for one-on-one group comparisons revealed statistical differences for listening means between the years of 2013 and 2014 ($p$ = .000) / 2013 and 2015 ($p$ = .006), and for total means between the years of 2012 and 2014 ($p$ = .007) / 2013 and 2014 ($p$ = .004). Therefore, the means for the four years were relatively consistent in terms of grammar and reading scores. However, as shown in Table 4.84 and Figure 4.34, the listening and total means had a tendency to increase from 2012 to 2015.

Table 4.84

*Means and Standard Deviations for Fine Arts Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 35 | 9.6286 | 2.50981 | .42424 | 8.7664 | 10.4907 |
| | 2013 | 40 | 10.5500 | 2.82797 | .44714 | 9.6456 | 11.4544 |
| | 2014 | 40 | 11.3500 | 2.34849 | .37133 | 10.5989 | 12.1011 |
| | 2015 | 39 | 10.2051 | 3.27815 | .52492 | 9.1425 | 11.2678 |
| | Total | 154 | 10.4610 | 2.81019 | .22645 | 10.0137 | 10.9084 |
| Reading | 2012 | 35 | 19.4857 | 7.10166 | 1.20040 | 17.0462 | 21.9252 |
| | 2013 | 40 | 20.9000 | 7.38606 | 1.16784 | 18.5378 | 23.2622 |
| | 2014 | 40 | 24.2500 | 6.31137 | .99791 | 22.2315 | 26.2685 |
| | 2015 | 39 | 20.8205 | 8.06184 | 1.29093 | 18.2072 | 23.4339 |
| | Total | 154 | 21.4286 | 7.38383 | .59501 | 20.2531 | 22.6041 |
| Listening | 2012 | 35 | 28.1143 | 6.03798 | 1.02060 | 26.0402 | 30.1884 |
| | 2013 | 40 | 25.6500 | 8.90851 | 1.40856 | 22.8009 | 28.4991 |
| | 2014 | 40 | 32.6000 | 5.85640 | .92598 | 30.7270 | 34.4730 |
| | 2015 | 39 | 30.9231 | 6.88012 | 1.10170 | 28.6928 | 33.1534 |
| | Total | 154 | 29.3506 | 7.49338 | .60383 | 28.1577 | 30.5436 |
| Total | 2012 | 35 | 57.2286 | 12.15364 | 2.05434 | 53.0537 | 61.4035 |
| | 2013 | 40 | 57.1000 | 16.23513 | 2.56700 | 51.9078 | 62.2922 |
| | 2014 | 40 | 68.2000 | 12.48014 | 1.97328 | 64.2087 | 72.1913 |
| | 2015 | 39 | 61.9487 | 15.85618 | 2.53902 | 56.8087 | 67.0887 |
| | Total | 154 | 61.2403 | 14.93693 | 1.20365 | 58.8623 | 63.6182 |

Table 4.85

*ANOVA Test for Fine Arts Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 58.736 | 3 | 19.579 | 2.555 | .058 |
| | Within Groups | 1149.530 | 150 | 7.664 | | |
| | Total | 1208.266 | 153 | | | |
| Reading | Between Groups | 476.128 | 3 | 158.709 | 3.027 | .031 |
| | Within Groups | 7865.586 | 150 | 52.437 | | |
| | Total | 8341.714 | 153 | | | |
| Listening | Between Groups | 1120.053 | 3 | 373.351 | 7.496 | .000* |
| | Within Groups | 7471.012 | 150 | 49.807 | | |
| | Total | 8591.065 | 153 | | | |
| Total | Between Groups | 3206.042 | 3 | 1068.681 | 5.183 | .002* |
| | Within Groups | 30930.069 | 150 | 206.200 | | |
| | Total | 34136.110 | 153 | | | |

*Significant at $p < .01$

Table 4.86

*Tukey's HSD Test for Fine Arts Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | 2.46429 | 1.63347 | .435 | -2.7079 | 7.6365 |
| | 2012 | 2014 | -4.48571 | 1.63347 | .034 | -9.6579 | .6865 |
| | 2012 | 2015 | -2.80879 | 1.64321 | .322 | -8.0118 | 2.3942 |
| | 2013 | 2014 | -6.95000(*) | 1.57808 | .000 | -11.9468 | -1.9532 |
| | 2013 | 2015 | -5.27308(*) | 1.58816 | .006 | -10.3018 | -.2443 |
| | 2014 | 2015 | 1.67692 | 1.58816 | .717 | -3.3518 | 6.7057 |
| Total | 2012 | 2013 | .12857 | 3.32362 | 1.000 | -10.3953 | 10.6524 |
| | 2012 | 2014 | -10.97143(*) | 3.32362 | .007 | -21.4953 | -.4476 |
| | 2012 | 2015 | -4.72015 | 3.34345 | .494 | -15.3068 | 5.8665 |
| | 2013 | 2014 | -11.10000(*) | 3.21092 | .004 | -21.2670 | -.9330 |
| | 2013 | 2015 | -4.84872 | 3.23144 | .440 | -15.0807 | 5.3832 |
| | 2014 | 2015 | 6.25128 | 3.23144 | .218 | -3.9807 | 16.4832 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and reading scores because the ANOVA test revealed no significant difference for these two sections among the four years.

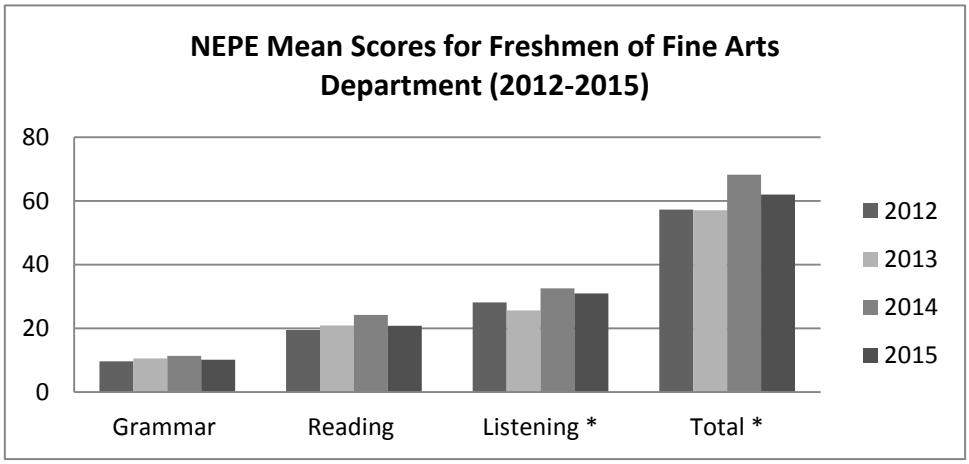


Figure 4.34 Means for Fine Arts Department Freshmen's NEPE Scores from 2012 to 2015

### *1-35 Analyses of the NEPE Scores for Freshmen of Music Department (2012-2015)*

For Music Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.88) presented no statistical difference between the years for grammar ($p$ = .790), reading ($p$ = .619), listening ($p$ = .557) and total scores ($p$ = .983). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.87 and Figure 4.35) were relatively consistent in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.87

*Means and Standard Deviations for Music Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 29 | 9.2414 | 3.51177 | .65212 | 7.9056 | 10.5772 |
| | 2013 | 31 | 8.9355 | 3.03244 | .54464 | 7.8232 | 10.0478 |
| | 2014 | 30 | 8.6000 | 2.69866 | .49271 | 7.5923 | 9.6077 |
| | 2015 | 25 | 8.4400 | 3.48903 | .69781 | 6.9998 | 9.8802 |
| | Total | 115 | 8.8174 | 3.15556 | .29426 | 8.2345 | 9.4003 |
| Reading | 2012 | 29 | 18.7586 | 8.60919 | 1.59869 | 15.4839 | 22.0334 |
| | 2013 | 31 | 17.4839 | 5.86442 | 1.05328 | 15.3328 | 19.6350 |
| | 2014 | 30 | 18.6667 | 6.26613 | 1.14403 | 16.3269 | 21.0065 |
| | 2015 | 25 | 16.4800 | 8.27204 | 1.65441 | 13.0655 | 19.8945 |
| | Total | 115 | 17.8957 | 7.24432 | .67554 | 16.5574 | 19.2339 |
| Listening | 2012 | 29 | 22.2759 | 9.03523 | 1.67780 | 18.8390 | 25.7127 |
| | 2013 | 31 | 25.0968 | 8.85195 | 1.58986 | 21.8499 | 28.3437 |
| | 2014 | 30 | 24.1333 | 7.59189 | 1.38608 | 21.2985 | 26.9682 |
| | 2015 | 25 | 25.2000 | 9.27362 | 1.85472 | 21.3720 | 29.0280 |
| | Total | 115 | 24.1565 | 8.64970 | .80659 | 22.5587 | 25.7544 |
| Total | 2012 | 29 | 50.2759 | 19.32041 | 3.58771 | 42.9268 | 57.6250 |
| | 2013 | 31 | 51.5161 | 15.86584 | 2.84959 | 45.6965 | 57.3358 |
| | 2014 | 30 | 51.4000 | 13.45644 | 2.45680 | 46.3753 | 56.4247 |
| | 2015 | 25 | 50.1200 | 18.35375 | 3.67075 | 42.5439 | 57.6961 |
| | Total | 115 | 50.8696 | 16.59239 | 1.54725 | 47.8045 | 53.9347 |

Table 4.88

*ANOVA Test for Music Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 10.624 | 3 | 3.541 | .350 | .790 |
| | Within Groups | 1124.541 | 111 | 10.131 | | |
| | Total | 1135.165 | 114 | | | |
| Reading | Between Groups | 94.789 | 3 | 31.596 | .596 | .619 |
| | Within Groups | 5887.959 | 111 | 53.045 | | |
| | Total | 5982.748 | 114 | | | |
| Listening | Between Groups | 157.213 | 3 | 52.404 | .695 | .557 |
| | Within Groups | 8371.969 | 111 | 75.423 | | |
| | Total | 8529.183 | 114 | | | |
| Total | Between Groups | 45.668 | 3 | 15.223 | .054 | .983 |
| | Within Groups | 31339.375 | 111 | 282.337 | | |
| | Total | 31385.043 | 114 | | | |

*Significant at $p < .01$

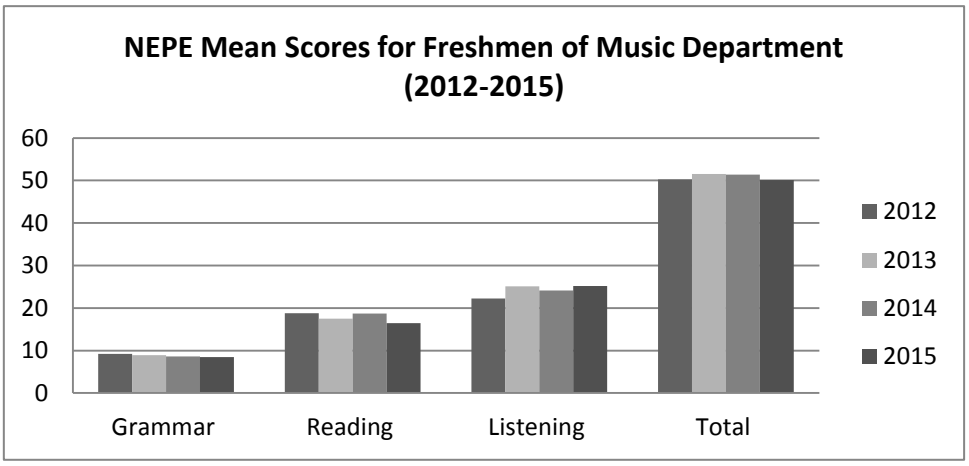


Figure 4.35 Means for Music Department Freshmen's NEPE Scores from 2012 to 2015

### *1-36 Analyses of the NEPE Scores for Freshmen of Architecture Department (2012-2015)*

For Architecture Department freshmen's NEPE scores for the four years, the results of the ANOVA Test (Table 4.90) presented no statistical differences between the groups for grammar ($p = .221$), listening ($p = .425$) and total scores ($p = .047$) while there was statistical difference for reading scores ($p = .006$). However, further results of Tukey's HSD test (see Table 4.91) for one-on-one group comparisons revealed no

statistical difference for reading means. Therefore, the means for the four years (Table 4.89 and Figure 4.36) were relatively consistent in terms of grammar, reading, listening and total scores as measures by the NEPE.

Table 4.89

*Means and Standard Deviations for Architecture Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 32 | 14.4063 | 2.33983 | .41363 | 13.5627 | 15.2498 |
| | 2013 | 31 | 14.0968 | 2.66277 | .47825 | 13.1201 | 15.0735 |
| | 2014 | 32 | 15.2500 | 2.47569 | .43764 | 14.3574 | 16.1426 |
| | 2015 | 32 | 15.0313 | 2.38928 | .42237 | 14.1698 | 15.8927 |
| | Total | 127 | 14.7008 | 2.48269 | .22030 | 14.2648 | 15.1368 |
| Reading | 2012 | 32 | 31.5625 | 5.07325 | .89683 | 29.7334 | 33.3916 |
| | 2013 | 31 | 31.7419 | 5.76754 | 1.03588 | 29.6264 | 33.8575 |
| | 2014 | 32 | 35.1875 | 4.30632 | .76126 | 33.6349 | 36.7401 |
| | 2015 | 32 | 31.1875 | 5.07643 | .89739 | 29.3573 | 33.0177 |
| | Total | 127 | 32.4252 | 5.27125 | .46775 | 31.4995 | 33.3509 |
| Listening | 2012 | 32 | 34.5625 | 4.71742 | .83393 | 32.8617 | 36.2633 |
| | 2013 | 31 | 35.2258 | 4.24821 | .76300 | 33.6675 | 36.7841 |
| | 2014 | 32 | 36.1875 | 5.03816 | .89063 | 34.3710 | 38.0040 |
| | 2015 | 32 | 36.0625 | 3.68027 | .65059 | 34.7356 | 37.3894 |
| | Total | 127 | 35.5118 | 4.44877 | .39476 | 34.7306 | 36.2930 |
| Total | 2012 | 32 | 80.5313 | 9.36357 | 1.65526 | 77.1553 | 83.9072 |
| | 2013 | 31 | 81.0645 | 10.42732 | 1.87280 | 77.2397 | 84.8893 |
| | 2014 | 32 | 86.6250 | 9.16427 | 1.62003 | 83.3209 | 89.9291 |
| | 2015 | 32 | 82.2813 | 8.85815 | 1.56591 | 79.0875 | 85.4750 |
| | Total | 127 | 82.6378 | 9.65572 | .85681 | 80.9422 | 84.3334 |

Table 4.90

*ANOVA Test for Architecture Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 27.233 | 3 | 9.078 | 1.490 | .221 |
| | Within Groups | 749.397 | 123 | 6.093 | | |
| | Total | 776.630 | 126 | | | |
| Reading | Between Groups | 331.479 | 3 | 110.493 | 4.288 | .006* |
| | Within Groups | 3169.560 | 123 | 25.769 | | |
| | Total | 3501.039 | 126 | | | |
| Listening | Between Groups | 55.688 | 3 | 18.563 | .936 | .425 |
| | Within Groups | 2438.044 | 123 | 19.821 | | |
| | Total | 2493.732 | 126 | | | |
| Total | Between Groups | 731.530 | 3 | 243.843 | 2.723 | .047 |
| | Within Groups | 11015.808 | 123 | 89.559 | | |
| | Total | 11747.339 | 126 | | | |

*Significant at $p < .01$

Table 4.91

*Tukey's HSD Test for Architecture Department Freshmen's NEPE Scores from 2012 to 2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Reading | 2012 | 2013 | -.17944 | 1.27927 | .999 | -4.2452 | 3.8864 |
| | 2012 | 2014 | -3.62500 | 1.26907 | .026 | -7.6584 | .4084 |
| | 2012 | 2015 | .37500 | 1.26907 | .991 | -3.6584 | 4.4084 |
| | 2013 | 2014 | -3.44556 | 1.27927 | .040 | -7.5114 | .6202 |
| | 2013 | 2015 | .55444 | 1.27927 | .973 | -3.5114 | 4.6202 |
| | 2014 | 2015 | 4.00000 | 1.26907 | .011 | -.0334 | 8.0334 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

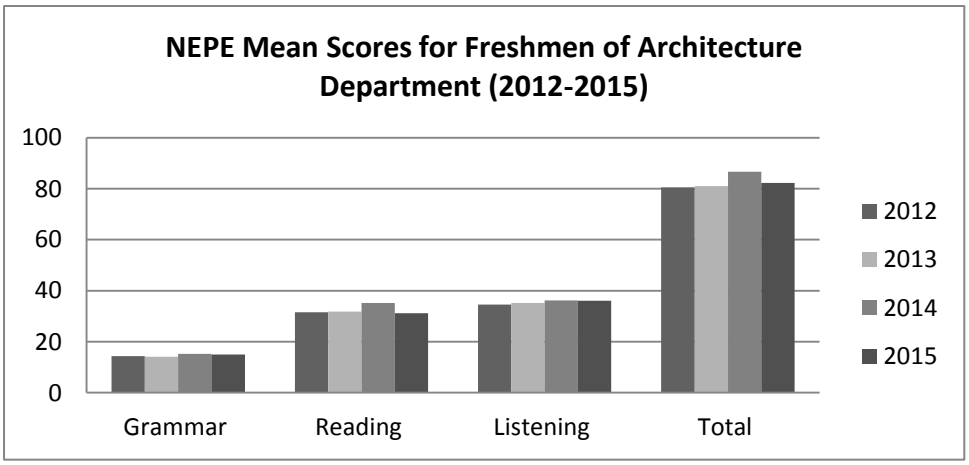


Figure 4.36 Means for Architecture Department Freshmen's NEPE Scores from 2012 to 2015

### *1-37 Analyses of the NEPE Scores for Freshmen of Industrial Design Department (2012-2015)*

For Industrial Design Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.93) presented no statistical difference between the years for grammar ($p = .730$), reading ($p = .640$), listening ($p = .664$) and total scores ($p = .869$). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.92 and Figure 4.37) were relatively consistent in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.92

*Means and Standard Deviations for Industrial Design Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 30 | 13.3333 | 2.61736 | .47786 | 12.3560 | 14.3107 |
| | 2013 | 32 | 12.7813 | 3.02393 | .53456 | 11.6910 | 13.8715 |
| | 2014 | 33 | 13.1212 | 3.62075 | .63029 | 11.8373 | 14.4051 |
| | 2015 | 33 | 12.4848 | 3.40148 | .59212 | 11.2787 | 13.6910 |
| | Total | 128 | 12.9219 | 3.18117 | .28118 | 12.3655 | 13.4783 |
| Reading | 2012 | 30 | 29.0000 | 5.11253 | .93342 | 27.0910 | 30.9090 |
| | 2013 | 32 | 28.9375 | 6.03184 | 1.06629 | 26.7628 | 31.1122 |
| | 2014 | 33 | 28.1818 | 5.92376 | 1.03119 | 26.0813 | 30.2823 |
| | 2015 | 33 | 27.2727 | 7.06785 | 1.23036 | 24.7666 | 29.7789 |
| | Total | 128 | 28.3281 | 6.06411 | .53600 | 27.2675 | 29.3888 |
| Listening | 2012 | 30 | 33.1333 | 5.00161 | .91316 | 31.2657 | 35.0010 |
| | 2013 | 32 | 33.4375 | 6.51023 | 1.15086 | 31.0903 | 35.7847 |
| | 2014 | 33 | 32.0606 | 6.23468 | 1.08532 | 29.8499 | 34.2713 |
| | 2015 | 33 | 33.7576 | 5.33286 | .92833 | 31.8666 | 35.6485 |
| | Total | 128 | 33.0938 | 5.78273 | .51113 | 32.0823 | 34.1052 |
| Total | 2012 | 30 | 75.4667 | 9.84617 | 1.79766 | 71.7900 | 79.1433 |
| | 2013 | 32 | 75.1563 | 12.77121 | 2.25765 | 70.5517 | 79.7608 |
| | 2014 | 33 | 73.3636 | 13.29431 | 2.31424 | 68.6497 | 78.0776 |
| | 2015 | 33 | 73.5152 | 13.72298 | 2.38886 | 68.6492 | 78.3811 |
| | Total | 128 | 74.3438 | 12.44290 | 1.09981 | 72.1674 | 76.5201 |

Table 4.93

*ANOVA Test for Industrial Design Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 13.326 | 3 | 4.442 | .433 | .730 |
| | Within Groups | 1271.893 | 124 | 10.257 | | |
| | Total | 1285.219 | 127 | | | |
| Reading | Between Groups | 62.889 | 3 | 20.963 | .564 | .640 |
| | Within Groups | 4607.330 | 124 | 37.156 | | |
| | Total | 4670.219 | 127 | | | |
| Listening | Between Groups | 53.594 | 3 | 17.865 | .528 | .664 |
| | Within Groups | 4193.281 | 124 | 33.817 | | |
| | Total | 4246.875 | 127 | | | |
| Total | Between Groups | 113.311 | 3 | 37.770 | .240 | .869 |
| | Within Groups | 19549.564 | 124 | 157.658 | | |
| | Total | 19662.875 | 127 | | | |

*Significant at $p < .01$

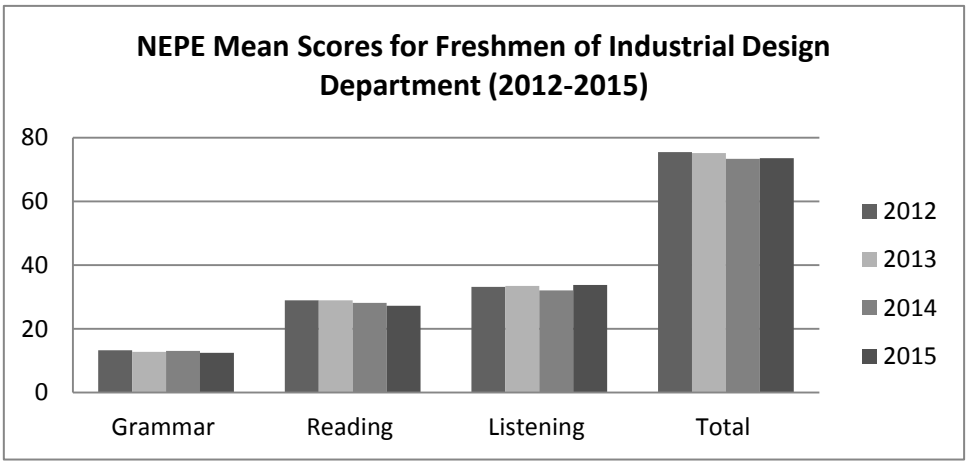


Figure 4.37 Means for Industrial Design Department Freshmen's NEPE Scores from 2012 to 2015

### *1-38 Analyses of the NEPE Scores for Freshmen of Landscape Architecture Department (2012-2015)*

For Landscape Architecture Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.95) presented no statistical difference between the years for grammar ($p$ = .083), reading ($p$ = .175), listening ($p$ = .078) and total scores ($p$ = .069). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.94 and Figure 4.38) were relatively consistent in terms of grammar, reading, listening and total score as measured by the NEPE.

Table 4.94

*Means and Standard Deviations for Landscape Architecture Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 57 | 12.1754 | 2.68010 | .35499 | 11.4643 | 12.8866 |
| | 2013 | 62 | 12.3548 | 2.56136 | .32529 | 11.7044 | 13.0053 |
| | 2014 | 59 | 11.4576 | 2.86068 | .37243 | 10.7121 | 12.2031 |
| | 2015 | 54 | 11.2963 | 2.47729 | .33712 | 10.6201 | 11.9725 |
| | Total | 232 | 11.8362 | 2.67243 | .17545 | 11.4905 | 12.1819 |
| Reading | 2012 | 57 | 25.5439 | 7.10148 | .94061 | 23.6596 | 27.4281 |
| | 2013 | 62 | 27.7097 | 6.49688 | .82510 | 26.0598 | 29.3596 |
| | 2014 | 59 | 26.4407 | 6.57128 | .85551 | 24.7282 | 28.1532 |
| | 2015 | 54 | 25.1481 | 6.88013 | .93627 | 23.2702 | 27.0261 |
| | Total | 232 | 26.2586 | 6.78695 | .44559 | 25.3807 | 27.1366 |
| Listening | 2012 | 57 | 30.8070 | 6.74918 | .89395 | 29.0162 | 32.5978 |
| | 2013 | 62 | 33.5806 | 5.03284 | .63917 | 32.3025 | 34.8587 |
| | 2014 | 59 | 32.6102 | 5.89862 | .76793 | 31.0730 | 34.1474 |
| | 2015 | 54 | 31.5556 | 6.86986 | .93487 | 29.6804 | 33.4307 |
| | Total | 232 | 32.1810 | 6.19887 | .40698 | 31.3792 | 32.9829 |
| Total | 2012 | 57 | 68.5263 | 13.43251 | 1.77918 | 64.9622 | 72.0904 |
| | 2013 | 62 | 73.6452 | 10.91862 | 1.38667 | 70.8724 | 76.4180 |
| | 2014 | 59 | 70.5085 | 12.50982 | 1.62864 | 67.2484 | 73.7686 |
| | 2015 | 54 | 68.0000 | 14.03500 | 1.90992 | 64.1692 | 71.8308 |
| | Total | 232 | 70.2759 | 12.83501 | .84266 | 68.6156 | 71.9361 |

Table 4.95

*ANOVA Test for Landscape Architecture Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 47.433 | 3 | 15.811 | 2.250 | .083 |
| | Within Groups | 1602.342 | 228 | 7.028 | | |
| | Total | 1649.776 | 231 | | | |
| Reading | Between Groups | 228.211 | 3 | 76.070 | 1.666 | .175 |
| | Within Groups | 10412.272 | 228 | 45.668 | | |
| | Total | 10640.483 | 231 | | | |
| Listening | Between Groups | 261.055 | 3 | 87.018 | 2.303 | .078 |
| | Within Groups | 8615.341 | 228 | 37.787 | | |
| | Total | 8876.397 | 231 | | | |
| Total | Between Groups | 1161.195 | 3 | 387.065 | 2.392 | .069 |
| | Within Groups | 36893.150 | 228 | 161.812 | | |
| | Total | 38054.345 | 231 | | | |

*Significant at $p < .01$

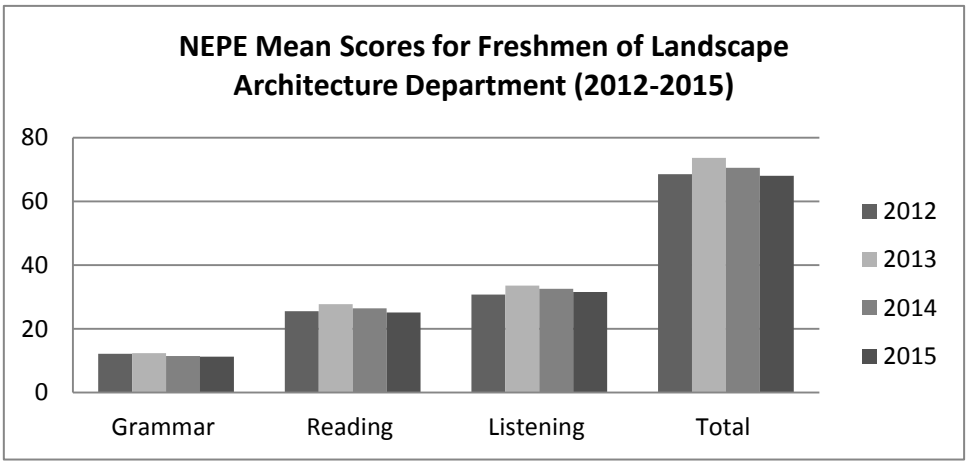


Figure 4.38 Means for Landscape Architecture Department Freshmen's NEPE Scores from 2012 to 2015

***1-39 Analyses of the NEPE Scores for Freshmen of Law Department (2012-2015)***

For Law Department freshmen's NEPE scores for the four years, the results of the ANOVA test (Table 4.97) presented no statistical difference between the years for grammar ($p$ = .116), reading ($p$ = .019), listening ($p$ = .074) and total scores ($p$ = .018). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.96 and Figure 4.39) were relatively consistent in terms of grammar, reading, listening and total scores as measured by the NEPE.

Table 4.96

*Means and Standard Deviations for Law Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 118 | 12.0339 | 3.15126 | .29010 | 11.4594 | 12.6084 |
| | 2013 | 116 | 12.4569 | 2.74857 | .25520 | 11.9514 | 12.9624 |
| | 2014 | 115 | 12.7478 | 2.79047 | .26021 | 12.2323 | 13.2633 |
| | 2015 | 109 | 11.9174 | 2.91906 | .27960 | 11.3632 | 12.4716 |
| | Total | 458 | 12.2926 | 2.91709 | .13631 | 12.0247 | 12.5604 |
| Reading | 2012 | 118 | 26.2034 | 6.83075 | .62882 | 24.9580 | 27.4487 |
| | 2013 | 116 | 28.3448 | 5.53425 | .51384 | 27.3270 | 29.3626 |
| | 2014 | 115 | 28.1565 | 6.36960 | .59397 | 26.9799 | 29.3332 |
| | 2015 | 109 | 26.8073 | 5.53855 | .53050 | 25.7558 | 27.8589 |
| | Total | 458 | 27.3799 | 6.15196 | .28746 | 26.8150 | 27.9448 |
| Listening | 2012 | 118 | 30.4746 | 7.13570 | .65689 | 29.1736 | 31.7755 |
| | 2013 | 116 | 32.1897 | 6.25253 | .58053 | 31.0397 | 33.3396 |
| | 2014 | 115 | 32.4348 | 6.71622 | .62629 | 31.1941 | 33.6755 |
| | 2015 | 109 | 32.2569 | 5.72907 | .54875 | 31.1692 | 33.3446 |
| | Total | 458 | 31.8253 | 6.52114 | .30471 | 31.2265 | 32.4241 |
| Total | 2012 | 118 | 68.7119 | 13.83733 | 1.27383 | 66.1891 | 71.2346 |
| | 2013 | 116 | 72.9914 | 11.66302 | 1.08288 | 70.8464 | 75.1364 |
| | 2014 | 115 | 73.3391 | 13.31197 | 1.24135 | 70.8800 | 75.7982 |
| | 2015 | 109 | 70.9817 | 11.06712 | 1.06004 | 68.8805 | 73.0828 |
| | Total | 458 | 71.4978 | 12.64466 | .59085 | 70.3367 | 72.6589 |

Table 4.97

*ANOVA Test for Law Department Freshmen's NEPE Scores from 2012 to 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 50.202 | 3 | 16.734 | 1.979 | .116 |
| | Within Groups | 3838.593 | 454 | 8.455 | | |
| | Total | 3888.795 | 457 | | | |
| Reading | Between Groups | 376.433 | 3 | 125.478 | 3.367 | .019 |
| | Within Groups | 16919.462 | 454 | 37.268 | | |
| | Total | 17295.895 | 457 | | | |
| Listening | Between Groups | 293.707 | 3 | 97.902 | 2.322 | .074 |
| | Within Groups | 19140.320 | 454 | 42.159 | | |
| | Total | 19434.026 | 457 | | | |
| Total | Between Groups | 1593.566 | 3 | 531.189 | 3.374 | .018 |
| | Within Groups | 71474.932 | 454 | 157.434 | | |
| | Total | 73068.498 | 457 | | | |

*Significant at $p < .01$

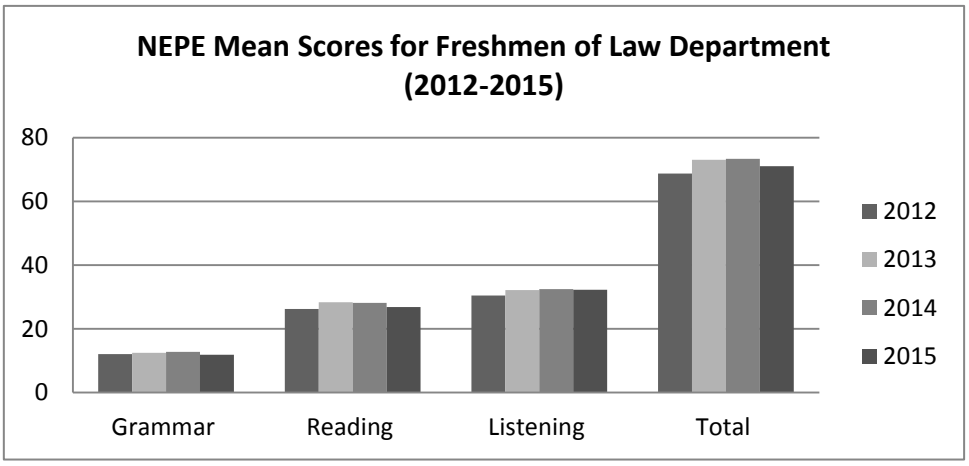


Figure 4.39 Means for Law Department Freshmen's NEPE Scores from 2012 to 2015

***1-40 Analyses of the NEPE Scores for Freshmen from Northern Taiwan (2012-2015)***

For the NEPE scores for freshmen from Northern Taiwan across the four years, the results of the ANOVA test (Table 4.99) presented no statistical difference between the years for grammar ($p$ = .319), reading ($p$ = .819) and total scores ($p$ = .040) while there was a significant difference in listening scores ($p$ = .000). Further results of Tukey's HSD test (Table 4.100) for one-on-one group comparisons revealed statistical differences for listening means between the years of 2012 and 2013 ($p$ = .002) / 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000). Therefore, the means for the four years (Table 4.98 and Figure 4.40) were relatively consistent in terms of grammar, reading and total scores. However, the listening means increased gradually year by year from 2012 to 2015. The listening means followed a consistent trend of increase across the four years.

Table 4.98

*Means and Standard Deviations for the NEPE Scores for Freshmen from Northern Taiwan in 2012-2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 833 | 10.3337 | 3.29904 | .11431 | 10.1094 | 10.5581 |
| | 2013 | 820 | 10.3195 | 3.12466 | .10912 | 10.1053 | 10.5337 |
| | 2014 | 854 | 10.1979 | 3.21805 | .11012 | 9.9818 | 10.4140 |
| | 2015 | 899 | 10.0834 | 3.11701 | .10396 | 9.8794 | 10.2875 |
| | Total | 3406 | 10.2302 | 3.18981 | .05466 | 10.1230 | 10.3373 |
| Reading | 2012 | 833 | 22.1128 | 8.01811 | .27781 | 21.5676 | 22.6581 |
| | 2013 | 820 | 21.9220 | 7.80744 | .27265 | 21.3868 | 22.4571 |
| | 2014 | 854 | 22.1756 | 7.36788 | .25212 | 21.6808 | 22.6705 |
| | 2015 | 899 | 21.8776 | 7.33106 | .24450 | 21.3978 | 22.3575 |
| | Total | 3406 | 22.0206 | 7.62627 | .13067 | 21.7643 | 22.2768 |
| Listening | 2012 | 833 | 26.6050 | 8.08957 | .28029 | 26.0549 | 27.1552 |
| | 2013 | 820 | 27.9951 | 8.21089 | .28674 | 27.4323 | 28.5579 |
| | 2014 | 854 | 28.6112 | 7.66877 | .26242 | 28.0962 | 29.1263 |
| | 2015 | 899 | 29.0389 | 7.70862 | .25710 | 28.5344 | 29.5435 |
| | Total | 3406 | 28.0851 | 7.96607 | .13650 | 27.8175 | 28.3528 |
| Total | 2012 | 833 | 59.0516 | 16.72037 | .57933 | 57.9145 | 60.1887 |
| | 2013 | 820 | 60.2366 | 16.47754 | .57542 | 59.1071 | 61.3661 |
| | 2014 | 854 | 60.9848 | 15.45249 | .52877 | 59.9469 | 62.0226 |
| | 2015 | 899 | 61.0000 | 15.39618 | .51349 | 59.9922 | 62.0078 |
| | Total | 3406 | 60.3359 | 16.01807 | .27447 | 59.7977 | 60.8740 |

Table 4.99

*ANOVA Test for the NEPE scores for Freshmen form Northern Taiwan in 2012- 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 35.728 | 3 | 11.909 | 1.171 | .319 |
| | Within Groups | 34609.809 | 3402 | 10.173 | | |
| | Total | 34645.537 | 3405 | | | |
| Reading | Between Groups | 53.970 | 3 | 17.990 | .309 | .819 |
| | Within Groups | 197980.591 | 3402 | 58.195 | | |
| | Total | 198034.561 | 3405 | | | |
| Listening | Between Groups | 2885.700 | 3 | 961.900 | 15.350 | .000* |
| | Within Groups | 213189.609 | 3402 | 62.666 | | |
| | Total | 216075.308 | 3405 | | | |
| Total | Between Groups | 2138.071 | 3 | 712.690 | 2.782 | .040 |
| | Within Groups | 871511.685 | 3402 | 256.176 | | |
| | Total | 873649.756 | 3405 | | | |

*Significant at $p < .01$

Table 4.100

*Tukey's HSD Test for the NEPE Scores for Freshmen from Northern Taiwan in 2012-2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.39008(*) | .38942 | .002* | -2.6034 | -.1768 |
| | 2012 | 2014 | -2.00620(*) | .38550 | .000* | -3.2072 | -.8052 |
| | 2012 | 2015 | -2.43389(*) | .38070 | .000* | -3.6200 | -1.2478 |
| | 2013 | 2014 | -.61612 | .38704 | .383 | -1.8220 | .5897 |
| | 2013 | 2015 | -1.04381 | .38227 | .032 | -2.2348 | .1472 |
| | 2014 | 2015 | -.42769 | .37827 | .671 | -1.6062 | .7508 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

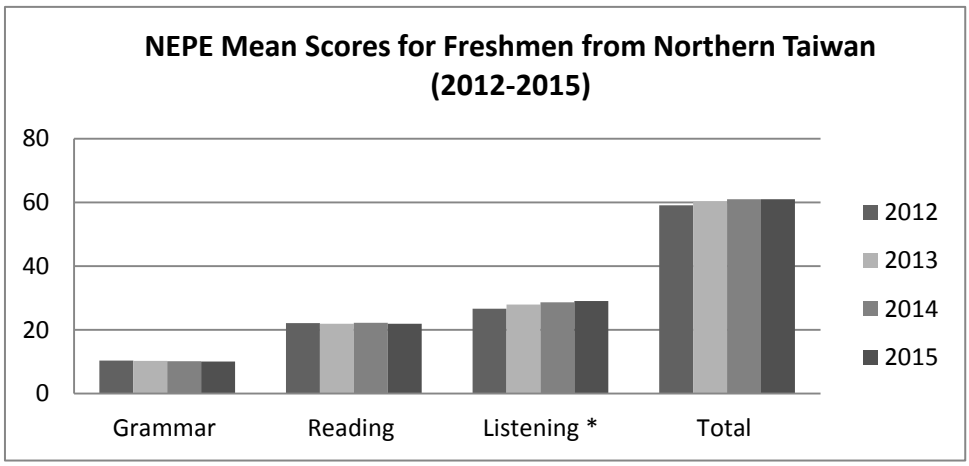


Figure 4.40 Means of the NEPE Scores for freshmen from Northern Taiwan in 2012-2015

### *1-41 Analyses of the NEPE Scores for Freshmen from Central Taiwan (2012-2015)*

For the NEPE scores for freshmen from Central Taiwan across the four years, the results of the ANOVA test (Table 4.102) presented no statistical differences between the years for grammar ($p$ = .081) and reading scores ($p$ = .511) while there were statistical differences for listening ($p$ = .000) and total scores ($p$ = .000). Further results of the Tukey's HSD test (Table 4.103) for one-on-one group comparisons revealed statistical differences for listening means between the years of 2012 and 2013 ($p$ = .000)

/ 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .000), and for total means between the years of 2012 and 2014 ($p$ = .001) / 2012 and 2015 ($p$ = .005). Therefore, the means for the four years (Table 4.101 and Figure 4.41) were relatively consistent in terms of grammar and reading scores. Yet, the listening and total means increased gradually from 2012 to 2015. They followed a consistent trend of increase across the four years.

Table 4.101

*Means and Standard Deviations for the NEPE Scores for Freshmen from Central Taiwan in 2012- 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 1100 | 10.6991 | 3.12427 | .09420 | 10.5143 | 10.8839 |
| | 2013 | 1072 | 10.6642 | 3.05736 | .09338 | 10.4810 | 10.8474 |
| | 2014 | 1038 | 10.5568 | 3.26994 | .10149 | 10.3577 | 10.7560 |
| | 2015 | 1044 | 10.3784 | 3.09076 | .09566 | 10.1907 | 10.5661 |
| | Total | 4254 | 10.5769 | 3.13713 | .04810 | 10.4826 | 10.6712 |
| Reading | 2012 | 1100 | 22.2309 | 7.48388 | .22565 | 21.7882 | 22.6737 |
| | 2013 | 1072 | 22.3694 | 7.39935 | .22599 | 21.9260 | 22.8128 |
| | 2014 | 1038 | 22.6859 | 7.45282 | .23132 | 22.2320 | 23.1399 |
| | 2015 | 1044 | 22.3084 | 7.19171 | .22258 | 21.8717 | 22.7452 |
| | Total | 4254 | 22.3959 | 7.38357 | .11321 | 22.1739 | 22.6178 |
| Listening | 2012 | 1100 | 26.5418 | 8.00620 | .24140 | 26.0682 | 27.0155 |
| | 2013 | 1072 | 27.9664 | 8.03580 | .24543 | 27.4848 | 28.4480 |
| | 2014 | 1038 | 28.8748 | 7.88134 | .24463 | 28.3947 | 29.3548 |
| | 2015 | 1044 | 29.0134 | 7.56105 | .23401 | 28.5542 | 29.4726 |
| | Total | 4254 | 28.0766 | 7.93560 | .12167 | 27.8381 | 28.3152 |
| Total | 2012 | 1100 | 59.4718 | 15.75824 | .47513 | 58.5396 | 60.4041 |
| | 2013 | 1072 | 61.0000 | 15.68159 | .47895 | 60.0602 | 61.9398 |
| | 2014 | 1038 | 62.1175 | 15.75339 | .48896 | 61.1581 | 63.0770 |
| | 2015 | 1044 | 61.7002 | 15.02198 | .46492 | 60.7879 | 62.6125 |
| | Total | 4254 | 61.0494 | 15.58756 | .23899 | 60.5808 | 61.5179 |

Table 4.102

*ANOVA Test for the NEPE Scores for Freshmen from Central Taiwan in 2012-2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 66.163 | 3 | 22.054 | 2.243 | .081 |
| | Within Groups | 41790.201 | 4250 | 9.833 | | |
| | Total | 41856.364 | 4253 | | | |
| Reading | Between Groups | 126.001 | 3 | 42.000 | .770 | .511 |
| | Within Groups | 231735.366 | 4250 | 54.526 | | |
| | Total | 231861.367 | 4253 | | | |
| Listening | Between Groups | 4181.619 | 3 | 1393.873 | 22.469 | .000* |
| | Within Groups | 263645.398 | 4250 | 62.034 | | |
| | Total | 267827.017 | 4253 | | | |
| Total | Between Groups | 4366.686 | 3 | 1455.562 | 6.012 | .000* |
| | Within Groups | 1028992.947 | 4250 | 242.116 | | |
| | Total | 1033359.633 | 4253 | | | |

*Significant at $p < .01$

Table 4.103

*Tukey's HSD Test for the NEPE Scores for Freshmen from Central Taiwan in 2012-2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.42460(*) | .33803 | .000* | -2.4776 | -.3716 |
| | 2012 | 2014 | -2.33294(*) | .34082 | .000* | -3.3946 | -1.2713 |
| | 2012 | 2015 | -2.47159(*) | .34032 | .000* | -3.5317 | -1.4115 |
| | 2013 | 2014 | -.90834 | .34297 | .040 | -1.9767 | .1601 |
| | 2013 | 2015 | -1.04699 | .34247 | .012 | -2.1138 | .0198 |
| | 2014 | 2015 | -.13865 | .34523 | .978 | -1.2141 | .9368 |
| Total | 2012 | 2013 | -1.52818 | .66780 | .101 | -3.6085 | .5521 |
| | 2012 | 2014 | -2.64572(*) | .67332 | .001* | -4.7432 | -.5483 |
| | 2012 | 2015 | -2.22837(*) | .67232 | .005* | -4.3227 | -.1340 |
| | 2013 | 2014 | -1.11753 | .67757 | .351 | -3.2282 | .9932 |
| | 2013 | 2015 | -.70019 | .67658 | .729 | -2.8078 | 1.4074 |
| | 2014 | 2015 | .41734 | .68203 | .928 | -1.7072 | 2.5419 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar and reading scores because the ANOVA test revealed no significant difference for these two sections among the four years.

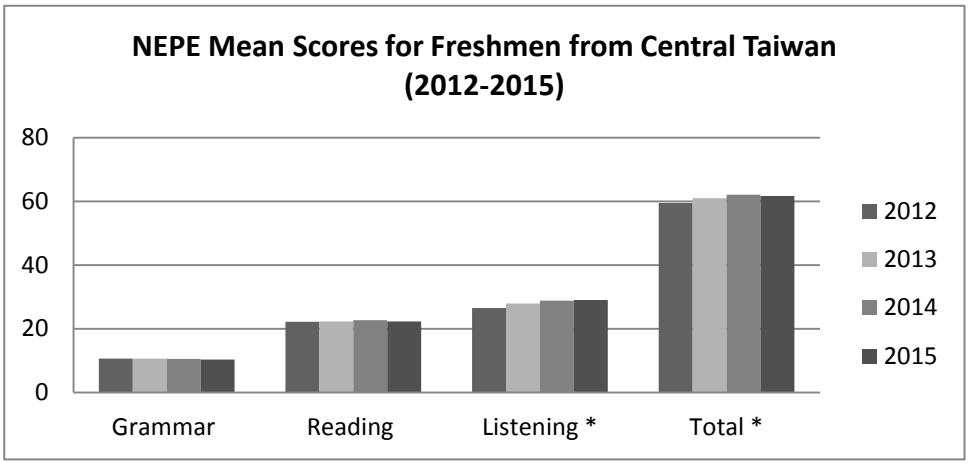


Figure 4.41 Means for the NEPE Scores for freshmen from Central Taiwan in 2012-2015

***1-42 Analyses of the NEPE Scores for Freshmen from Southern Taiwan (2012-2015)***

For the NEPE scores for freshmen from Southern Taiwan, the results of the ANOVA test (Table 4.105) presented no statistical differences between the years for grammar ($p$ = .170), reading ($p$ = .171) and total scores ($p$ = .040) while there was a significant difference in listening scores ($p$ = .000). Further results of Tukey's HSD test (Table 4.106) for one-on-one group comparisons revealed statistical differences for listening means between the years of 2012 and 2014 ($p$ = .000) / 2012 and 2015 ($p$ = .002). Therefore, the means for the four years (Table 4.104 and Figure 4.42) were relatively consistent in terms of grammar, reading and total scores. Yet, the listening means increased gradually from 2012 (M= 26.3356) to 2014 (M= 27.8346) and tapered in 2015 (M= 27.7194). The listening mean followed a consistent trend of increase from 2012 to 2015.

Table 4.104

*Means and Standard Deviations for the NEPE Scores for Freshmen from Southern Taiwan in 2012-2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 888 | 10.5563 | 3.21762 | .10798 | 10.3444 | 10.7682 |
| | 2013 | 964 | 10.4606 | 3.07563 | .09906 | 10.2662 | 10.6550 |
| | 2014 | 907 | 10.3120 | 3.17320 | .10536 | 10.1052 | 10.5188 |
| | 2015 | 841 | 10.2604 | 2.95441 | .10188 | 10.0604 | 10.4604 |
| | Total | 3600 | 10.4000 | 3.10938 | .05182 | 10.2984 | 10.5016 |
| Reading | 2012 | 888 | 21.4077 | 7.24234 | .24304 | 20.9307 | 21.8847 |
| | 2013 | 964 | 22.0145 | 7.38581 | .23788 | 21.5477 | 22.4813 |
| | 2014 | 907 | 22.0948 | 7.06043 | .23444 | 21.6347 | 22.5549 |
| | 2015 | 841 | 21.7408 | 7.16302 | .24700 | 21.2560 | 22.2256 |
| | Total | 3600 | 21.8211 | 7.21944 | .12032 | 21.5852 | 22.0570 |
| Listening | 2012 | 888 | 26.3356 | 7.84115 | .26313 | 25.8192 | 26.8520 |
| | 2013 | 964 | 27.4440 | 7.96865 | .25665 | 26.9403 | 27.9476 |
| | 2014 | 907 | 27.8346 | 8.01180 | .26603 | 27.3125 | 28.3567 |
| | 2015 | 841 | 27.7194 | 8.19566 | .28261 | 27.1647 | 28.2741 |
| | Total | 3600 | 27.3333 | 8.02040 | .13367 | 27.0713 | 27.5954 |
| Total | 2012 | 888 | 58.2995 | 15.42755 | .51771 | 57.2835 | 59.3156 |
| | 2013 | 964 | 59.9191 | 15.73164 | .50668 | 58.9248 | 60.9134 |
| | 2014 | 907 | 60.2415 | 15.18721 | .50428 | 59.2518 | 61.2312 |
| | 2015 | 841 | 59.7206 | 15.37559 | .53019 | 58.6799 | 60.7612 |
| | Total | 3600 | 59.5544 | 15.44895 | .25748 | 59.0496 | 60.0593 |

Table 4.105

*ANOVA Test for the NEPE Scores for Freshmen from Southern Taiwan in 2012-2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 48.643 | 3 | 16.214 | 1.678 | .170 |
| | Within Groups | 34747.357 | 3596 | 9.663 | | |
| | Total | 34796.000 | 3599 | | | |
| Reading | Between Groups | 261.234 | 3 | 87.078 | 1.672 | .171 |
| | Within Groups | 187319.561 | 3596 | 52.091 | | |
| | Total | 187580.796 | 3599 | | | |
| Listening | Between Groups | 1249.062 | 3 | 416.354 | 6.502 | .000* |
| | Within Groups | 230262.938 | 3596 | 64.033 | | |
| | Total | 231512.000 | 3599 | | | |
| Total | Between Groups | 1977.865 | 3 | 659.288 | 2.766 | .040 |
| | Within Groups | 856995.464 | 3596 | 238.319 | | |
| | Total | 858973.329 | 3599 | | | |

*Significant at $p < .01$

Table 4.106

*Tukey's HSD Test for the NEPE Scores for Freshmen from Southern Taiwan in 2012-2015*

| Dependent Variable | (I) SY | (J) SY | Mean Difference (I-J) | Std. Error | Sig. | 99% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Upper Bound | Lower Bound |
| Listening | 2012 | 2013 | -1.10840 | .37220 | .015 | -2.2680 | .0512 |
| | 2012 | 2014 | -1.49903(*) | .37777 | .000* | -2.6759 | -.3221 |
| | 2012 | 2015 | -1.38380(*) | .38503 | .002* | -2.5833 | -.1843 |
| | 2013 | 2014 | -.39064 | .37017 | .717 | -1.5439 | .7626 |
| | 2013 | 2015 | -.27540 | .37758 | .885 | -1.4517 | .9009 |
| | 2014 | 2015 | .11524 | .38306 | .991 | -1.0782 | 1.3087 |

*Significant at $p < .01$

Note: No Tukey's HSD test was presented for grammar, reading and total scores because the ANOVA test revealed no significant difference for these sections among the four years.

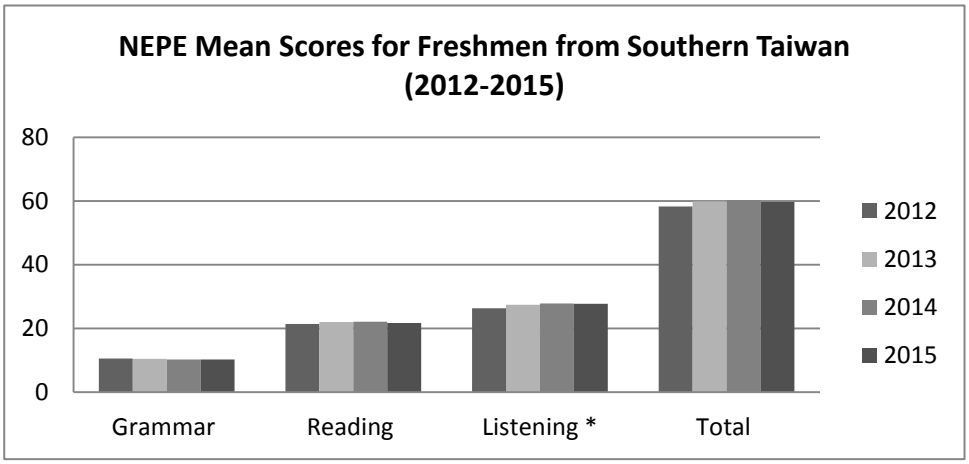


Figure 4.42 Means for the NEPE Scores for freshmen from Southern Taiwan in 2012-2015

### *1-43 Analyses of the NEPE Scores for Freshmen from Eastern Taiwan (2012-2015)*

For the NEPE scores for freshmen from Eastern Taiwan across the four years, the results of the ANOVA test (Table 4.108) presented no statistical difference between the groups for grammar ($p = .163$), reading ($p = .994$), listening ($p = .015$) and total scores ($p = .252$). No Tukey's HSD test was conducted. Therefore, the means for the four years (Table 4.107 and Figure 4.43) were relatively consistent in terms of grammar, listening, reading and total scores as measured by the NEPE.

Table 4.107

*Means and Standard Deviations for the NEPE Scores for Freshmen from Eastern Taiwan in 2012- 2015*

| Section | Semester Year | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Grammar | 2012 | 49 | 9.5102 | 2.76980 | .39569 | 8.7146 | 10.3058 |
| | 2013 | 27 | 10.8889 | 3.67249 | .70677 | 9.4361 | 12.3417 |
| | 2014 | 43 | 9.3721 | 3.25154 | .49586 | 8.3714 | 10.3728 |
| | 2015 | 44 | 10.0455 | 2.43954 | .36778 | 9.3038 | 10.7871 |
| | Total | 163 | 9.8466 | 3.00736 | .23555 | 9.3815 | 10.3118 |
| Reading | 2012 | 49 | 21.1429 | 8.27647 | 1.18235 | 18.7656 | 23.5201 |
| | 2013 | 27 | 21.4074 | 7.68244 | 1.47849 | 18.3683 | 24.4465 |
| | 2014 | 43 | 21.0233 | 6.46414 | .98577 | 19.0339 | 23.0126 |
| | 2015 | 44 | 21.4091 | 7.19922 | 1.08532 | 19.2203 | 23.5979 |
| | Total | 163 | 21.2270 | 7.37472 | .57763 | 20.0863 | 22.3677 |
| Listening | 2012 | 49 | 24.4490 | 9.03018 | 1.29003 | 21.8552 | 27.0428 |
| | 2013 | 27 | 26.8148 | 8.41718 | 1.61989 | 23.4851 | 30.1445 |
| | 2014 | 43 | 25.7674 | 8.17906 | 1.24729 | 23.2503 | 28.2846 |
| | 2015 | 44 | 29.6818 | 5.73757 | .86497 | 27.9374 | 31.4262 |
| | Total | 163 | 26.6012 | 8.11076 | .63528 | 25.3467 | 27.8557 |
| Total | 2012 | 49 | 55.1020 | 17.65673 | 2.52239 | 50.0304 | 60.1736 |
| | 2013 | 27 | 59.1111 | 16.58390 | 3.19157 | 52.5507 | 65.6715 |
| | 2014 | 43 | 56.1628 | 15.13106 | 2.30747 | 51.5061 | 60.8194 |
| | 2015 | 44 | 61.1364 | 12.77642 | 1.92612 | 57.2520 | 65.0207 |
| | Total | 163 | 57.6748 | 15.66544 | 1.22701 | 55.2518 | 60.0978 |

Table 4.108

*ANOVA Test for the NEPE Scores for Freshmen from Eastern Taiwan in 2012- 2015*

| Section | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Grammar | Between Groups | 46.298 | 3 | 15.433 | 1.729 | .163 |
| | Within Groups | 1418.867 | 159 | 8.924 | | |
| | Total | 1465.166 | 162 | | | |
| Reading | Between Groups | 4.470 | 3 | 1.490 | .027 | .994 |
| | Within Groups | 8806.132 | 159 | 55.384 | | |
| | Total | 8810.601 | 162 | | | |
| Listening | Between Groups | 675.663 | 3 | 225.221 | 3.588 | .015 |
| | Within Groups | 9981.416 | 159 | 62.776 | | |
| | Total | 10657.080 | 162 | | | |
| Total | Between Groups | 1005.568 | 3 | 335.189 | 1.375 | .252 |
| | Within Groups | 38750.199 | 159 | 243.712 | | |
| | Total | 39755.767 | 162 | | | |

*Significant at $p < .01$

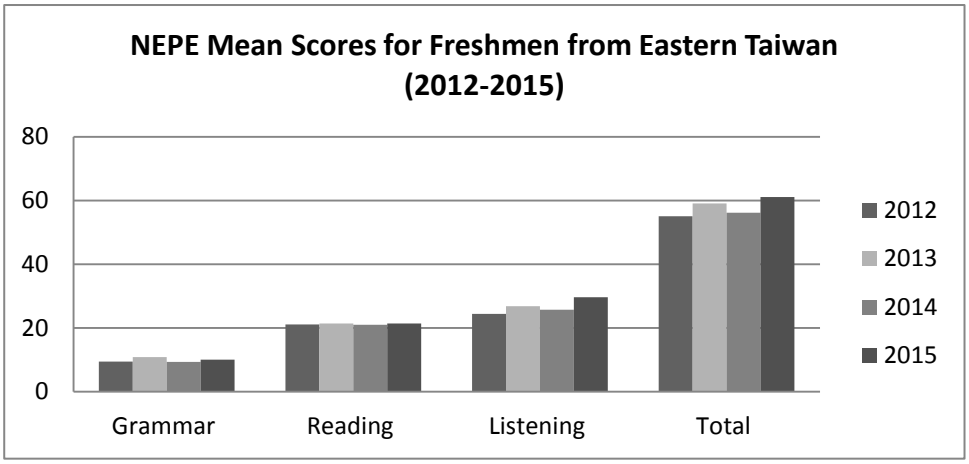


Figure 4.43 Means for the NEPE Scores for freshmen from Eastern Taiwan in 2012- 2015

***Summary and Discussion of the Results for the NEPE Scores from 2012 to 2015***

The results of all 43 analyses in terms of grammar, reading, listening and total scores can be concluded into three types (Table 4.109). The three types included (1) no statistical difference revealed for the ANOVA test, (2) no statistical difference revealed for the Tukey's HSD test, and (3) the means followed a consistent trend. The frequency for the results of the three types was presented in Table 4.110.

For grammar section, 39 among the 43 analyses revealed no statistical difference for the ANOVA test (Type 1: f = 38, %f = 88.4%) and the Tukey's HSD test (Type 2: f = 1, %f = 2.3%). 4 among the 43 analyses (Type 3: %f = 9.3%) presented a consistent trend of decrease from 2012 to 2015 for all subjects and as the subjects were females, E & P admissions, Information Management Department freshmen. This indicated that the grammar scores for all four years were relatively consistent or had a tendency to decrease slightly.

For reading section, 38 among the 43 analyses revealed no statistical difference for the ANOVA test (Type 1: f = 35, %f = 81.4%) and the Tukey's HSD test (Type 2: f = 3, %f = 7.0%). 5 among the 43 analyses (Type 3: %f = 11.6%) presented a consistent trend of increase (PA admissions, and Philosophy Department freshmen) or decrease (E & P

admissions, Accounting Department freshmen, and Information Management Department freshmen) from 2012 to 2015. This indicated that the reading scores for all four years were relatively consistent or had a tendency to decrease / increase slightly.

For listening section, 27 among the 43 analyses revealed no statistical difference for the ANOVA test (Type 1: f = 26, %f = 60.5%) and the Tukey's HSD test (Type 2: f = 1, %f = 2.3%). 16 among the 43 analyses (Type 3: %f = 37.2%) presented a consistent trend of increase from 2012 to 2015. This indicated that the listening scores for all four years were relatively consistent or had a tendency to increase gradually.

For the total scores of the NEPE, 33 among the 43 analyses revealed no statistical difference for the ANOVA test (Type 1: f = 31, %f = 72.1%) and the Tukey's HSD test (Type 2: f = 2, %f =4.7%). 10 among the 43 analyses (Type 3: %f = 23.3%) presented a consistent trend of increase from 2012 to 2015. This indicated that the total scores for all four years were relatively consistent or had a tendency to increase gradually.

To be concluded, the NEPE scores for the four years from 2012 to 2015 were relatively consistent or the means followed a consistent trend. Even though there were decreases for a small proportion in terms of grammar and reading scores, the total scores were consistent or increased. This can be contributed to the gradually increase of listening scores. Therefore, the English performance for freshmen entered at this college for the four years as measured by the NEPE was positive.

Table 4.109

*Summary of the Results for the 43 Analyses (2012-2015)*

| Subject Group | | G | R | L | T | Subject Group | | G | R | L | T |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | All subjects | 3- | 1 | 3+ | 3+ | 23 | Statistics | 1 | 1 | 1 | 1 |
| 2 | Male subjects | 1 | 1 | 3+ | 3+ | 24 | Finance | 2 | 1 | 1 | 1 |
| 3 | Females subjects | 3- | 1 | 3+ | 3+ | 25 | Information Management | 3- | 3- | 1 | 1 |
| 4 | E & P admissions | 3- | 3- | 3+ | 1 | 26 | Economics | 1 | 1 | 1 | 1 |
| 5 | SP admissions | 1 | 2 | 3+ | 3+ | 27 | Political Science | 1 | 1 | 2 | 2 |
| 6 | PA admissions | 1 | 3+ | 3+ | 3+ | 28 | Public Administration | 1 | 1 | 1 | 1 |
| 7 | Chinese Literature | 1 | 1 | 1 | 1 | 29 | Social Work | 1 | 1 | 3+ | 1 |
| 8 | Japanese | 1 | 1 | 1 | 1 | 30 | Sociology | 1 | 1 | 1 | 1 |
| 9 | History | 1 | 1 | 1 | 1 | 31 | Animal Science | 1 | 1 | 3+ | 1 |
| 10 | Philosophy | 1 | 3+ | 1 | 3+ | 32 | Food Science | 1 | 2 | 3+ | 3+ |
| 11 | Applied Physics | 1 | 1 | 3+ | 1 | 33 | Hospitality Management | 1 | 1 | 1 | 1 |
| 12 | Chemistry | 1 | 1 | 1 | 1 | 34 | Fine Arts | 1 | 1 | 3+ | 3+ |
| 13 | Life Science | 1 | 1 | 1 | 1 | 35 | Music | 1 | 1 | 1 | 1 |
| 14 | Applied Mathematics | 1 | 1 | 3+ | 2 | 36 | Architecture | 1 | 2 | 1 | 1 |
| 15 | Chemical and Materials Engineering | 1 | 1 | 3 | 1 | 37 | Industrial Design | 1 | 1 | 1 | 1 |
| 16 | Environment Science and Engineering | 1 | 1 | 1 | 1 | 38 | Landscape Architecture | 1 | 1 | 1 | 1 |
| 17 | Computer Science | 1 | 1 | 1 | 1 | 39 | Law | 1 | 1 | 1 | 1 |
| 18 | Industrial Engineering | 1 | 1 | 1 | 1 | 40 | Northern Taiwan | 1 | 1 | 3+ | 1 |
| 19 | Electrical Engineering | 1 | 1 | 1 | 1 | 41 | Central Taiwan | 1 | 1 | 3+ | 3+ |
| 20 | Business Administration | 1 | 1 | 1 | 1 | 42 | Southern Taiwan | 1 | 1 | 3+ | 1 |
| 21 | International Business | 1 | 1 | 1 | 1 | 43 | Eastern Taiwan | 1 | 1 | 1 | 1 |
| 22 | Accounting | 1 | 3- | 1 | 1 | | | | | | |

Note: G=grammar section; R=reading section; L=listening section; T= total scores; 1= the ANOVA tests revealed no statistical difference between the means for all four years from 2012 to 2015; 2= the Tukey's HSD tests revealed no statistical difference for the means within the ono-on-one year comparison for all four years; 3= the means were significant different between the four years but they followed a consistent trend of decrease (-) or increase (+)

Table 4.110

*The Frequency of the Results for the 43 Analyses (2012-2015)*

| Section | Type 1 | | Type 2 | | Type 3 | | Total | |
|---|---|---|---|---|---|---|---|---|
| | f | %f | f | %f | f | %f | f | %f |
| Grammar | 38 | 88.4% | 1 | 2.3% | 4 | 9.3% | 43 | 100% |
| Reading | 35 | 81.4% | 3 | 7.0% | 5 | 11.6% | 43 | 100% |
| Listening | 26 | 60.5% | 1 | 2.3% | 16 | 37.2% | 43 | 100% |
| NEPE Total Scores | 31 | 72.1% | 2 | 4.7% | 10 | 23.3% | 43 | 100% |
| Total | 130 | 75.6% | 7 | 4.1% | 35 | 20.3% | 172 | 100% |

Note: f=Frequency; %f=Percentage Frequency

## 2. Results of Analysis for All Subjects' NEPE Scores Between 2015 and 2016

The independent samples t test was conducted for the comparisons of all subject's NEPE scores between 2015 and 2016 in this section. Based on the results of independent samples t test, the researcher aimed to answer Research Question 2, "Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 as measured by the NEPE?"

The independent samples t test (Table 4.111) revealed no significant difference in grammar ($p$ = .194) and reading scores ($p$ = .992) while there were statistical differences revealed in listening ($p$ = .000) and total scores ($p$ = .000). Both listening and total means decreased from 2012 to 2016. Accordingly, the grammar and reading score were consistent while there were significant decreases in listening and total means between the two years for all subjects.

Table 4.111

*T-test Results for All Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=2828) | | 2016 (N=2789) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.24 | 3.05 | 10.14 | 3.11 | .11 (0.55%) | 1.298 | .194 |
| Reading | 21.99 | 7.23 | 21.99 | 7.40 | .00 (0.00%) | -.010 | .992 |
| Listening | 28.65 | 7.80 | 26.56 | 7.54 | 2.09 (5.23%) | 10.215 | .000* |
| Total | 60.88 | 15.23 | 58.68 | 15.21 | 2.20 (2.20%) | 5.405 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

## 3. Results of Analyses for the NEPE Scores as Related to Gender Between 2015 and 2016

The independent samples t test was conducted for the comparisons of the NEPE scores between 2015 and 2016 as they related to gender. The results of (1) changes in the NEPE scores for males between 2015 and 2016, and (2) changes in the NEPE scores for females between 2015 and 2016 were presented to answer Research Question 3, "Are there any statistical differences in university freshmen's English language performance for the males and females in terms of grammar, reading, listening, and total scores as measured by the NEPE between 2015 and 2016?" The results of analyses and summary for answering the research question were as follows.

### *3-1 Analyses for Male Subjects' NEPE Scores (2015 & 2016)*

The results of independent samples t test (Table 4.112) for male subjects' NEPE scores revealed no statistical difference for grammar ($p = .088$) and reading ($p = .688$) scores while there were statistical differences revealed in listening ($p = .002$) and total scores ($p = .002$). Accordingly, male subjects' NEPE scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.112

*T-test Results for Male Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=1299) | | 2016 (N=1263) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.00 | 3.14 | 9.78 | 3.19 | .21 (1.05%) | 1.705 | .088 |
| Reading | 21.16 | 7.40 | 21.04 | 7.60 | .12 (0.30%) | .401 | .688 |
| Listening | 27.51 | 8.04 | 25.88 | 7.63 | 1.63 (4.08%) | 5.263 | .000* |
| Total | 58.67 | 15.75 | 56.71 | 15.53 | 1.96 (1.96%) | 3.175 | .002* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *3-2 Analyses for Female Subjects' NEPE Scores (2015 & 2016)*

The results of independent samples t test (Table 4.113) for female subjects' NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .853$) and reading scores ($p = .729$). However, there were statistical differences revealed for listening ($p = .000$) and total scores ($p = .000$). Accordingly, female subjects' NEPE scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.113

*T-test Results for Female Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=1516) | | 2016 (N=1526) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.45 | 2.96 | 10.43 | 3.01 | .02 (1.00%) | .185 | .853 |
| Reading | 22.69 | 6.98 | 22.77 | 7.13 | -.09 (0.23%) | -.346 | .729 |
| Listening | 29.60 | 7.46 | 27.12 | 7.42 | 2.48 (6.20%) | 9.196 | .000* |
| Total | 62.73 | 14.48 | 60.32 | 14.74 | 2.41 (2.41%) | 4.550 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

## 4. Results of Analyses for the NEPE Scores as Related to Admission Pathways between 2015 and 2016

The independent samples t test was conducted for the comparisons of the NEPE scores between 2015 and 2016 as the subjects related to admission pathways. The results of (1) changes in the NEPE scores for Examination & Placement Admissions, (2) changes in the NEPE scores for Stars Program Admissions, and (3) changes in the NEPE scores for Personal Application Admissions were presented to answer Research Question 4, "Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to admission pathways?". The results of analyses and summary to answer research question 4 were as follows.

### *4-1 Analyses of the NEPE Scores for Examination & Placement Admissions (2015 & 2016)*

The results of independent samples t test (Table 4.114) for E & P admissions' NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .018) and reading scores ($p$ = .102) while there were statistical differences revealed in listening ($p$ = .000) and total scores ($p$ = .000). Accordingly, E & P admissions' NEPE scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.114

*T-test Results for E & P Admissions' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=1171) | | 2016 (N=1191) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.14 | 3.00 | 9.84 | 3.08 | .30 (1.50%) | 2.362 | .018 |
| Reading | 21.80 | 7.12 | 21.31 | 7.40 | .49 (1.23%) | 1.635 | .102 |
| Listening | 28.08 | 7.81 | 25.18 | 7.77 | 2.90 (7.25%) | 9.029 | .000* |
| Total | 60.02 | 14.98 | 56.34 | 15.30 | 3.68 (3.68%) | 5.903 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *4-2 Analyses of the NEPE Scores for Stars Program Admissions (2015 & 2016)*

The results of independent samples t test (Table 4.115) for SP admissions' NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .050$), reading ($p = .304$), listening ($p = .053$) and total scores ($p = .908$). Accordingly, SP admissions' NEPE scores were consistent in term of grammar, reading, listening and total scores between 2015 and 2016.

Table 4.115

*T-test Results for SP Admissions' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=360) | | 2016 (N=414) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.90 | 3.07 | 10.33 | 3.10 | -.44 (2.2 %) | -1.961 | .050 |
| Reading | 21.80 | 7.42 | 22.35 | 7.37 | -.55 (1.38%) | -1.028 | .304 |
| Listening | 27.45 | 8.45 | 26.33 | 7.59 | 1.12 (2.8 %) | 1.936 | .053 |
| Total | 59.15 | 16.33 | 59.01 | 15.69 | .13 (0.13%) | .115 | .908 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *4-3 Analyses of the NEPE Scores for Personal Application Admissions (2015 & 2016)*

The results of independent samples t test (Table 4.116) for PA admissions' NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .018), reading ($p$ = .102) and total scores ($p$ = .042) while there were statistical differences revealed in listening scores ($p$ = .000). Accordingly, PA admissions' NEPE scores were consistent in term of grammar, reading and total scores while there were significant decreases in listening means from 2015 to 2016.

Table 4.116

*T-test Results for PA Admissions' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=1297) | | 2016 (N=1184) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.44 | 3.08 | 10.36 | 3.12 | .07 (0.35%) | .568 | .570 |
| Reading | 22.21 | 7.28 | 22.55 | 7.35 | -.34 (0.85%) | -1.150 | .250 |
| Listening | 29.49 | 7.51 | 28.02 | 6.70 | 1.48 (3.70%) | 5.057 | .000* |
| Total | 62.14 | 15.05 | 60.93 | 14.60 | 1.21(1.21%) | 2.030 | .042 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

## 5. Results of Analyses for the NEPE Scores as Related to Majors Between 2015 and 2016

The independent samples t test was conducted for the comparisons of the NEPE scores between 2015 and 2016 as the subjects related to majors. The results of changes in the NEPE scores for freshmen as they related to 33 departments were presented individually to answer Research Question 5: "Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to majors?" The results of analyses and summary for answering the fifth research question were as follows.

### *5-1 Analyses of the NEPE Scores for Chinese Literature Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.117) for Chinese Literature Department freshmen's NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .523), reading ($p$ = .892), listening ($p$ = .065) and total scores ($p$ = .389) between 2015 and 2016. Accordingly, Chinese Literature Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.117

*T-test Results for Chinese Literature De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=105) | | 2016 (N=98) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.05 | 2.44 | 9.69 | 2.69 | .35 (1.75%) | .628 | .532 |
| Reading | 21.41 | 7.20 | 21.64 | 8.37 | -.23 (0.58%) | -.136 | .892 |
| Listening | 29.68 | 5.74 | 27.18 | 6.47 | 2.50 (6.25%) | 1.868 | .065 |
| Total | 61.14 | 12.78 | 58.51 | 14.80 | 2.62 (2.62%) | .867 | .389 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-2 Analyses of the NEPE Scores for Japanese Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.118) for Japanese Department freshmen's NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .399$), reading ($p = .281$), listening ($p = .228$) and total scores ($p = .341$) between 2015 and 2016. Accordingly, Japanese Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.118

*T-test Results for Japanese De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=98) | | 2016 (N=94) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.11 | 2.92 | 11.47 | 2.91 | -.36 (1.80%) | -.845 | .399 |
| Reading | 25.96 | 6.42 | 24.94 | 6.71 | 1.02 (2.55%) | 1.080 | .281 |
| Listening | 31.94 | 7.16 | 30.72 | 6.74 | 1.22 (3.05%) | 1.210 | .228 |
| Total | 69.01 | 13.91 | 67.13 | 13.40 | 1.88 (1.88%) | .955 | .341 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-3 Analyses of the NEPE Scores for History Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.119) for History Department freshmen's NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .132), reading ($p$ = .043), listening ($p$ = .257) and total scores ($p$ = .055) between 2015 and 2016. Accordingly, History Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.119

*T-test Results for History De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=54) | | 2016 (N=54) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.69 | 2.66 | 8.89 | 2.79 | .80 (4.00%) | 9.69 | .132 |
| Reading | 20.44 | 5.49 | 17.96 | 7.00 | 2.48 (6.20%) | 20.44 | .043 |
| Listening | 27.41 | 7.19 | 25.81 | 7.34 | 1.59 (3.98%) | 27.41 | .257 |
| Total | 57.54 | 11.70 | 52.67 | 14.29 | 4.87 (4.87%) | 57.54 | .055 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-4 Analyses of the NEPE scores for Philosophy Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.120) for Philosophy Department freshmen's NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .718), reading ($p$ = .353), listening ($p$ = .126) and total scores ($p$ = .176) between 2015 and 2016. Accordingly, Philosophy Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.120

*T-test Results for Philosophy De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=48) | | 2016 (N=50) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.15 | 2.91 | 8.94 | 2.71 | .21 (1.05%) | .363 | .718 |
| Reading | 19.50 | 6.44 | 18.24 | 6.90 | 1.26 (3.15%) | .934 | .353 |
| Listening | 26.42 | 6.73 | 24.04 | 8.38 | 2.38 (5.95%) | 1.544 | .126 |
| Total | 55.06 | 13.01 | 51.22 | 14.78 | 3.84 (3.84%) | 1.364 | .176 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-5 Analyses of the NEPE Scores for Applied Physics Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.121) for Applied Physics Department freshmen's NEPE scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .686$), reading ($p = .835$), listening ($p = .930$) and total scores ($p = .897$) between 2015 and 2016. Accordingly, Applied Physics Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.121

*T-test Results for Applied Physics De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=78) | | 2016 (N=64) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 8.83 | 2.94 | 9.03 | 2.83 | -.20 (1.00%) | -.405 | .686 |
| Reading | 17.15 | 6.08 | 17.38 | 6.52 | -.22 (0.55%) | -.209 | .835 |
| Listening | 24.18 | 8.34 | 24.06 | 7.37 | .12 (0.30%) | .088 | .930 |
| Total | 50.17 | 14.55 | 50.47 | 12.94 | -.30 (0.30%) | -.129 | .897 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-6 Analyses of the NEPE Scores for Chemistry Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.122) for Chemistry Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .016), reading ($p$ = .092), listening ($p$ = .011) and total scores ($p$ = .010) between 2015 and 2016. Accordingly, Chemistry Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.122

*T-test Results for Chemistry De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=81) | | 2016 (N=80) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.80 | 2.73 | 8.68 | 3.16 | 1.13 (5.65%) | 2.426 | .016 |
| Reading | 19.90 | 6.96 | 18.05 | 6.91 | 1.85 (4.63%) | 1.693 | .092 |
| Listening | 26.64 | 8.54 | 23.43 | 7.34 | 3.22 (8.05%) | 2.561 | .011 |
| Total | 56.35 | 15.22 | 50.15 | 14.83 | 6.20 (6.20%) | 2.615 | .010 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-7 Analyses of the NEPE Scores for Life Science Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.123) for Life Science Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .842), reading ($p$ = .826), listening ($p$ = .785) and total scores ($p$ = .773) between 2015 and 2016. Accordingly, Life Science Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.123

*T-test Results for Life Science De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=76) | | 2016 (N=79) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.50 | 2.80 | 11.41 | 3.09 | .09 (0.45%) | .200 | .842 |
| Reading | 25.29 | 7.74 | 25.04 | 6.40 | .25 (0.63%) | .221 | .826 |
| Listening | 31.84 | 5.67 | 31.62 | 4.37 | .22 (0.55%) | .273 | .785 |
| Total | 68.63 | 13.31 | 68.06 | 11.07 | .57 (0.57%) | .289 | .773 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-8 Analyses of the NEPE Scores for Applied Mathematics Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.124) for Applied Mathematics Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .951), reading ($p$ = .548), and total scores ($p$ = .055) between 2015 and 2016. Yet, there was a statistical difference revealed in listening scores ($p$ = .003). The listening means decreased from 2015 to 2016. Accordingly, Applied Mathematics Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading and total score while there was a decrease in listening scores from 2015 to 2016.

Table 4.124

*T-test Results for Applied Mathematics De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=45) | | 2016 (N=48) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 8.40 | 2.46 | 8.44 | 3.31 | -.04 (0.20%) | -.062 | .951 |
| Reading | 17.02 | 6.23 | 16.25 | 6.10 | .77 (1.93%) | .604 | .548 |
| Listening | 23.82 | 9.45 | 18.38 | 7.77 | 5.45 (13.63%) | 3.045 | .003* |
| Total | 49.24 | 16.15 | 43.06 | 14.51 | 6.18 (6.18%) | 1.944 | .055 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-9 Analyses of the NEPE Scores for Chemical and Materials Engineering Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.125) for Chemical and Materials Engineering Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .982), reading ($p$ = .921), listening ($p$ = .013) and total scores ($p$ = .160) between 2015 and 2016. Accordingly, Chemical and Materials Engineering Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.125

*T-test Results for Chemical and Materials Engineering De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=115) | | 2016 (N=110) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 8.63 | 2.78 | 8.62 | 2.46 | .01 (0.05%) | .023 | .982 |
| Reading | 17.03 | 6.29 | 17.11 | 6.19 | -.08 (0.02%) | -.100 | .921 |
| Listening | 24.38 | 7.96 | 21.80 | 7.40 | 2.58 (6.45%) | 2.517 | .013 |
| Total | 50.03 | 13.92 | 47.53 | 12.70 | 2.51 (2.51%) | 1.410 | .160 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-10 Analyses of the NEPE Scores for Environment Science and Engineering Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.126) for Environment Science and Engineering Department freshmen's NEPE Scores revealed no statistical difference for grammar ($p$ = .169), reading ($p$ = .658), and total scores ($p$ = .042) between 2015 and 2016. Yet, there was a statistical difference revealed in listening scores ($p$ = .005). The listening means decreased from 2015 to 2016. Accordingly, Environment Science and Engineering Department freshmen's NEPE scores were

relatively consistent in terms of grammar, reading and total score while there was a decrease in listening scores from 2015 to 2016.

Table 4.126

*T-test Results for Environment Science and Engineering De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=82) | | 2016 (N=77) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.45 | 2.72 | 8.81 | 3.17 | .65 (3.25%) | 1.381 | .169 |
| Reading | 19.98 | 7.56 | 19.48 | 6.42 | .50 (1.25%) | .444 | .658 |
| Listening | 26.59 | 8.18 | 22.99 | 7.59 | 3.60 (9.00%) | 2.871 | .005* |
| Total | 56.01 | 15.04 | 51.27 | 14.13 | 4.76 (4.76%) | 2.045 | .042 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-11 Analyses of the NEPE Scores for Computer Science Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.127) for Computer Science Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .185), reading ($p$ = .211), listening ($p$ = .748) and total scores ($p$ = .291) between 2015 and 2016. Accordingly, Computer Science Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.127

*T-test Results for Computer Science De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=111) | | 2016 (N=103) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.00 | 2.79 | 10.55 | 3.30 | -.55 (2.75%) | -1.329 | .185 |
| Reading | 21.30 | 6.78 | 22.54 | 7.75 | -1.25 (3.13%) | -1.255 | .211 |
| Listening | 26.50 | 7.77 | 26.84 | 7.20 | -.33 (0.83%) | -.322 | .748 |
| Total | 57.80 | 14.36 | 59.93 | 15.07 | -2.13 (2.13%) | -1.059 | .291 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-12 Analyses of the NEPE Scores for Industrial Engineering and Enterprise Information Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.128) for Industrial Engineering and Enterprise Information Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .351), reading ($p$ = .677), listening ($p$ = .019) and total scores ($p$ = .374) between 2015 and 2016. Accordingly, Industrial Engineering and Enterprise Information Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.128

*T-test Results for Industrial Engineering and Enterprise Information De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=115) | | 2016 (N=111) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.46 | 2.94 | 9.81 | 2.67 | -.35 (1.75%) | -.935 | .351 |
| Reading | 20.64 | 6.84 | 21.01 | 6.32 | -.37 (0.93%) | -.417 | .677 |
| Listening | 29.55 | 7.31 | 27.21 | 7.60 | 2.34 (5.85%) | 2.361 | .019 |
| Total | 59.65 | 13.60 | 58.03 | 13.84 | 1.63 (1.63%) | .890 | .374 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-13 Analyses of the NEPE Scores for Electrical Engineering Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.129) for Electrical Engineering Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .881), reading ($p$ = .155), listening ($p$ = .353) and total scores ($p$ = .222) between 2015 and 2016. Accordingly, Electrical Engineering Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.129

*T-test Results for Electrical Engineering De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=60) | | 2016 (N=65) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.32 | 3.15 | 9.40 | 3.04 | -.083 (0.42%) | -.151 | .881 |
| Reading | 20.10 | 7.36 | 22.03 | 7.71 | -1.93 (4.83%) | -1.430 | .155 |
| Listening | 25.13 | 8.34 | 26.40 | 6.81 | -1.27 (3.18%) | -.933 | .353 |
| Total | 54.55 | 15.62 | 57.83 | 14.25 | -3.28 (3.28%) | -1.228 | .222 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-14 Analyses of the NEPE Scores for Business Administration Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.130) for Business Administration Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .057) and reading scores ($p$ = .163). However, there were statistical differences revealed for listening ($p$ = .001) and total scores ($p$ = .005). Accordingly, Business Administration Department freshmen's NEPE Scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.130

*T-test Results for Business Administration De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=148) | | 2016 (N=152) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.41 | 2.97 | 9.76 | 2.97 | .66 (3.30%) | 1.912 | .057 |
| Reading | 22.54 | 6.67 | 21.43 | 7.04 | 1.11 (2.78%) | 1.397 | .163 |
| Listening | 29.03 | 7.20 | 26.28 | 6.96 | 2.75 (6.88%) | 3.366 | .001* |
| Total | 61.98 | 13.55 | 57.47 | 13.76 | 4.51 (4.51%) | 2.862 | .005* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-15 Analyses of the NEPE Scores for International Business Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.131) for International Business Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .659) and reading scores ($p$ = .584). However, there were statistical differences revealed for listening ($p$ = .000) and total scores ($p$ = .005). Accordingly, International Business Department freshmen's NEPE Scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.131

*T-test Results for International Business De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=158) | | 2016 (N=155) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.91 | 2.95 | 11.76 | 2.81 | .14 (0.70%) | .441 | .659 |
| Reading | 25.89 | 6.24 | 26.28 | 6.59 | -.40 (1.00%) | -.548 | .584 |
| Listening | 32.73 | 5.78 | 28.32 | 6.62 | 4.41 (11.03%) | 6.282 | .000* |
| Total | 70.53 | 12.51 | 66.37 | 13.39 | 4.16 (4.16%) | 2.840 | .005* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-16 Analyses of the NEPE Scores for Accounting Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.132) for Accounting Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .479), reading ($p$ = .241), and total scores ($p$ = .277) between 2015 and 2016. Yet, there was a statistical difference revealed in listening scores ($p$ = .003). The listening means decreased from 2015 to 2016. Accordingly, Accounting Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading and total score while there was a decrease in listening scores from 2015 to 2016.

Table 4.132

*T-test Results for Accounting De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=115) | | 2016 (N=118) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.30 | 2.87 | 11.04 | 2.59 | .25 (1.25%) | .709 | .479 |
| Reading | 23.20 | 6.90 | 24.22 | 6.36 | -1.02 (2.55%) | -1.174 | .241 |
| Listening | 30.28 | 6.63 | 27.68 | 6.66 | 2.60 (6.50%) | 2.988 | .003* |
| Total | 64.77 | 13.35 | 62.94 | 12.34 | 1.83 (1.83%) | 1.089 | .277 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-17 Analyses of the NEPE Scores for Statistics Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.133) for Statistics Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .226), reading ($p$ = .689), listening ($p$ = .074) and total scores ($p$ = .335) between 2015 and 2016. Accordingly, Statistics Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.133

*T-test Results for Statistics De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=104) | | 2016 (N=94) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 8.41 | 2.56 | 8.90 | 3.12 | -.49 (2.45%) | -1.215 | .226 |
| Reading | 17.75 | 6.29 | 17.38 | 6.60 | .37 (0.93%) | .401 | .689 |
| Listening | 23.52 | 7.77 | 21.51 | 7.98 | 2.01 (5.03%) | 1.794 | .074 |
| Total | 49.68 | 13.17 | 47.80 | 14.25 | 1.88 (1.88%) | .967 | .335 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-18 Analyses of the NEPE Scores for Finance Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.134) for Finance Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .184) and reading scores ($p$ = .060). However, there were statistical differences revealed for listening ($p$ = .000) and total scores ($p$ = .000). Accordingly, Finance Department freshmen's NEPE Scores were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.134

*T-test Results for Finance De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=111) | | 2016 (N=113) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | M | (2-tailed) |
| Grammar | 11.05 | 2.78 | 10.55 | 2.89 | .51 (2.55%) | 1.333 | .184 |
| Reading | 25.39 | 6.49 | 23.72 | 6.71 | 1.67 (4.18%) | 1.893 | .060 |
| Listening | 30.22 | 7.10 | 25.35 | 6.89 | 4.87 (12.18%) | 5.211 | .000* |
| Total | 66.66 | 13.15 | 59.61 | 13.35 | 7.05 (7.05%) | 3.979 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-19 Analyses of the NEPE Scores for Information Management Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.135) for Information Management Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .092$), reading ($p = .026$), listening ($p = .083$) and total scores ($p = .587$) between 2015 and 2016. Accordingly, Information Management Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.135

*T-test Results for Information Management De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=53) | | 2016 (N=51) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.72 | 2.80 | 10.65 | 2.76 | -.93 (4.65%) | -1.703 | .092 |
| Reading | 19.40 | 7.02 | 22.47 | 6.83 | -3.07 (7.68%) | -2.262 | .026 |
| Listening | 28.91 | 7.41 | 26.43 | 6.97 | 2.47 (6.18%) | 1.753 | .083 |
| Total | 58.02 | 14.83 | 59.55 | 13.77 | -1.53 (1.53%) | -.545 | .587 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-20 Analyses of the NEPE Scores for Economics Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.136) for Economics Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .167), reading ($p$ = .380), listening ($p$ = .076) and total scores ($p$ = .091) between 2015 and 2016. Accordingly, Economics Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.136

*T-test Results for Economics De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=156) | | 2016 (N=161) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.41 | 2.71 | 8.98 | 2.88 | .44 (2.20%) | 1.384 | .167 |
| Reading | 20.62 | 6.52 | 20.00 | 5.95 | .62 (1.55%) | .878 | .380 |
| Listening | 27.00 | 7.60 | 25.50 | 7.37 | 1.50 (7.50%) | 1.781 | .076 |
| Total | 57.03 | 13.79 | 54.48 | 12.92 | 2.55 (2.55%) | 1.698 | .091 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-21 Analyses of the NEPE Scores for Political Science Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.137) for Political Science Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .532), reading ($p$ = .558), listening ($p$ = .053) and total scores ($p$ = .439) between 2015 and 2016. Accordingly, Political Science Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.137

*T-test Results for Political Science De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=98) | | 2016 (N=103) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.58 | 2.69 | 10.33 | 2.98 | .25 (1.25%) | .627 | .532 |
| Reading | 22.47 | 7.50 | 23.09 | 7.43 | -.62 (1.55%) | -.587 | .558 |
| Listening | 29.86 | 7.34 | 27.90 | 6.89 | 1.95 (4.88%) | 1.947 | .053 |
| Total | 62.91 | 14.09 | 61.32 | 14.90 | 1.59 (1.59%) | .775 | .439 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-22 Analyses of the NEPE Scores for Public Administration Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.138) for Public Administration Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for reading scores ($p$ = .013). However, there were statistical differences revealed for grammar ($p$ = .001), listening ($p$ = .000) and total scores ($p$ = .000). Accordingly, Public Administration Department freshmen's NEPE Scores were consistent in term of reading scores while there were significant decreases in grammar, listening and total means from 2015 to 2016.

Table 4.138

*T-test Results for Public Administration De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=59) | | 2016 (N=56) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.81 | 2.60 | 9.14 | 2.73 | 1.67 (8.35%) | 3.362 | .001* |
| Reading | 23.80 | 5.21 | 21.18 | 5.89 | 2.62 (6.55%) | 2.527 | .013 |
| Listening | 29.66 | 6.15 | 25.36 | 6.57 | 4.30 (10.75%) | 3.628 | .000* |
| Total | 64.27 | 10.01 | 55.68 | 11.58 | 8.59 (8.59%) | 4.263 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-23 Analyses of the NEPE Scores for Social Work Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.139) for Social Work Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .207), reading ($p$ = .418), listening ($p$ = .017) and total scores ($p$ = .055) between 2015 and 2016. Accordingly, Social Work Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.139

*T-test Results for Social Work De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=119) | | 2016 (N=117) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.23 | 2.65 | 9.76 | 3.00 | .47 (2.35%) | 1.266 | .207 |
| Reading | 22.35 | 5.68 | 21.69 | 6.78 | .66 (1.65%) | .812 | .418 |
| Listening | 29.13 | 6.52 | 27.13 | 6.26 | 2.00 (5.00%) | 2.400 | .017 |
| Total | 61.71 | 11.82 | 58.58 | 13.06 | 3.12 (3.12%) | 1.928 | .055 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-24 Analyses of the NEPE Scores for Sociology Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.140) for Sociology Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .866), reading ($p$ = .949), listening ($p$ = .030) and total scores ($p$ = .198) between 2015 and 2016. Accordingly, Sociology Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.140

*T-test Results for Sociology De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=117) | | 2016 (N=116) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 9.95 | 2.78 | 9.89 | 2.73 | .06 (0.30%) | .168 | .866 |
| Reading | 21.38 | 6.79 | 21.33 | 6.68 | .06 (0.15%) | .065 | .949 |
| Listening | 27.88 | 7.86 | 25.69 | 7.44 | 2.19 (5.48%) | 2.185 | .030 |
| Total | 59.21 | 13.93 | 56.91 | 13.35 | 2.31 (2.31%) | 1.291 | .198 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-25 Analyses of the NEPE Scores for Animal Science Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.141) for Animal Science Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .514$), reading ($p = .018$), listening ($p = .156$) and total scores ($p = .042$) between 2015 and 2016. Accordingly, Animal Science Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.141

*T-test Results for Animal Science De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=81) | | 2016 (N=85) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.26 | 3.00 | 10.56 | 3.01 | -.31 (1.55%) | -.655 | .514 |
| Reading | 20.86 | 7.16 | 23.51 | 7.07 | -2.64 (6.60%) | -2.391 | .018 |
| Listening | 28.17 | 7.91 | 29.81 | 6.89 | -1.64 (4.10%) | -1.425 | .156 |
| Total | 59.30 | 14.71 | 63.88 | 14.09 | -4.59 (4.59%) | -2.052 | .042 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-26 Analyses of the NEPE Scores for Food Science Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.142) for Food Science Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .260), reading ($p$ = .065), listening ($p$ = .176) and total scores ($p$ = .706) between 2015 and 2016. Accordingly, Food Science Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.142

*T-test Results for Food Science De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=96) | | 2016 (N=86) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.52 | 2.86 | 11.02 | 3.14 | -.50 (2.50%) | -1.129 | .260 |
| Reading | 23.10 | 5.76 | 24.86 | 6.99 | -1.76 (4.40%) | -1.858 | .065 |
| Listening | 29.38 | 7.63 | 27.91 | 6.85 | 1.47 (3.68%) | 1.359 | .176 |
| Total | 63.00 | 13.87 | 63.79 | 14.31 | -.79 (0.79%) | -.378 | .706 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-27 Analyses of the NEPE Scores for Hospitality Management Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.143) for Hospitality Management Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .267), reading ($p$ = .578), listening ($p$ = .021) and total scores ($p$ = .074) between 2015 and 2016. Accordingly, Hospitality Management Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.143

*T-test Results for Hospitality Management De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=53) | | 2016 (N=54) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.53 | 3.24 | 10.87 | 2.85 | .66 (3.30%) | 1.116 | .267 |
| Reading | 25.17 | 6.64 | 24.48 | 6.11 | .69 (1.73%) | .558 | .578 |
| Listening | 32.23 | 6.88 | 29.15 | 6.69 | 3.08 (7.70%) | 2.346 | .021 |
| Total | 68.92 | 12.94 | 64.50 | 12.45 | 4.42 (4.42%) | 1.803 | .074 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-28 Analyses of the NEPE Scores for Fine Arts Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.144) for Fine Arts Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .954), reading ($p$ = .789), and total scores ($p$ = .128) between 2015 and 2016. Yet, there was a statistical difference revealed in listening scores ($p$ = .004). The listening means decreased from 2015 to 2016. Accordingly, Fine Arts and Engineering Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading and total score while there was a decrease in listening scores from 2015 to 2016.

Table 4.144

*T-test Results for Fine Arts De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=39) | | 2016 (N=37) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.21 | 3.28 | 10.16 | 3.22 | .04 (0.2%) | .058 | .954 |
| Reading | 20.82 | 8.06 | 20.32 | 8.05 | .50 (1.25%) | .268 | .789 |
| Listening | 30.92 | 6.88 | 25.73 | 8.40 | 5.19 (12.98%) | 2.956 | .004* |
| Total | 61.95 | 15.86 | 56.22 | 16.64 | 5.73 (5.73%) | 1.538 | .128 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-29 Analyses of the NEPE Scores for Music Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.145) for Music Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .778), reading ($p$ = .793), listening ($p$ = .428) and total scores ($p$ = .555) between 2015 and 2016. Accordingly, Music Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.145

*T-test Results for Music De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=25) | | 2016 (N=28) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 8.44 | 3.49 | 8.21 | 2.25 | .23 (1.15%) | .283 | .778 |
| Reading | 16.48 | 8.27 | 15.93 | 6.96 | .55 (1.38%) | .263 | .793 |
| Listening | 25.20 | 9.27 | 23.29 | 8.17 | 1.91 (4.78%) | .799 | .428 |
| Total | 50.12 | 18.35 | 47.43 | 14.55 | 2.69 (2.69%) | .595 | .555 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-30 Analyses of the NEPE Scores for Architecture Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.146) for Architecture Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .303), reading ($p$ = .328), listening ($p$ = .065) and total scores ($p$ = .616) between 2015 and 2016. Accordingly, Architecture Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.146

*T-test Results for Architecture De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=32) | | 2016 (N=31) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 15.03 | 2.39 | 14.35 | 2.78 | .68 (3.40%) | 1.038 | .303 |
| Reading | 31.19 | 5.08 | 32.52 | 5.61 | -1.33 (3.33%) | -.986 | .328 |
| Listening | 36.06 | 3.68 | 34.19 | 4.21 | 1.87 (4.68%) | 1.879 | .065 |
| Total | 82.28 | 8.86 | 81.06 | 10.26 | 1.22 (1.22%) | .504 | .616 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-31 Analyses of the NEPE Scores for Industrial Design Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.147) for Industrial Design Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p = .470$), reading ($p = .399$), listening ($p = .592$) and total scores ($p = .681$) between 2015 and 2016. Accordingly, Industrial Design Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.147

*T-test Results for Industrial Design De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=33) | | 2016 (N=33) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 12.48 | 2.65 | 13.03 | 3.40 | -.55 (2.75%) | -.727 | .470 |
| Reading | 27.27 | 6.83 | 28.73 | 7.07 | -1.45 (3.63%) | -.850 | .399 |
| Listening | 33.76 | 4.69 | 33.09 | 5.33 | .67 (1.68%) | .539 | .592 |
| Total | 73.52 | 12.45 | 74.85 | 13.72 | -1.33 (1.33%) | -.413 | .681 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-32 Analyses of the NEPE scores for Landscape Architecture Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.148) for Landscape Architecture Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .664), reading ($p$ = .439), listening ($p$ = .029) and total scores ($p$ = .119) between 2015 and 2016. Accordingly, Landscape Architecture Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.148

*T-test Results for Landscape Architecture De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=54) | | 2016 (N=56) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.30 | 2.48 | 11.07 | 2.91 | .22 (1.10%) | .436 | .664 |
| Reading | 25.15 | 6.88 | 24.14 | 6.69 | 1.01 (2.53%) | .777 | .439 |
| Listening | 31.56 | 6.87 | 28.89 | 5.73 | 2.66 (6.65%) | 2.210 | .029 |
| Total | 68.00 | 14.04 | 64.11 | 11.93 | 3.89 (3.89%) | 1.570 | .119 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *5-33 Analyses of the NEPE scores for Law Department Freshmen (2015 & 2016)*

The results of independent samples t test (Table 4.149) for Law Department freshmen's NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .603), reading ($p$ = .177), listening ($p$ = .120) and total scores ($p$ = 1.000) between 2015 and 2016. Accordingly, Law Department freshmen's NEPE scores were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.149

*T-test Results for Law De. Freshmen's NEPE Scores between 2015 and 2016*

| Section | 2015 (N=109) | | 2016 (N=110) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 11.92 | 2.92 | 12.11 | 2.51 | -.19 (0.95%) | -.521 | .603 |
| Reading | 26.81 | 5.54 | 27.84 | 5.71 | -1.03 (2.58%) | -1.354 | .177 |
| Listening | 32.26 | 5.73 | 31.04 | 5.84 | 1.22 (3.05%) | 1.561 | .120 |
| Total | 70.98 | 11.07 | 70.98 | 11.22 | -.00 (0.00%) | .000 | 1.000 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

All in all, the results for the independent samples t test for freshmen's NEPE scores as they related to majors can be concluded in terms of grammar, reading, listening and total scores as follows. (1) There was no statistical difference in grammar scores between 2015 and 2016 for freshmen of 32 departments, but there was a statistical decrease for Public Administration Department freshmen. (2) No statistical difference was revealed for the reading scores between 2015 and 2016 for all 33 departments. (3) There was no statistical difference revealed in listening scores between 2015 and 2016 for freshmen of 25 departments, but there were statistically significant differences for freshmen of 8 departments as showed in Table 4.150. (4) There was no statistical difference in total scores for freshmen of 29 departments, but there were statistical differences for freshmen of 4 departments as showed in Table 4.150.

Table 4.150

*List of Statistical Significant Decreases for Grammar, Listening and Total scores as Related to Majors*

| Section | Department |
|---|---|
| Grammar | (1) Public Administration |
| Listening | (1) Applied Mathematics,(2) Environment Science and Engineering, (3) Business Administration, (4) International Business,<br>(5) Accounting, (6) Finance, (7) Public Administration,(8) Fine Arts |
| Total Score | (1) Business Administration, (2) International Business,<br>(3) Finance, (4) Public Administration |

## 6. Results of Analyses for the NEPE Scores as Related to Geographical Location between 2015 and 2016

The in dependent samples t test results of (1) changes in the NEPE scores for freshmen from Northern Taiwan, (2) changes in the NEPE scores for freshmen from Central Taiwan, and (3) changes in the NEPE scores for freshmen from Southern Taiwan, and (4) changes in the NEPE scores for freshmen from Eastern Taiwan between the years of 2015 and 2016 were presented to answer Research Question 6, "Are there any statistical differences in university freshmen's English language performance in terms of grammar, reading, listening, and total scores between 2015 and 2016 measured by the NEPE as related to geographical locations?" The results of the analyses and the answer to the sixth research question were as follows.

### *6-1 Analyses of the NEPE Scores for Freshmen from Northern Taiwan (2015 & 2016)*

The results of independent samples t test for Northern Taiwan subjects' NEPE Scores between 2015 and 2016 (Table 4.151) presented no statistical difference for grammar ($p$ = .979) and reading scores ($p$ = .960) while there were statistical differences

revealed in listening ($p$ = .000) and total scores ($p$ = .001). Accordingly, the NEPE scores for freshmen from Northern Taiwan were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.151

*T-test Results for Northern Taiwan Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=899) | | 2016 (N=931) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.08 | 3.12 | 10.08 | 3.19 | .00 (0.00%) | .027 | .979 |
| Reading | 21.88 | 7.33 | 21.86 | 7.46 | .02 (0.05%) | .050 | .960 |
| Listening | 29.04 | 7.71 | 26.70 | 7.86 | 2.33 (5.83%) | 6.413 | .000* |
| Total | 61.00 | 15.40 | 58.64 | 15.77 | 2.36 (2.36%) | 3.232 | .001* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *6-2 Analyses of the NEPE Scores for Freshmen from Central Taiwan (2015 & 2016)*

The results of independent samples t test (Table 4.152) for Central Taiwan subjects' NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .076) and reading scores ($p$ = .591) while there were statistical differences revealed in listening ($p$ = .000) and total scores ($p$ = .000). Accordingly, the NEPE scores for freshmen from Central Taiwan were consistent in term of grammar and reading scores while there were significant decreases in listening and total means from 2015 to 2016.

Table 4.152

*T-test Results for Central Taiwan Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=1044) | | 2016 (N=940) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.38 | 3.09 | 10.13 | 3.13 | .25 (1.25%) | 1.777 | .076 |
| Reading | 22.31 | 7.19 | 22.49 | 7.45 | -.18 (0.45%) | -.537 | .591 |
| Listening | 29.01 | 7.56 | 26.62 | 7.54 | 2.39 (5.98%) | 7.039 | .000* |
| Total | 61.70 | 15.02 | 59.24 | 15.28 | 2.46 (2.46%) | 3.615 | .000* |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *6-3 Analyses of the NEPE scores for Freshmen from Southern Taiwan (2015 & 2016)*

The results of independent samples t test (Table 4.153) for Southern Taiwan subjects' NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .819), reading ($p$ = .718) and total scores ($p$ = .029) while there were statistical differences revealed in listening ($p$ = .000) scores. Accordingly, the NEPE scores for freshmen from Southern Taiwan were consistent in term of grammar, reading, and total scores while there was a significant decrease in listening means from 2015 to 2016.

Table 4.153

*T-test Results for Southern Taiwan Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=841) | | 2016 (N=879) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.26 | 2.95 | 10.23 | 3.01 | .03 (0.15%) | .228 | .819 |
| Reading | 21.74 | 7.16 | 21.62 | 7.21 | .13 (0.33%) | .361 | .718 |
| Listening | 27.72 | 8.20 | 26.30 | 7.23 | 1.42 (3.55%) | 3.812 | .000* |
| Total | 59.72 | 15.38 | 58.14 | 14.54 | 1.58 (1.58%) | 2.187 | .029 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *6-4 Analyses of the NEPE scores for Freshmen from Eastern Taiwan (2015 & 2016)*

The results of independent samples t test (Table 4.154) for Eastern Taiwan subjects' NEPE Scores between 2015 and 2016 revealed no statistical difference for grammar ($p$ = .532), reading ($p$ = .892), listening ($p$ = .065) and total scores ($p$ = .389) between 2015 and 2016. Accordingly, the NEPE scores for freshmen from Eastern Taiwan were relatively consistent in terms of grammar, reading, listening and total score between 2015 and 2016.

Table 4.154

*T-test Results for Eastern Taiwan Subjects' NEPE Scores between 2015 and 2016*

| Section | 2015 (N=44) | | 2016 (N=39) | | Mean | T | Sig. |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | Difference | | (2-tailed) |
| Grammar | 10.05 | 2.44 | 9.69 | 2.69 | .35 (1.75%) | .628 | .532 |
| Reading | 21.41 | 7.20 | 21.64 | 8.37 | -.23 (0.58%) | -.136 | .892 |
| Listening | 29.68 | 5.74 | 27.18 | 6.47 | 2.50 (6.25%) | 1.868 | .065 |
| Total | 61.14 | 12.78 | 58.51 | 14.80 | 2.62 (2.62%) | .867 | .389 |

*Significant at $p < .01$ Note: M= mean; SD= standard deviation

### *7. Summary and Discussion of the Results from 2012 to 2016*

Table 4.155 showed the summary of statistical differences for the NEPE scores between 2015 and 2016 as related to gender, admission pathways, majors and geographical locations.

For the grammar section, the only statistical difference was revealed for Public Administration Department freshmen between 2015 and 2016. The previous analysis results revealed the NEPE scores freshmen at this department were relatively consistent from 2012 to 2015 (Table 4.109). Therefore, there was a significant change in Public Administration Department freshmen's grammar performance in 2016 in comparing with the previous four years.

For the reading section, no statistically significant difference was revealed for any of the factors between 2015 and 2016. This also indicated that the reading performance in 2016 was consistent or followed similar consistent trend as the previous four years as the subjects related to all factors.

For the listening section, the significant differences between 2015 and 2016 were revealed for both male students and female students, for Examination & Placement admissions and Personal Application admissions, for freshmen of 8 departments (Applied Mathematics, Environment Science and Engineering, Business Administration, International Business, Accounting, Finance, Public Administration, and Fine Arts), and for freshmen from Northern, Central, and Southern Taiwan. As related to above mentioned groups, the listening scores for the previous four years were consistent or increase gradually from 2012 to 2015. This indicated that the listening scores for those groups changed significantly.

For the total scores of the NEPE, the significant differences between 2015 and 2016 were revealed for both male students and female students, for Examination & Placement admissions, for freshmen of 4 departments (Business Administration, International Business, Finance, and Public Administration), and for students from Northern and Central Taiwan. The total scores for the previous four years for these groups were consistent or increase gradually from 2012 to 2015. This indicated that the listening scores for those groups changed significantly.

Table 4.155

*Summary of Significant Statistical Differences for the NEPE Scores between 2015 and 2016*

| | Group of Subject | Grammar | Reading | Listening | Total |
|---|---|---|---|---|---|
| All | All | | | -* | -* |
| Gender | Male | | | -* | -* |
| | Female | | | -* | -* |
| Admission Pathways | E & P Admissions | | | -* | -* |
| | SP Admissions | | | | |
| | PA Admissions | | | -* | |
| Majors | Chinese Literature | | | | |
| | Japanese | | | | |
| | History | | | | |
| | Philosophy Department | | | | |
| | Applied Physics | | | | |
| | Chemistry | | | | |
| | Life Science | | | | |
| | Applied Mathematics | | | -* | |
| | Chemical & Materials Engineering. | | | | |
| | Environment Science & Engineering. | | | -* | |
| | Computer Science | | | | |
| | Industrial Engineering & Enterprise Information. | | | | |
| | Electrical Engineering | | | | |
| | Business Administration | | | -* | -* |
| | International Business | | | -* | -* |
| | Accounting | | | -* | |
| | Statistics | | | | |
| | Finance | | | -* | -* |
| | Information Management | | | | |
| | Economics | | | | |
| | Political Science | | | | |
| | Public Administration | -* | | -* | -* |
| | Social Work | | | | |
| | Sociology | | | | |
| | Animal Science | | | | |
| | Food Science | | | | |
| | Hospitality Management | | | | |
| | Fine Arts | | | -* | |
| | Music | | | | |
| | Architecture | | | | |
| | Industrial Design | | | | |
| | Landscape Architecture | | | | |
| | Law | | | | |
| Geographical Location | Northern Taiwan | | | -* | -* |
| | Central Taiwan | | | -* | -* |
| | Southern Taiwan | | | -* | |
| | Eastern Taiwan | | | | |

Note: "-"means decrease; "* "means significant statistical difference of $p < .01$; the other empty boxes means the scores were consistent

# CHAPTER 5

# CONCLUSION

This chapter includes summary of major findings, implications, and limitations of this study as well as suggestions for further research.

## *Summary of Major Findings*

This study investigated the statistical differences in university freshmen's English language ability measured by the NEPE over the past five years to verify whether there were any statistical differences between the years of 2016 and the time period (2012-2015) before the drastic drop of the student population as they related to gender, admission pathways, majors, and geographical locations. The findings included (1) the changes in students' English language ability from 2012 to 2015, and (2) changes in students' English language ability in 2016. The findings are as follows.

### *Summary of Changes in Students' English Language Ability from 2012 to 2015*

Based on the results of this study (see Table 4.110), students' English grammar, reading, listening and overall ability as measured by the NEPE was moderately consistent for the years from 2012 to 2015 because among the 43 analyses (1) 75.6% of the analyses revealed no statistical difference for the ANOVA tests for the NEPE scores, (2) 4.1% of the analyses revealed no statistical difference for the Tukey's HSD tests, or (3) 20.3% of the analyses presented a consistent trend for the means from 2012 to 2015. In general, students' grammar, reading, and total scores did not change significantly. The first key finding was the gradual increase in students' listening ability from 2012 to

2015 for all subjects and as the subjects related to gender, admission pathways, and geographical locations as well as 6 out of 33 departments.

### *Summary of Changes in Students' English Language Ability in 2016*

According to the results of this study, the changes in students' English language ability were concluded in terms of grammar, reading, listening and total scores measures by the NEPE as follows.

#### *Changes in Students' English Grammar Ability*

In general, there was almost no statistical difference revealed for students' grammar ability as measured by the NEPE between 2015 and 2016. Although the grammar means had a tendency to decline slightly year by year from 2012 to 2016, the grammar ability for freshmen's enrolled in 2016 did not change significantly. The only exception was the significant decrease in grammar scores for freshmen of Public Administration Department in 2016. The freshmen of Public Administration Department were only a small proportion of approximately 0.2% of all subjects. That is to say the students' grammar ability was consistent before and after the steep drop of the shrinking student population. Consequently, the shrinking student population might not have an effect on enrolling students with significantly different grammar ability in 2016.

#### *Changes in Students' English Reading Ability*

There was no significant difference for students' reading ability between 2015 and 2016 in this study. The students' reading ability remained consistent before and after this shrinking student population. It is fair to say that the shrinking student population

might not have an effect on enrolling students with significantly different reading ability in 2016.

### *Changes in Students' English Listening Ability*

Students' listening ability had a tendency to increase from 2012 to 2015 for most of the factors as related to gender, admission pathways and geographical locations. Interestingly, students' listening scores declined significantly with a 5.23% difference for all subjects between 2015 and 2016. Similar significant decreases were also found for the factors of male (MD = 4.08%), female (MD = 6.2%), E & P admission (MD = 7.25%) PA admission (MD = 3.7%), as well as Northern Taiwan (MD = 5.83%), Central Taiwan (MD = 5.98%), and Southern Taiwan (MD = 3.55%). Additionally, as the freshmen related to majors, the listening ability for freshmen from 8 out of 33 departments (Table 4.150) declined significantly from 2015 to 2016. And the freshmen of these 8 departments were approximately a proportion of 25.7% among the freshmen in 2016.

This overwhelming decrease in the listening ability as measured by the NEPE before and after the drop of student population was in contrast to the consistent trend of gradual increase in listening ability in this study. Additionally, this finding was also inconsistent with the results of previous studies examining the changes in the English language ability (MOE, 2016b ; S. C. Chen, 2014; Sims, 2012; Sims & J. Liu, 2013; T. L. Chiang, 2014). These studies indicated that students' English language ability was progressing over the past decade. Moreover, this regression in listening ability was beyond the expectation of the new curricula at the elementary and the high school levels. The objectives of the curricula mainly expected to improve students' listening ability via more communicative teaching and learning (MOE, 2006; 2010). Lastly, the change

in the listening ability in 2016 was also beyond the expectation to develop students' listening ability via a gradual inclusion of the listening section into national entrance examinations (CEEC, 2016).

To be concluded, students' English listening ability did not progress as expected for students enrolled at this university in 2016. Although this change in listening ability might be affected by factors under investigation, it was coincident with the shrinking student population in 2016. Therefore, it is fair to say that the shrinking student population might have an effect on enrolling students with different English listening ability at this university in Taiwan according to the results of this study.

***Changes in Students' Overall English Language Ability as Measured by the NEPE***

Students' overall English ability as measured by the NEPE declined from 2015 to 2016 for all subjects and as they related to the factors of male, female, E & P admission, Northern Taiwan, and Southern Taiwan as well 5 out of 33 departments (Table 4.155). This can be contributed to the decrease in listening ability since the grammar and reading abilities were relatively consistent. The result also indicated that the shrinking student population might have an effect on enrolling students with worse overall English ability which was affected by the decline in listening ability as measured by the NEPE.

### *Implications of the Study*

The results of the study provided a better understanding of the changes in the English language ability of incoming freshmen from 2012 to 2016. Specifically, the results also pinpointed the specific changes in the English listening ability before and after this drastic drop in student population. It is hoped that the results of the study can provide useful information for researchers, educators, policy makers, administrators and teachers.

Firstly, this study provided information for researchers who were interested in this area as related to the impact of low birth rate or shrinking student population on changes in the students' academic quality entering universities. Over the past decade, many researchers (Chi, 2012; Hsu, 2006; T. Z. Huang, 2015; S. H. Lin, 2011; Lwo, 2007; M. J. Tsai, 2008, 2012; Yung, 2009) pointed out the effects of the low birth rates on education and predicted that the student quality of incoming freshmen might decrease due to the higher admission rate and less competitiveness for entering universities. However, few studies had pointed out any statistical changes in students' academic performance. This study served as an indication of the impact of this shrinking student population on changes in university freshmen's English language ability.

Secondly, this study also provided information for policy makers and educators while facing the challenges of the shrinking student population. Demography was a major factor to be taken into account while establishing educational policies (Wang, 2004). According to W. S. Lin (2013), over the three decades, the challenges for establishing educational policies in Taiwan were to satisfy the demographic transition of increasing and decreasing student population. This study served as an indication for the effects of educational policies on measuring the transition of student population.

Moreover, the results provided information for further studies examining other under investigated factors to this decline in English listening ability. The decline in students' listening ability in 2016 reflected students' English listening performance was inconsistent with what the curricula had expected. Over the past two decades, English language curricula at the elementary and secondary levels were prone to enhance students' communicative ability on the purpose of developing the four skills equally (MOE, 2006; 2010). However, this study indicated an unexpected decline in incoming freshmen's listening ability at this university in 2016. This might be contributed to the shrinking student population or other under investigated factors.

For example, since spending time on English listening might not be effective in getting scores in comparison with spending time on reading or grammar, practicing listening might be cut off more easily when students arranged their after schools time. Specifically, the development of students' listening ability requires intensive practices for a period of time to achieve the threshold of basic comprehension. For high school students, there might be insufficient time or autonomy to persist in English listening. Additionally, schools might use monthly English magazines as supplementary materials for students to strengthen English listening ability. However, students might tend to read them instead of listening to them after school because teachers might not assess their listening rather than reading, grammar, or vocabulary. Since the effects of above mentioned factors on students' English listening ability are still under investigation, this study provided useful information for policy makers, educators and teachers to explore the effectiveness of implementing the curricula, and for researchers for future studies.

Thus, lastly, the results of changes in students' English grammar, reading, and listening ability provided information for further invention of more suitable English

curricula for administrators and for the English language teachers in instructing students in class at this university.

### *Limitations of the Study and Suggestions for further Research*

The results of this study have answered the research questions and the findings also presented the information as the topic has been addressed. Yet there are still limitations presented as follows.

Firstly, this study only examined changes in the English language ability of freshmen at one university. The freshmen for this study represented a small portion among all the freshmen at all universities. It is suggested that similar studies at other universities might be needed to confirm the results and the findings in this study.

Secondly, this study analyzed the scores measured by the NEPE which focused on assessing freshmen's grammar, reading, and listening ability. The investigation to changes in other areas such as speaking, writing, learning attitudes, or learning motivations might be needed.

Thirdly, the findings indicated that the significant regression in English listening ability may possibly be affected by this shrinking student population in 2016. However, this study did not present any information related to the impact of this shrinking student population on the other class subjects such as Mathematics, Chinese, Science, and Sociology. Thus, similar studies examined changes in students' academic performance for other subjects might also be needed.

Moreover, this study only examined the impact of the student population drop in 2016. Although there might not be a steep drop (approximately a decrease of 54,000) like it was in 2016 within two decades, according the MOI, not until 2028, the university student population might decrease gradually from year to year. Further

research examining changes in students' academic performance under the influences of shrinking student population as well as changes in the admission rates and admission policies might also be needed.

Lastly, this study did not explore the effects of admission pathways on the changes in the English language ability rather than reporting the changes in the English language ability in each pathway through the years. The changes in freshmen's English language ability between admissions through different pathways are under investigation. Since 2014, the 12 year compulsory education has been implemented. This group of students would attend colleges in the fall of 2017. This might be a big change for the development of education. The effects of this change might also be under investigated. Additionally, the government planned to implement the New 107 (2018) Curriculum for the 12 year compulsory education, and it would be postponed to the following year (2019). Following by the implementation of the 12 year compulsory education, the admission to universities would change as well. That is to say the new curriculum would change not only school teaching and learning at the elementary and secondary levels, but also the admission proportion of the three pathways (Examination & Placement, Stars Program and Personal Application). Since the resource of student population might be fewer and fewer, the competition between universities for enrolling enough students might increase. This had aroused the heated arguments between universities as related to the proportions of each pathway admissions. However, further investigation examining the effects of these changes in educational policies on students' English language learning outcome might be needed.

## *Conclusion*

In this study, the students' English language ability generally reflects not only the effects of English teaching and learning but also the effects of changes in student population. Specifically, teaching and learning are deeply connected with student population. The literature expected that the educational policies to the changes in student population might not be complete in time that students' academic performance enrolled in universities might change. This study investigated the changes in students' English ability and the results indicated that their reading and grammar abilities remained consistent while their listening ability decreased significantly. This change in listening ability for students enrolled in 2016 was coincident with the shrinking student population. The drastic declining in student population in 2016 might have an effect on enrolling students with worse English listening ability. Yet, the change in students' listening ability might also be affected by other under investigated factors. This research does not only serve its pedagogical implications but also implications for researchers, educators, policy makers as they related to the whole educational system and the demographic transitions in Taiwan.

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# APPENDICES

## Appendix A

### Number of Subject of Each Department from 2012 to 2016

| College | Department | 2012 | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|---|---|
| Arts | Chinese Literature | 102 | 102 | 98 | 105 | 98 | 505 |
| | Japanese | 89 | 93 | 96 | 98 | 94 | 470 |
| | History | 54 | 50 | 54 | 54 | 54 | 266 |
| | Philosophy | 45 | 42 | 50 | 48 | 50 | 235 |
| Science | Applied Physics | 87 | 82 | 76 | 78 | 64 | 387 |
| | Chemistry | 86 | 87 | 81 | 81 | 80 | 415 |
| | Life Science | 77 | 77 | 79 | 76 | 79 | 388 |
| | Applied Mathematics | 48 | 53 | 44 | 45 | 48 | 238 |
| Engineering | Chemical and Materials Engineering | 110 | 105 | 111 | 115 | 110 | 551 |
| | Environment Science and Engineering | 86 | 81 | 78 | 82 | 77 | 404 |
| | Computer Science | 103 | 110 | 104 | 111 | 103 | 531 |
| | Industrial Engineering and Enterprise Information | 112 | 114 | 115 | 115 | 111 | 567 |
| | Electrical Engineering | 55 | 55 | 62 | 60 | 65 | 297 |
| Management | Business Administration | 165 | 168 | 153 | 148 | 152 | 786 |
| | International Business | 173 | 173 | 158 | 158 | 155 | 817 |
| | Accounting | 118 | 117 | 119 | 115 | 118 | 587 |
| | Statistics | 102 | 107 | 97 | 104 | 94 | 504 |
| | Finance | 115 | 115 | 115 | 111 | 113 | 569 |
| | Information Management | 52 | 52 | 56 | 53 | 51 | 264 |
| | Economics | 173 | 173 | 166 | 156 | 161 | 829 |

# Appendix A

## Number of Subject of Each Department from 2012 to 2016 (continued)

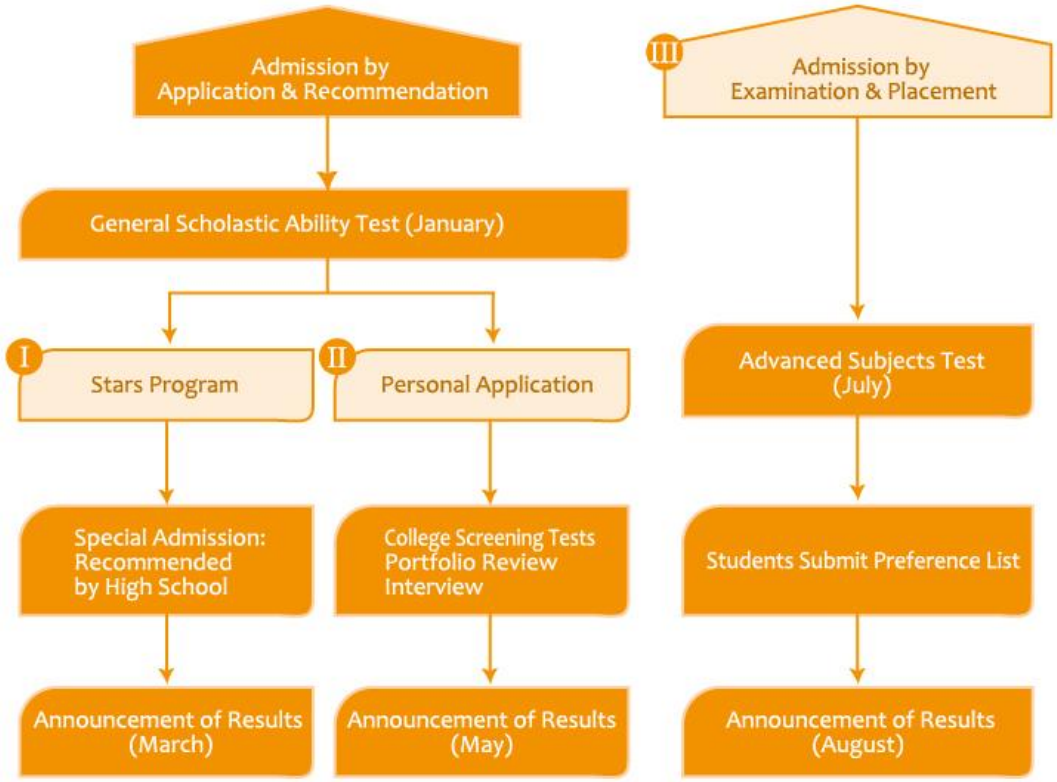
| College | Department | 2012 | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|---|---|
| Social | Political Science | 93 | 95 | 106 | 98 | 103 | 495 |
| Sciences | Public Administration | 62 | 57 | 56 | 59 | 56 | 290 |
| | Social Work | 115 | 118 | 121 | 119 | 117 | 590 |
| | Sociology | 115 | 102 | 110 | 117 | 116 | 560 |
| Agriculture | Animal Science | 82 | 86 | 77 | 81 | 85 | 411 |
| | Food Science | 97 | 102 | 97 | 96 | 86 | 478 |
| | Hospitality Management | 53 | 55 | 54 | 53 | 54 | 269 |
| Fine Arts and | Fine Arts | 35 | 40 | 40 | 39 | 37 | 191 |
| Creative | Music | 29 | 31 | 30 | 25 | 28 | 143 |
| Design | Architecture | 32 | 31 | 32 | 32 | 31 | 158 |
| | Industrial Design | 30 | 32 | 33 | 33 | 33 | 161 |
| | Landscape Architecture | 57 | 62 | 59 | 54 | 56 | 288 |
| Law | Law | 118 | 116 | 115 | 109 | 110 | 568 |
| Total | | 2,870 | 2,883 | 2,842 | 2,828 | 2,789 | 14,212 |

## Appendix B

### College Admission Process in Taiwan

Between 1954 and 1994, students enrolling in colleges in Taiwan were required to participate in the Joint College Entrance Examination (JCEE). Within that period, a student's score on the JCEE was the sole factor determining the college a student would attend and the major the student would pursue. In 1994, CEEC implemented the General Scholastic Ability Test (GSAT), ushering in the era of multiple pathways to college admission.

The college admission process has undergone minor modifications since 1998 in response to suggestions from students, parents, high school teachers, and colleges. Currently, students planning to continue their education have three options: (I) Stars Program, (II) Personal Application, and (III) Admission by Examination and Placement.



### (I) Stars Program.

Introduced in 2007, the Stars Program seeks to provide all public and private high school students across the country with an equal opportunity to attend college. One of the primary objectives of the Stars Program is to increase enrollment in college of students from remote areas. The program utilizes grade point average from the first two years of high school as the admission criterion in conjunction with a GSAT score that has been specified by the college department. All candidates must be recommended by their high schools, and there is a specified quota of students who are able to enter college through this program.

### (II) Personal Application.

The Personal Application process was introduced in 1998, and expanded in 2000, with the goal of providing all high school students with an opportunity to apply to their preferred colleges or departments. Students choosing this option first take the GSAT. After students receive their GSAT results, they decide which colleges they are eligible to apply based on criteria set by the colleges. If a student is qualified, the college will invite the student to participate in the second stage of the screening process. During this stage, students may be asked to take additional tests given by the department, prepare a portfolio, and take part in interviews.

### (III) Examination and Placement.

The Examination and Placement process is for students who did not take part in the Stars Program or the Personal Application process, or who failed to gain admission through either of these routes or were dissatisfied with the results. Students taking part in the Examination and Placement process must take the Advanced Subjects Test (AST). After students obtain their results, they fill out a preference list where they indicate their interests in specific colleges and departments.

Information retrieved August, 2016 from
http://www.ceec.edu.tw/CeecEnglishWeb/E07Process.aspx

## Appendix C

### General Scholastic Ability Test (GSAT)

- The focus of the GSAT is on fundamental concepts. Candidates are tested on their knowledge and skills of required high school subjects, and to determine their readiness for college study. Questions are based on the material students study in their first and second years of high school.
- For students planning to participate in the Stars Program or the Personal Application process, a GSAT score is required.
- The GSAT includes five subjects: Chinese, English, Mathematics, Social Studies, and Science. For each subject area, the scaled score ranges from 0 to 15, with a total maximum score of 75.
- There are multiple-choice questions for Mathematics, Social Studies and Science. For the Chinese test, there are multiple-choice questions, response writing and essay writing. For the English test, there are multiple-choice questions, a translation task, and essay writing.
- The GSAT is offered in January each year.

## Appendix D

## General Scholastic Ability Test (GSAT)
## English Subject

In the 2010 version of the Senior High School Curriculum Guidelines, a new goal for high school English courses was added, requiring students "to acquire the skills of logical reasoning, critical thinking, and creativity" at the same time they are learning English. Furthermore, a clear distinction has been drawn between the levels of difficulty of the AST English and GSAT English, with AST English being the more difficult. The questions on the AST English and GSAT English are thus constructed to cover different levels of difficulty so the tests can distinguish among candidates with varying levels of English proficiency.

### *Objectives*

1. To evaluate ability to understand and use high school level content words and their collocations
2. To evaluate ability to understand English words, phrases (including content words, function words, fixed expressions, and transitional words, etc.), sentences and paragraphs using context clues
3. To evaluate ability to understand content words (and fixed expressions) and transitional words using context clues
4. To evaluate ability to understand paragraphs using knowledge of English vocabulary, fixed expressions, syntax, and pragmatics as well as analytical skills and deductive reasoning
5. To evaluate ability to write English sentences which are correct in form and coherent in meaning
6. To evaluate students' ability to construct a coherent short essay based on a given prompt (e.g. a topic sentence or a set of pictures), using appropriate vocabulary and sentence structures
7. To evaluate higher-order skills such as logical reasoning, critical thinking, and creativity

## *Scope*

All questions are based on the 2010 version of Senior High School Curriculum Guidelines and the materials covered in 10th and 11th grade required English courses.

## *Content*

The GSAT English evaluates knowledge of English vocabulary and ability to comprehend paragraphs, to write sentences (in the form of sentence making, sentence combining or Chinese-to-English translation), and to construct short paragraphs. There are multiple-choice questions and constructive response questions, each consisting of several types of questions. Among the multiple-choice questions, the items in the Vocabulary section evaluate students' knowledge of English words, particularly with respect to their meaning and use; the passages for Rational Cloze, Banked Cloze, Sentence Gap Fill, and Reading Comprehension average 150 to 250 words in length and are followed by sets of questions that aim to assess students' overall comprehension of as well as their ability to make inferences based on the passages. The passages chosen cover a wide range of topics in different genres (e.g. narrative or argumentative), from newspapers, magazines, books and other sources. Students planning to take the test should read articles on different topics and in different genres to improve their reading ability.

The constructive response portion of the test consists of two parts: Chinese-to-English Translation and Guided Writing. The Translation section aims to evaluate students' ability to use basic English words and to construct basic sentences (simple, compound, and complex sentences). Students are asked to translate sentences and paragraphs from Chinese to English, and to fill in the blanks in English sentences or paragraphs based on the given Chinese paragraph. The Guided Writing section asks for a short letter or paragraph based on a designated topic or (a set of ) pictures related to students' school or everyday life.

The GSAT English requires a 4,500-word vocabulary (see levels 1-4 of the Senior High School English Word-list constructed and provided by the College Entrance Examination Center, CEEC).

## *Question Types*

The GSAT English consists of reading and writing sections in the forms of multiple-choice questions and constructive response questions. Listed below are possible questions types.

### Sections One: Multiple-Choice Questions

**1. Vocabulary**

This part evaluates understanding of and ability to use high school-level content words and their collocations.

**2. Rational Cloze**

This part evaluates ability to understand English words, phrases (including content words, function words, fixed expressions, and transitional words, etc.), sentences and paragraphs using context clues.

**3. Banked Cloze**

This part evaluates ability to understand content words (and fixed expressions) and transitional words using context clues.

**4. Reading Comprehension**

This part evaluates students' ability to comprehend paragraphs using knowledge of English vocabulary, fixed expressions, syntax, and pragmatics as well as analytical skills and deductive reasoning.

### Section Two: Guided Writing

**1. Sentence-combining/ rewriting or translation from Chinese to English**

**(1) Sentence-combining/ rewriting**

This part tests ability to combine or rewrite sentences based on the prompts given.

**(2) Chinese to English Translation:**

Possible questions types here include single-sentence translation and sentence-gap translation.

**i. Single-sentence translation**

This part evaluates ability to transform Chinese sentences into their English equivalents which are correct in form and coherent in meaning.

**ii. Sentence-gap translation**

This part evaluates ability to translate sentences from Chinese to English using context clues in the paragraphs.

**2. Guided writing:** Students could be asked to write a short letter or paragraphs based on a given topic or (a set of) pictures.

This part evaluates ability to construct a coherent short essay based on a given prompt (e.g. a topic sentence or a set of pictures), using appropriate vocabulary and sentence structures.

## Appendix E

### Advanced Subjects Test (AST)

- The AST assesses candidates' higher level knowledge of specific subjects and their readiness to study in their selected academic discipline. The AST tests students' comprehension, reasoning, analysis and the ability to effectively communicate.
- For students planning to participate in the Examination and Placement process, an AST score is required.
- Ten subjects are included in the AST. These include Chinese, English, Mathematics I (for science and engineering majors), Mathematics II (for humanities and social science majors), Geography, History, Physics, Chemistry, Biology, and Civics.
- Students must take a minimum of three subject tests, but they can take a maximum of ten tests. Most colleges specify that three to six subjects be tested.
- Questions are based on the material students study throughout their high school education.
- Each subject test is worth 100 points.
- There are a variety of question types on the AST. These include multiple-choice questions, short answer questions, problem solving, response writing, essay writing, and translation.
- The AST is offered in July each year.

## Appendix F

### Advanced Subjects Test (AST)

### English Subject

In the 2010 version of the Senior High School Curriculum Guidelines, a new goal for high school English courses was added, asking students "to acquire the skills of logical reasoning, critical thinking, and creativity" at the same time they are learning English. Furthermore, based on the principle of adaptive learning, a clear distinction should be drawn between the levels of difficulty of the AST English and GSAT English, with AST English being the more difficult one. Therefore, the questions on the AST English and GSAT English involve different levels of item difficulty so the tests can help distinguish various levels of English proficiency.

### *Objectives*

1. To evaluate ability to understand and use high school level content words and their collocations

2. To evaluate ability to understand English words, phrases (including content words, function words, fixed expressions, and transitional words), sentences and paragraphs using context clues

3. To evaluate ability to understand content words (and fixed expressions), and transitional words using context clues

4. To evaluate ability to understand and organize sentences into paragraphs

5. To evaluate ability to understand paragraphs using their knowledge of English vocabulary, fixed expressions, syntax, and pragmatics, along with analytical skills and deductive reasoning

6. To evaluate ability to write English sentences which are correct in form and coherent in meaning

7. To evaluate ability to construct a coherent short essay based on a given prompt (e.g. a topic sentence or a set of pictures), using appropriate vocabulary and sentence structures

8. To evaluate higher-order skills such as logical reasoning, critical thinking, and creativity

## *Scope*

All questions are based on the 2010 version of the Senior High School Curriculum Guidelines and the materials used in 10th to 12th grade required English courses.

## *Content*

The AST English evaluates students' knowledge of English vocabulary and their ability to read paragraphs, write and translate sentences, and to construct short paragraphs. There are multiple-choice questions and constructive response questions, and each include several types of questions. Among the multiple-choice questions, the Vocabulary section is designed with separate questions that evaluate students' ability to use English words; the sections for Rational Cloze, Banked Cloze, Sentence Gap Fill, and Reading Comprehension each goes with paragraphs of 200 to 300 words to test whether students can understand their meaning and answer the corresponding questions. The paragraphs chosen draw on students' life and learning experience. They cover a wide range of topics, including abstract or advanced areas, and are written in various genres (e.g. narrative or argumentative). They may come from newspapers, magazines, books and other sources. Students planning to take the test should read articles in different genres in order to improve their reading ability.

The constructive response portion of the test consists of two parts: Translation and Writing. The translations section aims to evaluate students' ability to use advanced English words and to construct complicated sentences (compound, complex, and compound-complex sentence). Students are asked to translate sentences and paragraphs from Chinese to English, and to fill in the blanks in English sentences or paragraphs based on the Chinese given paragraphs. The writing section requires students to write short paragraphs based on a designated topic or topic sentence closely related to students' school and home life in order to evaluate their ability to write descriptive, expository, and narrative paragraphs in English.

The AST English requires more than a 7,000-word vocabulary (see level 1-6 of the Senior High School English Word-list provided by the College Entrance Examination Center, CEEC). Words in the 4,500-to-7,000-word range can also appear on the test (see level 1-6 of the senior high school English word-list provided by the CEEC).

## *Question Types*

The AST English consists of reading and writing sections in the form of multiple-choice questions and constructive response questions. Listed below are possible questions types.

### Sections One: Multiple-Choice Questions

**1. Vocabulary**

This part evaluates students' understanding of and ability to use high school level content words and their collocations.

**2. Rational Cloze**

This part evaluates students' ability to understand English words, phrases (including content words, function words, expressions, and transitional words, etc.), sentences and paragraphs using context clues.

**3. Banked Cloze**

This part evaluates students' ability to understand content words (and expressions) and transitional words using context clues.

**4. Sentence Gap Fill**

This part evaluates students' ability to understand and organize paragraph structure.

**5. Reading Comprehension**

This part evaluates students' ability to understand paragraphs using their knowledge of English vocabulary, expressions, syntax, and pragmatics as well as their analytical skills and deductive reasoning.

### Section Two: Essay Questions

**1. Translation (from Chinese to English):** Possible questions types here include single-sentence translation, sentence-gap translation, and paragraph translation.

**(1) Single-sentence translation**

This part evaluates students' ability to turn Chinese sentences into correct, coherent, and sensible English sentences.

**(2) Sentence-gap translation**

This part evaluates students' ability to translate sentences from Chinese to English using context clues in the paragraphs.

**(3) Paragraph translation**

This part evaluates students' ability to translate Chinese paragraphs into English paragraphs that are correct and coherent.

**2. Guided Writing:** Students could be asked to write about a certain topic or using a certain topic sentence.

This part evaluates students' ability to construct a coherent short essay using a prompt or a topic sentence to showcase the vocabulary and syntax they've learned in high school.