EFFECTS OF STUDENT LEADERSHIP IN A PEER-TO-PEER PROGRAMME ON RESILIENCY, SELF-EFFICACY AND MOTIVATION OF UNDERGRADUATE STUDENTS IN A PRIVATE UNIVERSITY

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ABSTRACT

An ongoing concern amongst students in higher education is the ability to do well and succeed academically. One of the main factors in addressing that concern is ensuring a smooth and positive transition for students from high school entering university. Hence, the first-year experience in higher education institution for these students is crucial to help them to manage and cope with the new environment. Peer learning programmes have been proven to help students succeed academically especially for the first-year students. In building that momentum for ultimate academic success, it is also important to note that students need to build their resiliency, self-efficacy and motivation to help them move forward every year and graduate. This study examines the effectiveness of the Peer-to-Peer leaders and the programme in enhancing students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation of undergraduate students. A total of 303 undergraduate students from a local private university participated in the study. This peer-to-peer (P2P) programme is modeled after the Peer Assisted Study Sessions (PASS) programme from Australia and the Supplemental Instructions (SI) programme from the United States of America. Participation in the programme is voluntary and no students were coerced into joining the programme. From the 303 participants, a total of 223 students participated in the P2P programme while 80 students have chosen not to join in the programme. A quasi experiment was conducted where the student group who took the P2P programme was the treatment group while the student who did not join the P2P was the control group. The analysis was done using SPSS and SmartPLS. The results show that the leadership of the P2P leaders in leading the P2P programme was effective in enhancing students' knowledge. A split-plot ANOVA (SPANOVA) test was conducted to examine the

effect of the treatment intervention (attending the P2P programme) on all the dependent variables where multivariate tests were conducted to determine if the interaction effects of the independent variables were significant. The results of the SPANOVA test show that the scores of post-test for all the dependent variables was significantly higher than the scores of the pre-test, and significant interaction effects occur which concludes that the peer-to-peer programme did indeed have positive effects on resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Besides that, there was also moderating effect of age, study time and parents' income on the relationship between attending the peer-to-peer programme and resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. The study concluded that such peer learning programme is beneficial for undergraduate students especially at the first year at university life to help set the momentum for the academic journey ahead.

Keywords: peer-to-peer, student leader, resiliency, self-efficacy, motivation

KESAN KEPIMPINAN PELAJAR DALAM PROGRAM '*PEER-TO-PEER*' TERHADAP DAYA TAHAN, EFIKASI KENDIRI DAN MOTIVASI PELAJAR SARJANA MUDA DI SEBUAH UNIVERSITI SWASTA

ABSTRAK

Perkara yang menjadi kebimbangan berterusan dalam kalangan pelajar pendidikan tinggi adalah keupayaan untuk mencapai prestasi yang cemerlang dalam akademik. Salah satu faktor utama dalam menangani kebimbangan tersebut adalah memastikan peralihan yang lancar dan positif untuk pelajar dari sekolah menengah ke universiti. Oleh itu, bagi para pelajar ini, pengalaman tahun pertama dalam institusi pendidikan tinggi adalah penting untuk membantu mereka mengurus dan menangani persekitaran baru. Program pembelajaran rakan sebaya telah terbukti membantu pelajar berjaya dalam akademik terutamanya untuk pelajar tahun pertama. Dalam membina momentum untuk kejayaan dalam akademik, pelajar perlu membina daya tahan, efikasi kendiri dan motivasi untuk membantu mereka bergerak ke depan setiap tahun sehingga tamat pengajian di universiti. Kajian ini dilaksanakan untuk menyelidik keberkesanan pemimpin Peer-to-Peer (P2P) dalam meningkatkan pengetahuan pelajar serta keberkesanan program P2P ke atas daya tahan, efikasi kendiri, motivasi intrinsik, motivasi ekstrinsik dan motivasi sosial pelajar sarjana muda di sebuah universiti swasta. Sejumlah 303 pelajar sarjana muda dari sebuah universiti swasta tempatan mengambil bahagian dalam kajian ini. Program P2P ini dibina berdasarkan model program Sesi Pengajaran Bantuan (PASS) dari Australia dan program Arahan Tambahan (SI) dari Amerika Syarikat. Penyertaan dalam program ini secara sukarela dan tidak ada pelajar dipaksa untuk menyertai program ini. Daripada 303 peserta, seramai 223 pelajar menyertai program P2P manakala 80 orang pelajar memilih untuk

tidak menyertai program ini. Kaedah kuasi eksperimental digunakan di mana kumpulan pelajar yang mengambil program P2P merupakan kumpulan rawatan manakala pelajar yang tidak menyertai P2P merupakan kumpulan kawalan. Analisis dilakukan menggunakan SPSS dan SmartPLS. Keputusan kajian menunjukkan bahawa kepimpinan para pemimpin pelajar dalam program P2P berkesan meningkatkan pengetahuan pelajar. Ujian 'split-plot ANOVA' (SPANOVA) dijalankan untuk mengkaji kesan intervensi rawatan (program P2P) ke atas semua variabel bersandar kajian. Keputusan analisis ujian SPANOVA menunjukkan bahawa skor bagi pasca ujian untuk semua variabel bersandar adalah lebih tinggi berbanding dengan skor ujian pra, dan kesan interaksi yang wujud secara signifikan menunjukkan bahawa program peer-to-peer mempunyai kesan positif terhadap daya tahan, efikasi kendiri, motivasi intrinsik, motivasi ekstrinsik dan motivasi sosial. Selain itu, moderator umur, masa belajar dan pendapatan ibu bapa mempengaruhi hubungan antara menghadiri program P2P dengan daya tahan, efikasi kendiri, motivasi intrinsik, motivasi ekstrinsik dan motivasi sosial. Kajian ini menyimpulkan bahawa program pembelajaran rakan sebaya ini bermanfaat kepada pelajar sarjana muda terutamanya pada tahun pertama di universiti untuk membantu mereka menetapkan momentum dalam perjalanan akademik ke hadapan.

Kata kunci: pembelajaran rakan sebaya, pemimpin pelajar, daya tahan, efikasi kendiri, motivasi, sarjana muda

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To GOD be the glory. For in HIM all things are possible. This has been a long journey with many trials along the way. I promised my grandmother that she will see me graduate with my doctorial degree but during this journey, she could wait no longer and went home to the Lord. Sadly, I did not manage to complete this in time for her to see me graduate but I promised her that I will graduate. The time I spent caring for her in the final years of her life showed me many things – compassion, love, courage, humility and most important the meaning of family. Without family, who are we. I dedicate this accomplishment to my late grandmother for her encouragement and love; to my parents Charles and Anna, for their prayers and support in every way and to my husband, David for he is my pillar of strength and my rock. Without him, I would not be where I am today. His love and encouragement nudging me forward helped me persist and move forward. I also wish to extend my utmost gratitude to my supervisor Prof. Dr. Chua Yan Piaw for his continuous support and encouragment even through at my lowest moments. Thank you for not giving up on me. To the faculty and staff of IEL and the Faculty of Education, I thank you all from the bottom of my heart for the advice, help and support given to tme. The trials and difficulties I faced in my journey to completion has allowed me to realise and learn many valuable lessons in life. This journey was indeed enriching for me and I am grateful to everyone I have met along the way who have helped me in the progress. Thank you. My love and gratitude to you.

TABLE OF CONTENTS

Chapter 1: Introduction

Chapter 2: Literature Reivew

Chapter 3: Methodology

Chapter 4: Analysis

Chapter 5: Discussion, Conclusion and Recommendation

LIST OF FIGURES

LIST OF TABLES

LIST OF SYMBOLS AND ABBREVIATIONS

PASS	:	Peer Assisted Study Sessions
P2P	:	Peer-to-Peer
SI	:	Supplemental Instructions
Gen Z	:	Generation Z

LIST OF APPENDICES

CHAPTER 1: INTRODUCTION

1.1 Overview

A crucial factor in successful nation building lies in the development of its human capital; its people who are the heart and soul of any nation. The intellectual capacity and abilities of its nation helps the country develop and progress forward by stimulating creativity, innovation, technological advancement and economic expansion. With the intellectual capacity of its people, today, Malaysia is ready to embrace Industry Revolution 4.0 or known for short as IR4.0. This is the growth and evolution of a country to move forward progressively to be able to compete with countries that are more advanced. This possibility is fuelled by its people's ability and intelligence. Thus, to ensure continuous progress, the country needs to continuously build on human capital.

The twenty first century poses more challenges than ever. Globalisation, uncertain economic fluctuations, technological disruptions, internet security and treats, increasing information flow, increasing expectations, innovations and competition is putting pressure on the ability to learn and acquire knowledge in a fast and efficient way. Let us go back to basics. Education provides the base or fundamentals for people to learn and acquire knowledge. It is through education that the people of a country grows and this translates to betterment of the country. The late Nelson Mandela, (1994 – 1999), who has contributed vastly to the development of South Africa as its former President has mentioned about the importance of education. His famous quote is "Education is the most powerful weapon which you can use to change the world". Hussien (2013) stressed that education is a valuable social commodity that can transform human capital to another stage of development. It is like a push for any nation, population, community or group to move and advance from one stage to

another. Anagnostaki, Pavlopoulos, Obradovic, Masten and Motti-Stefanidi (2016) concurred that increased achievements in academia will lead to more opportunities in higher education, better job opportunities or prospects and higher successful outcomes for its people. For Malaysia, the primary mechanism driving the government's effort to plan, build, grow and maintain efficient human capital is in its education. Sound education of its people equates to economic growth and national development. Education policies are changing and evolving to meet the demands of tomorrow's needs. Preparing the future generation, which are today's youth, to succeed and prosper in this robust, multifaceted and volatile economy, it is also necessary to have the same robust change in how our education and higher education system and higher learning institutions currently operate. The best indicator for this is knowing what and how students are learning in the classrooms and lecture halls in these higher education institutions. How are our students educated? In this age of globalisation and technology availability, a country's achievement depends primarily on the knowledge, expertise, abilities, capabilities of its human capital and their abilities to embrace the disruptions that advancement in technology brings. Even in Malaysia today with the dawning of Industry Revolution 4.0, it changes the way people consume products and services, the way they manage their health, the way they communicate and move from one place to another. Due to the inter-connectedness, internet of things (IOT), cloud technology, data warehousing and analytics, the knowledge, literacy and competency level of its people will determine how fast growth will take place. It is also quite evident that countries with higher literacy and education levels tend to enjoy better economic status.

This is the age of technology inter connectedness, and substantial focus needs to be given to the contribution made by its human capital and the knowledge and skills

that they bring to affect change and advancement of the country. Both, technological advancement and human knowledge needs to move and grow in tandem for the country to grow and prosper. The absence of any one element may hinder the progress of the nation as a whole. According to Kwon (2009), the basis for the capabilities of the nation's human capital is related to the knowledge and skills, which its people bring, contribute, and have acquired through the individual's learning activities. Therefore, the development of those knowledge and skills of a country's workforce is considered as a vital approach for encouraging national economic development. Therefore, based on that discussion, there is an assumption that people who bring more to the table and contribute more should be earning more as compared to those who are not as active or do not contribute as much. People who are paid more are expected to perform more, are given bigger responsibilities to manage and have higher accountability, hence to be able to perform the task and responsibilities given, that person must first have the necessary training, knowledge, abilities and the experience to perform the job well. It can be said that skills level equate to level of compensation that is fair. Hence, it is important for the population in the country to have the required education to be able to contribute to the growth of the nation.

According to the report of the "Malaysian Education Blueprint 2013 – 2025" (Ministry of Education Malaysia, 2013), education has a key part to play in our country's trade and industry growth and national development. This ties in to the argument above on the importance of education in the development and growth of a nation. This is the best indicator of a country's future starting from what happens in the classroom, how students learn and what shapes their learning. The report highlighted that the education system of the country is facing increased public scrutiny and argument. It may be attributed to the rise in economic expectations, parental

concerns or feedback from industry discussing the concerns on the ability of the country's policy to sufficiently prepare its next generation for the uncertainties that the 21st century may bring. In other words, are education institutions preparing students for the future of work?

Education institutions have to face the consequences of globalization and worldwide educators and trainers are confronted with a demand for greater adaptability, openness, accessibility and quality (Colin & Donald, 2003). Due to forces of globalisation, the first-year students entering college or university has become more diverse, in that these group of young adults come from varied backgrounds bringing with them different skills and education levels (Geerlings, Cole, Batt, & Martin-Lynch, 2016). The prior education may include formal or informal education. Many years ago, students entering colleges and university was termed as the 'traditional student', where they were mostly high school-leavers who were embarking on the next natural phase in life by seeking tertiary qualification. These students will try to gain entry into their desired field in tertiary education by doing well and scoring the required marks on their university entrance exams to be offered a seat in the university program of their choice (Gerlings, et al., 2016). But today is a different scenario altogether, there are also many private institutions of higher learning and as these institutions are profit driven, there is generally no quota on the number of students they can accept to the different programs offered. The exception is of course to certain professional programs where the quota is determined by the governing or professional body.

Institutions of higher learning in Malaysia are tasked with a significant role in realizing the government's vision in developing efficient human capital that translates

to economic growth of the country. Therefore, education institutions today are required to build on the capacity of its students, and teach them to remain competitive in this rapidly and fast paced economy. According to the "Malaysia Education Blueprint 2013-2025" (Ministry of Education Malaysia, 2013), the industry have voiced its concern and reports that "graduates today still lack on the skills of critical thinking, creative thinking, proficiency in English communication that are essential for success in the 21st century" (p.11). With the challenges outlined above, a sound university education is a requisite even more today. Gone were the days when a certificate would suffice in getting employment. Today, almost everyone has a minimum basic diploma or even degree and many more are opting for post-graduate education – Masters and Doctorial degrees even, all in search for a better, more comfortable and promising future. Many companies are also investing in their employees by sending them for upskilling training and personal and professional development. This helps in the enhancement of the abilities of their employees and that may translate into better work output. Hence, education and training is important for knowledge and improvement in job performance. This is evident in the various upskilling programs organized by colleges, training institutes and institutions of higher learning. Many institutions of higher learning are collaborating with the industry to provide training and development courses for their workforce. These institutions of higher learning are providing short courses and diplomas to the companies who want to develop their employees. The Malaysian Human Resources Minister, Mr. M. Kula Segaran has urged Malaysian workers to improve themselves by attending skills training courses, saying having the right skills could earn them 20 per cent higher pay (The Malaysian Insight, 2019). The courses provided can be general skills courses or it may be tailored to what the company needs so that it is relevant to the job scope.

Organisations such as Talent Corporation Malaysia Berhad or TalentCorp has been setup to look into finding amd developing the right talent for the country. They are the national agency that drives Malaysia's talent strategy and pipeline towards IR 4.0 initiatives. Hence, we see why attracting and developing talent is so vital for the country's potential ability for growth and success. Education has a crucial role in every step and phase of our lives. The main focus of this study it to look at the students who are now in higher education.

1.2 Educating Generation 'Z'

In educating students, educators and institutions of learning must also take into consideration the characteristics of the current generation in school. Each generation of learners come with their unique learning abilities, characteristics and vision of what they want to achieve. The current generation in colleges and universities is known as Generation Z (Gen Z) and they are the cohort born right after the millennials.

According to Lanier (2017), generation Z are the generation born after 1995. They are those born between the years 1995 to 2009 and is currently making up the majority of those enrolled now in high school, colleges and university when this research was conducted. According to Chillakuri and Mahanandia (2018), this generation possess the characteristics of those born in 2000 or also known as the millennials. These characteristic include loyalty, compassionate, thoughtfulness, being responsible and determined. These same characteristics were also reported by Seemiller and Grace (2016). Although Gen Z's characteristics are rather similar to the millennials, they do differ in other qualities such as Gen Z are considered to be more entrepreneurial, and have an identity of their own. Generation Z are multitaskers and they prefer to do and learn things by themselves. They believe in efficiency and

effectiveness and strive to do or learn things in the fastest way possible, thus saving valuable time. This makes learning easier for these students and it helps them to be more adaptable. Cameron & Pagnattaro (2017) explained that as students, they are encouraged to argue to prove a point and participate in dialogues providing them with an opportunity to present their own perspective.

Generation Z are true digital natives with a minimum connection of at least 8 hours on the internet. For these students digital and mobile devices are a given. The can connect whenever and wherever they are. They have information at the touch of a button literally. They consider education to be the main strategy to realize their goals (Chillakuri & Mahanandia, 2018). According to a research conducted by Microsoft Corporation, who studied two thousand participants in Canada and observed the brain activities using electroencephalograms (EEGs) discovered that since the year 2000 or at the same time of the beginning of the wide usage of the mobile devices, the average attention span of a person dropped from twelve seconds to a mere eight seconds (Mcspadden, 2015). People become easily distracted as information are more readily available at the tip of their fingers. With the dawn of the mobile technology, almost everyone has a mobile device and students today depend on it a lot for access to online information and course materials. How do educators engage these group of students who are only able to stay interested for 8 seconds? According to a published study done by INTI International University & Colleges (2015), Generation Z are self-starters, hyper-connected and socially conscious people. They are a generation that wants to be its own GPS, they navigate themselves of what they want to achieve. A total of 511 students participated in the survey and the analysis found that 42% want to do something completely new, 37% hope to turn hobbies into a profession and 31% wants to start their own business. Gen Z are determined in achieving their goals and

they are defined by these characteristics; independent and self-reliant, ability to co-create content with peers and are more inclined towards sharing and exchanging ideas such as collaboration and engagement. They want engaging and interactive learning experiences, they have the capability to work on vast amounts of information and is able to process them efficiently. They have the ability to work through problems, and they have the tendency to be entrepreneurs or 'self-starter' or have their own online business. Educators need to understand the students who are in their class now in order to know how to engage with these students to help them learn in the most effective way.

Studies done by other researchers also show similar findings. Howe and Strauss (2000) found that these millennial students are usually driven, courteous, structured rule followers, secured, sheltered, accommodating, group orientated, gifted go-getters, assertive and hopeful about their own futures.

The life experiences of Gen Z is so different from the generation before and educating Gen Z also poses some challenges in itself. Their unique attitudes and characteristics discussed earlier are noteworthy as they will bring about different implications to educators at all levels. If these students have a generally shorter attention span, they may lose focus and interest in what is being taught to them in class. While they may have the drive to do something on their own, be self-starters and are socially conscious, they need to have sound academic and personal navigation that will help them to build the skills they need to do well. With this challenges, educators are tasked with different methods to engage these students and maintain their interest. The first year in university is very important for any student as it acts as a base or foundation for them. Having the right start or footing will help set the pace for them.

Adversely, if students did not get a good start in university, there may be issues that will arise that will hinder academic success in the subsequent years. Let us discuss on the possible reasons that will bring these issues or problems to light for both the institutions of higher learning and for students themselves.

1.3 Transition issues

Apart from taking into account the generation that educators are now teaching at the university and the characteristics they bring with them, which affects how they learn, there is also another important factor to consider which is known as transition. Anderson, Jacobs, Schramm and Splittgerber (2000) mentioned that when students go through the entire education system through the years, they will be exposed to various transitions. These transitions include developmental, intellectual, physical and systemic. In Malaysia, for example there are four major systemic transitions: home to pre-school, pre-school to primary school, primary school to secondary school and secondary school to college or university. The transition referred to in this study is systemic transition from high school to college or university. Students face different issues daily in their lives but the main concern is the transition issues that they will face when they move or 'transit' from one place to another or one phase of their lives to another and for this study it refers to transitioning from the phase from high school to college or university. Transitioning into life in a tertiary environment such as college or university can be demanding and unnerving for new students and they may face numerous challenges especially with first-year courses that are not only mandatory but also substantial in the topics covered (Geerlings, et al, 2016).

According to Anderson, et al. (2000), transitions interrupt the continuity of life that one is used to. They introduce students to "institutional discontinuities" (p.326).

Institutional discontinuities can be divided into organizational and social discontinuities. Organizational discontinuities can be explained by the changes in the size of the institution they are studying in, departmentalization as in the various departments and programs available, academic standards as in the increased in rigor in assessments, expectations as in how the teacher and institution expects the students to perform and student autonomy where they experience higher level of freedom and decision making ability as compared to when they were in high school. Social discontinuities covers the changes in the diversity of student population in the institution, relations with their lecturers as they are expected to have more conversations and discussion with them and the need to have a sense of acceptance and belonging to a group.

When students transition from high school to college or university they are embarking on a whole new episode of their lives. Their circle of friends will be different, their support system will be different and they will need to adjust to a whole new environment (Thuo, Edda, Abite, Derso, Kifle, Getachew & Alemayehu, 2017). Anderson et al. (2000) explains that these students are confronted with the increased size of the institution and student population, increased heterogeneity of the student population in terms of race, ethnic, nationality and even socio economic diversity. Entering into college or university is likened to a newfound freedom, a rite of passage to adulthood and it can be overwhelming for many students. The University of Toronto in Canada (2019), had highlighted some issues related to transition for high school students entering university. The first is being in a totally new environment where the students have to learn to navigate around campus, adjust to courses and academic work and meeting new people. The second is having larger classroom size as compared to high school. Thirdly, academic expectations between high school and

college or university is very different as students need to exhibit greater discipline and initiative as compared to when they were in high school. Forth is the change in support systems. The support in high school and university is very different. Students' today need to learn to build networks with coursemates and peers, get to know their professors, counsellors or other personnel on campus if required. The fifth reason is increased freedom and flexibility. The structure, schedules and courses that is available to students is different in university than in high school. Learning methodology and expectations are different. Finally, having a new sense of independence, ideas and ways of thinking. Students, class sizes in college or university tends to be larger than high school, students get to select the courses they want to take as compared to high school where the classes and timetable are fixed. Students always need to develop links with their coursemates and peers, get to know faculty and staff, meet counsellors or get any other professional assistance on campus should the need arises. Expectations are higher and assignments are tougher. These students are also expected to be resourceful, be creative and critical in their thinking. They need to be able to work in groups, collaborate and communicate well with their teachers and fellow peers. They are also expected to do presentation and public speaking, all of which may be new to these students, something they are not accustomed to in high school. There have been numerous research done on this topic of transition and the issues these researchers discuss include, coping with independence, off-campus living and homesickness (Ying & Wang, 2002). Berry (2005) spoke about the lack of local cultural awareness especially for international students, Andrade (2009); Harryba, Guilfoyle, and Knight (2012) discussed about language difficulties especially in international students whose first language either spoken or written may not be in English. Major (2005); Lamberton and Ashton-Hay (2015) found that different or

unfamiliar teaching practices by the institution where the students are studying at may also cause stress and uncertainty for the students in adapting to the new teaching and learning environment in university as compared to what they were used to spending several years in high school. Based on a research done in Australia, there is also a lack of global awareness by the local students (Mazzarol, Kemp, & Savery, 1997); and more recently, Thuo, et al. (2017) found concerns to be related to finance, support from friends, fear of new environment, confusion and disorientation for students in the first semester.

Resiliency, tenacity and the will to persist depends the instructions the students receive while in their formative years in university or college. This in turn depends on the complete appreciation of one's learning, one's attitude, expectations and intellectual development (Erickson, Peters & Strommer, 2006). The challenges of life in university are daunting. It is so different compared to high school in so many different aspects.

The differences range from as vast as expectations to culture differences. According to Erickson, et al. (2006), adjusting to the new environment, rigors of new academic life, time management, larger classroom settings, expectations of a demanding professor, scores of assignments to complete and meeting and forming new friendships are recurring issues faced by students entering university and colleges and how success is achieved.

Numerous research has been conducted to find the reasons for success or failures of students to attain academic success. The study of first year student experience and success was of particular interest for many researchers. In my opinion the first year of university life are the formative years of many students. It generally

takes approximately three to four years to obtain a first basic degree. It is in these years that students acquire academic and social skills. How they perform in the first year and what motivates them is crucial. Even more important is how they are guided in their first year.

Having proper peer support in the learning can be effective in helping students transition to life in university (Topping, 2005). According to Wismath and Newberry (2019), one major method that helps students adjust to the transitioning into university is the introduction of a "First-year Experience (FYE) programme" which are a series courses designed specifically at enhancing learning and success for first-year students. These dedicated programmes include first-year workshops, student learning communities, academic writing courses, co-operative assignments and projects, student joint projects which encourages teamwork, diversity workshops, community based learning, peer learning and other courses and projects which encourages inter-disciplinary collaboration.

1.4 Research Problem

The failure rates and retention of students in college or university education is a challenge to most institutions around the world (Wismath & Newberry, 2019). The rates are quite alarming as found by Wismath and Newberry that approximately 20 to 30 percent of first-year university students in the United States and about 14 percent of first-year students in Canada leave their studies midway and close to 40 percent overall students may not complete their studies. In Malaysia, the overall student attrition rates are not readily available as these attrition rates are a sensitive topic. The institution under study faces similar problems. According to data from the registry,

failure rates for core first-year subjects are approximately 35 percent to 40 percent and overall attrition after first year is at least 12 percent to 15 percent.

Retention trends according to Countryman and Zinck (2013) are troubling in that they noticed students who found it challenging when dealing with several difficult courses when in university together with both personal and social demands of university life. This is supported by evidence of declining attendance rates, tardiness, poorly completed assignments verbal acknowledgements of feeling overwhelmed. Thuo, et al (2017) had similar views stating that first semester students felt "afraid, frightened, confused and disoriented" (p.45).

Knowing these issues with transition and retention and what effects students' success and their ability to continue is of primary importance to universities. The quality of graduates the university produces reflects on the quality of their programmes, the calibre of their academic staff and their efforts in nurturing students during their undergraduate education. If these students are taken care of, their academic experience would be a pleasant one. The most pressing issues are with students' academic achievement and knowing what universities are doing in handling their students' learning issues especially for first year students is crucial. Academic achievement is not the sole measurement of students' success. Achieving academic success is like the endgame for the students but equally important is the process of arriving at the final academic achievement. Factors relating to the resiliency of the students who are going through the three or four year program at the university, how well can they manage themselves and deal with their own issues, their self-efficacy which means a person's confidence in their inborn talent to accomplish goals, their levels of motivation to want to push forward and succeed. Understanding the

characteristics of the present generation of students now in university is important. If the students can build their resilience, have higher self-efficacy and is able to stay motivated on the final goal they are more likely to achieve academic success in the end. Knowing the challenges of how they learn and retain information will help academics device programs to help these students learn and remember materials better.

Numerous studies has been conducted in the recognition of peer mentoring in helping students' learn and many universities are now engaging in peer mentoring programmes to help students do better in their studies. These peer mentors are like student leaders who are able to lead and guide the students. Studies conducted in the United States, Australia, Europe and parts of Asia confirms the effectiveness of peer mentoring programmes which are conducted by student leaders in helping students earn a better grade, reducing failure rates, helping them to cope with academic life, and helping them stay motivated on their course of study (Rogan, 2009). Student leadership in this context is important to mitigate the problems highlighted earlier. The effectiveness of peer mentoring is also being widely discussed and researched in the areas of attrition and retention issues, providing a sound first-year familiarity with the new environment and providing the support that new students need to thrive (Larkin & Dawyer, 2016). Peer as defined by Crawford (2010) is someone who is looked upon as having the same or equal social standing in the community. This refers to the student as he or she will have the same social standing in the eyes of the education institution. Peer mentoring programs are explained as a variety of activities and set-ups that provide chances for all students to be directed and supported by more senior and experienced peer. This is also evident in the generation today, Generation Z who are more inclined towards teamwork, sharing and exchanging information and ideas with their peers. They like collaboration and engagement and seek more

engaging and interactive learning experiences. The idea of learning with others is more appealing to them then learning on their own in silo. Hence with this understanding on the importance of peer mentoring, this study will also delve into student leadership and the important part they play in mitigating the problem and helping students to succeed.

Many researchers have found that students from families who face financial difficulties, or come from culturally or ethnically diverse backgrounds would usually be students who are in danger of failing a course or being thrown out of university. They feel that they are not able to fit in. Researchers like O'Brien, Llamas and Stevens (2012); Menzies and Nelson (2012); Kift, Nelson and Clarke (2010); Nelson, Kift, Humphreys and Harper (2006); discovered that students who did not commence tertiary studies almost immediately after high school or those who did not feel a sense of connection to the institution they are with, would usually experience difficulty to connect with faculty, peers in their cohort or interact with the facilities given to them by the institution. These situations mean that students who fall into any of these groups may most likely be disengaged from their studies or disconnected with academic life even in the first year of studies. The first year of any students' life is very important as it is regarded as the corner stone of their success. If they nail their first year, they will be able to cope and do well for subsequent years. Generally, all institutions will have students that will have a high probability of being at risk, therefore, measures must be taken to look into helping these students to reduce attrition rate or disengaging from university.

Common issues faced by many first year university students in student attrition and retention rate. This is especially true among non-traditional students, students from

different ethnic or culture backgrounds, and students who have financial hardship in the family (Crosling, Thomas & Heagney, 2009). Literature states that these groups of students that have the higher possibility of failing from their studies in the first year if they were not integrated into the institution or academic community or form the connection with their surroundings. According to Taylor and Parsons (2011), there are important connections that students' must make successfully to do well academically. These connections include peer-to-peer connections or student-to-student connections. It is the friendship bond with their peers and the need to feel accepted to the group. Second connection is the student to course or program of study, which means that the student must be clear in what they want to study and be certain about what they want to do in the future. If they are passionate about the program they were to be enrolled in, they are more likely to continue and succeed. The third connection is students to the campus or university, which covers the facilities and resources that the students will need to have when they are studying for the next three to four years. Since students spend more than a third of their time in university, they should feel like the university is able to support their needs, for example sporting facilities, accommodation, labs, equipment, library resources, adequate clubs and societies, etc. The fourth connection is student to staff and faculty of the university. Do the students have a good relationship with their teachers and professors in the program? Are they able connect with the faculty members and staff of the university? Pleasant relationships formed between student and their teachers will help to motivate students to do well.

Peer mentoring helps to form such connections, which will help students to feel like they are part of the group and have peer support. Interestingly, however, there are also different effects to such peer mentoring programme. Malm, Bryngfors, and

Morner (2011) found that the peer relationship and influence were so strong that students no longer attend the peer mentoring programmes but leave and form their own study groups. The attendance for the programme dropped and it was difficult to assess the effectiveness of such programme.

Many of the studies conducted on the effectiveness of peer mentoring programs looked at the final results of the subject but did not measure the increase in understanding over time. One must study the improvement in knowledge and understanding over a period of time to be able to gauge the efficacy of the peer mentoring programs, The test done to evaluate efficacy of peer mentoring programs have not employed either quasi or true experimental design using pre-test and post-test procedure. Experimental research is capable in examining the effectiveness of peer mentoring program on student learning behaviours.

This study looks at a private institution of higher learning located in Kuala Lumpur, Malaysia. The student attrition rate amongst 1st year students are unusually high. After completion of the foundation programme, approximately 28% - 35% of the students do not continue to the 1st year degree program. They will withdraw and either transfer to another institution that is perceived to be easier to pass or would opt to work for a bit first before continuing their studies. Only a handful will go for overseas education for their degree. This increase in student attrition has been observed since 2014 and for the past 4 years, the foundation student's numbers continuing to degree has been on a continuous decline and in 2017 the attrition rates was almost 38%. This means for every 1000 students in the foundation programme, about 380 will not continue to the degree.

The institution also found that the passing rates of the students for certain subjects were low and the failure rates of some of the core subjects were between 25% to as high as 40%. This could be a reason why students do not progress to the next level as they need to clear all subjects for each year. They find that it is more difficult to score at this institution compared to others. It is more difficult to earn an 'A' at this institution compared to another. Due to the high academic standards, the weaker students find it harder to cope as shown by the high attrition rates of the institution. Once they fall back in their study, it is very difficult to catch up so they just give up. These problems cause serious concerns amongst the management of the institution. For private institutions the revenue and profits is usually based on the student intake numbers and the numbers continuing or progressing to the following years; more students enrol in the programme, the higher the revenue for that year and when the students continue into the next year, this guarantees a certain revenue for every year the student stays with the institution.

The institution needs to look into ways of helping its students do well, persevere and be motivated to continue learning successfully with the institution. Overall there is also lack of programmes to help weak students cope with their studies. Most of the time the students are left on their own to figure out their studies, do group studies or seek help for the lecturer if they need extra help out of classes. There are no structured remedial classes for students who fail the subject repeatedly.

There is also a need to find out the underlying issue of why students tend to be demotivated and to give up halfway during the course of their studies.

The above issues are of deep concern for the deans of the respective programmes and for the management the institution overall. This study hopes to find

solution that will help reduce the failure rates and attrition rates of students in the first year degree programmes, improve passing grades and ultimately overall student success. This study intends to investigate if resiliency, self-efficacy and motivation can be developed in students. These dependent variable was identified as these characteristic may be considered to be the underlying foundation for students ability to succeed. Studies by Anderson, et al. (2000) which discusses on how transitions interrupt the continuity of life; Ying & Wang, (2002) which explained about the importance of coping with the new surrounding; Harryba, Guilfoyle, and Knight (2012) who discussed on coping with language differences which affects understanding of what they are learning; Lamberton and Ashton-Hay (2015) on coping with new ways of learning and expectaions; Gerlings, et al, (2016) who described that entering into a new environment can be challenging, unnerving and demanding and the need to be able to manage those; University of Toronto in Canada (2019) spoke about adjusting to new environment, managing academic expectations, different support structure and the ability to handle new-found independence and freedom. The underlying theme from the research, findings and discussions of these previous studies focuses on the need to cope, manage and be able to rise above those problem areas. That is why the researcher for this study is including the importance of building resiliency, self-efficacy and motivation levels to be able to have the foundation to rise above and succeed. Hamdan-Mansour, Azzeghaiby, Alzoghaibi, Al Badawi, Nassar & Shaheen (2014) who did a study to investigate resiliency among university students perceived that social support from peers are significant predictors of resilience.

The institution introduced a peer learning programme to its students to help support their learning and academic development. The programme is known as the Peer to Peer programme or P2P. This P2P program was developed based on the Peer

Assisted Study Session (PASS), a popular peer learning program from Australia. PASS is an academic support programme designed to help students learn and remember difficult concepts, helps them to articulate their understanding and guides the students to develop effective learning and studying strategies for the subject. Through the introduction of P2P, the institution hopes to reduce the failure rates, enhances students' motivation for learning and reduce attrition rates for continuing students and to help build their resiliency so that the students are able to more resilient in the face of adversity. This program was introduced because it had found similar success in some of the western countries namely the United States of America and Australia when it was introduced to the higher education institutions there. In a study conducted by Dawson, van der Meer, Skalicky, and Cowley (2014, p.609) they established that this type of peer academic support is "correlated with higher mean grades, lower failure and withdrawal rates, and higher retention and graduation rates." Their findings is based on the numerous research done over the years on this support program. Many studies have stated the benefits of achieving higher than average grades or from a fail to a pass grade. Hence this study will look at other possible outcomes or effect of this type of peer-to-peer program on students for example their resiliency, self-efficacy, intrinsic, extrinsic and social motivation.

1.5 Research Objectives

Based on the discussions above, the researcher has developed four objectives for this study. The objectives of this study are as follows:

1. To assess the level of students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.
2. To examine the P2P leaders' knowledge in conducting the P2P sessions.

3. To examine the effects of the P2P program on resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.
4. To examine the moderating effects of demographic variables and study time on the effectiveness of the P2P program on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

1.6 Research Questions

There are eight research questions developed based on the objectives above. The following questions hopes to achieve the research objectives above.

1. What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students? – This question is to answer Research Objective no. 1.
2. Are the P2P leaders knowledgeable in the subject matter? – This question is to answer Research Objective no. 2.
3. Do the knowledge level of the students increase after attending the P2P sessions? – This question is to answer Research Objective no. 3.
4. Are students more confident in passing their exams after attending the P2P sessions? – This question is to answer Research Objective no. 3.
5. Is there any effects of the P2P program on students' resiliency? – This question is to answer Research Objective no. 3.
6. Is there any effects of the P2P program on students' self-efficacy? – This question is to answer Research Objective no. 3.
7. Is there any effects of the P2P program on students' motivation in terms of intrinsic, extrinsic and social motivation? – This question is to answer Research Objective no. 3.

8. Do the four demographic variables of gender, age, academic stream in high school and parent incomes and also study time have any moderating effects between the independent variable and dependent variable? – This question is to answer Research Objective no. 4.

1.7 Theoretical Framework

There are several theories that will be referred to in this study as it is relevant to how students think, behave, cope, be motivated to succeed. This research on peer-to-peer learning can be linked to social learning theory, resiliency theory, self-efficacy, motivational theory and theory of involvement. Social learning theory discusses how students learn from each other by observation, socialising and modelling the behaviour of the other person. By doing this they are able to see and recognize the behaviour that is valued and want to emulate that which benefits them. The resiliency theory explains that when every student is faced with difficulties or challenges in his or her own life be it personal, economic or political situations, they learn to cope and bounce back and try to manage these challenges and be more resilient in life. As a student, they could be faced with various adversities but they need to be able to have the ability to cope and bounce back. The self-efficacy theory discusses the students' innate ability to believe in themselves that they are able to succeed when faced with challenges and the theory of motivation looks at if students are intrinsically, extrinsically or socially motivated to do well in university.

1.7.1 Social Learning Theory

The main theory discussed in this research is based on Bandura's Social Learning Theory, which states that people learn from one another. According to Bandura, as cited by Crain (2011), in social settings, people learn a lot through

imitation, and imitation involves cognitive processes. Humans acquire information just by observing others (models) and then making a mental code of what they observed. This learning takes place by observation of the behaviour of others, imitating what they observed, and re-enacting that behaviour. This social learning theory is also known as a conduit connecting behaviorist and cognitive learning theories because it incorporates attention, retention, and drive. Human beings learn by observation of the behaviors and attitudes of others and the resulting consequences of those behaviors. According to Bandura (1971), most human conduct is learned by observation through demonstration . By looking at the act or demonstration of the act by others, one develops an idea of how new actions are executed, and on the next occasion where similar circumstances recur, this coded evidence aids as a monitor for action. Social learning theory explains "human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, and environmental influences" (Bandura, 1971) (p. 51). When there is a positive reinforcement, the behaviour is remembered and modelled again the next time as it is beneficial or valuable to do so.

The diagram below in Figure 1.1 explains about Bandura's Social Learning Theory. Attention to an action given by an observer is usually based on interest and needs (Bandura 1977, p.25). The observer attempts to retain the information he or she has seen and tries to remember the action in a symbolic form usually using some visual association. Then observer needs to have the ability to reproduce the earlier behaviour based on certain perceived benefits associated with performing that behaviour. Finally the behaviour is performed as the observer is motivated to receive the benefits associated with performing that action.

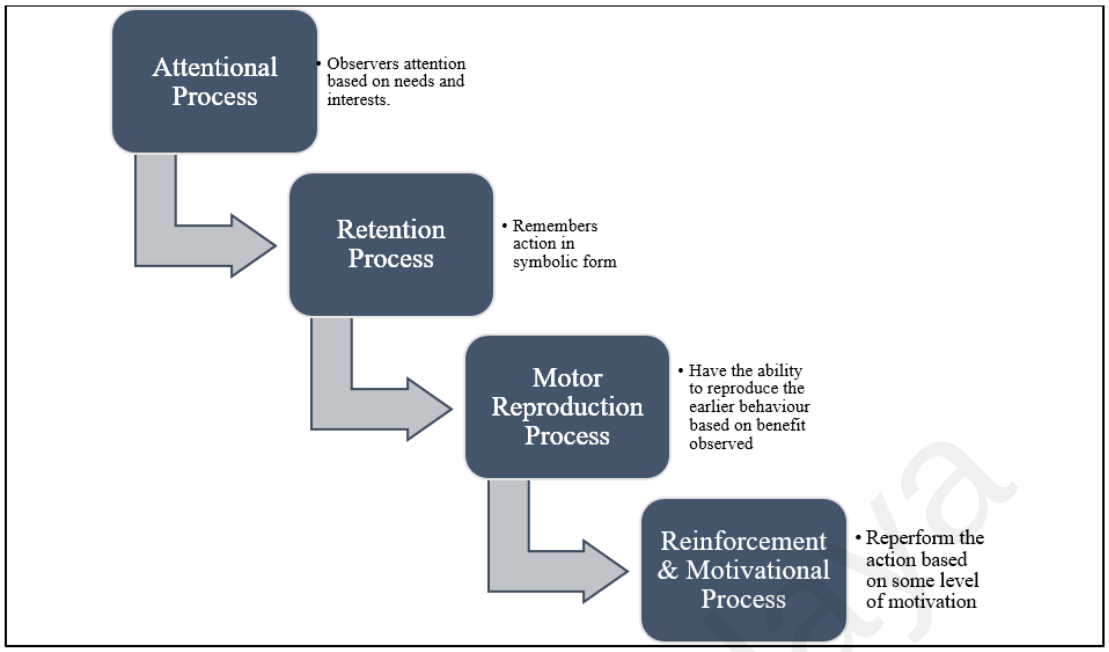

Figure 1.1. Albert Bandura's Social Learning Theory

This is similar for the P2P program, where a student observes the other student and the way they learn and answer questions. This involves the cognitive process. When they see there is positive outcomes where the fellow student is able to answer the questions well and succeed, this student now wants to emulate the other peer to do better. This shows how behaviour can be influenced by beliefs and what the student value to be important. That behaviour results in positive outcomes, for example begin able to answer the questions correctly or able to correctly do a mathematical equation, students will learn that behaviour and emulate it based on the belief that it will benefit them in a positive manner.

1.7.2 Resiliency

Resilience is the ability of bouncing back and recovering from breaking down or collapsing in the face of adversity. Resilience is the process of how well one can adjust under different types of pressures, the feeling of traumatisation, tragedy, threats or other risk factors. One of the early theorist on resilience is Micheal Rutter. Rutter

(2013) defined resilience as a combination of 2 different experiences, one where there is an experience of risk and the other is the experience of positive psychological outcomes in the face of adversities. Rutter continued explaining that some people will have experienced positive outcomes even having gone through difficult times in the face of those stressors and yet some others will have an even better experience coming out of the same type of problems faced by others. Resilience theory is likened to an accepted a set wisdoms that explains and discusses the impact of these difficult occasions in the lives of the individual on themselves, their families and how well they have adapted to those difficult experiences, and still strive to continue moving forward. Despite the difficult or unfortunate events in their lives, they are able to continue forward as if unfazed by the situation. How do some students go through difficult situations and still be able to strife to achieve academic success? What makes these students different from the others?

Severe traumatic experiences can include the death of a family member or loved ones, displacement from community or home, violence in the family, loss of income, and other issues resulting from economic downturn, natural disasters and political upheaval (Masten, Narayan, Silverman, & Osofsky, 2015). Exposure to stressful events can put one's mental health in substantial levels of stress which may ultimately lead to a collapse under pressure.

Resilient individuals will be able to bounce back even after going through traumatic experiences. Some will use that experience to push them into a more sustaining and better life than before. They have learned from that experience and came out better. It is difficult to make out what are the elements or reasons that will make someone more resilient than others but the important thing is to find out what

can be done to mediate these life situations for the students. It will be in the interest of institutions of higher education to take note of the challenges that their students will be facing in college or university and plan for an intervention programmes or a series of programmes and activities that can help students manage or overcome stressful situations during their student life. The programmes or activities can come in forms of peer tutoring for academic help, counselling for emotional or psychological help and buddy system or involvement in clubs and societies on campus to give them the assurance of support

1.7.3 Self- Efficacy

Self-efficacy is the conviction we have in ourselves. This is the conviction we have in our own abilities to solve challenges and realize the objectives we have set forth to achieve. For the purpose of this research we will look at self-efficacy for academic purposes. Self-efficacy is linked to our self-confidence and the valuation of ones value as a person. Bandura (1982) defines self-efficacy as a self-given verdict of how well we can decide on given options that will best solve a problem at hand. Expectations of self-efficacy explains whether a person will be expected to exhibit the right responses and how long can their efforts be sustained in tough difficult events. Someone who has high self-efficacy will wield sufficient effort that may lead them to positive outcomes. They know exactly what they need to do the achieve the desired goal. On the other hand, those with low self-efficacy may feel at a total loss and may reduce effort in trying to problem solve and just give up altogether. According to Bandura, as cited by Crain (2011), he calls this as self-efficacy appraisals. He believed that an individual's appraisal of their own self-efficacy will drive motivation on what needs to be done. For example in the P2P program, when students believe that they are good at the tasks and solving problems related to the course, they will be more

motivated to try and will focus on the problem and persist until they succeed. However, if they are uncertain about their own capabilities, there will be less motivation and will not work so hard or give up easily. Figure 1.2 below shows the sources of self-efficacy appraisals which include actual performance, vicarious experiences, verbal persuasion and physiological cues.

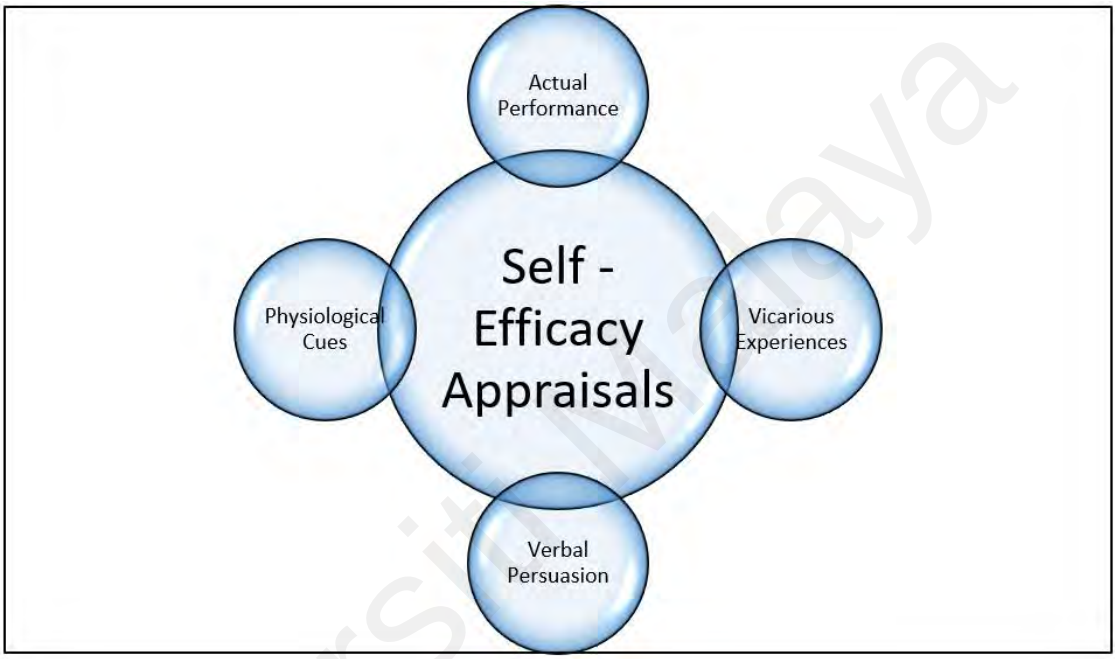

Figure 1.2. Self-Efficacy Appraisals

Figure 1.2 above shows how the four sources of information form the basis of self-efficacy appraisals. According to Bandura, as cited by Crain (2011), the most dominant source of information is known as actual performance. When one actually performs the task and succeeds the sense of self-efficacy increases. It is the believe in their own ability to successfully achieve a task. When they repeat the action with success, their self-efficacy increases, meaning their believe in themselves increases, but it is also the same on the flipside, when one fails at any task, their self-efficacy will drop. When the individual develops a strong and vigorous sense of self-efficacy, they

will not be too concerned by temporary setbacks and will be able to move forward easily. Temporary setbacks will only be viewed as minor obstacles that they need to work harder to overcome. The next is vicarious experiences. When someone sees others accomplish something that is perceived to be difficult, they too, may conclude that they too can do it and be successful at it. It is true especially if they see these others as having same or similar abilities. The third is verbal persuasion or pep talk. When an individual is convinced by someone else that they can perform the task, they usually can as they belief that they can do it. Finally an individually may judge himself or herself based on physiological cues like if someone is practicing rigorously for a tournament, the bodily cue may be interpreted as being ready or prepared to take on the competition.

There are several perspectives in the expansion of self-efficacy theory. Researchers have noted the following; the dynamics of self-efficacy, or the lack of it, in various differing settings; inter-play between self-efficacy and self-concept; and practices of attribution that adds to it; or that moves away from, self-efficacy. According to Kathy Kolbe (2009), the trust and confidence in one's own capabilities means appreciating their own set of cognitive strengths. This will also show unwavering commitment and persistence to overcome hurdles that would interfere with applying those innate abilities to accomplish goals.

Self-efficacy touches every part of human effort. In defining the conviction, a person holds about their own abilities to change situation, it intensely impacts the capability a person who is facing challenges head on capably and the possible alternatives that the person may likely make. These effects are particularly obvious,

and convincing, when it comes to behaviours regarding one's health and well being (Luszczynska, A. and Schwarzer, R. (2005).

1.7.4 Motivation

Most educators in colleges or university assumes that adult learners or mature students are driven to self-regulate and take charge of their own learning. This may be because of the age factor that these educators will make that assumption. Adult learners or mature students may have better motivation to succeed as they are already adults and know what they want in life. They curate their own information. Geerlings, et al (2016) quoted Pintrich, Wolters, and Baxter (2000) saying that self-regulated learning is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behaviour, guided and constrained by their goals and the contextual features in the environment" (p.453). According to Knowles, Swanson, & Holton (2011), the theory that reinforces adult teaching and learning is based on the key assumptions of Eduard Lindeman's research which states that grown-ups to be "…motivated to learn as they experience needs and interest that learning will satisfy" and they will" … "have a deep need to be self-directing" (p.39). When someone is motivated, it means that they have the deep urge to perform a task. If someone feels no desire, or not moved to act, will be considered as not motivated. Many theories about motivation talks about the unitary phenomenon of either very motivated to do something or not motivated but motivation needs to be viewed also as different kinds of motivation (Ryan & Desi 2000). According to them, the varieties of motivation comes in both levels and types of motivation. Ryan & Desi (2000) said,

"Orientation of motivation concerns the underlying attitudes and goals that give rise to action—that is, it concerns the why of actions. As an example, a student can be highly motivated to do homework out of curiosity and interest or, alternatively, because he or she wants to procure the approval of a teacher or parent." (p.54)

Numerous research done previously on student motivation comes largely from studies done in the classrooms of college or university environment. The findings of those research all point to the importance of student motivation for success in college or university. When students are motivated to learn and perform all tasks required of them in the classroom, the chances of them doing well and succeeding is higher. Based on Orvis, Sturges, Tysinger, Riggins and Landge (2018) observation of student motivation, it has been proven that motivation is the main element of academic performance and attainment of success for students. Students who are motivated will have better overall attendance, grades and a better first-year experience in the universities.

Linking back to this research, students could be driven to learn something new because he or she recognises their future benefits and value or because learning something new and getting good at it may potentially yield a good grade and ultimately success in their academic life. The nature and focus of the motivation points to the fact that the students want to achieve the end result of having a successful academic life and therefore, they are motivated to learn and get better. Hence, for the P2P learning, students may view that the leader is smart and is selected to be the leader and they may be motivated to listen and follow the examples of that student leader to try to emulate their success.

Many theories try to discriminate between the various motivation based on the different reasons, goals or focus. This can be distinguished between intrinsic motivation and extrinsic motivation. Intrinsic motivation is the act or urge of doing something because it gives a reward internally. According to Orvis, Sturges, Tysinger, Riggins and Landge (2018), intrinsic motivation is explained when a person does somethings because it is intrinsically satisfying and gratifying. There is no separable outcomes or contingencies that initiate and maintain the behaviour but it is intrinsically motivated behaviours occur spontaneously and it leads to interest, excitement and enjoyment of having performed that behaviour. We choose to do something because it gives us enjoyment, pleasure or because it is interesting and not due to an external or environmental inducement or pressure to do it. An example of intrinsic motivation would be reading an interesting novel because we enjoy the story line and have an interest in the topic or subject area and not just because we have to write an assignment to pass the course. It is based purely on an internal desire or want.

Extrinsic motivation on the other hand, refers to conduct that is motivated by external rewards such as money, fame, grades, and praise. This type of motivation arises from outside the individual. Orvis, et al (2018) states that for extrinsic motivation, a person does and activity because it leases to a separable outcome of consequence such as receiving an award or avoiding punishing, there is an external push factor to it. An example of extrinsic motivation would be a student studying really hard to pass all the courses because he or she really wants to get a scholarship. The idea of getting the scholarship is an external motivator for the student to push themselves to do well.

1.7.5 Theory of Involvement

Alexander Astin developed the Theory of Student Involvement back in 1985 (Astin, 1999). This theory explains how desired outcome for colleges and universities are viewed in relation to how students' progress and develop because of their involvement in other academic and co-curricular activities. There are three main elements in this theory. According to Astin (1999), they are a student's inputs, a student's environment and the outcomes. The student's inputs are their demographics, for example, their background, or any previous experiences they may bring together with them when they enter college or university. The student's environment covers their current experiences during college or university, the surrounding of the students and the outcomes, which covers a student's characteristics, knowledge, skill set, attitudes, beliefs, and values that the students would have developed after they complete their studies.

Astin (1999) suggests that participation is the "investment of physical and psychological energy in the student experience that has both quantitative and qualitative features and spans a continuum" (p.519). He added that "the amount of student learning time and self-development linked with any educational program is directly proportional to the quality and quantity of student involvement in that program" (p.519). Therefore, with a focused investment of time and effort in a specific activity is likely to improve outcomes related to that involvement effort.

The theory of involvement has been applied numerous times in higher education and has formed the basis of many co-curricular student involvement. This study on peer-to-peer learning is very relevant to this theory of involvement. The involvement of peer students in the program learning from the peer leaders to produce

desired outcomes and the levels of the outcomes such as resiliency, self-efficacy and motivation will be in direct proportion to the amount of effort the students put into the activity or their level of involvement and investment into the peer-to-peer (P2P) program.

1.8 Conceptual Framework

Grounding this study is the researchers' fundamental commitment to student-led-student peer learning. This arises both form the engagement literature and the pedagogical stance that certain topics, information, messages, explanation carry more meaning and will be more effectively listened to when is discussed with or explained by those who have more recent experience (Leach & Zepke, 2011). With the research objectives and the existing theories discussed in the theoretical framework above, the conceptual framework for this research is shown in Figure 1.3.

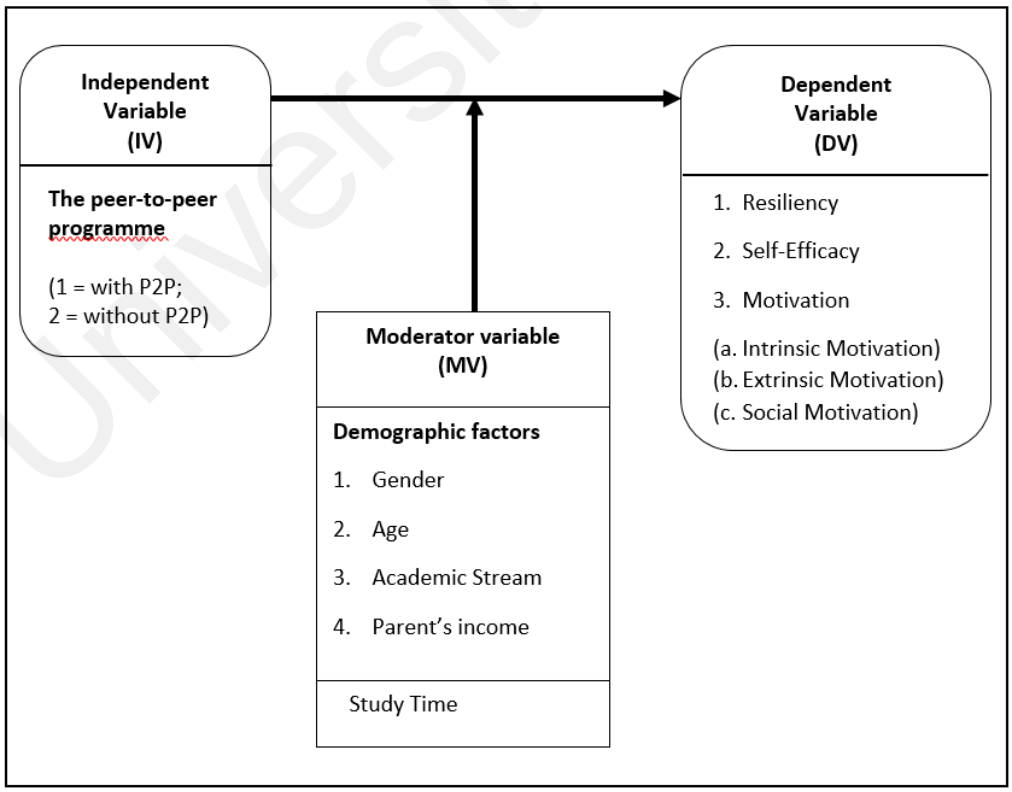

Figure 1.3. Conceptual framework of this research

The researcher wants to study the effect of the peer-to-peer learning on students' resiliency levels, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Can learning with a more capable peer (a chosen student leader who has excelled in the course) help students in those various areas? The independent variable for this study is the peer-to-peer learning program and the dependent variables are the resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

1.9 Significance of study

This study is important and significant to the institution at the time when the research is conducted for the following reasons. The first is this private institution is working towards being the centre for peer learning in Asia. They want to be the authority in peer learning issues where Asia is concern. This is based on the training by the University of Wollongong Australia which is the National Centre for the Peer Assisted Study Sessions. Next, there was a strong indication towards the importance of peer learning in helping students learn and this was the feedback by the Malaysian Qualification Agency (MQA) in an audit conducted on the institution in 2010 and by the Board of Engineers Malaysia in 2011. The Engineering Faculty of the institution back then conducted a peer-led-peer mentoring program for the smarter students to help the weaker students and that trial semester proved to be very effective. During the audit, for the usually high failure rate subject through the years, the auditor noticed marked improvements in the subject and enquired about it. The faculty produced evidence of the peer program in helping the weaker students. However, the peer program didn't continue after that due to lack of monitoring and follow up. A more structured peer learning program needs to be in place to allow for consistency and sustainability. The institution as a whole noticed that the failure rates for other core

subjects from other faculties continue to rise, hence the urgent need to have a structured peer learning program to be put in place. This study is also of particular interest to the researcher to find out what are the other positive outcomes that peer learning can bring other than purely academic outcomes.

The importance of first year experience has always been stressed time and time again by various researchers such as Zarifnejad, Mirhaghi and Rajabpoor (2018), Miao, Henderson, and Supple (2017), Larkin and Dwyer (2016), Zamberlan and Wilson (2015). Baik, Naylor, and Arkoudis (2015) and Menzies and Nelson (2012) stresses the importance of having a positive experience in first year of university life which will help increase student engagement with their program of study through developing an institution wide culture round student cooperation and support. O'Brien, Llamas and Stevens (2012) stresses that if processes are not put in place to help students connect with the college or university in an optimum manner, they will soon be disengaged. According to Clerehan (2003) and Menzies and Nelson (2012), peer mentoring programs are beneficial in helping ease the process of adjusting to university life as the obvious effect on the student and academia progress of students are their peers. That is why this research is important as it attempts to study the effects of peer mentoring on undergraduates.

With the support of these research findings, it can be an evidence for the university to offer a structured peer-to-peer program for its first year students. This can be a starting point for the institution as they work towards their goal of being the centre for peer learning in Asia.

1.10 Scope and Limitation of research

Every research would have its scope of coverage and its own limitations. For the purpose of this quasi-experimental study, the researcher has decided to conduct the research in one private university. One limitation of the study is due to the convenience of the researcher personally, the study was only confined to one university and was not extended to include other institutions. Different academic institutions with different demographic students or geographic location may have given results that are more conclusive. Geographic location of academic institution would be of interest to be included to determine if there is any difference between students in urban institutions and students who are studying in remotely located institutions. The target population would have included a more balanced count for gender; a wider range of socio economic status group; a good mix of students from urban and rural areas to see if there is bearing on performance from these different settings as well as possible inclusion of nationality to the study to see if students from different nationalities would perform better than others.

The limitations of the study would be that there aren't many other institutions to compare to for the effectiveness of such peer learning program or at least a structured program. Also it may be difficult to generalize to the other institutions as the programme structure may vary with different institutions.

The survey is conducted on students in only one semester, from August to December. If the study is conducted to students in the earlier semester for example in the January to May it may be interesting to study if the resilience, self-efficacy and motivation of the students will be higher in the earlier months of the year as compared to later months or when the year is coming to an end. This will determine if there is

any difference in the students who chooses to enter university earlier in the year and students who decide to join towards the end of the year.

1.11 Operational Definition

There are several terms used in this study such as resilience, self-efficacy and motivation in terms of intrinsic, extrinsic and social motivation. These terms are also known as constructs. A construct is a concept that cannot be experienced directly but a thought invented to explain behaviour (Gay, Mills & Airasian; 2006). They continued to explain that in order for constructs to be measured, these constructs must first be defined operationally. This means to define it in terms of processes or operations that can be observed and measured within the scope of this study. Let us take a look at the operational definitions of these constructs within the context of this research.

1. **Independent Variable: Peer-to-Peer (P2P) Program**

   Independent variable or referred to as IV is a variable whose changes is not dependant on another. The IV for this study is the Peer-to-Peer program or P2P and labelled as "1 = with P2P program" and "2 = without P2P program". This is designed based on a global peer learning program which is known as different names in different countries. In the United States of America (USA), it is called Supplemental Instructions or SI. SI is introduced to subjects with high failure rates or subjects that are deemed to be very difficult by students. SI sessions are led by a student leader because having a peer to lead the course is somewhat less threatening compared to a teacher of faculty member. In most universities in the United Kingdom and some in Australia, this similar peer-led-peer program is known as PAL or Peer Assisted Learning. The

fundamentals are the same when peer leader is identified to lead the session for subjects where students find challenging, with high attrition rates or have high failure rates. For other universities in Australia, this is called Peer Assisted Study Sessions or PASS for short. The University of Wollongong in Australia is the National Centre for PASS in Australia. Essentially these different terminologies mean the same thing and for the purpose of this study, the researcher will term it as Peer-to-Peer (P2P) learning for uniformity. In this study the term student leader and peer leader will be used interchangeably to reflect that the student(s) who is/are leading the P2P program are in fact also peers to other students. Their leadership in the P2P program in providing the knowledge, skills and guidance is what helps students do better as they are viewed as a peer and not a threatening position like a teacher or someone of authority.

2. **Dependent Variable**

Dependent Variable (DV) means a variable whose change in value is dependent on the independent variable. For this study there are five dependent variables such as resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. This section will discuss all the dependent variable with more detail to understand the usage of it in this research context.

DV1: Resiliency.

This is to which extent a student is able to cope with difficult and challenging situations that they may face in their lives on a daily basis. Their ability to rebound and rise from adversities. In the context of this study, we refer to resiliency as academic resiliency.

The indicators for resiliency are adapt to new environments; my belief in myself; focused on study; will follow through with plans made; not affected by emotions; rely of self more than others; never give up; able to manage all I need to do; do things my way; love life; can stand criticism; make quick decisions; work on improving self; able to accomplish task despite obstacles; studies before pleasure; staying interested; feel comfortable with self; able to handle disagreements; accomplished a lot of work; my knowledge of concepts have increased; I have self-discipline; I can say 'enough is enough'; I am easily moved to tears; I look on the bright side of life; and I am someone people can rely on.

DV2: Self-Efficacy.

This is the extent to which the student believes in his or her own innate abilities to solve problems and overcome difficult situations. It is a belief is one's self. The indicators for self-efficacy are I manage my studies effectively; I can influence my peers; my contribution to the group is significant; I am a good role model for my peers; my peers seek advice from me; and I am confident about my leadership.

DV3: Intrinsic Motivation.

This is when students feel the need to do something is solely motivated from within themselves. The urge to take action comes from within. The indicators for intrinsic motivation include I always think of the most effective ways to increase my experience; I try to produce better work then my peers; I have own goals to achieve; I am of the opinion that m studies in school need to be carried

out the best way possible; I do not hesitate to attend trainings to further improve my skills; and I aspire to increase my performance in school to the level of excellence.

DV4: Extrinsic Motivation.

Extrinsic motivation means that the urge to accomplish something stems from external sources and not from within. These are external push factors from the environment that encourages the individual to take action. The indicators for external motivation include I am happy when my work is being recognized; I believe that recognition is a motivation for me to increase my performance; I will praise my peers/classmates if they do well; I feel that any recognition given to me must be in accordance with the effort that I put in; I feel that any recognition given to me will further increase my performance; and I am happy if my university is being recognized as one of the top institution around.

DV5: Social Motivation.

Social motivation is concerned with need for students to interact and feel accepted by the larger community. This tie in with Abraham Maslow's hierarchy of needs; having the sense of acceptance and belonging to the group that one is associated with. The indicators for social motivation include I give the level of trust to my peers that they will perform to the best of their ability; I feel proud to be able to share my knowledge with my peers; I believe that a conducive learning environment can increase the performance of students; I like to work with peer who discuss things with me; suggestions from

peers/classmates is my main motivation; and I believe that the opinions of my peers are important in achieving good teamwork.

1.12 Summary of Chapter 1

This chapter discussed on the overview of the research, the challenges faced by institutions of higher education today, understanding the students currently in the classrooms today known as Generation Z, their characteristics and how they learn, the issues with transitions from high school to college or university, the research problem, the objectives of the research, research questions, theoretical framework, conceptual framework, significance of study, scope and limitations of this research and its operational definition.

Next, in Chapter 2, the discussion will cover the literature review, which is the existing knowledge related to this study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Chapter 2 looks at study done on learning and peer learning in particular, Peer Assisted Study Sessions (PASS), Peer Assisted Learning (PAL) and Supplemental Instruction (SI) programs, all of which the Peer-to-Peer program (P2P) was based on. As mentioned in Chapter 1, these programs are called differently in different countries or institutions but the intent of the program is essentially similar. The study of the P2P program will be based on both SI and PASS as it uses the same principles for peer learning. This chapter will discuss both the PASS and SI programs in detail. It will also look into the theories of learning, behavioral and cognitive theories, social learning theory, the theory of involvement, resiliency, self-efficacy and theory of motivation, all of which form the theoretical ground of the study. Besides that, this study will be divided to cover the research in peer learning done in the various countries around the world namely the United States of America (USA), Europe, Australia and closer to home in the Asian region.

2.2 Theories of Learning

Learning starts at a certain level of skill or knowledge that the learner brings to the current situation, which they will change, adapt, expand or refine as learning takes place. Learning consist of obtaining knowledge or modifying that knowledge, acquiring abilities, attitudes, strategies, and behaviours over a period of time. Learning constantly evolves over time as new information, knowledge or skills are acquired. According to Schunk, (2012), Learning "*is an enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience*" (p.3). Schunk further discusses that when someone learns, it consist of the usage of some sort of cognitive approaches and procedures that helps the mind

make sense of things. He said cognitive approaches and procedures used are "attention, perception, rehearsal, organization, elaboration, storage, and retrieval" (p.3). When the brain goes through that process, it picks up and learns new information. Through this learning, we acquire cognitive, linguistic, social and motor skills. Schunk further explained that there are three criterion for learning to take place. First criteria is that learning must involve some sort of modification either in actions or in the ability to behave. The second criteria is that learning sustains over a period so if the changes are only very brief in duration, we cannot say that learning has occurred. Finally, learning occurs through lived experience for example through observation of what others do and then practice that behavior. This reinforces Bandura's social learning theory that explains how humans learn from each other socially and learning takes place by observation of behaviour, imitating what they observed, and modelling.

Schunk (2012) added that there are two main points on knowledge and its origins as well as its relationship to its surroundings. The two points are rationalism and empiricism and these are evident in current learning theories discussed. "Rationalism refers to the idea that knowledge comes from reason without recourse to the senses and empiricism refers to the impression that experiences is the only source of knowledge" (p.5). According to Suppes (1974), a theory is a scientifically acceptable set of philosophies given to describe about an occurrence. Theories are important as they provide a framework for researchers in interpreting observations in the environment and helps to connect education and research. Findings from research outputs can then be analysed, organized and systematically linked back to theories to explain why things happen the way they do.

John Dewey, who is one of the earliest theorist on learning argued that learning should emphasis on real-world life experiences and social dealings with one another instead of going about outdated and boring way of instruction and repetitive or rote learning (Tarrant & Thiele, 2016). He advocated for the idea of learning by participating and experimenting rather than just taking in information passively. In other words, he encouraged people to get involved in the activity and learn when doing so rather than just sit and observe from a far. The learner should be central to the education process and be an active participant in a socially interactive environment which promotes investigation, trial or testing. This then encourages the learner to make their own sense of the environment and the world around them. This can also be referred to as student centered learning. Elkjaer (2009) wrote about the Experiential Learning Theory (ELT) which was established by Kolb in the 1970s. The theory argues that learning is, and should be a continuous cycle and that active experience and encounter of information is not knowledge by itself but forms the groundwork for starting the knowledge-building process.

Both behavioral and cognitive theorist come to an agreement that variances in the students themselves and difference in the surrounding can affect how learning takes place. Behavioral theories stresses the role of the atmosphere and surroundings and how stimulus within the environment are arranged and presented and how reactions are reinforced. The two learner variables, which are postulated by behavioral theories, are supporting history, which is the extent to which the individual was supported for performing that behavior in the past and also the developmental status which is what the person is able to do given his or her current phase of growth.

Cognitive theories recognize the role of the surrounding conditions around as influencers of learning. A faculty teaching, explains and demonstrates theories or ideas becomes an environmental stimuli for students. Student listens, observes, takes in what they see and hear, practices the skills and combines them with constructive feedback will help promote learning. Pintrich, Cross, Kozma and McKeachie (1986) concur that instructional factors are not the only factors encouraging or is accountable for students learning. They argue that what students do with the information they have, for example, how they make sense of the information, practice, alter, recode, save and retrieve is as important. The role of learners in terms of their cognitive abilities, belief system, attitudes and values are important as it shapes learning. Students who have low esteem, constantly doubt themselves and their capabilities may not learn as well or may not attend to the task with complete focus, thus impairs learning.

2.3 Behavioural and Cognitive Theories

Behavioral theories see learning as a alteration in the amount, regularity of incidence, conduct or feedback, which occurs mainly as a function of the surrounding stimuli (Schunk, 2012). He postulates that learning encompasses the construction of relations between stimulus and responses. Behavioral theories explain learning in terms of apparent occurrences. According to Thorndike, as cited by Schunk (2012) the most elementary type of learning involves establishing a connection or association between "sensory experiences and neural impulses" (p.5) that manifests themselves behaviorally. He believes that learning will occur as a continuous process of trial and error. This way of learning happens incrementally over time as successful reactions are recognized and remembered and failed responses discarded. These connections,

knowing what is successful and what is unsuccessful will be formed mechanically over time through repetition; conscious awareness becomes unnecessary.

Schunk discussd on the the Law of Effect and the Law of Readiness both developed by Edward Lee Thorndike. This Law of Effect emphasizes the consequences of a conduct. When that behavior produces a valuable outcome, that behavior will be remembered, strengthened and increased. It will be repeated again in same or similar situation. On the flipside, if the behavior produces unwanted or an uncomfortable effect, that behavior will be removed and never repeated again. When the behavior results in rewarding or positive consequences, that behavior will be learned and remembered whereas responses producing negative consequences will be discarded. Thorndike also introduced us to the Law of Readiness, which explains that one is willing or ready to act in a certain way, which is rewarding and gives satisfaction and will not act in a way that is punishing. For example, if one is thirsty, the natural reactions that would lead to drinks or water are in a condition of willingness, whereas other reactions not leading to drinks are not in a condition of willingness.

When we apply this concept to learning, we can say that when students are willing and ready to learn somethings, in terms of growth or talent acquisition, then the behaviours that inspire this learning will be satisfying. When is produces a positive, valuable or rewarding responses, that behavior will be remembered, rehearsed and preformed again. However when a student is not prepared to get the extra skill or knowledge or do not have the necessary expertise and abilities, then trying to pick up the new information would be difficult for them as they view it as something that is punishing and would therefore be a waste of time.

Another behavioural theory is operant conditioning, introduced by B.F. Skinner (1904 – 1990). He explains how learning takes place when doing an act or task or when one performs a behavior. In Skinner's (1948) view, any particular reaction to an inducement will repeat as a function of the consequences of past behaviour; consequences that are positive or rewarding make the behavior response more likely to be repeated again in the future, and on the other hand, consequences that produces negative or punishing responses, that behavior response will be minimized.

2.4 Student Leadership

Student leadership in the past decade has grown to become a significant feature in higher education programs throughout many western countries. (Young, Hoffman and Reinhardt, 2019). According to Ganser and Kennedy (2012), there have been numerous evidence and documentation on how student leaders and senior mentors have been used in many academic and student support programs. Ganser and Kennedy continued to explain that one of the main reasons many institutions begin to use and rely on the help of student leaders is the rising population of students and the urgent need to accommodate this increase and their learning needs. Student to student learning provides for a comfortable and non-threatening learning environment. According to Newton and Ender (2010) and Whitman (1988) as cited by Young, et. al. (2019), academic program begin to form formal undergraduate to undergraduate peer teaching initiatives. Young, et. al continued to discuss the increase of the use of these student leaders in the areas of admissions, campus activities, community service, counseling, first-year experience (FYE), accommodation, international student offices, orientation programs, clubs and societies and others. The roles that student leaders serve as peer educators are such as "co-instructors, teaching assistants, and classroom

partners in first-year seminars and gateway courses" (Skipper & Keup, 2017). Student leadership is crucial in the PASS program or any Peer-to-Peer program. It matters most in respect of openess and honesty in dialogue discussions, mutual respect, collaborative problem solving and encouragement of initiative (Gill, 2006).

Gill (2006) continued to explain that there are four dimensions of leadership that covers the intellectual or cognitive, the emotional, the spiritual and the behavioral. The intellectual or cognitive dimensions of leadership comprises abilities to perceive and understand information, reason with it, imagine possibilities, use intuition, make judgements, solve problems and make decisions. This exactly reflects the cognitive or intellective dimension that a student leader needs to have. According to Gill (2006), the student leaders themselves must first be equipped with the knowledge, skills and are experts in the area of mentoring. They must be able to guide the students and help them solve questions that are difficult and help the students to see the solution that best fits the problem. The emotional dimension of leadership or can be referred to as emotional intelligence comprises understanding oneself and others, practicing self-control and responding to other people in appropriate way. The student leader must be one who knows himself/herself well and how to respond to the other students during the P2P sessions so the engagement between leaders and students during the sessions are more effective and meaningful. The spiritual dimension of leadership or spiritual intelligence is concerned with understanding that human beings have an animating need for meaning, value and a sense of worth in what they seek and do and responding to that need. The student leaders as P2P leaders recognize the need of the students attending these sessions and the value they place in the learning of the topic and hence the leaders will also need to respond accordingly by preparing well for each session so that the knowledge is shared amongst all in the session. Finally, Gill (2006) pointed

out that, the behavioral dimension of leadership comprises the skills of both using and responding to emotions, for example through communication, body language, speech, writing and active listening using personal power and physical activity. There needs to be effective communication between the peer leaders and students to help students understand if they are on the right path in their abilities to solve difficult questions related to the subject matter that they are learning.

Leadership is usually associated with the ability to influence, motivate and inspire people to follow a certain path or direction. The role of the student leaders are exactly the same and when they lead the P2P sessions, these leaders must have strategies to help the students learn, motivate them to try again and again and never give up on the courses they find difficult or topics they do not understand and inspire the students to succeed in the course and in their overall studies.

The student leaders are students themselves. They are typically volunteer students from the second and third year undergraduate level who have either offered or been nominated by faculty to facilitate weekly small group study sessions to the first year students. These student leaders were students who had gone through the course and successfully completed it. Hence, they would understand the requirements and rigor of the course to be able to lead the discussion and guide the learning for the others students. These student leaders have been trained, equipped and supported in their role by staff supervisors and student ambassadors who are also experienced leaders through regular session observations and session debriefs (Chilvers & Waghorne, 2018). The student leader's role involves a variety of activities and responsibilities that will help stimulate student learning. The role of student leadership is indeed very important. They plan, organize and facilitate engaging P2P sessions

which revisits but not reteach course content, important topics and concepts, guide students to develop learning and studying strategies and foster peer to peer relationships (Chilvers, 2016; Dawson et al., 2014).

What makes these leaders good is how the role they play has impacted their own development. Findings include: increasing leaders own learning and academic performance (Alberte, Cruz, Rodriguez, & Fitzer, 2012; Arendale, 2014; Capstick, 2004; Guyon, Butterfint, Lacy, Sanosi, Sheridan and Unwin, 2015; PcPhail, Despotovic, & Fisher, 2012); feeling a sense of satisfaction from helping their peers (Gill &McConnell, 2016); a sense of belonging and enculturation to their course community (Alberte et al., 2012); developing positive peer relationships (Couchman, 2009; Stout & McDaniel, 2006); increased retention and graduation rates (Alberte et al., 2012; Arendale, 2014). These positive research outcomes is proof of the leaders capability of affecting change in their respective sessions. The confidence levels of the students towards the subject area have also significantly increased. In addition to that, the students have also indicated gains in their confidence in public speaking and in their leadership, communication and facilitation skills (Liou-Mark, et al., 2018).

During the P2P sessions, these student leaders will facilitate active learning amongst the students in their session by encouraging group members to work together towards shared understanding (Laurs, 2018). There has been numerous research on the social and development benefits for participants of 'learning how to learn' (Capstick, 2004; Ette, Burmeister & Elder, 2001). Students who are led by these leaders grow in their knowledge and understanding of the subject matter. It is important to note that for these sessions, the same leader will be meeting the students each week to ensure continuity and to give the students some level of comfort knowing

it's the same leader as they may be used to the leaders style of coaching in the P2P sessions. Bunting (2019) summed up saying the importance of thoughtfully designing student leader programs in ways that enhance their potential to facilitate deep, long-lasting, and even transformative learning for participants.

The study will now move on to discuss how those theories are applied in peer-to-peer learning environment in educational institutions.

2.5 Peer Learning

A study done by Zakaria, Chin and Daud (2010) discussed that in order to achieve effective and proficient learning and teaching, attainment of information should not merely focus on teaching theories, definitions, rules or processes for students to memories. It should however be more be actively engaging the students in the learning activity as the students themselves are the primary participants in the learning. This is explained earlier confirming that the learner should be central to the learning process and the learner referred to in this study are the students in the university and colleges. Hence, they recommend that one way to engage the students is via peer tutoring. Moreneo and Duran (2002) regards peer tutoring as an effective method for simplifying the mastery of interpersonal competencies.

According to Zarifnejad, Mirhaghi, and Rajabpoor (2018) peer education is an impressive and rapidly developing educational method to enhance student learning. Yu, Wilson, Singh, Lemanu, Hawken, & Hill (2011) continued to say that peer education can be defined as people of social backgrounds that are alike who are not qualified teachers, assisting one another to grasp concepts and in turn learning themselves by coaching others. Students instruct their peers and face new experiences

and a challenging role (Sobral, 2002) while taking part in an experience that is different from typical teacher centered learning strategies (Mirhaghi, Karimi-Moonaghi, Sharafi, & Emami-Zeydi, 2015). When the student instructs their peers, they will also learn and remember the content better. Studies by Lake, 1999; Glynn, MacFarlane, Kelly, Cantillon, & Murphy, 2006; Srivastava, Waghmare, Mishra, Rawekar, Quazi, and Jagzape, 2015; shown that students perceive peer tutoring sessions as favorable and effective, hence they are passionate to continue peer education for their other courses. Also since peer-to-peer education is a more learner-centered approach, it is more well received by students because it provides a great opportunity for students to fully participate in an educational program (Outhred & Chester, 2010; Sevenhuysen et al., 2013).

An evaluation study done by Hartman in 2010 shows that peer tutoring increases students' motivation to want to learn more and get better. This is later reinforced by Whitman (2012) and Annis (2013) stating that student lead student programmes helped each other achieve better outputs on higher-order thinking scales than students who merely study on their own by doing self-reading. Working and learning materials with the peer leader is more effective and just studying alone. An hour in the peer learning program equals to three hours of studying on your own. This is evident in the PASS programmes discussed by Rogan (2009) that spending a mere hour in PASS is more effective than spending three hours reading the material one's own.

According to Geerlings, et al. (2016), "Peer-learning is an effective way to assist students to acquire study skills and content knowledge, especially in university courses that students find difficult and it is an effective adjunct to improve student

retention" (p.10). This method of learning amongst peers is more effective as there is no lecturer present in the session and students need not be afraid to ask questions or speak if they do not understand as they would normally be in normal classroom setting with their lecturer or teacher asking the questions. With a peer leading the session, students may feel more at ease as it is also a 'fellow student' in the session and they may be easier to relate to. Topping (2005), mentioned that the learning support provided by the peer-to-peer has been shown to be an effective way to help students to attain learning and studying strategies and adapt to university life. There were clear educational benefits to peer learning according to Zhang and Bayley (2019) and learning from someone close to their own age group, someone who had gone through similar experiences, for example struggling and coping and could have "broadened their horizons." (p.69). Providing different perspectives or even a collection of perspectives sometimes helps to shape ideas. A possible side benefit of offering to help others with their learning is that "it helps you to get better, as well" (p.69). Other researchers have also found that students who participate in the peer learning programmes develop important academic and social skills (Dawson et al., 2014). This includes independent learning skills, enhanced self-efficacy, and interpersonal skills (Despotovic & Fisher, 2012; Topping, 2005), as well as a range of employment skills (Chilvers & Waghorne, 2018; Carr et al., 2018).

2.6 Background of the Peer-to-peer (P2P) Program

The P2P program introduced in this study was based on a structured peer learning program which was developed by the University of Missouri – Kansas City in the United States. This background information will form the foundation and understanding of the P2P program and how it works. The program is based on Supplemental instruction or SI is an academic help programme created by Dr Deanna

Martin from the University of Missouri – Kansas City in 1973 (Rogan, 2009). Dr Martin wanted to find ways of helping students learn better overall and not just targeting the weak or at risk students like what most remedial programs are focused on. She, instead looked at subjects with high failure rate and subjects with high student attrition rates. In this way, SI avoids the remedial stigma often attached to similar programmes by targeting subjects and not students.

According to Twigg (2004) as cited in Mark, Dreyfuss & Younge (2010), subjects which were considered difficult usually had about 15 percent drop-failure-withdrawal rate for introductory courses, and between 22 to 50 percent or more for the other courses. Mark, et.al (2010) noted that Twigg (2004) commented that the problem which causes high failure rates especially in introductory course were that "most lecture courses are notoriously ineffective in engaging students. The lecture format neither encourages active participation nor offers student an opportunity to learn collaboratively form one another" (p. 249). The challenge was to help reduce the failure rates of these courses and help students achieve better understanding of the subject. The main idea of SI is the discussion of difficult course material amongst peers and processing of the information through guidance of a senior student or the SI leader. This SI leader is a facilitator and not a teacher and presents no new course materials other than what was taught in the classroom before. The program is designed to be peer-lead-peer where a senior student who has successfully completed the subject, who obtained at least grade A in the subject they are leading and who has good communication skills to lead the discussion in the SI session and facilitate the learning for the students. As the SI leader has previously gone through the subject and knows the content well, he or she know what is expected of that subject, what is important, and how to remember the theories and important facts from that subject. In doing so,

Dr. Martin wants to encourage all students – both the weak and strong to attend the SI sessions and discuss about the difficult topics within the subject. Having a peer as the facilitator creates an open, relaxed and informal environment where students will be able to share and discuss ideas in a friendly and secure manner without fear of rejection or being laughed at as compared to having a lecturer conduct the session.

The goals of SI include helping students get better grades in courses that are deemed to be difficult, reducing drop-out rates in those subject, helping students improve effective learning and studying strategies that will help them in other similar courses (Martin, Blanc, & DeBuhr, 1983; Hensen, & Shelly, II, 2003; Armstrong, Power, Coady, & Dormer, 2011). SI has proven to improve participants' understanding and performance in the subject area, build confidence, develop study skills and help foster friendship (Beasly, 1997). The benefits of SI are not limited to participants of the session and the SI leader but it also contributes positively to the course, faculty and institution. Institutions gain by reducing student attrition rates, while faculty my improve their teaching and learning practices and the course gets a higher average rate (Sultan, Narayansany, Kee, Chin, Manickam & Meng; 2014)

Based on the model and goals in SI, many institutions have adopted it and introduced in their programs. SI is also known around the world by different names for example Peer Assisted Study Sessions (PASS) or Peer Assisted Learning (PAL).

Knowing how students learn, acquire or construct knowledge for themselves is important. What contributes to their academic success or failures is crucial for any institution of higher learning. This will help institutions to structure programs and introduce different teaching methods to enhance the learning capacities of its students.

In the process of constructing knowledge, students will benefit from peer collaborative learning. Human beings, as social animals take part in a variety of peer learning experiences everyday (Martin, 2008).

The Peer Assisted Study Session or PASS has been created and introduced by the University of Wollongong in Australia based on the earlier mentioned principles and goals of SI. PASS as University of Wollongong is the National Center of PASS for whole of Australia (Rogan, 2009). PASS uses students who have in the past finished the course in a successful manner to help and encourage new students to learn through small group discussions. This mode of peer-to-peer learning encourages active discussion, collaborative learning, independence and accountability for their learning. Both, students and their respective peer leader engage with the course material and use suitable and effective learning and studying strategies (Arendale, 2014). According to Dawson, van de Meer, Skalicky, and Cowley (2014), PASS has also been proven to beneficial to students and the institutions by increasing grades, overall passing rates and lowering attrition and failure rates.

SI or PASS programme is developed based on several learning theories but the most notable one being Bandura's Social Learning Theory. Albert Bandura's Social Learning Theory, is highly relevant to the peer mentoring programme. His theory emphasizes that learning occurs by observing the behaviours of others (Crain, 2011). Bandura's theory states that behavior is often unintentionally based upon viewing examples of actions and modeling is a valuable means of learning when applied appropriately (Bandura, 1971). Bandura also establishes an efficient and effective process of learning. He states for learning to occur, participants in the situation must be driven to act, they must be shown with an example of the preferred conduct and

outcome of that conduct, they must execute responses that matches the examples and their copied behavior must be positively reinforced.

In 2008, Martin reported that SI or PASS as an academic support program has been introduced to more than 1500 university colleges and universities in nearly 30 countries worldwide. In three short decades, the program has grown tremendously. PASS employs students who have successfully completed the course much earlier to be leaders of that particular course unit. These leaders will help facilitate the learning of the course content to the other students. This is done by way of self-directed learning through small group discussions and interactions to find the answers or solutions to problems. There is a wealth of research done previously backing up the advantages of PASS especially by improving grades and pass rates and reducing attrition and failure rates (Dawson, van der Meer, Skalicky, & Cowley, 2014). PASS is alike other peer-to-peer learning programs that are known as Peer Assisted Learning (PAL) and Supplemental Instructions (SI). Reference to PASS in this research should be taken to include other similar programs.

Modelling after Supplemental Instruction and PASS, the P2P program will be offered weekly to students in a one hour duration session. In the session, the student leader will set the agenda of what is to be covered for that session. The session starts with an overview or recap of the chapter that was being taught in class that week, then the leader will emphasize the important areas to focus on for that chapter and devises questions relating to that topic for the students to solve. The leader will then call upon the students randomly to answer the questions given and the students will need to explain in detail how the answer was derived. The key thing here is that the leader is the facilitator of the session and will not confirm the answer. The leader will call upon

the next student to ask if the answer given by the first student is correct or otherwise. The second will then be asked on why he or she thought that the answer is correct or wrong. The second will need to highlight which part is wrong and to rectify it by giving the correct answer. The leader will then ask the other students in the session to confirm the answer. If it is correct, the leader will revert back to the first student to ask again if he/she knows now what went wrong.

The role of the P2P leader is a facilitator to facilitate and guide the progression of the session to make sure all the relevant topics are covered but it is the students themselves who will do the work of solving the problems and sharing with each other how to derive the answers. Through the discussion and working together the students will learn to consolidate key points and learn effective learning and studying strategies for the course. The student leader will guide them with tips and hints of how to do it as he or she has taken the course before and know exactly how to learn and prepare for the course.

2.6.1 P2P Process

This is a summary overview of how the P2P program works. It starts with identifying courses with high failure rates, courses who are viewed by students as being very difficult. Usually this means that if the course has about 20% - 25% failure rates, it will be perceived as difficult subject. Next, a student leader or peer leader will be identified and this is a senior student who has already taken and completed the course successfully. They will know exactly what is expected of the course to pass. They have gone through the course before and know what is easy and what is more challenging. After the leader has been nominated and they agree to being the P2P leader for the course, they will undergo a detailed training session to train and prep the

leader on how to conduct the sessions. These student leaders act as facilitators of the course and guide the students on how to learn. In the P2P sessions, the student leaders do not teach as they are not the teachers but rather they help guide the students to develop effective learning and studying strategies and how to tackle the course and important information. The session is conducted consistently each week for about 1 hour. The weekly P2P sessions are progressive and developmental (Rogan,2009) in that they progress each week based on the pace of the lessons thaught in class. During the session, they cover important concepts, formulas, study strategies to enhance the retention of information for that subject. In the session, the leader crafts question and problems for the students to solve. The leaders do not show them how to derive at the answers but the students themselves have to try to solve it and provide the answers. The leader merely confirms that the students are correct. They involve the whole session attendees by getting them to check and confirm the answers given by their peers. The students must provide explanation why the answer or solution is such. If the student did not provide a complete answer or gave the wrong answer, the leader will not point out the mistake but instead will call upon other students to highlight the errors or gaps. This way, the students are forced to learn and understand the process behind deriving at the answer and they are able to critique and provide feedback at every step. This process of social learning helps students to build connection with one another and in doing so they make friends and build a bond with the group. With new friendships formed, the social support group is helping these students navigate themselves in university. According to Srivastava, Waghmare, Mishra, Rawekar, Quazi, and Jagzape (2015), when they work together as a group, they are able to better cope and manage their learning and will not feel lost. In a way its related to the famous quote “give a man a fish, he will eat for a day, teach the man to fish and he can eat for

a lifetime". Throughout the semester, the students would have learned the strategies and techniques of how to learn and will not fall back on their studies. They also have friends to socialize with, form study groups with to continuously connect with their peers. Hence, this constant connectivity with each other will help to build on their ability to be more resilient, have better self-efficacy and have higher motivation.

Peer or P2P student leadership in the P2P program in crucial to the success of the program. The ability of the leader to lead the discussion and plan for the activities in the session dictates how effective the session will be. The leaders knowledge in the subject matter is also very important as they need to be able to know how to solve each problems or questions raised in the session. They also need to know possible solutions to the questions or problems to be able to confirm if the answers given by students is correct or if the explanation is on the right track. So the skills in organizing and conducting the sessions as well as the knowledge in the subject area for the leaders are crucial.

2.7 Research on Peer Assisted Study Sessions conducted in the United States of America

A study was conducted by Hensen & Shelley, (2003) on a public university in the USA on the impact of supplemental instruction on students. The aim of the study was to isolate the reasons behind the success of SI programme and in doing so to find ways to enhance the quality of the programme and its implementation.

The study was carried out to determine if the SI participants in entry-level biology, chemistry, mathematics, and physics courses obtain a higher mean final course grades than non-SI participants; is there a association between students' pre-

entry qualifications and students' participation in SI; and when controlling for students' pre-entry qualifications, do students who attend SI perform better than students who did not join in the program? Data was obtained from 7,339 students who were enrolled in the entry-level biology, chemistry, mathematics and physics courses offering SI during the 1999 – 2000 academic year. Background information, composite scores and course details were obtained from the class rosters from the Registrar's Office. The researchers wanted to determine if the SI students' had higher mean final course grades as compared to non-SI students and if there is an association between students' pre-entry qualification (composite score) and participation in SI. The analysis of data on final course grades found that SI students in biology, chemistry, mathematics and physics courses attained a considerably higher percentage of A and B grades, a considerably lower percentage of Ds, Fs and withdrawals, and considerably higher mean final course grades than the non-SI students. The results also demonstrated that SI students had lower pre-entry composite scores than the non-SI students and hence did not have a stronger pre-entry qualification before entering the course. This means that pre-entry qualification did not have an impact on the ability of the SI participants to succeed. For the physics students, the test revealed that there was not a significant difference between the mean composite scores for SI and non-SI students. After controlling for students' pre-entry characteristics, SI students was found to perform better than non-SI participants.

Hensen and Shelley suggested that further work can be done to find out students' motivation in participating in SI which is a non-compulsory program. Future studies could also examine the differential impact of SI on minority and first generation college students, on learning community participants and on students in different academic disciplines.

Nevertheless, this study was only limited to a few courses namely biology, chemistry, mathematics and physics. It did not include other SI supported subjects. The study could not be generalized to other institutions. Also the composite score could not be found for majority of the students. This study only looked at academic performance as the outcome of SI participation. SI's effectiveness has been studied across many institutions in the United States and Australia. This program is found to be successful in helping students do better in their academic life. Chen and Liu (2011) found that reciprocal peer tutoring program has been successful in regard to tutors and tutees' achievements, motivation and attitudes. This study will consider Hensen and Shelley's suggestion of looking into the motivation behind the participation in peer-to-peer programs. The study conducted by Hensen and Shelley is relevant to this study as it looks at high stream in high school as a moderating variable to the relationship between attending P2P and students' resiliency, self-efficacy and motivation.

Purdie and Rosser (2011) conducted a study and found that one of the many challenges facing higher education today is the retention rates of first-year college students. Many students enroll in courses but not all would progress to the next level or complete their courses. In most instances, they may have to repeat the course and retake the test as they have failed. The success of students in college is measured by the retention rates and this can vary widely depending on the type of institution the student is in. The purpose of study done by Purdie and Rosser is to examine the effects of 2 types of living learning communities namely the Academic Theme Floors (ATFs) and Freshman Interest Group (FIGs) and first-year experience (FYE) courses on academic performance and retention rates of first-year students of a large, public, research-extensive university in the United States of America.

This study is relevant to the current research as PASS is like to a learning community in itself and does create broader learning communities for different disciplines (University of Wollongong, 2010)

The study was conducted to find out whether first year students who participate in an FIG, ATF or FYE course would earn higher GPAs as compared to students in the other two programmes or non-participants after controlling for variables high school, GPA, ACT score, sex, race, family income level, initial major, living arrangement and society membership. Besides that their study examined whether first-year students who participate in an FIG, ATF, or FYE course would more likely to re-enrol at the same institution for their second year compared to students in the other two programmes or non-participants after controlling the covariates first-semester GAP, high school, GPA, ACT score, sex, race, family income level, initial major, living arrangements, and society membership.

This research is a quantitative study. Initial data on first-year students who had participated in the learning communities of FIG and ATF or first-year experience programme (FYE) was gathered from the institution and coded into the SPSS software. There were dependent variables of academic performance and retention and independent variables of the learning communities and first-year experience courses. Sample used was first-year students who joined in the Fall semester of 2003, 2004 or 2005. This study only focused on Fall semester because the FIG programme was not offered in Spring. High school GPA had the most significant effect on the students first-semester GPA. Although the other variables had a statistically significant and positive effect on first-semester GPA, their effect sizes were small.

Results of their study showed that participating in learning communities and first-year experience courses did not improve grades on retention of students. The findings suggests that retention can be improved when faculty members and student affairs practitioners collaboratively create programmes that link the curricular and residential experience, and foster student interaction with peers and faculty who share an academic interest. This research focused on the two learning communities and the FYE programme of one institution. Different programmes are conducted differently in different campuses so the results cannot be generalized. Types of learning communities also differ in formats and structures at different campuses. There are many determinants to the academic performance and retention of first-year students. After considering the "entering college" factors, other factors such as other academic support programmes, institutional support, have an impact on the student's learning process and ultimately their retention rates. Reames; Anekwe; Wang; Witte (2015) also spoke about several positive effects of learning communities in higher educational settings. Learning communities provided conducive conditions which lead to student success, students in learning communities persisted through and beyond the first years. Students had strong peer group support and developed a sense of belonging.

On the other hand a study conducted by Rocconi (2011) to investigate the direct and indirect relationships between participating in a learning community, student engagement and self-reported learning outcomes saw different outcomes. Rocconi (2011) found out that "learning community participation and learning outcomes are mediated by students' levels of engagement" (p.178). He further discovered that participation in a learning community was not directly related to educational gains but was indirectly related to educational gains via student engagement. The higher or better the level of engagement, the better the outcomes will be. This is relevant to the

theory of involvement by Astin (1999). The higher the involvement, the better the outcomes.

Another research by Mark, Dreyfuss and Younge (2010) looked the implementation of Peer Assisted Learning (PAL) workshops for students in a private institution in New York, USA. The study was conducted on 40 students who were enrolled for the PAL workshop for the Pre-calculus course in the Spring and Fall of 2008 and Spring of 2009 semesters. The study hoped to find the efficacy of the PAL workshops, usefulness of the modules covered and the effectiveness of the peer leader. In order to study the impact of the PAL workshop approach on the students' understanding of the Pre-calculus subject, grades from those who attended the workshop were compared to those who did not attend. The grades ABC pass rates for workshop attendees were 82.5% and 52.5% for non-attendees. The failure rates for attendees were only 7.5% compared to 15% for non-attendees. This shows that those who attended the PAL workshop obtained higher rates and were more likely to pass than those who did not. The students also responded favorably when asked about their experiences with the PAL workshops. The materials used in PAL strongly reflected those covered in the regular lecture for Pre-calculus. The students come together and work to consolidate understanding of the subject matter, reinforce key concepts of the subject, develop effective studying strategies and learn different problem solving techniques (UCSI, 2011).

The students felt that the PAL workshops help them perform better on exams and helped improve their grades. The interaction with the peer leaders also helped them increased their understanding of the material. The environment was conducive for them to ask questions about concepts they did not understand. Overall the students

appreciated the PAL workshop and valued the type of open learning environment. According to Mark, et al (2010), the benefits obtained from a peer-led-peer workshop was that is created a space where students felt at ease and comfortable asking and discussing questions with their peer leaders. Seeing that their peer leader was also a student themselves, they were able to open up easily and ask questions. Hence, they no longer felt isolated or unsupported. The researcher found that the results demonstrated that making peer-lead team learning or PAL workshops an integral part of the course can help increase student success rates. This study provided an in-depth look at peer leaders and peer-lead team model structure. It focused on the importance of supporting year one students in vital subjects such as math so the students will not feel bored, difficult or will not abandon the subject. Making the transition from high school to university is a challenge to many students. In the US, a long-term study done by the American Freshman Project of first-year students reported that a huge majority of new enrolments into colleges and universities have the right intentions of continuing with tertiary education (Erickson, Peters, and Strommer; 2006). They come in "enthusiastic, intellectually curious, and reasonably well prepared for academic life. Yet, at the same time they are easily discouraged, unnerved, and overwhelmed" (p.5). Participating in sessions such as PAL or PASS can help students ease the transition process.

Meanwhile, a study by Price, Lumpkin, Seeman and Bell (2012) looked into the effectiveness of PASS in improving short-term and long-term retention on information. The researchers wanted to find out if PASS would enhance short-term retention but hinder long-term preservation of course content and the predictors of students' attendance in PASS. Contradictory to Erickson, et al. (2006), in the earlier study, Price, et.al. (2012) quoting Raths (2009) says "students often find themselves

ill-prepared for the academic and social challenges of college, which can increase their risk of failing or dropping out" (p.9). Congos & Schoeps (1998) explained that one main factor that contributes to the academic difficulties of students as they enter first year college or university courses is the mismatch in thinking and expectations. These students come in with preconceived ideas about how to learn and study based on their experiences from their high school course. Little did they know that learning strategies that worked for them back in high school may no longer be effective in the new college or university environment. These first year college students do not know what strategies would be the most effective for their learning and how to apply them. How than can PASS help with information retention and memory?

The study by Price, et.al (2012) needed to answer two objectives a) to investigate PASS effectiveness by examining how PASS attendance affected the introductory psychology students' short-term and long-term retention of information and b) to assess whether academic self-efficacy or indicators of ability level could predict which students would choose to attend PASS.

The researchers studied 67 students who enrolled in introductory psychology course at a public university in the United States. Of the 67 students, 42 students attended PASS while 25 students did not and this was divided into PASS attendees and non-attendees. Mixed methods were used where attendance in PASS was noted and data was collected seven times throughout the course of the semester. Six of those data collection were based on the six unit quizzes and the cumulative final exam was the last data point collected. The students were also asked to do an academic self-efficacy assessment using the Self-Efficacy for Learning Form (SELF). The inventory is a 57-item self-report inventory where participants need to indicate their ability to

accomplish the task set forth in the question on a scale of 0 (definitely cannot) to 100 (definitely can). SELF was administered twice in the semester, first was done before the first quiz and second SELF test was done before the sixth quiz. SELF was used to assess if there are any changes in self-efficacy over the course of the semester and if the measure would yield adequate test-retest reliability in the study.

An independent sample *t* test was done to compare final grades between PASS attendees and non-attendees and the outcome was consistent with other prior research on the effectiveness of PASS. PASS attendees obtained a significantly higher final grade in the class than did the non-attendees. The analyses yielded both a main effect for quizzes, and a reliable interaction of quizzes with PASS attendance. A further analyses of *t* test was done on the outcomes of each quiz to determine at which point the difference existed. The results of the analyses showed similar performance on Quiz 1 but the PASS attendees outperformed non-PASS attendees in the remaining five quizzes. PASS attendees also scored better on the cumulative final exam than did non-attendees. This shows that the learning and studying strategies taught in the PASS classes facilitated short-term retention and enhanced long-term memory as well.

To investigate whether students' self-efficacy is a predictor of PASS attendance, the researcher looked at the relationship between both the pretest and posttest global academic self-efficacy scores and PASS attendance. The pretest SELF scores were divided into low, medium and high self-efficacy. The analyses revealed that there is a significant positive relationship between self-efficacy and PASS attendance for those in the high self-efficacy group but a significant negative relationship between self-efficacy and PASS attendance for those in the low self-efficacy group. This means students in the high self-efficacy category were more

likely to attend PASS the higher their SELF scores and in contrast, the students with lower self-efficacy scores were more likely to attend PASS than those with higher SELF scores. Towards the end of the semester, the students' level of self-efficacy did not correlate significantly with PASS attendance. These findings suggests that during the start of the semester, those with the highest and lowest self-efficacy score were more likely to attend PASS but towards the end of the semester, self-efficacy has less impact on attendance. In the researcher's opinion this study looked at two dimensions never before discussed in detailed – short-term and long-term memory retention of course information and the motivations behind joining PASS.

Apart from the benefits for the students Micari, Streitwieser and Light (2006) studied the effects on the PASS leader, the senior student leading the PASS sessions. Quoting Dewey (1964) who wrote that "a teacher ought to serve as his or her students' co-partner and guide in a common enterprise" (p. 269). Therefore, acting as "co-partner and guide" the PASS leader is engaged not merely in correcting students' performance but rather help students along the "path of inquiry and discovery" (p. 270). The leader's role is no longer as a teacher or tutor but as a facilitator of learning. Peer mentors may experience some significant gains as the facilitators because it is not just the student receiving the information that benefits but the student giving the information as well. This study looked at the experiences of undergraduate peer facilitators involved in a science based peer lead peer program. The main objective was to gain an understanding of the peer-lead-peer experience as a whole. The research employed a qualitative approach using open-ended surveys, focus groups and individual interviews. The participants were peer leaders from four science based disciplines within two schools of the university. This allowed the researchers to survey a variety of experience or as what Patton (2001) says as cited in Micari et.al. (2006)

"maximum-variation sampling" (p.272). The research was conducted over one academic year through 2 phases, the first phase focused on facilitator's general reactions to the experiences gained and the second was on ways in which these individuals understood themselves to have developed through the facilitation process. Phase 1 was to identify areas within the program that the peer facilitators felt satisfied and dissatisfied and to begin to explore the ways in which facilitators understood their respective roles in the program and to identify the ways in which they themselves felt they had been affected through participating it the program. Phase 2 was a more focused research and in addition to collecting feedback on surveys and in focus groups, the researchers begin to probe the areas identified as benefits in Phase 1. The main objective of Phase 2 was to clearly and fully define the ways in which facilitators described their own experiences of growth during the facilitation period.

After collecting data from surveys, focus groups and personal in-depth interview, the study concluded that peer facilitators perceived themselves as having progressed in three general areas namely cognitive, personal and instrumental. For cognitive development, the peer facilitators experienced a gain in knowledge as the more they explained the material, the better their ability to understand the material. Three areas of cognitive development emerged: consolidating knowledge in the discipline, enhancing conceptual understanding, and developing problem-solving skills. In other words, the more they were able to internalise and verbalise the material, the better they were at the knowledge content of the subject. For personal growth, the facilitators were able to increase their ability to engage with students. There was a growth in communication skills, confidence, understanding of the audience, self expression, pedagogical skills and probing abilities. For instrumental growth, the facilitators found the experience of the peer-lead-peer program to be integral to their

professional development at a later stage. The findings of this study clearly shows the benefits of the program for peer leaders in helping other learn.

In this researcher's opinion, the study has very good value as the focus on the effects of peer-lead-peer of the peer leaders are not as widely researched as compared to the benefits to students attending such sessions. By virtue of the facilitator being a peer themselves, sets the tone for an open environment, free discussion and learning as a group as compared to a teaching assistant, tutor or lecturer where the position of authority may and would change the dynamics of the group's willingness to ask questions and discuss solutions.

In summary, this section on the peer programmes conducted in the United States of America discussed studies on PASS, PAL and SI programmes and the benefits for the students and also the peer leaders. These studies found that such peer lead peer programs did indeed help students do well in college by getting higher grades and improving retention (Liou-Mark, Dreyfuss & Younge, 2010; Price et al, 2012; Rocconi, 2011). Hensen and Shelley (2003) found that pre-entry qualifications had no influence on how students fared in college and that the SI program helped students succeed regardless of whether they had higher pre-entry scores. Purdie and Rosser (2011) found that although mere participation in learning communities and first-year experience did not improve grades, they suggested that both faculty members and student affairs practitioners need to come together to collaboratively create programmes that link the curricular and residential experience, and foster student interaction with peers and faculty who share an academic interest. Rocconi found that involvement in first-year experience courses is not enough rather the level of engagement or involvement in such programmes that would determine the success for

the student. This is linked to the theory of involvement by Astin (1999) which states that the more the students are involved, the better the outcomes for students. Peer lead programs not only brings benefits to the students participating in the programmes but also for the leaders as according to Micari et al. (2006) and many others cite the benefits for leaders are that they understood themselves better, improve cognitive development, be more confident and have better communication skills.

2.8 Research on Peer Assisted Study Sessions conducted in Europe

Malm, Bryngfors, and Morner (2011) conducted a study at a Swedish University, to determine how SI attendance affects course results in an engineering course. The research question guiding this study is how does the degree of SI attendance affects student success in first-year engineering courses supported by SI. The SI attendance for the first-year students in each of the first three quarters of the academic year was taken for the study. The attendance of the SI specific courses was also taken into consideration. This information was presented in table format for analysis. A comparison of course results for SI and non-SI attendees were taken to obtain an overview of how SI attendance affects course results. The average attendance in SI decreased successively by quarter. The percentage of student attending all SI sessions in a quarter was also gradually decreasing each quarter. For the purpose for this study, the researchers took the easiest and probably the most comprehensible attendance percentage for assessments, which is the percentage of students attending at least one SI session. This was acceptable as confirmed by numerous research conducted at the University of Missouri – Kansas City, a Midwestern university and the University of Pittsburg, USA. Based on the research at these universities, the attendance percentages at the school of engineering reported in this present study was high in comparison. However to qualify a student as an SI student, the student must have attended at least

3 sessions to be able to adopt the SI methodology. For all courses the SI attendees have lower failure rates than non-SI attendees. The difference is also statistically significant. Next the study also looked at the link between SI attendance and course results per quarter. SI attendance is divided into 4 categories – no attendance, low attendance, average attendance and high attendance. The results show that students with high attendance are most successful in the course followed by student with average, low and not attendance at SI sessions. Students attending SI session have better success in the courses compared to non-SI attendees. The relationship between student success in the course and SI attendance rates is also very clearly seen from the study. The decreasing number of SI attendance from quarters 1 to 3 was not too alarming considering that these students would most probably have made friends and study partners during the first quarter and feel that it is no longer necessary to attend SI sessions in quarters 2 and 3. There were no discussions on further recommendations from the author. This study is quite comprehensive but it will be good to also study the motivations behind SI attendance and hence this will help understand why students attend or do not attend SI.

2.9 Research on Peer Assisted Study Sessions conducted in Australia

Armstrong, Power, Coady, & Dormer (2001) conducted a research on video-based Supplemental Instruction for at-risk students taking engineering mathematics. This was a study noting the processes of implementation of the pilot research on video-based SI or VSI in the first semester of 2011. VSI hopes to create an atmosphere where students can learn the lecture material in a thorough and reflective manner. The research questions guiding this study is to determine the positive effects for the attendees who had failed this subject in the past and how does this video-based SI

program address student engagement and progression. Qualitative and quantitative research methods were employed. This VSI model was devised to help 'marginally prepred' students. 66 students who previously filed the subject will participate in this VSI mode. The main tool is a pre-recorded lecture which consist of four main components such as preview, process, review and polish. The VSI mode entails implementating the same assessment as students in the regular mode but instead of attending regular classes and tutorials, these students will attend the VSI classes. Both VSI students and regular students were measured at the beginning and at the end of the semester. The surveys were designed to gain an insight into students mathematical backgrounds, attitudes towards learning and mathematics and perspectives on participation in VSI mode of learning. The data from the survey was coded and analysed using SPSS. Paired t-test was used to analyse VSI students' performance on each of the class test. Additionally two focus groups were also conducted during the semester to capture their reflections about the session each week. The data was analysed qualitatively for emerging themes. VSI students have shown that they were able to do very well in their class test in comparison with their previous attempts at the same subject and in comparison with regular students attending the regular lectures and tutorials.

Recently, Dawyer and Larkin (2016) conducted a study on the Bachelor of Justice degree program from the University of Queensland, Australia on supporting students in first year university. They conducted a peer-to-peer intensive peer mentoring program on these transitioning students. According to them, these groups of first year students are more likely to leave their studies, drop out or get demotivated in the first year itself if they did not become integrated into the university community. Hence the discussion earlier from Cueso (2015) on the importance of the integration

and connection every new student should have with their surroundings. Cueso mentioned four important connections to help students succeed. First is student-to-student connection, which is the need to have friends, to feel a sense of welcome and belonging in the community. The second connection is student-to-course connection, which is students need to like what they are learning so that they will enjoy the learning journey. Third is student-to-faculty connection, which is the need to be able to have good relationship with their teachers and staff members for them to navigate the next three or four years of their degree in the university. The forth connection is the student--to-university connection, which is how the university can support the students' needs for example services and facilities for students to use while studying in the university. Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, Llamas and Stevens (2012) felt that students were at risk of separating themselves from university studies if they were mature age students (not traditional age students), experiencing financial hardships at home, are from ethnically or racially different backgrounds, did not begin university study straight after high school and if they did not feel a sense of belonging to the university community and therefore do not engage with the resources that the university makes available to them. Menzies & Nelson (2012) and Beltman and Schaeben (2012) also mentioned that first year students who are from those category are more likely to leave their degree if they do not become assimilated into the university community, do not interact with the university resources that are made available for them for academic and personal help, or if they do not remain involved with the curriculum or the course meaning that the work was either too exciting or not exciting enough would make them loose interest in their studies. However, those students who are most at risk for withdrawing are those who feel isolated or disconnected from the university environment (O'Brien, et al., 2012).

In another study, Baik, Naylor, and Arkoudis (2015) and Menzies and Nelson (2012) stresses the importance of having a positive first year experience in increasing student participation with their degree through developing a university culture round student collaboration and support. Furthermore, O'Brien et al., (2012) stresses that if steps are not taken to help students connect with the university environment in a positive way, they will be disengaged eventually. According to Clerehan (2003) and Menzies and Nelson (2012), peer mentoring programs can help to facilitate the process as the most prevalent influence on the person and academic development of university students are their peers.

2.10 Research on Peer Assisted Study Sessions conducted in Asia

There are not many studies on the effects or benefits of peer learning in Asia as most institutions of higher learning in this region do not practice peer learning as extensively as in the west or Australia. Chen and Liu (2011) conducted a case study to evaluate the current peer tutoring program that was implemented for university students at National Formosa University in Taiwan during academic years 2007 to 2009. The objective of the case study was to evaluate the Teaching Excellence Project introduced at a dormitory learning resources center of the university. The goal was to promote continual program improvement and program accountability. This study was conducted on tutors and tutees to assess their reactions to the peer tutoring experience as well as to the skills and knowledge gained.

This is a qualitative study supported with quantitative investigation focused on the examples from peer tutoring program in the dormitory. In this study, evaluation of the peer tutoring program included self-corrected learning, informal group discussions,

participant observation, semi-structured interview, actual tutoring data and tutoring reports were collected and analysed.

The tutor and tutee's relationship was one that was ongoing, developmental and reciprocal. It motivates both tutor and tutee to learn and grow cognitively. This was consistent with the study done in the US by Macari, et.al (2006) on the cognitive benefits for the peer leaders. The realize the benefits of the program the peer leaders need strong interpersonal skills, relationship building, communication skills and team building skills. Tutees can improve their skills by giving constant feedback and input to the leaders. The researchers of this study conclude that structured planning, training, on-going evaluation and problem solving are all necessary components of the program planning success. Therefore through this peer engagement, both tutors and tutees can increase their self-confidence, communication skills and knowledge acquisition.

This is consistent with the studies of the previous researchers which explains how peer to peer engagement can help both the peer student and the peer leaders in terms of academic achievements, personal development and growth and enhancement of social and communication skills.

2.11 Resiliency of students in learning

In the recent decade, resilience has been given emphasis of research on students in the behaviourial and medical sciences. Several researchers including Carver (1997); Tusaie & Dryer (2004) explained that the term "resilience" has been described in different variations but basically it revolves around the ability to rebound back or recover from difficulty and stressful situations and adapting to any present stressful circumstances, to not fall ill despite the adversities faced and to be able to function

above the norm in spite of all the stressors or difficulties. Smith, Dalen, Wiggins, Tooley, Christopher and Bernard (2008) cited Carver's (1998) distinction between "resilience" as returning to the previous level of functioning (e.g., bouncing back or recovery) and "thriving" as moving to a superior level of functioning following a stress event. "Adaptation" (or "stress adaption") could be used for changing to adjust to a new situation and "resistance" (as in "stress resistance" or "resistance to illness) to refer to not becoming ill or showing a decrease in functioning during stress.

Resilience may be defined differently depending the different perspectives and background for example psychological researchers may have a different definition from people who are involved on a daily basis with others who are facing life struggles. There is not just one recognized set of components of resilience. Table 2.1 shows a set of characteristics and contributing factors can provide a useful guide.

Table 2.1

Characteristics for Resilience building

Characteristics	Explanation
Optimism	Those who are optimistic tend to be more resilient as well since they are more likely to stay positive about the future even when faced with seemingly insurmountable obstacles.
Altruism	The most resilient among us often turn to help others when they need to relieve stress and boost their self-efficacy.
Moral Compass	People with a strong moral compass or steadfast set of beliefs about right and wrong generally have an easier time bouncing back.
Faith and Spirituality	Although this is not factor for resilience, people often find their faith helpful in surviving challenges and coming through stronger and wiser on the other side.
Humor	People who have a healthy sense of humor and are able to laugh at their own misfortune are at an advantage when it comes to bouncing back, for obvious reasons.
Having a Role Model	This is also not a requirement for resilience, but those who have a role model in mind can draw strength from their desire to emulate this person.

Table 2.1 (continued)

Characteristics	Explanation
Social Supports	Unsurprisingly, social support is important when it comes to resilience; those with strong social support networks are better equipped to bounce back from loss or disappointment.
Facing Fear	This is an action or tendency to act, but people who are willing to leave their comfort zone and confront their fears are more likely to overcome their challenges and grow as a person.
Meaning or Purpose in Life	It shouldn't be surprising that those who feel they have a specific purpose in life or find a tremendous amount of meaning in their lives are more likely to recover from failure or disappointment; when you fervently believe you have a purpose, you are less likely to give up when faced with tragedy or loss.
Training	While a portion of individual resilience may be somewhat permanent and unchangeable, there is an opportunity for improvement; it is possible to improve your resilience through training.

Source: Positive Psychology Program (Glenn Schiraldi, 2017)

These components are not present in each and every measure of resilience, but they form a good basis for understanding the nature and scope of resilience.

We need to recognize that words will evolve in meaning overtime. Resilience, for example can mean either to recover or bounce back from a stressful situation or someone who has already taken ill and are dealing with the facts of their illness and managing the situation or someone who is managing an ongoing health-related stress. Therefore in differentiating between all meanings linked with resilience, it may be useful to use different words for struggling with an illness, adaptation to new situations or surroundings, handling stress and still working above the norm in spite of these stressors. Miller (2012) provided a clear distinction between "resilience as returning to the previous level of functioning and thriving as in moving to a superior level of functioning following a stressful event or in spite of the stress" (p.438). In addition, adaptation could be used for changing to adjust to a new situation or surrounding.

Finally, it may be preferable to use a word like resistances to refer to not becoming ill or showing a decrease in functioning during stress.

Wolin and Wolin (1993) who are some of the early researchers on resiliency develop the theory of resilience. They conducted an extensive research and study on self-resilience which provided a solid understanding of human resiliency and the way it develops. There are certain qualities inherent in resilient people. According to Wolin and Wolin, one needs to be resilient to persist and flourish under stressful situations and being resilient is to be able to permit oneself in using one's inner means and also resources in one's situation to confront the demands placed upon him. These resources can be tapped to regain one's balance as quick as possible when thrown off-balance.

Resilience means the ability to absorb high level of disruptive changes while displaying minimal dysfunctional behaviour. Although resilient people face no less of a change than others when they engage change, they tend to regain their equilibrium faster, maintain a high level of productivity, are physically and emotionally healthier, and generally then to rebound from the demands of change even stronger than before. The seven clusters of strength or resiliencies identified in Wolin and Wolin (1993) research are Insight, Independence, Relationships, Initiative, Creativity, Humour, and Morality.

Hamdan-Mansour, Azzeghaiby, Alzoghaibi, Al Badawi, Nassar & Shaheen (2014) did a study to investigate resiliency among university students. In their study perceived social support from peers are significant predictors of resilience. They found that university students with higher overall perceived social support from peers are more likely to report as having higher level of resiliency. There was a positive

correlation between perceived social support and resilience. According to Erickson (1968) as cited by Hamdan-Mansour, et. Al. (2014) a possible reason for is that university students are at the age where they struggle to establish their identity. These university students are the millennial generation and they need the independence and to connect on a deeper interpersonal relationship. They are socially conscious and hyper connected. They need to be with others. Ayman et al confirmed that perceived social support from friends are significant predictors of resilience.

This ties in to the P2P program where participation in the P2P sessions conducted by peer leaders is a socially enriching experience for the students. Throughout the P2P sessions the student and their peer leaders will be able to connect on a deeper interpersonal level. They would have found a friend and support in the peer leader as the leader is someone they can rely and depend on. With this support from the peer leader and other peers in the P2P program, resiliency may most likely be strengthen.

2.12 The Concept of Resilience

Wolin and Wolin (1993) They look at some of the basic concepts of resiliency which are firstly, resilience arises from the belief of one's own self-efficacy; which is one's own ability to deal with difficult situations, problems and develops a range of problem-solving skills to tackle the problem. Second, people who are resilient does not mean that they are invincible, they are human too. Human beings get hurt, angry and frustrated at the stressors of daily life and finally resilience is a process where one successfully adapt to difficult circumstances overtime.

Resilience looks at the ability of the person to rebound from stressful circumstances or events and resume usual activity. It is like having the power of

recovery. Resilience is dynamic and ever changing and it is affected by the environment of the person, the stage of the person's development, and the specific situation a person is in (Wolin & wolin,, 1993) . Being resilient means being capable of bouncing back from defeats and disappointments; turning losses into learning experiences; and coping with stressful settings and difficult life events. Simply it means a resilient person can bounce back no matter what the pressure is or what the odds are against him or her failing (Louis, 1998).

In this research, resilience is taken to mean the ability to restore a balance by accepting difficult life events and merging them into the broader life experiences. This involves courage, flexibility, self-reliance, and the ability to find continued meaning and purpose in life.

Resiliency index is a computed value of resilience based on the scores of the 50 items in the Resilience Attitudes Scale (Biscoe, 1994) used to measure resilience. The items were constructed based on the seven resiliencies identified by Wolin and Wolin (1993).

2.13 Self-Efficacy of students in learning

Bandura (1997) explained that self-efficacy or efficacy expectations refers to the personal beliefs about one's own capabilities to learn or perform certain actions at some expected levels. Self-efficacy is a belief about what one is capable of achieving. Individual access their skills and capabilities to translate those skills into actions. Self-efficacy is about perceptions of one's capabilities to initiate actions but outcome expectations involve beliefs about the anticipated outcome of those actions. For example, a student may belief that a positive outcome may result from their efforts but they may also believe that they lack certain competence to initiate those actions. There

are no necessary relations between self-efficacy and outcome expectation. According to Schunk & Zimmermman (2006) as quoted Schunk (2012), "self-efficacy and outcomes expectations do not have the same meaning. Self-efficacy refers to perceptions of one's capabilities to produce certain actions whereas outcome expectations involve beliefs about the anticipated outcomes of those actions" (p.146).

Bandura (2001) explained on human behavior within a framework of triadic reciprocity or tri-party interactions among behaviours, environmental variables and personal factors such as cognitive abilities. Figure 2.1 explains this.

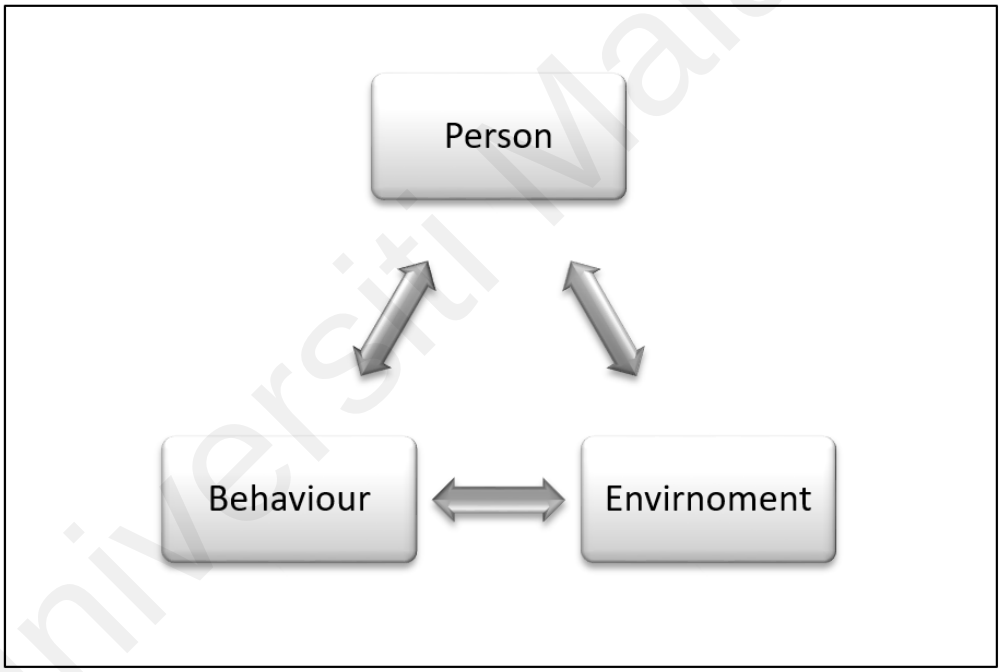

Figure 2.1. Tri-party reciprocal interactions

In Figure 2.1 above shows interacting determinants which can be explained using perceived self-efficacy, or belief's concerning one's capabilities to plan, organize and implement actions which are necessary to learn or perform behaviours at certain required levels (Bandura, 1997).

When self-efficacy (personal) interacts with behavior, research shows that self-efficacy beliefs influences achievement behaviours such as choice of tasks, persistence, amount of effort expensed and skill acquisition (person → behavior) (Schunk & Pajares, 2002) as quoted in Schunk (2012). Self-efficacy can have diverse effects in achievements. Bandura (1993) explains that self-efficacy can influence choice of activities. For example, students with low self-efficacy for learning may avoid difficult tasks whereas those students who think of themselves as efficacious may be ready to participate more readily. Self-efficacy can also affect the amount of effort and persistance one is willing to put forth in learning. For example, students who feel more efficacious about learning and improving themselves will generally put in more effort and persist longer than students how have doubt in their own capabilities when difficult situation arises.

As students work on tasks, they note their progress towards their learning goals like completing an assignment on time, participating actively in-group discussions, completing writing their research paper or project or even completing a thesis. These progress indicators communicate to students that they are capable of performing well and enhance their self-efficacy for continued learning (behavior → person).

The environment also plays an important part in that the social circles of the student. For example if the lecturer or a mentor continuously encourages by giving positive feedback to the student, this can affect the self-efficacy of the student. For example if the lecturer were to praise the student and encourage the student with positive words like “you can do this, I am sure” or “you have what it takes to succeed, just focus your effort on this’, the student will feel more confident in succeeding (environment → person). Likewise in P2P program the role of the peer leader is to

encourage and motivate students to find the answers and learn solutions to problems. They will encourage students to try and then use phrases like “good job!” and “yes, you are on the right track, can you explain more”. The students feel good then the leader affirms their answers. They feel more motivated and more confident in trying other questions or providing solutions to other problems.

Students acquire much information about their capabilities through knowledge of how others perform. Schunk (1987) explains that similarity to others is an important cue for gauging one’s self-efficacy. When they observe someone similar to them try and succeed, it raises the observers own self-efficacy and motivates them to try the task as they now a stronger belief that if that other person can do it and succeed, so can they. This is exactly what peer-learning progams want to achieve. The social learning and observation of someone who is able to achieve success and the behavior is emulated.

For cognitively challenged students or student with learning disabilities, this explains the interaction between self-efficacy and environmental factors. Such students may hold a sense of low self-efficacy at performing well. The people within the social environmental circles of such students may react to them based on the attributes typically associated with students with learning disabilities. For example a lecturer who may be more lenient towards a student with certain learning disabilities and have lower academic expectations as compared with students without any learning disabilities even though the student with the learning disabilities may be as competent as their peers (person → environment).

Students’ behaviours and classroom environments influence one another in different ways. A typical instructional sequence where the lecturer presents

information and instructions and ask students to direct their attention towards something either to the blackboard or to a specific page on a book, and when students do as they are told without much conscious deliberation, environmental influence on behavior takes place (environment → behaviour). Students' reactions and behaviours can also alter the instructional environment. If the lecturer post certain questions about the topic with his/her students and the students are not able to provide the correct answer or are still confused over the topic or concept, the lecturer may re-teach or re-explain the topic or concept to the students again (behavior → environment).

2.14 Motivation of students in learning

According to Velmurugan and Sankar (2017), motivation come from the root word 'motive', which reflects to desire, needs, wants, or drives within the individual. Ahlstron and Bruton (2011), explains motivation as a situation or form that prompts a person to behave in a certain way, giving it a guided path towards completing a task. It energizes and guides goal oriented behaviour as well as intensity and gives direction for that behaviour. Therefore, motivation defines a person's determination and intensity towards doing something. Similar to Ahlstron and Bruton, Bateman and Snell, (2011) refer motivation as the forces that invigorate, provide direction and sustain a person's efforts. They describe that all action, except spontaneous reactions, is motivated. A person who is highly motivated will work hard towards a goal and has potential for high productivity. "Given enough knowledge, experiences and resources: Performance = (Ability x Understanding x Motivation x Environment)" (Jonas, 2016) (p. 107). Moorhead and Griffin, (2009) view motivation as the set of forces that cause people to behave in one way rather than the other. They choose the path that brings benefits rather than the opposite. Mullins, (2002) has a similar view of motivation, but emphasizes that motivation is an individual phenomenon, which is influenced

largely by individual differences. Such differences emanate from a number of dimensions, like age, sex, background, values, history attitudes, goals and level of education. It is neither behaviour nor performance but that which ignites, propels and guides certain behaviour. The underlying concept is that there is some driving force or a push factor that drives the action. These explains the motivation behind the students who decides to succeed in their studies. The peer learning program and the peer leaders act like a catalyst that encourages the positive behavior of the students to follow. The students see the benefits and value of doing certain things and they are energize to do it.

One of the more famous theorist where motivation is concerned is Abrahim Maslow and his 'Hierarchy of Needs Theory' (Maslow, 1954). This theory condenses needs into five basic categories. Maslow ordered these needs in his hierarchy, beginning with the basic psychological needs and continuing through safety, belonging and love, esteem and self-actualization. In his theory, the lowest unsatisfied need becomes the dominant, or the most powerful and significant need. The most dominant need activates an individual to act to fulfil it. Satisfied needs do not motivate. Individual pursues to seek a higher need when lower needs are fulfilled.

The first is physiological needs for example food, water, shelter and rest. It includes the most basic needs for humans to survive, such as the need oxygen to breath, water to drink, food to satisfy hunger and a roof over our heads. Maslow emphasized, our body and mind cannot function well if these requirements are not fulfilled. These physiological needs are the most dominant of all needs. If someone is missing everything in his/her life, probably the major motivation would be to fulfil his/her physiological needs first rather than any others. A person who is lacking food, safety,

love and esteem, would most probably hunger for food (and also for money, salary to buy food) than for anything else. If all the needs are unsatisfied, and the organism is then overruled by the physiological needs, all other needs may turn into the background. All capacities are put into the attendance of satisfying hunger. Any other things are forgotten or got secondary importance.

The second is safety and security for example having a secure and steady source of income every month, a safe place to live in, having good health and well being. When the initial physiological needs are relatively well secured, new needs will appear. Safety needs refer to a person's desire for security or protection. Safety and security needs include: Personal security; Financial security; Health and well-being; Safety mesh against accidents, illnesses and their adverse impacts.

The third is love and belonging for example the belonging to a social group, feeling accepted and being part of a community or groups. If both the physiological and the safety needs are fulfilled, the affection, love and belongingness needs come into prominence. Maslow claimed people need to belong and accepted among their social groups. Group size does not mean anything: social groups can be large or small. People need to love and be loved by others. Depending on the power and pressure of the peer group, this need for belonging may overbear the physiological and security needs. When they are unsatisfied, a person will immediately eliminate the lack of friends, peers and partner. Many people suffer from social nervousness, loneliness, social isolation and also clinical depression because of the lack of this love or belongingness factor.

The fourth is self-esteem. In our society most people long for a stable and high valuation of themselves, for the esteem of others and for self-respect or self-esteem.

Esteem means being valued, respected and appreciated by others. Humans need to feel to be valued, such as being useful and needed by society. People with low self-esteem often need respect and recognition from others. Maslow divided two types of esteem needs: a 'lower' version and a 'higher' version. The 'lower' version of esteem is the need for respect from others: for example attention, prestige, status and loving their opinion. The 'higher' version is the need for self-respect: for example, the person may need independence, and freedom or self-confidence.

The fifth need is self – actualization which is an individual's desire for growth and develop to his or her fullest potential. People like opportunities, choosing his/her own destiny, challenging positions or creative tasks. Maslow described this level as the '*need to accomplish everything that one can, to become the most that one can be*'.

As each level is adequately satisfied, one will then be motivated to satisfy the next level in the hierarchy, always new and higher needs are coming. This is what is meant, when the basic human needs are drawn like a pyramid, a hierarchy. Life experiences, including loosing a loved one, loss of job and income, may cause an individual to fluctuate between levels of the hierarchy. These five different levels were further sub-categorised into two main groups: deficiency and growth needs.

Deficiency needs are the very basic needs for survival and security. They include physiological needs, safety and security needs, social needs for love and belonging, the need for self-esteem. It may not cause a physical indication if these 'deficiency needs' are not fulfilled, but the individual will feel anxious, tensed or stressed. So the most basic level of needs must be fulfilled before a person wants to focus on the secondary or higher level needs. The growth needs of personal growth and fulfilment of one's personal potential is the self – actualization needs.

Likewise for the students, they too need to fulfill all these needs. They need to have nourishment for the body to be able to focus in class and their studies, they need to feel safe and secured when they are on campus and in class. They know that they are not being bullied or threatened so they can focus on their courses. As students entering university, especially for those in the first year, they need to feel that they belong and are accepted in the university community. Hence they will join various clubs and societies to network and make friends. Their self-esteem goes up when they do well in their program, when they pass their courses with flying colours or if they make it to the Dean's list for high merit or academic achievement.

When we see someone being rewarded for behaving in a certain way, we too become motivated to act in a similar manner. That is why having such academic help programs like the Peer to Peer (P2P) program will help students fulfill at least three of those needs.

This study looks at three types of motivation which are intrinsic motivation, extrinsic motivation and social motivation. It attempts to see if participation in the P2P program will have positive effects on the intrinsic, extrinsic and social motivation of students. Based on Maslow's motivation theory (1954), motivation can be driven either by intrinsic or extrinsic motivation or it can be an interplay of both. Goodman et al (2011) discusses how motivation involves conditions that determines the variation, intensity, direction as well as quality of a behavior. As discussed earlier in Chapter 1, intrinsic motivation is the drive to perform an act solely based on internal satisfaction. Orvis, Sturges, Tysinger, Riggins and Landge (2018), explained that intrinsic motivation is when a person does somethings because it is inherently satisfying and enjoyable to them. There is no external forces that initiate and maintain

the behaviour but it is an intrinsically motivated behaviour that occur spontaneously and it leads to interest, excitement and enjoyment of having performed that behaviour. The drive is from oneself. We choose to do something because it gives us enjoyment, pleasure or because it is interesting and not because of an outside incentive or pressure to do it. McClelland's (1955) stated in his theory of achievement motivation that people who are intrinsically motivated tend to be more productive and will perform any tasks well.

Extrinsic motivation on the other hand, refers to behaviour that is driven by external environment. rewards such as an award, money, fame, grades, and praise. This type of motivation arises from outside the individual. Orvis, et al (2018) states that for extrinsic motivation, a person is driven to perform the act because there is separable outcome of consequence that is attached to it such as receiving a cash prize or reward for performing the act.

Social motivation refers to the human nature's need to socialise with other human beings and the need to be accepted by them. These connections are considered to be social behaviors that have either a direct or indirect involvement with others with the purpose of soliciting a reaction of sorts. Social motivation ties into Maslow's motivation theory for belonging where people need to feel that they are accepted and belong to a wider community.

Goodman (2011) conducted a study to investigate the relationship between university's students motivation and their academic performance with effort as the mediating variable. The study was done on 254 students from the commerce faculty in a university in South Africa using online questionnaire and convenience sampling. The results indicated that there was a significant relationship between intrinsic

motivation, extrinsic motivation and academic achievement. There was evidence to show that the university students' intrinsic motivation and extrinsic motivation influenced the amount of work effort put in to achieve outcome they were looking for. Apparently it was evident that intrinsic motivation was the strongest predictor of academic motivation. This was supported by what McClelland (1955) mentioned about how someone who is intrinsically motivated. Goodman also found that confidence plays an important role in the level of intrinsic motivation of the student. On the other hand, extrinsic motivation could not explain the variance in the academic performance of those university students. This can be due to the various external environmental rewards that there may be. Theses external sources of motivation could be in forms of family and friends support or some other tangible and intangible rewards.

The previous studies in literature talked about how with high intrinsic motivation, students can perform better. For this study, the researcher wants to look at the interaction and support from peers and friends in the P2P progamme that can possibly lead to better intrinsic, extrinsic and social motivation.

2.15 Moderating Variables

Moderating variables are introduced to the study to gauge if the effects of independent variable on the dependent variable are caused entirely by the independent variable alone or if the moderators that are determining the strength of the relation of the effect of the independent variable on the dependent variable. Demographic variables are usually included in the study as the moderators. The common demographic variables are gender, age, income, frequency of an event. For the purpose of this experiment, the moderators used are gender, age, academic stream when in high school and

parents' income. In addition to the demographic variables, another variable to be included is the amount of hours that students allocate for studying on their own will also be discussed as a moderating variable.

The variable 'age' is an important variable to be included in the study of the effects of attending the peer-to-peer sessions on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Does the age of the students in this study have any effect on this relationship? The age of the population of students in the first year of university will all be different and cannot be assumed that all first university students start at the same age. This is because students come with different backgrounds, situations and education experiences. Some of these students started a bit later due to family or financial reasons and hence they are slightly older then then those traditional students who came straight after completing high school. Students that start later may have gone through certain life experiences making them more resilient and motivated compared to their younger counterparts as they have seen or experience hardship if their family background is from lower income bracket, they may want to persist to succeed and may have higher motivation. According to Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012), students were at risk of disengaging from university studies if they were mature age students (not traditional age students). Hence, it is of interest to include age in the study of research.

According to Adigun, Onihunwa, Irunokhai, Sada, & Adesina (2015), gender is the range of physical, biological, mental and behavioral characteristics pertaining to and differentiating between the feminine and masculine. Gender is another important variable to be included in the study as numerous research have discussed on the

difference in male and female and how the characteristics may influence the outcome of the study and influence the resiliency, self-efficacy and motivation of students.

McKenzie and Schweitzer (2001) as cited by Geerlings, et. al (2016) studied the factors that contributed to students' academic success at university found that gender was not a contributing factor to the students' grades. They argued that gender on its own does not appear to be responsible for academic outcomes but it was implicated in several psychosocial philosophies within education like student engagement and motivation. Wigfield, Eccles, and Pintrich (1996) highlighted that in certain subjects, stereotypic gender roles might influence students' self-belief in that subject as they conform to accepted gender-specific behaviours rather than showing genuine interest and engagement in the subject. Based on this, the researcher has included gender in this study to observe if there is a moderating effect with resiliency, self-efficacy and motivation.

The academic stream of students while in high school may play a moderating role in the relationship between attending the P2P program and the resiliency, self-efficacy and motivation of students. Would students who were from the sciences or technical stream fare better than students who come from the arts or commerce streams in high school? There is always the notion that Science students are smarter than the Arts students are. Would students from the sciences background be considered smarter, more brilliant then their arts counterparts? Is this truth or just myth? If so then does it mean that these sciences based students will be more resilient, have better self-efficacy and better motivation then their counterparts in the Arts stream. There are also some who argue that science students are more 'bookwormish' or 'nerdy' as compared to the students from arts or commerce and may have issues with social

interaction. With all these arguments, it is definitely of interest to the researcher to include high school academic stream in the study.

Another variable that may be of interest to the study is the level of the students' Parents' income. Would the parents' income have any influence on the relationship between attending the peer-to-peer sessions on students' resiliency, self-efficacy, and motivation? Do students from higher or above average income families thrive better in their studies than students from lower income families? Does having enough money and resources encourage students to perform better? Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012) also felt that students were at risk of disengaging from university studies if they were experiencing financial hardships at home. If parents income were low and there is not enough for the family to get by, students may feel stressed and not able to focus as they may feel that they have to seek out part time work to help supplement the income for the family. Working and studying is not easy and will affect the students' concentration, performance and ultimately their grades.

Study time, although not part of the demographic variable is also included in the study as a potential moderating variable that may have an effect on the relationship between attending P2P sessions and the students' resiliency, self-efficacy and motivation. The amount of time a student spends on his/her studies also of interest to the researcher. Does the number of study hours equate to successful outcomes? This is an interesting area to note, as many usually would say that we put in the hours, we will be able to reap its benefits. However in the case of the peer learning program of PASS or Peer Assisted Study Sessions and SI (Supplemental Instruction), studies have been done by Stout and McDaniel (2006) and Rogan (2009) about a decade ago citing

that “an hour studying in the PASS program is worth three hours studying alone”. There were the verbatim comments collected by these earlier researchers on the amount of study hours put in. The outcome is shared in the PASS manual produced by the University of Wollongong, Australia. It shows that it is more effective studying in a group with peers than studying alone. Hence when studying together in a group with a someone more capable for example a peer leader or peer mentor, one would remember better or learn more than studying three hours on their own. When one is studying amongst peers, there is an opportunity to seek clarification, ask questions, and learn in a friend, non-threatening environment, versus studying alone where there is no opportunity to discuss ideas and clarify concepts. Studying and learning together helps students remember or recall information better.

2.16 Benefits for Student Leaders

Bandura’s theory of social learning applies to the peer leaders as well. Through observation of an existing leader’s attitude, behavior and performance, students under the leadership of these peer leaders may most likely develop the tendency to be peer leaders themselves to other students. Leaders are admired and looked up to, and they are given preferences and privileges for campus activities, recognition and awards. Hence, students who see this benefit for themselves would want to model their behavior and be a leader themselves someday.

The rationale for using peer leaders according to Skipper & Keup (2017) and Young & Keup (2018) are the obvious effectiveness for the intended beneficiaries which are the peer students; the delivery of educational services which helps the institution where cost is concerned and finally the benefits for these peer leaders who are engaged in peer educator roles. Among the benefits gained by peer leaders

themselves are their ability to help and managed first year student groups, empathize with them and facilitate learning (Bunting, Dye, Pinnegar, & Robinson, 2012; Kenedy, Monty, & Lambert-Drache, 2012). Others like Bunting, et. el, 2012; Wawrzynski & Beverly, 2012 found that peer leaders are able to develop better communication and leadership skills; integrative and applied learning; better knowledge of campus resources, interaction with faculty, staff and peers; have better creative and critical thinking, problem solving abilities and they are able to work under pressure.

These peer leaders or peer mentors are engaged in a variety of roles on campus and in functional areas in both academic and co-curricular capacities. In carrying out their duties, these peer leaders were found to have increased intra- and interpersonal communication abilities (Heys & Wawrzynski, 2013; Wawrzynski & Beverly, 2012), heighten awareness of diversity, better connection to the campus, facilities, faculty and staff and have increased self-confidence and self-efficacy (Young & Keup, 2018).

2.17 Leadership for Learning

Apart from looking at peer leaders and their ability to help and influence peer success, it is also important to discuss leadership for learning. What is leadership for learning? Leadership for Learning (LfL) is a framework and set of principles that arose from the Carpe Vitam project (The Legacy of the Carpe Vitam Leadership for Learning project; February 2008) in which practitioners and researchers worked together to develop the practice of leadership for learning. It brought together practitioners, schools and organisations who were concerned with the connections between learning and leadership. In an environment today where is more volatile, uncertain, complex and ambiguous, education systems are constantly challenged (Sancho, 2010). The ecosystem of learning for the institution needs to come together as single mechanism

to lead, manage and guide the teaching and learning practices for the teachers and students. The main outcome of the project was a set of principles that could be used by researchers, by school leaders, by teachers and students to make the connections between leadership and learning through reflecting on, or researching, their own practice. Lfl practice involves maintaining a focus on learning as an activity, creating conditions favourable to learning as an activity, creating a dialogue about leadership for learning, the sharing of leadership and a shared sense of accountability amongst the group.

In the context of this research where we look at students' ability to manage and cope, be resilient, be motivated to continue to show progress and pass all levels and be successful, it is indeed the challenge and discontent amongst leaders in educational institutions that there is still a growing sense of school disaffection that contributes to the increasing number of students who do not wish to continue studies beyond compulsory education or do not finish their degrees (Wright, 2015). How do educational institutions overcome this? Educational institutions today need a profound, substantive and sustainable change that is able to take into account the complexity and intricate power relations of both the surrounding world and the institutions themselves (Coscollola, Carballo, & Gil, 2016). Sustainable change can only happen by involving students, teachers and stakeholders in the decision-making process (Sancho & Alonso, 2012). Educational change argues that leadership and educational leadership is not to be found only in the actions of principals and managing team but also must be understood as a general organizational function that is distributed over a network of actors within the institutions (Gronn, 2000; Spillane 2006). In reflecting on leadership for the 21st century, Hallinger (2009) highlights how the initial theories of instructional leadership have evolved into the theory known as

"leadership for learning". Tintore (2015) says that this concept that has surpassed instructional, transformational and distributed leadership is leadership for learning. As explained earlier, leadership is the process of providing direction and influencing individuals and groups to achieve goals. Be it the leader of the institution, the teacher or a peer leader, they provide guidance, advise and direction for students to follow and hopefully succeed. Effective leaders are concerned with "doing the right things" rather than "doing things right". The right things comprises of the ability to create and communicate the vision of what the organization should be, the ability to communicate with and gain the support of multiple groups, the ability to persist in the desired direction even under unfavorable conditions, the ability to create the appropriate culture and obtain the desired results (Kouqing, 2009). The entire ecosystem for the institution and teaching and learning needs to be clear on what needs to be done and communicated effectively throughtout the organization with appropriate buy-ins from everyone within the community.

Leadership is considered to be the outcome of dynamic, connective and collective activity, through the development and nurturing of relationships and networks of influence. The direction of this network of influence is as much bottom up as top down, with more free flowing interactions with leaders open to discussions and new ideas and deemed to be 'less hierarchical' than the traditionally top down leaders before. Roles may even change and is reversed depending on the situation with a person being labeled as a leader in one situation to being a follower in another situation but with the same group of people. In a way there is room for everyone to lead and everyone to follow. Leadership creates an environment where new knowledge – collective learning – can be co-created and implemented rather than just as the implementation of a top leader plan. The new leadership focus is on dynamic,

interactive processes of influence and learning which will transform organizational structures, norms and work practices (James, 2011). Leadership for learning includes distributed leadership and it is also leadership for change that arises from the context of each institution. There is also a lot emphasis put into learning. In this regard, Robertson (2005) believes that everyone in the institutions who is able to learn and to enable those around them to learn is an educational leader. Hence, peer leaders are also educational leaders and is as much responsible in helping students within the institution to succeed. Both the student leaders and the students are at the center of the learning process by recognizing and promoting their agency and responsibility in an autonomous and self-directed learning process.

According to MacBeath (2012), there are five Leadership for Learning (LfL) principles. These five principles are dynamically interrelated, forming the connections, a focus on learning and shared leadership mediated by conditions for learning, and all framed by principle of accountability. 'A focus on learning' is quite deliberately placed first because it can be considered as the prime principle, reflecting a commitment to making learning the number one priority – the core of Leadership for Learning. Learning relies on the effective interplay of social, emotional and cognitive processes. Learning from close interaction with others, observing the benefits and values an action brings, invoking the emotions to want similar benefits and remembering what, why and how it is done for knowledge and skill improvement. This clearly describes how the P2P program works. The efficacy of learning is highly sensitive to context and to the differing ways in which people learn, the capacity for leadership arises out of powerful learning experiences gained throughout the journey and opportunities to exercise leadership enhance learnings. Even the leaders of the P2P program will continue to grow and benefit being peer leader

Secondly, leadership for learning practice involves creating conditions favorable to learning as the diversity of the group of learners' cultures nurture the learning of everyone and they will have the opportunities to reflect on the nature, skills and processes of learning. Physical and social spaces stimulate and celebrate learning. The P2P program where students learn key concepts and discover new ways of problem solving through learning from each other. The peer leader creates an environment with the P2P sessions that is safe and secure to allow everyone to take risks, cope with failure and respond positively to challenges. Students are not afraid to speak up and attempt to solve the problems they are all peers and learning together and from each other. The usage of tools and strategies are used to enhance thinking about learning and the practice of teaching.

Thirdly, leadership for learning practice involves creating a dialogue about the leadership for learning in which this practice is made explicit, discussable and transferable with active collegial inquiry focusing on the connection between learning and leadership. Coherence is achieved through the sharing of values, understandings and practices and factors which inhibit and promote learning and leadership are examined and addressed in the open as to ensure the connection between leadership and learning is a shared concern for everyone. Different viewpoints are acknowledged and explored through networking with researchers and practitioners across national and cultural boundaries.

The forth principle for leadership for learning practice involves the sharing of leadership where structures support participation in developing the school as a learning community and shared leadership is symbolised in the day-to-day flow of activities of the school. Everyone within the institution is encouraged to take the lead as

appropriate to task and context. There is empowerment and the experience and expertise of staff, students and parents are drawn upon as resources and fuel for further progress. Collaborative patterns of work and activity across boundaries of subject, role and status are valued and promoted. Interdisciplinary learning is encouraged.

Last but not least, leadership for learning practice involves a shared sense of accountability in which a systematic approach to self-evaluation is embedded at classroom, school and community levels. Feedback is taken at various levels and everyone is accountable for their actions and decisions. There is a focus on evidence and its congruence with the core values of the school and internal accountability is a precondition of accountability to external parties. There must also be a continuous focus on sustainability, succession and leaving a legacy.

There is an increasing sense of agreement that preparing younger generation to succeed requires nurturing not only content knowledge but also teaching them transferable learning skills. This combination will enable them to take responsibility for their own lives and operate within a greater social context with a strong sense of identity, agency, and competence (Wilhoit, Pittenger and Rickbaugh, 2016). This new idea challenges previous norms about learning and teaching to create an understanding of leadership in an era of learning in which the student, not the institution, is the primary reference point. The thinking behind leadership for learning is to think more broadly about the characteristics of those leading complex change efforts specifically in the knowledge, skills, and the dispositions leaders must have to be effective and what it takes for them to create an environment where students will be able to thrive and be successful. According to Wilhoit, Pittenger and Rickbaugh (2016) “Learning

becomes the culture and currency of a community working for a changed student experience" (p.6).

They continue to add that in this new environment, "fidelity to purpose" shifts from valuing precision and compliance in implementing carefully developed standards and procedures, to valuing learning above everything else. Fidelity to purpose will become a deliberate and continuous intention for leaders and decision makers in making learning purposeful. Learning therefore becomes the culture where learners are developing skills, attitudes and personalities that may lead to learning for life; learning to succeed in jobs that have yet to be invented; to developing and using skills that have yet to be clarified; and to navigating an increasingly interdependent world. Students will also become actively engaged and motivated to succeed and progress to the next levels, demonstrating their learning in ways that are authentic, meaningful, and relevant. Developing and practicing their knowledge by making decisions and purposefully connecting their education to their own futures and to a purpose bigger than themselves.

If these elements are present in the overall experience of learners and learning becomes true to its purpose, then the strategies taken by the community as a whole that are supporting these learners will be consistent and congruent with the intended learning outcomes. Improved student outcomes are most likely to result when educators and collaborators are united in developing their strategies and have a strong sense of purpose in improving and challenging the traditional teaching and learning practices and putting the needs of the learners first.

Our communities need education leaders who not only have the knowledge, skills, and dispositions that we associate with success, but who are keenly aware of the contexts within which they are operating and know how to lead from one situation to the next in very purposeful ways. There is a strong connection between student learning and leadership performance, in some cases, the educators and the staff members within the schools are considered to be the leaders in whose hands the educational requirements, the developmental aspects, the norms, rules, regulations, policies and procedures are vested. Between all these aspects and the learning that takes place within the schools by the students, there is a strong correlation. It is all a matter of commitment and dedication to the strong and comprehensive leadership support system which is aimed at strengthening the connection between learning and leadership by defining what the leaders should know, what they should be aware of and what should they be able to do by providing them with the tools and feedback needed to improve and ultimately excel (Mezzacappa, Holland, Willen, Colvin, & Feemster, 2008).

Linking Lfl back to this research, the ecosystem supporting the program needs to be cohesive and this includes not just the capable peer leader but the support from the leadership of the institution in providing the resources, the faculty whose course is supported in working closely with the peer leader in terms of content and focus and the students in terms of their commitment to the sessions each week. The P2P program helps to enhance the peer leaders and student learners capacities for directing their own learning processes, thinking critically for themselves and taking responsibility for their own positions and taking into account other points of view. The students also become producers of content who contribute to learning for the other students.

According to the Leadership for Learning report 2017-2018 published by the University of Cambridge's Lfl network indicated that Malaysia has become of its recent members. This is promising as it translates to higher level decision making and policy makers negotiating the future of learning for the country.

2.18 Summary for Chapter 2

This chapter covered literature relating to learning, social learning theory, behavioral and cognitive theories. It looked into peer learning and the benefits to students. This chapter introduced the international program of Supplemental Instructions or SI, Peer Assisted Study Sessions, Peer Assisted Learning and similar peer led peer programs in various countries such as the United States of America, Australia, Eurpoe and Asia. It discussed on the concepts of resiliency, self-efficacy and motivation. The chapter also covered the role of the student leaders in the peer learning environment that contribute to effective peer-peer-learning and the benefits that the leaders will experience through this role.

The existing knowledge presented in this chapter serves as reference for the researcher to design the research of this study. Next, in chapter three, the study will look into the research methodology and design, and sampling. It will discuss in depth on the variables namely independent variable, dependent variables and the moderating variables of gender, age, academic stream when in high school, parents income and study time. The study will look into the treatment of study, the participants of the study and instrumentation. A pilot study was also done to determine the reliability and validity of the instrument and all the variables.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The purpose of this chapter is to describe in detail about the methodology used for the study. This includes the research design of the study, description of population and sampling procedures, the development of the research instruments, the reliability and validity of the developed instrument, data collection procedures and data analysis according to the research questions.

The way in which research is conducted may be conceived of in terms of the research philosophy subscribed to, the research strategy employed and so the research instruments utilised to achieve the research objective(s) - and the quest for the solution of a problem to address the research question.

The purpose of this study was to enquire empirical data in investigating the effects of PASS on students' resiliency, self-efficacy and motivation with respect to social motivation, intrinsic motivation and extrinsic motivation. The ancillary purpose were to investigate the effects of moderator variables, which is the demographic variable on students' resiliency, self-efficacy and motivation.

The outline of this chapter is organized as follows: (1) research design, (2) sampling (3) instrumentation, (4) pilot study, (5) data collection procedures and (6) data analysis procedures.

This study discusses the methods used to examine and address the following research questions:

1. What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students?

2. Are the P2P leaders knowledgeable in the subject matter?
3. Do the knowledge level of the students increase after attending the P2P sessions?
4. Are students more confident in passing their exams after attending the P2P sessions?
5. Is there any effects of the P2P program on students' resiliency?
6. Is there any effects of the P2P program on students' self-efficacy?
7. Is there any effects of the P2P program on students' motivation in terms of intrinsic, extrinsic and social motivation?
8. Do the four demographic variables of gender, age, academic stream in high school and parent incomes and also study time have any moderating effects between the independent variable and dependent variable?

3.2 Research Methods

The following presents the research methods for the study. The sections are organized as follows: (1) research design, (2) instrumentation, (3) data collection procedures and (4) data analysis procedures.

3.2.1 Research Philosophy

A research philosophy is a belief about the way in which information about a phenomenon should be gathered, analysed and used. The term epistemology (what is known to be true) as opposed to doxology (what is believed to be true) encompasses the various philosophies of research approach. The purpose of science, then, is the process of transforming things believed into things known: doxa to episteme. According to Galliers (1991) and Tuli (2010), two major research philosophies have

been identified, namely positivist (sometimes called scientific) and interpretivist (also known as antipositivist).

3.2.2 Philosophical Based Positivism

Positivism is a philosophical theory which states that "genuine" knowledge is exclusively derived from experience of natural phenomena and their properties and relations. Thus, information derived from sensory experience, as interpreted through reason and logic, forms the exclusive source of all certain knowledge. Positivism therefore holds that all genuine knowledge is a posteriori knowledge. Verified data (positive facts) received from the senses are known as empirical evidence; thus positivism is based on empiricism (Giddens, 1974).

Positivism epistemology is related to quantitative research where human behaviour and relationships are observed by quantity and numbers, while interpretivism epistemology is concerned with the nature of knowledge and ways of knowing as related to human behaviours are explained by text and words. Ontology is associated with the question of whether social entities should be perceived as objective or subjective. Accordingly, objectivism ontology (consistent with positivism and quantitative research methodology) and subjectivism ontology (consistent with interpretivism and qualitative methodology) can be specified as two important aspects of ontology.

Levin (1988) argues that positivists believe that reality is stable and can be observed and described from an objective viewpoint, that is without interfering with the phenomena being studied. They contend that phenomena should be isolated and

that observations should be repeatable. This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and to form relationships between, some of the constituent elements of the social world.

This research is based on quantitative research methodology based on objectivism ontology and positivism epistemology. This study observes how with the introduction of the P2P program can cause changes in the levels of resiliency, self-efficacy and motivation amongst students.

3.2.3 Research Design

The validity of an experimental research is determined by its research design (Chua, 2016). It is important to find the right research design for what we want to study or test to ensure that our findings are valid and reliable. This research will employ quantitative research methodologies using a quasi-experimental research technique. In an experimental research, the researcher attempts to test an idea or method or a procedure to understand if it has any influence on the outcomes or in research terms, the dependent variables. The word quasi in quasi-experimental means "similar to". Therefore, quasi-experimental research is a research that is similar to experimental research but is not the same as true experimental research. Although the independent variable is manipulated, participants are not randomly assigned to groups (Cook & Campbell, 1979). Quasi-experimental research is able to eliminate the directionality problem because the independent variable is manipulated before the dependent variable is measured. For this quasi-experiment study, the researcher is testing whether the P2P program can increase the resiliency, self-efficacy, intrinsic, extrinsic and social motivation of undergraduate students. A quasi- experimental research design with control and treatment group for pre-test and post-test method is selected because the researcher wants to establish possible cause and effect between

the independent variable of the P2P program and the dependent variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. The researcher will attempt to control all other variables that influences the outcome except for the independent variable and if indeed the independent variable did influence the dependent variables, it can be concluded that the independent variable 'caused' or 'probably caused' the dependent variable.

The independent variable is also known as treatment, causal or experimental variable and the dependent variable is known as the criterion, effect or posttest variable. According to Gay, Mills and Airasian (2006) and Creswell (2008), experimental research is the best quantitative design and most structured of all the types of research and if conducted well, it can produce the soundest evidence regarding cause-effect relationships. Best and Kahn (2003) stated that "an experiment that looks at the effects of a treatment are compared with those of a different treatment or no treatment at all" (p. 161) these group would be called "experimental and control" (p. 161). As described by Fraenkel & Wallen (2003) and Chua (2012), an experimental study usually involves two groups of participants, an experimental group which receives a treatment and a control group which receives no treatment or a comparison groups which receives a different type of treatment. Those authors stated that in any experimental research, it is rare to have a pure control group with no treatment at all, but rather a control group which receives a different treatment which some educational researcher refer to as comparison groups. Therefore, this study is a pretest-posttest between groups design, with participants (N=303) conveniently assigned to two different experimental groups, calling it group A and group B.

It is important to note that the researcher controls both the selection and the assignment of the research participants. That is, the researcher randomly selects participants from a single, well-defined population and then randomly assigns these participants into the different treatment conditions. It is the ability to randomly select and randomly assign participants to treatments that make experimental research so unique. The random assignment of participants to treatments, which is also called the researcher's manipulation of the treatments, is the distinguishing aspect of experimental research and the feature that distinguishes it from causal-comparative research.

However, for this study of the P2P program, it is rather impossible to say that a certain group should receive the P2P treatment and that other group should not receive this treatment as it would be deem to be unfair for the group who cannot receive any treatment if the selection is done by the researcher. For this study, participation in P2P, is purely voluntary and there is no force or coercion of students into taking these sessions or to exclude or prevent students who what to take it from joining the sessions. Since participation is entirely a voluntary decision, this could be influenced by the individual's characteristics – observed and unobserved to the researcher (Paloyo, 2015). An example would be the innate but unobserved motivation or ability, which may influence the student's likelihood to participate in the P2P program. Some students are smart and want to continue to maintain their good grades and hence they will join the P2P sessions. Some students may view P2P as a remedial program and will not want to join as they will seem to be academically weak and hence they will not participate.

There are a number of quasi-experimental approaches that still provide credible impact estimates under certain conditions. When evaluating the impact of P2P, these methods are particularly useful, especially since a randomized experiment may not be possible due to the ethical or practical reasons.

The literature in Chapter 2 shows that, the evaluation of P2P, PASS or SI based on experimentally-generated data is rare. The majority of the literature of the topic relies on evidence obtained from non-experimental approaches that fail to account for the presence of self-selection bias.

As with any research design, the researcher must ensure that the study is valid and that any possible extraneous variable is removed or kept at minimum to ensure validity of this experiment. An experiment is considered valid if the results obtained are caused only by the manipulated independent variable and if they are generalizable to individuals or context beyond the experimental setting. There are two criteria to follow to ensure validity, they are internal validity and external validity. Internal validity is the degree to which observed differences on the dependent variable are a direct result of the manipulation of the independent variable and not any other variables. Threats to internal validity are caused by any variable that threaten the ability to draw correct cause-effect inferences that arises because of the experimental procedure or the experiences of participants. According to Creswell (2008), the possible threats to internal validity are threats related to participants in the study and their experiences, threats related to treatments used in the study, threats that occur during an experiment and relate to the procedure of the study.

Threats to external validity are problems that threaten the ability of the researcher to draw conclusions from the sample data to other persons, settings, and

past and future situations. Threats to external validity include interaction of selection and treatment, interaction of setting and treatment and interaction of history and treatment.

In all experimental situations, the researcher will assess whether a treatment condition influences an outcome or dependent variable and in the case of this study it is the students' resilience, self-efficacy and motivation. In experiments, the outcome is the dependent variable that is the presumed effect of the treatment variable. Good outcomes measures are sensitive to treatments in that they respond to the smallest amount of intervention. Outcome measures as well as treatment variables also need to be valid so that experimental researchers can draw valid inferences from the study.

The diverse background, knowledge and skill levels of the participants may provide accountability for various types of research error in which there is no guarantee of comparability of the experimental groups at the baseline. According to Bonate (2000), baseline homogeneity is important to "increase the researcher's ability to detect a significant difference between groups" (p.3). Bonate added that a "baseline measurement of the dependent variable of interest must be made prior to imposition of the treatment effect" (p.8). He described the characteristics of pretest-posttest data as "two measurements are made on the same experimental unit, one measurement possibly being made prior to administration of a treatment intervention and a temporal distance separates the collection of the post-test measurement from the pre-test measurement" (p.2). Therefore, in order to "maximize the statistical power of an experimental design" (Bonate, 2000, p.5), for this study, pre-test was administrated at Week 1 of the semester, prior to treatment intervention which being only at Week 3 of

the semester. Post-test was administrated after the completion of treatment intervention which was by Week 13 of the semester.

In Table 3.1 below shows the description of the quasi-experimental design for this study. Under quasi-experimental research design, the treatment is manipulated independent variable which is the peer learning program while the pre-test and post-test (0) measure the value of the dependent variables before and after the treatment.

The table below illustrates the non-randomised Pretest-Posttest between subjects experimental design.

Table 3.1

Quasi-experimental design of the study

Experimental Group	Pretest	Treatment	Posttest
Group 1	*O*	*X1*	*O*
Group 2	*O*	*X2*	*O*

Note:
X1 = with P2P / Attended P2P
X2 = without P2P / did not attend P2P
O = measurement

3.3 Sampling

Sampling is the process of selecting a number of subjects from a population as research respondents for a study in such a way that they represent the larger group from which they were selected. A sample is a smaller group which is selected from a larger group referred to as a population such as individuals, items or events. Sampling is done for a study because it is generally impossible to collect data for the whole population Apart from other important factors like the research design and the measurement instruments, the quality of the research finding also depends on sampling. Samples are tangible

and can be measured or calculated accurately because the behavior of every subject within the sample can be studied. For this study, the sample are students who are enrolled in the high failure rate subjects and the target population is the undergraduate students in the university.

The target population for this study are undergraduate students of a private higher education institution in Malaysia. Based on previous literature on PASS, PAL or SI, the peer-lead-peer program is offered for courses with high failure rates and the lowest retention rates. Hence the courses with the highest failure rates in this private university was identified as the sample for the study. In the research problem discussed in Chapter 1, the university has been facing high attrition rates of about 38% especially in the first year in university and many of the core course have recorded high failure rates of between 25% - 40% failure rates. This means that for some of the core courses, almost half of the class will not get through the course successfully. The study identified the courses based on the high failure rates which also may have caused the attrition rates to increase as the inability of the students to pass the course will result in them not being able to continue to the next semester or progress to the next year. A total of 10 courses were identified by the university and the total enrolment of these 10 courses is 303 students. The enrolment numbers are usually high for the lower level courses as these are the core courses that the students need to take before progressing to their major courses.

The researcher chose to focus only on the undergraduate students as this level was the longest in duration as compared to the other levels. To complete an undergraduate degree it generally takes approximately three to four years depending on major of study. A longer study duration requires students to be more focused,

resilient, motivated to want to continue studying until they graduate. The other programs offered had a shorter duration of study meaning students will be able to complete in a shorter time frame for example the pre-university programs are between one year to one and a half year; foundation program is only one year; diploma program is approximately 2 years. These shorter programs finish earlier and hence students are able to complete with lesser amount of time. There the focus of this study was on the undergraduate degree program which had a longer duration of study.

Convenience sampling was used in obtaining a sample for this study. According to Gay, Mills and Airasian (2006), convenience sampling is also known as accidental sampling and haphazard sampling. It is the process of using as the sample whoever happens to be available or interested to participate at that time. When the researcher conducted this study, she approached all the three main faculty at the university which are the Business faculty, the Engineering and Information Technology faculty and the faculty of Health and Life Sciences. The faculties were asked to identify courses within their program which had high failure rates. High failure rates meant that the courses had consistently more than 25%-40% of its students failing the course. The Peer-to-peer (P2P) program that was to be studied had to maintain the same principles as the original program Peer Assisted Study Sessions (PASS) from which it was founded. It supports subjects with high failure rates or subjects that were deemed to be very difficult by students. Hence that was the starting point for the researcher to identify the courses to be supported for this study. A total of 10 courses was identified for this study. The P2P program had to have students for the experiment to start and with the help of the respective faculty members of those selected 10 courses, the students to be included in the study were students enrolled in all those 10 courses. The faculty opened the P2P program to their respective chosen

courses. The details and mechanics of the program was explained to each of the classes and the students decided on their own if they wanted to participate in the course. The decision to participate was as the sole discretion of the students and they were not influenced in any way. This is also another important element of the PASS program that participation is entirely voluntary and students are not coerced into taking the program. Hence the number of students who registered from the program and the number of students who did not register for the program was not equal. The number of students who wanted to participate in the P2P program was more than those who did not. After the date and time of the P2P sessions was agreed on, the session started. The P2P would run on the same day and time every week. The group of students who received the P2P treatment was the treatment group while the group of students who did not join was the controlled group.

The P2P sessions were conducted as a mirror to the PASS sessions offered in other foreign universities. It kept to its original principals of peer leading peer program without the interference of any faculty or staff member of the university during the progress of the session from the start to end. The sessions were conducted by a senior student who had already completed the course. The leader was recommended by the faculty member usually based on grades obtained for that course, the communication skills of the leader as well as the personality of the leader. The leader must be someone who is friendly, approachable and able to speak and articulate. The P2P session was conducted by the same leader throughout the whole experiment from Week 3 till Week 13 for a total of 11 treatment weeks. This is to remove the possibility of different leaders with different characteristics and abilities to be coaching the treatment group. This will contaminate the data findings.

3.3.1 Independent Variables

There are two types of independent variables which are the control variable and the treatment variable. The treatment variable is a variable which is expected to cause a systematic change in the dependent variable. For this research, the researcher is using the peer-to-peer (P2P) program as the treatment variable The independent variables for research questions 2, 3 and 4 of this study included two different treatment interventions: (a) with P2P and (b) without P2P. The two categories of P2P are with P2P (X1), which is the additional coaching sessions given to the students of a subject; and without P2P (X2), where some students from the same subject are not receiving any coaching sessions.

3.3.2 Dependent Variables

The dependent variables for this study are resiliency, self-efficacy and motivation which is categorized into intrinsic motivation, extrinsic motivation and social motivation.

3.3.3 Moderators

When the goal is to uncover the boundary conditions for an association between two variables, moderation analysis is used. An association between two variables X and Y is said to be moderated when its size or sign depends on a third variable or set of variables M. Figure 3.1 depicts moderator variable M influencing the magnitude of the causal effect of X on Y. Moderation is also known as interaction between the independent variable and the moderator that causes the change in the dependent variable.

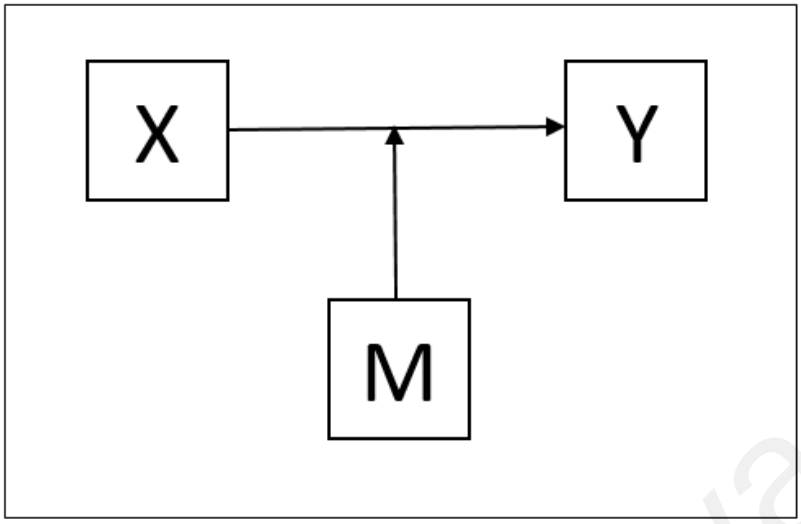

Figure 3.1. A moderation model with a single moderator variable M influencing the size of X's effect on Y.

According to Hayes, (2013), in any statistical analysis, moderation analysis is conducted by testing for interaction between M and X in a model of Y. With evidence that X's effect on Y is moderated by M, the researcher typically will then quantify and describe the contingent nature of the association or effect by estimating X's effect on Y at various values of the moderator which is also known as probing an interaction. M in this study refers to the demographic variables and study time as moderators for estimating the effect of attending P2P sessions on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

The variables perceived to have moderating effects are gender, age, academic stream in high school, parent incomes, and study time. The study will test if any of these variables will have any moderating effects in this experimental study of the relationship between student who attended the P2P or those without the P2P sessions

on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

1. Gender as Moderator

The element of gender is important to be included in any study. The notion that the gender of the participants may or may have an effect on the outcome is interesting to note. In this study, gender is also listed as a variable that may potentially have a moderating effect on the relationship between attending the P2P sessions on the outcomes of students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Gender, according to Adigun, Onihunwa, Irunokhai, Sada, & Adesina (2015) is the range of physical, biological, mental and behavioral characteristics pertaining to and differentiating between the feminine and masculine.

McKenzie and Schweitzer (2001) as cited by Geerlings, et. al (2016) studied the factors that contributed to students' academic success at university found that gender was not a contributing factor to the students' grades. They argued that gender on its own does not appear to be responsible for academic outcomes but it was implicated in several psychosocial philosophies within education like student engagement and motivation. Wigfield, Eccles, and Pintrich (1996) highlighted that in certain subjects, stereotypic gender roles might influence students' self-belief in that subject as they conform to accepted gender-specific behaviours rather than showing genuine interest and engagement in the subject.

Based on this, the researcher has included gender in this study to observe if there is a moderating effect with resiliency, self-efficacy and motivation.

2. Age as Moderator

Another area of that may be of interest to the study of the effects of attending the peer-to-peer sessions on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation is age. Does the age of the students in this study have any effect on this relationship? The age of the population of students in the first year of university may be different and cannot be assumed that all first university students are of the same age. This is because students come with different backgrounds, situations and education experiences. Some of these students started a bit later due to family or financial reasons and hence they are slightly older then then those traditional students who came straight after completing high school. The notion that when a student is older or more mature, they may be more resilient and motivated compared to their younger counterparts may have some merits as they have seen or experience hardship if their family background is from lower income bracket, they may want to persist to succeed and have higher motivation.

According to Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012), students were at risk of disengaging from university studies if they were mature age students (not traditional age students). Hence it is of interest to include age in the study of research.

3. Academic Stream as Moderator

Another area of that may be of interest to the study of the effects of attending the peer-to-peer sessions on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation is academic stream. This refers to the stream they were in when in high school. Would students who were from the sciences or technical stream fare better than students who come from the arts or commerce streams in high school? Would students from the sciences background be considered smarter, more brilliant then their arts counterparts? If so then does it mean that these sciences based students will be more resilient, have better self-efficacy and better intrinsic, extrinsic and social motivation then their arts peers. There are also some who argue that science students are more 'bookwormish' or 'nerdy' as compared to the students from arts or commerce and may have issues with social motivation.

4. Parents' Income as Moderator

Parents' income level of these students may have an influence on the relationship between attending the peer-to-peer sessions on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Do students from above average income families thrive better in their studies than students from lower income families? Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012) also felt that students were at risk of disengaging from university studies if they were experiencing financial hardships at home. If parents income were low and there is not enough for the family to get by, students may feel stressed and not able to focus as they may feel that they have to work to help supplement the

income for the family. Working and studying is not easy and will affect the students concentration, performance and their grades ultimately.

5. Study Time as Moderator

The amount of hours devoted to study is also important. Does the number of study hours equate to successful outcomes? This is an interesting area to note as many usually would say that we put in the hours, we will be able to reap its benefits. However in the case of the peer learning program of PASS or Peer Assisted Study Sessions, studies have been done by Rogan (2009) and Stout and McDaniel (2006), although it has been more than a decade, they mentioned that "an hour studying in the PASS program is worth three hours studying alone". There were the verbatim comments collected by these earlier researchers on the amount of study hours put in. It shows that it is more effective studying in a group with peers than studying alone. When one is studying amongst peers, there is an opportunity to seek clarification, ask questions, and learn in a friend, non-threatening environment, versus studying alone where there is no opportunity to discuss ideas and clarify concepts. Studying and learning together helps students remember or recall information better.

3.4 Treatment of the study

The treatment period of this study was equal for all the groups, a 60-minute P2P session per week was conducted for 11 weeks. At the beginning of the semester at Week 1, a survey was conducted for all students using a set of questionnaire. This was the pre-test survey. The treatment of the P2P programme started at Week 3 of the semester and ended at Week 13 for a total for 11 weeks of treatment. All groups

received the same intensity of coaching as all the P2P leaders have been trained and guided equally in accordance with the principles of PASS (international program).

3.4.1 Participants

The participants in this study comprised of 303 undergraduate level students from a private university located in Kuala Lumpur. These participants are from the 3 different faculties in the university namely the Faculty of Science Technology Engineering and Mathematics; the Faculty of Business Communications and Law; and the Faculty of Health Sciences. The participants are students in the courses that have been identified as having high failure rates. Courses with high failure rates have been identified for this study. These courses have been identified as the failure rates are high, usually above 25% every semester. This mean that for each of the courses, approximately 25% of the course enrolment will fail that course.

3.4.2 Instrumentation

Creswell (2014) stated that an instrument is a tool to measure and to document quantitative data that contains specific questions and response possibilities that are established or developed by the researcher before the real study. The instrument used in this study was adapted from various established findings based on quantitative research and developed by the researcher by referring to various studies. A questionnaire will be developed by the researcher as an instrument to obtain information needed for the study because this study applied quantitative research method to explain the relationship between variables. The questionnaire was then given to an authority within the field of education and learning to vet through for relevancy and consistency with the topic under study. Feedback and comments are attached in the appendix at the end of this thesis.

The instrument designed in this study contained three sections namely – Part 1 for demographics, Part 2 (a) for resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation and Part 2 (b) is related to the P2P programme.

To test the effects of P2P on students' resiliency, self-efficacy and motivation, a questionnaire will be administered directly to the students before and after the treatment. The questionnaire will be administered for the first time at the beginning of the semester at Week 1. The questionnaire will be administered again at the end of the treatment period which is at Week 13 of the semester.

A survey questionnaire was used in this quasi-experimental research. There was two parts to the survey. Part one asked for respondents particulars which comprises of ten questions and part two had 57 questions covering the five areas to be tested namely resiliency – 24 questions, self-efficacy - 6 questions, intrinsic motivation – 6 questions, extrinsic motivation – 6 questions, social motivation – 6 questions and 9 questions relating to the P2P program leaders.

The items in the resiliency questionnaire was adapted from a study on The Resilience Scale: A study in a Portuguese adult sample conducted by Pinheiro, Matosa, Pestanaa, Oliveiraa and Costaa (2015). Resilience Scale was taken from RS-Resilience Scale Wagnild & Young, 1993; the items in the resilience scale aims to assess the level of resilience of the individual as a positive feature of the personality that promotes individual adaptation (Wagnild & Young, 1993, as cited by Pinheiro et al, 2015). The resilience scale consist of 25 items, each item rated on a 7-point Likert scale. Total score ranges between 25 and 175 points. Based on the validity test by Pinheiro et al (2015), the resilience scale indicated good psychometric properties, with respect to internal validity and content validity. A Cronbach's alpha of .91 was found

and item-total correlations ranged between .37 and .75 (Wagnild, 1993, as cited by Pinheiro). It is composed of a unifactorial structure that includes items referring to aspects related to self-esteem, independence, mastery, resourcefulness, perseverance, adaptability, balance, flexibility and a balanced perspective on life. In the study by Pinheiro a Cronbach's alpha of .943 was obtained for the scale.

The items in the self-efficacy, intrinsic motivation, extrinsic motivation and social motivation are adapted from a chapter from a book by Aribah (2014) titled *Kecerdasan Pelbagai dan Motivasi Kerja Pemimpin Sekolah* in Bahasa Malaysia. It was translated to English by a certified English TESL teacher. For these items, the validity and reliability score was not indicated by the author.

For the purpose of this study, the researcher has adapted the questions from Pinheiros (2015) and Aribah (2014) and used a 10 point Likert-rating scale for both the pre-test and post-test survey. Table 3.2 below shows the summary of the number of items and variables in the questionnaire used for this survey.

Table 3.2

Summary table of questions for Questionnaire

	Items
Part 1: Demographics	10 items 1. Age 2. Faculty 3. Year of study 4. Reasons for enrolling 5. Attended P2P 6. Gender 7. Race 8. Academic stream in high school 9. Time spent on studying 10. Parents' income

Table 3.2 (continued)

	Items
Part 2: Pre and post	58 items
	Resiliency – 24 items
	Self – Efficacy – 6 items
	Intrinsic Motivation – 6 items
	Extrinsic Motivation – 6 items
	Social Motivation – 6 items
	P2P Program – 9 items

To establish the content validity of the instrument items for this study, the items of the research instrument was given to two experts in the area psychology to validate its content validity. These two experts are lecturers at other private universities. Based on the comments and suggestions of the experts, the items were finalized.

3.5 Pilot Study

Prior to the treatment period, a pilot study was conducted to examine the feasibility of the research procedures and to test the validity and reliability of the instruments used. The pilot study research design was fundamentally similar to the main study but the participants for this pilot study was from only one subject. The subject selected for the pilot study also had a relatively high failure rate of at least 15%. The pilot study was conducted one semester prior to the actual study.

A sample of 30 students (N = 30) from the Faculty of Business, Communications and Law was identified for this pilot study. The students answered the instrument items.

The researcher entered the data using SPSS. Validity and reliability analyses were then conducted on the data.

3.6 Validity of Research Instrument

Validity is the most important characteristic a test or measuring instrument can possess. According to Gay, Mills & Airasian (2006), "validity is the degree to which a test measures what it is supposed to measure and consequently permits appropriate interpretation of scores" (p.134). Can an appropriate interpretation be made based on the findings of the research? Chua (2016) states that

"Validity is defined as the correlation value between measurement and the true value of a variable. If a measurement accurately reflects the true value of the variable, the value of correlation will be high and the research will have high validity". (p.290)

The results of the validity analysis is presented in Table 3.3 below.

Table 3.3

Convergent validity of the instrument

Resiliency	Loading	AVE
1. I can handle disagreements	.880	.592
2. My believe in myself helps me through hard times	.831	
3. I put studies above pleasure	.814	
4. I accomplished a lot of work	.798	
5. I work on improving myself	.697	
6. When I make plans, I will follow through with them through completion	.664	
7. Keeping interested in things is important to me	.611	

Table 3.3 (continued)

Resiliency	Loading	AVE
8. I have self-discipline	.575	
9. My knowledge of concepts has increase	.522	
10. I can stand criticisms	.782	
11. I am able to accomplish tasks despite obstacles in the way	.657	
12. I can always say enough is enough	.607	
13. I can make quick decisions	.637	
14. I feel comfortable with myself	.721	
15. I am easily moved to tears	.688	
16. I look on the bright side of life	.761	
17. I am focused when I study or do homework	.781	
18. In an emergency, I am someone people can generally rely on	.732	
19. I am not easily affected by my emotions	.819	
20. I do things my own way	.782	
21. I rely more on myself than others	.699	
22. I never give up hope	.712	
23. I love life	.881	
24. I usually manage all that I need to do one way or another	.763	
Self-efficacy	**Loading**	**AVE**
1. My peers always seek advice from me to produce good work	.823	.777
2. My contribution towards the success of my group is very significant	.802	

Table 3.3 (continued)

Self-efficacy	Loading	AVE
3. I can influence my peers	.729	
4. I am confident about my leadership	.711	
5. I am a good role model for my peers	.701	
6. I manage my studies effectively	.747	
Intrinsic Motivation	**Loading**	**AVE**
1. I try to produce better work than my peers	.838	.686
2. I aspire to increase my performance in school to the level of excellence	.823	
3. I am of the opinion that my studies in school need to be carried out the best way possible	.768	
4. I have my own goals to achieve in school	.721	
5. I do not hesitate to attend trainings to further improve my skills	.720	
6. I always think of the most effective ways to increase my experience here	.742	
Extrinsic motivation	**Loading**	**AVE**
1. I believe that recognition is a motivation for me to increase my performance	.870	.791
2. I feel that any recognition given to me must be in accordance to the effort that I put in	.815	
3. I am happy when my work is being recognized	.812	
4. I feel that any recognition given to me will further increase my performance in school	.798	
5. I am happy if my university is being recognised as one of the top institutions around	.723	
6. I will praise my peers/classmates if they do well	.633	

Table 3.3 (continued)

Social motivation	Loading	AVE
1. I like to work with peers who discuss things with me	.870	.726
2. I give the level of trust to my fellow peers that they will perform to the best of their ability	.868	
3. I feel proud to be able to share my knowledge with my peers	.847	
4. I believe the opinions of my peers are important in achieving good teamwork	.758	
5. I believe that a conducive learning environment can increase the performance of students	.726	
6. Suggestions from peers/classmates is my main motivation	.701	
Student leadership in peer-to-peer program	**Loading**	**AVE**
1. My P2P leader is very knowledgeable on the subject	.865	.787
2. My P2P leader is very well prepared for every P2P session	.823	
3. My P2P leader listens to our problems relating to the subject	.799	
4. My P2P leader plans for the session very well each week	.812	
5. My P2P leader is very creative in designing the activities for the session	.791	
6. My P2P leader is my role model	.729	
7. I have problems with my P2P leader	.821	
8. Impact of P2P on my knowledge of the subjects	.562	

Table 3.3 (continued)

Student leadership in peer-to-peer program	Loading	AVE
9. I have more confidence in passing the test at the end of the semester	.632	

Note: The data of the negative item 7 is recoded into positive before analysis

3.7 Reliability of Research Instrument

Reliability also refers to dependability and trustworthiness. Reliability is the degree to which a test consistently measures what it is supposed to measure. The higher the reliability of a test, the more dependable it becomes to obtain the same scores if the test were to be administered again to the same test takers (Gay, Mills and Airasian, 2006). If a test instrument is not reliable, it cannot provide consistent information about performance and the scores obtained would be quite different each time it is administered. Chua (2016) states that the reliability of a research refers to the capability of the research in obtaining the same value over time when the measurements are repeated. If all subsequent test yield the same results, the research is then said to have a high level of reliability. Reliability also refers to the capability of all the items in the research instruments to consistently measure the concept. This is called internal consistency reliability which is determined by comparing the correlation values among the items. The research is said to have a high internal consistency reliability if the correlation among all the items in the measurement are high.

There are several methods to test for reliability in measurements for research. They are the test-retest reliability method, the split-half reliability method and the Cronbach's alpha reliability method (Chua, 2016). The reliability test that was used

to determine the reliability for this study is the Cronbach's alpha internal consistency method.

This reliability method is used to identify the correlation value between scores for each item in the test and the total score for all items in the test, which is also known as the test index score. Using this method, items with low correlational value to the test index score means it has low reliability and should be discarded from the test. The items with high correlational values to the test index score means it has high reliability and should be kept. This is known as the internal consistency method. The reliability level of the research instrument can be identified by calculating the Cronbach's alpha reliability coefficient score. The figure 3.2 below illustrates the Cronbach's alpha internal consistency approach.

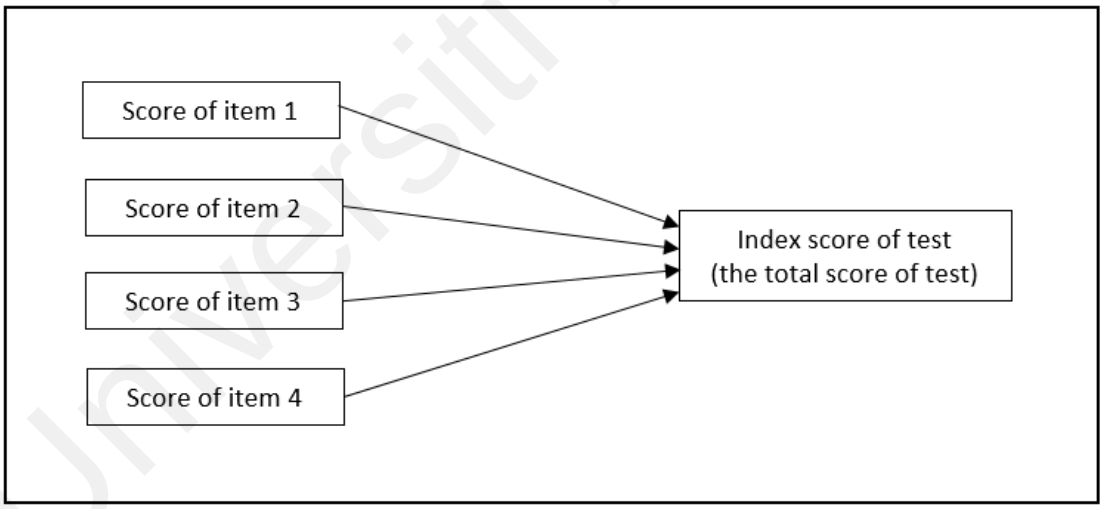

Figure 3.2. Cronbach's alpha internal consistency approach

Chua (2013) wrote that to determine the reliability of any instrument based on the Cronbach's alpha internal reliability method, the alpha value of 0.65 to 0.95 is satisfactory because a low alpha coefficient value (alpha < 0.65) shows that the ability of the items in the research instrument to measure the variable is low. But if an alpha

value which is too high (alpha >0.95) it means that all items are similar or overlap each other and using items which overlap one another is not encouraged.

Reliability of an instrument refers to the internal consistency of the items that make up a construct. Having internal consistency among the items means they have the tendency to correlate to one another. High internal consistency also shows the stability of scores of the construct. To establish the internal consistency of items in this inventory, coefficient alpha was used. Hair, Anderson, Tathan, & Black (1998, p.118) maintain that Cronbach's alpha values above .70 are considered 'acceptable' reliability, above .80 'good' reliability, and above .90 to have 'excellent' reliability. Sekaran (1992), on the other hand, argues that Cronbach's alphas in the range of above .60 and .80 are acceptable while those above .80 are good.

3.7.1 Reliability for Resiliency items

The Cronbach's alpha reliability test was done for the resiliency items. There were 24 items for the resiliency variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is very reliable at 0.826, which is higher than the benchmark of 0.65.

Table 3.4 and table 3.5 below shows the results of the reliability test for the resiliency items.

Table 3.4

Reliability Statistics for Resiliency items

Reliability Statistics	
Cronbach's Alpha	N of Items
.826	24

Table 3.5

Item-Total Statistics for Resiliency

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My believe in myself helps me through hard times	145.6000	399.697	.346	.821
I am focused when I study or do homework	145.2333	397.013	.256	.825
When I make plans, I will follow through with them through completion	145.5333	379.775	.473	.815
I am not easily affected by my emotions	146.1000	386.231	.369	.820
I rely more on myself than others	145.2000	390.028	.342	.821
I never give up hope	144.8333	381.385	.416	.817
I usually manage all that I need to do one way or another	145.2667	391.513	.445	.817
I do things my own way	145.9000	395.748	.345	.820
I love life	143.5667	397.495	.240	.825
I can stand criticisms	146.0000	396.069	.330	.821
I can make quick decisions	145.9333	380.616	.444	.816
I am able to accomplish tasks despite obstacles in the way	145.7000	407.183	.222	.824
I work on improving myself	144.3333	399.471	.298	.822
I put studies above pleasure	145.9000	391.472	.388	.819
Keeping interested in things is important to me	143.9000	407.403	.227	.824
I feel comfortable with myself	144.5000	405.845	.237	.824
I can handle disagreements	144.7333	381.099	.633	.810

Table 3.5 (continued)

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I accomplished a lot of work	144.8667	391.637	.533	.815
I have self-discipline	144.5333	388.602	.463	.816
I can always say enough is enough	146.1333	382.809	.357	.821
I am easily moved to tears	144.7000	372.217	.401	.819
I look on the bright side of life	144.2000	398.855	.310	.822
In an emergency, I am someone people can generally rely o	144.5667	392.875	.421	.818
My knowledge of concepts have increase	144.6000	394.662	.398	.819

This reliability value is high. Removal of any items will not improve the Cronbach's Alpha value further, hence all the 24 items in the resiliency variable will be used for this survey.

3.7.2 Reliability for Self-Efficacy items

The Cronbach's alpha reliability test was done for the self-efficacy items. There were 6 items for the self-efficacy variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is 0.870, which is larger than the benchmark of 0.65. Hence all the 6 items in the Self-Efficacy variable will be retained for this study.

Table 3.6 and table 3.7 show results of the reliability test for the self-efficacy items.

Table 3.6

Reliability Statistics for Self-Efficacy items

Reliability Statistics	
Cronbach's Alpha	N of Items
.870	6

Table 3.7

Item-Total Statistics for Self-Efficacy

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I manage my studies effectively	28.1333	48.464	.284	.908
I can influence my peers	29.3000	42.286	.686	.847
My contribution towards the success of my group is very significant	28.6000	38.524	.812	.823
I am a good role model for my peers	28.6333	36.999	.903	.806
My peers always seek advice from me to produce good work	28.7333	37.720	.806	.823
I am confident about my leadership	28.6000	39.697	.598	.864

3.7.3 Reliability for Intrinsic Motivation items

The Cronbach's alpha reliability test was done for the items on intrinsic motivation. There were 6 items for the intrinsic motivation variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is 0.721, which is higher than the benchmark of 0.65. This value is good and hence all the 6 items for intrinsic motivation will be retained.

Table 3.8 and table 3.9 below show the results of the reliability test for the intrinsic motivation items.

Table 3.8

Reliability Statistics for Intrinsic Motivation items

Reliability Statistics	
Cronbach's Alpha	N of Items
.721	6

Table 3.9

Item-Total Statistics for Intrinsic Motivation

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I always think of the most effective ways to increase my experience here	31.3333	29.333	.648	.626
I try to produce better work than my peers	31.1333	30.602	.607	.642
I am of the opinion that my studies in school need to be carried out the best way possible	31.4333	30.599	.601	.643
I have my own goals to achieve in school	31.3667	30.861	.493	.671
I do not hesitate to attend trainings to further improve my skills	32.3667	38.585	.013	.827
I aspire to increase my performance in school to the level of excellence	31.5333	29.361	.562	.648

3.7.4 Reliability for Extrinsic Motivation items

The Cronbach's alpha reliability test was done for the items for extrinsic motivation. There were 6 items for the extrinsic motivation variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is 0.873. The alpha value is above the benchmark of 0.65, therefore, the reliability value is high and acceptable, hence all the 6 items in extrinsic motivation will be retained.

Table 3.10 and table 3.11 show the results of the reliability test for extrinsic motivation items.

Table 3.10

Reliability Statistics for Extrinsic Motivation items

Reliability Statistics	
Cronbach's Alpha	N of Items
.873	6

Table 3.11

Item-Total Statistics for Extrinsic Motivation

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I am happy when my work is being recognized	35.6333	46.999	.674	.853
I believe that recognition is a motivation for me to increase my performance	35.7000	47.390	.748	.839
I will praise my peers/classmates if they do well	35.7333	52.478	.507	.880

Table 3.11 (continued)

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I feel that any recognition given to me must be in accordance to the effort that I put in	36.4000	50.386	.679	.851
I feel that any recognition given to me will further increase my performance in school	36.0000	47.172	.779	.834
I am happy if my university is being recognised as one of the top institutions around	35.2000	49.614	.681	.851

3.7.5 Reliability for Social Motivation items

The Cronbach's alpha reliability test was done for the items for social motivation. There were 6 items for the social motivation variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is 0.819. The alpha value for the social motivation items are larger than the benchmark of 0.65. The reliability value is high and acceptable, hence all the 6 items under social motivation will be retained in the survey.

Table 3.12 and table 3.13 show results of the reliability test for the social motivation items.

Table 3.12

Reliability Statistics for Social Motivation items

Reliability Statistics	
Cronbach's Alpha	N of Items
.819	6

Table 3.13

Item-Total Statistics for Social Motivation

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I give the level of trust to my fellow peers that they will perform to the best of thier ability	34.4667	48.120	.690	.771
I feel proud to be able to share my knowledge with my peers	34.4667	43.982	.765	.749
I believe that a condusive learning environment can increase the performance of students	34.7667	42.737	.447	.856
I like to work with peers who discuss things with me	34.4667	49.568	.652	.779
Suggestions from peers/classmates is my main motivation	35.3667	51.344	.613	.788
I believe the opinions of my peers are important in achieving good team work	34.9667	52.240	.537	.801

3.7.6 Reliability for student leadership in the P2P program items

The Cronbach's alpha reliability test was done for the items for the student leadership in the P2P program. There were 9 items for the P2P variable. The results show that for this variable, the Cronbach's alpha reliability coefficient is extremely low at 0.414. This alpha value is lower than the benchmark of 0.65. The reliability value is very low and the item with the highest Cronbach's alpha value if item deleted must be removed.

Table 3.14 and table 3.15 show the results of the reliability test on the P2P program leader items.

Table 3.14

Reliability Statistics for student leadership in the P2P program items

Reliability Statistics	
Cronbach's Alpha	N of Items
.414	9

Table 3.15

Item-Total Statistics for student leadership in the P2P program items

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My P2P leader is very knowledgeable on the subject	61.8000	328.600	.376	.375
My P2P leader is very well prepared for every P2P session	61.2667	326.352	.397	.370
My P2P leader listens to our problems relating to the subject	61.6000	324.400	.418	.366

Table 3.15 (continued)

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My P2P leader plans for the session very well each week	61.2000	322.886	.397	.364
My P2P leader is very creative in designing the activities for the session	61.4667	314.695	.558	.343
My P2P leader is my role model	61.9333	326.781	.290	.377
I have problems with my P2P leader	62.0000	128.143	.114	.842
Impact of P2P on my knowledge of the subjects	62.0667	328.638	.339	.376
I have more confidence in passing the test at the end of this semester	61.9333	313.638	.471	.345

These items were adapted from the various research conducted the university of Wollongong, Australia on the effectiveness of PASS program. As mentioned earlier, University of Wollongong is the National Center for PASS and the peer learning model adopted by this institution under study is from the University of Wollongong. The supervisors have been trained extensively by the University of Wollongong and brought to Malaysia to introduce it here. These items are reflective of what the P2P leaders need to have to be able to conduct the session effectively. As discussed in the process of P2P, it clearly explains that these areas are essential in the success of the program.

After removing the item "I have problems with my P2P leader", the Cronbach alpha's value jumped to 0.842. The reliability for the student leadership in the P2P program items have improved tremendously. Cronbach's alpha value of 0.842 is above the benchmark of 0.65 and therefore the items are reliable.

Table 3.16 and table 3.17 show the results of the new reliability test on the P2P program leader items.

Table 3.16

New Reliability Statistics for student leadership in the P2P program items

Reliability Statistics	
Cronbach's Alpha	N of Items
.842	8

Table 3.17

New Item-Total Statistics for student leadership in the P2P program items

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My P2P leader is very knowledgeable on the subject	55.0667	109.067	.485	.833
My P2P leader is very well prepared for every P2P session	54.5333	101.124	.714	.811
My P2P leader listens to our problems relating to the subject	54.8667	96.410	.848	.796
My P2P leader plans for the session very well each week	54.4667	98.695	.691	.811

Table 3.17 (continued)

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My P2P leader is very creative in designing the activities for the session	54.7333	94.067	.888	.791
My P2P leader is my role model	55.2000	103.314	.475	.836
Impact of P2P on my knowledge of the subjects	56.6000	117.257	.122	.877
I have more confidence in passing the test at the end of this semester	55.2000	96.600	.653	.815

As a summary, analysis of validity and reliability, the valid and reliable instrument has 56 items. The items are all suitable to be used to measure the variable of the study.

3.8 Data Collection Procedures

Data collection for the main study was conducted from August – December 2018. All 303 participants for this study were administered with pre-test and post-test. Pre-test survey was conducted at Week 1 of the August 2018 semester which was prior to the treatment intervention which was only introduced at Week 3 of the semester. The post-test was conducted at Week 13 upon completion of the treatment intervention. The treatment intervention duration is 11 consecutive weeks. The pre-test and post-test administered at Week 1 (pre-test) and Week 13 (post-test) were identical tests. The same survey question on a 10 point Likert-rating scale was used at Week 1 and again at Week 13.

3.9 Data Analysis

Table 3.18 presents the data analysis to be employed based on the research questions.

Table 3.18

Data Analysis for each Research Question

Research Question (RQ)	Variable	Measurement Scale	Data Analysis used
Demographics variables	Demographics	Nominal Ratio	Descriptive Statistics Frequency
RQ 1: What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students.	Resiliency Self-Efficacy Intrinsic Motivation Extrinsic Motivation Social Motivation	Ratio	Descriptive Statistics Mean Standard Deviation (SD)
RQ 2: Are the P2P leaders knowledgeable in the subject matter?	Student leadership in P2P	Ratio	Descriptive Statistics Mean
RQ 3: Do the knowledge level of the students increase after attending the P2P sessions?	Student leadership in P2P	Ratio	Descriptive Statistics Mean
RQ 4: Are students more confident in passing their exams after attending the P2P sessions?	Student leadership in P2P	Ratio	Descriptive Statistics Mean
RQ 5: Is there any effects of the P2P program on students' resiliency?	DV = Resiliency IV = P2P	Ratio	Descriptive Statistics Mean Standard Deviation (SD) Multivariate Test Split Plot ANOVA

Table 3.18 (continued)

Research Question (RQ)	Variable	Measurement Scale	Data Analysis used
RQ 6: Is there any effects of the P2P program on students' self-efficacy?	DV = Self-Efficacy IV = P2P	Ratio	Descriptive Statistics Mean Standard Deviation (SD) Multivariate Test Split Plot ANOVA
RQ 7: Is there any effects of the P2P program on students' motivation in terms of intrinsic, extrinsic and social motivation?	DV = Intrinsic Motivation Extrinsic Motivation Social Motivation IV = P2P	Ratio	Descriptive Statistics Mean Standard Deviation (SD) Multivariate Test Split Plot ANOVA
RQ 8: Do the four demographic variables of gender, age, academic stream in high school and parent incomes and also study time have any moderating effects between the independent variable and dependent variable?	DV= Resiliency Self-Efficacy Intrinsic Motivation Extrinsic Motivation Social Motivation Moderator = Demographics Study Time IV = P2P	Ratio	SMART PLS

Note:

1. The SPANOVA test is used to analyse RQ 5 – RQ 7 because it is comparing between subjects and within subjects of the pre-test and post-test scores. It is useful to present the effectiveness of the P2P program on the dependent variables such as resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.
2. The SMART-PLS is a structural equation modeling tool used to analyse effect of a third variable (moderator) on the relationship between the independent variable and the dependent variable.

3.10 Summary of Chapter 3

Chapter 3 covered the research methodology, research design, explained on the independent variables, dependent variables and the moderators such as gender, age, academic stream, parents' income and study time. It explained the treatment of the P2P program, its participants and instrumentation. A pilot study was also conducted to test the reliability of the questionnaire before the actual study and each of the questions that was purportedly to test the variables were tested to make sure that they are reliable and valid. It presents the analysis of validity and reliability of the variables of the study, including the dependent variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation, social motivation and the student leadership in the P2P program. It discussed on the data collection procedure and types of analysis to be used for all the research questions.

The next chapter presents the results of the study. Each of the research questions will be analysed and the results presented and summarised.

CHAPTER 4: ANALYSIS

4.1 Overview

This chapter presents the results of the data analysis based on the data collected from students in a private higher education institution in Malaysia. For the purpose of this study, the researcher will refer to this institution as University XYZ. The first section of this chapter describes on the data preparation prior to the analysis, followed by preliminary data analysis in terms of the response rate; an overview of the respondents' demographic variable profiles by age group, faculty, year of study, reasons enrolled in the program, attend P2P, frequency of attending P2P, gender, race, stream in high school, amount of time spent on studying and parents estimated income. This is then followed by presenting the statistical analysis results based on the research questions proposed. The results are presented in the form of descriptive statistics followed by inferential statistics for each of the research questions proposed.

This chapter presents the statistical analysis of data and the results of the study. The sections are organized as follows: (1) descriptive analysis; (2) profile of respondents; (3) normality of data; (4) analysis of research questions 1 to 8; and (5) summary of results.

The results are presented based on the research questions of the study. The research questions are as follows:

1. What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students?
2. Are the P2P leaders knowledgeable in the subject matter?
3. Do the knowledge level of the students increase after attending the P2P sessions?

4. Are students more confident in passing their exams after attending the P2P sessions?
5. Is there any effects of the P2P program on students' resiliency?
6. Is there any effects of the P2P program on students' self-efficacy?
7. Is there any effects of the P2P program on students' motivation in terms of intrinsic, extrinsic and social motivation?
8. Do the four demographic variables of gender, age, academic stream in high school and parent incomes and also study time have any moderating effects between the independent variable and dependent variable?

4.2 Descriptive Statistics

Descriptive statistics for all variables are computed using SPSS and conducted on all continuous variable measures. A total of 303 students participated in the experiment. Table 4.1 below shows the profile of respondents in this study.

Table 4.1

Profile of Respondents

Variable	Description	Frequency	Percentage (%)
Age			
	17 – 19 years old	211	69.60
	20 – 22 years old	83	27.40
	23 – 25 years old	9	3.00
	26 – 28 years old	0	0.00
	29 - 30 years old	0	0.00
	Above 30 years old	0	0.00
Faculty			
	Faculty of Science, Technology, Engineering and Mathematics	112	37.00
	Faculty of Business, Communications and Law	181	59.70
	Faculty of Health Sciences	10	3.3

Table 4.1 (continued)

Variable	Description	Frequency	Percentage (%)
Year of Study			
	1st year student	257	84.80
	2nd year student	46	15.20
	3rd year student	0	0
	Final year student	0	0
Reasons Enrolled			
	I am interested in this course	249	82.20
	My parent(s) asked me to take this course	24	7.90
	My friend(s) is(are) taking this course	2	0.70
	I don't know what other courses to take	21	6.90
	Other reasons	7	2.30
Attend P2P			
	Yes	223	73.60
	No	80	26.40
Gender			
	Male	208	68.6
	Female	95	31.40
Race			
	Malay	16	5.30
	Chinese	222	73.30
	Indian	27	8.90
	Others	38	12.50
Academic Stream in High School			
	Science	213	70.30
	Arts	90	29.70
Studying time			
	Less than 1 hour a day	201	66.30
	Between 1 and 3 hours a day	91	30.30
	More than 3 hours a day	11	3.60
Parent(s) monthly income per month (p/m)			
	Less than RM3000 p/m	50	16.5
	Between RM3000 – RM5000 p/m	147	48.5
	Between RM5001 – RM7000 p/m	81	26.70
	Between RM7001 – RM10000 p/m	16	5.30
	Between RM10001 – RM15000 p/m	8	2.60
	Above RM15000 p/m	1	0.30

Based on the information in table 4.1, there is a total of 303 students who participated in the research. The age category of between 17 to 19-years-old was the largest group with 211 students which made up 69.60% of the total sample. Next was 83 students from the age group of between 20 – 22-years-old which made up 27.40% of the sample and only 9 students came from the 23 – 25-years-old category which made up 3% of the sample. There were not any students from the 26-year-old category and above. Majority of the sample are traditional students who joined the private education directly after high school. This is represented visually in Figure 4.1 below.

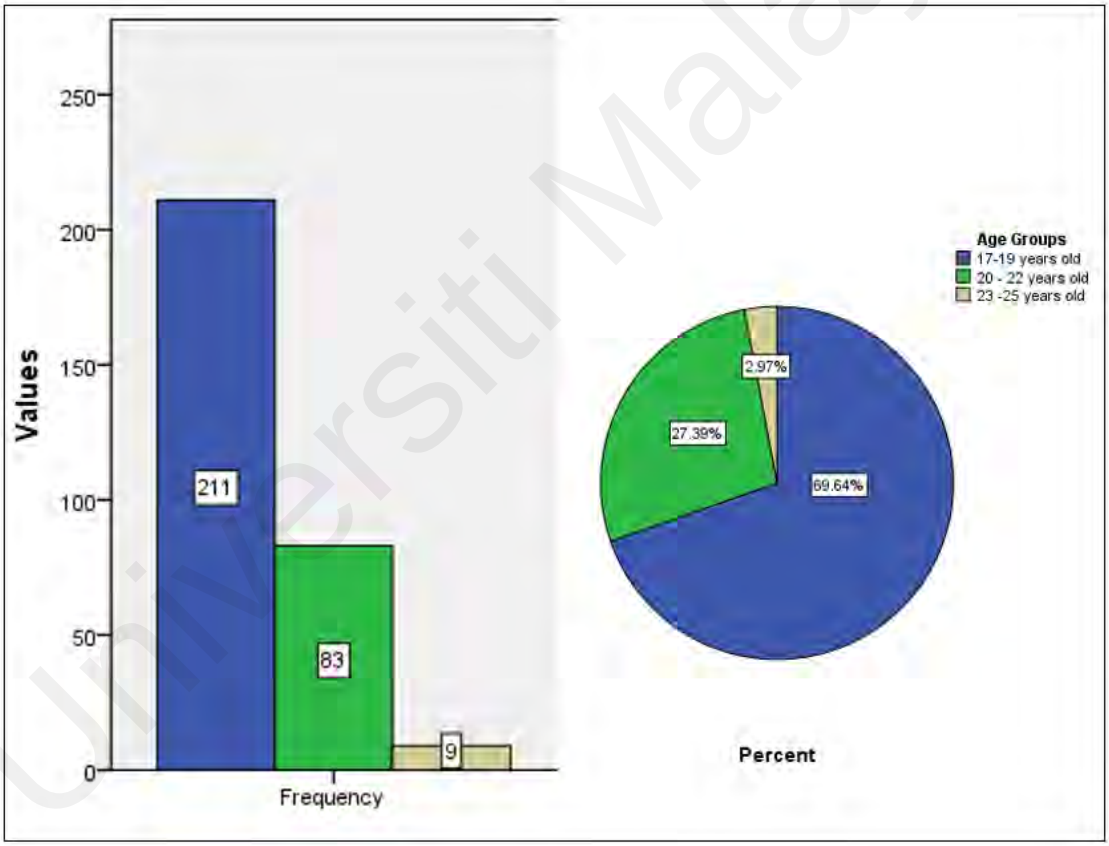

Figure 4.1. Frequency and Percentage for Age group

The largest student group came from FOBCAL which is the Faculty of Business, Communications and Law with a total of 181 students or 59.70%. The Faculty of Science, Technology and Mathematics or FOSTEM was the next largest with 112 students or 37% and lastly only a small group of about 10 students or 3.30% were from the Faculty of Health Science or FHS. This is consistent with the enrolment of the university with the highest number of students coming from the Business faculty. This data is represented visually in the Figure 4.2 below.

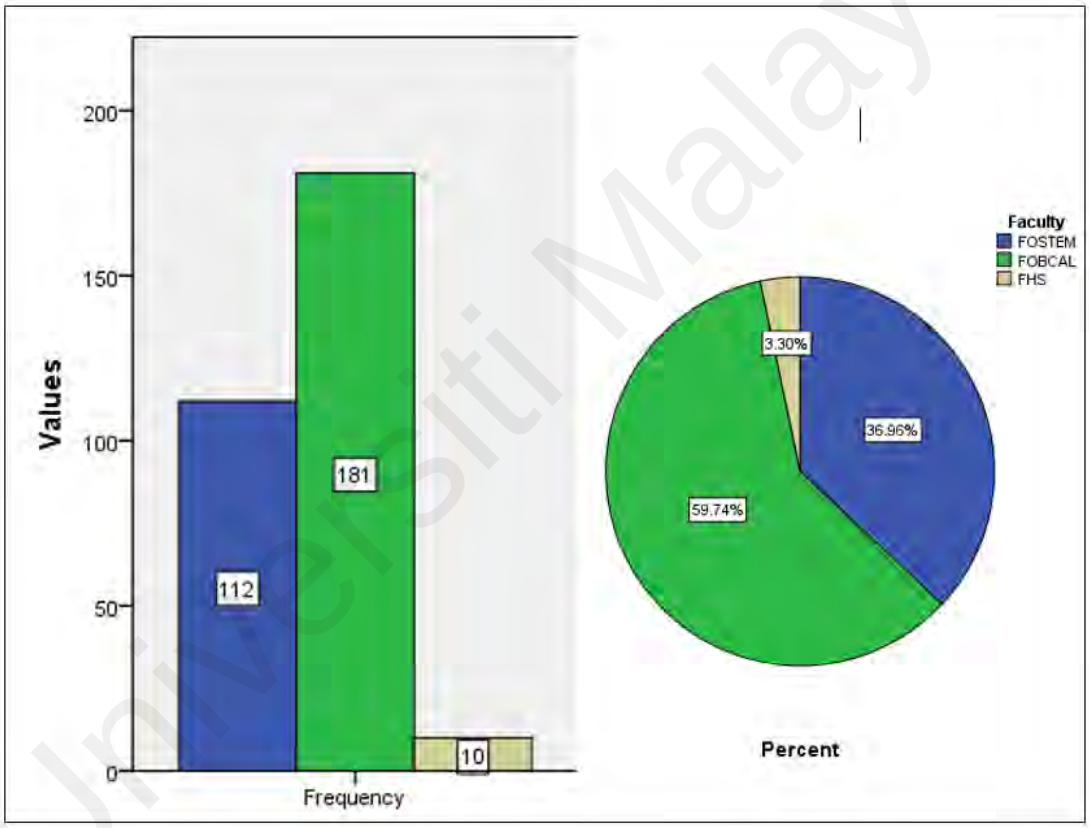

Figure 4.2. Frequency and Percentage for Faculty breakdown

Majority of the students are first year students with a total of 257 students which makes up 84.80% of the sample. Only 15.2% of the students or 46 students came from second year. This is shown in the Figure 4.3. It also represents the importance of a first year experience of students studying in college or tertiary level

education. The first year of studies is the corner stone of their success. Colleges and universities need to focus on how they can help first year students build academic confidence.

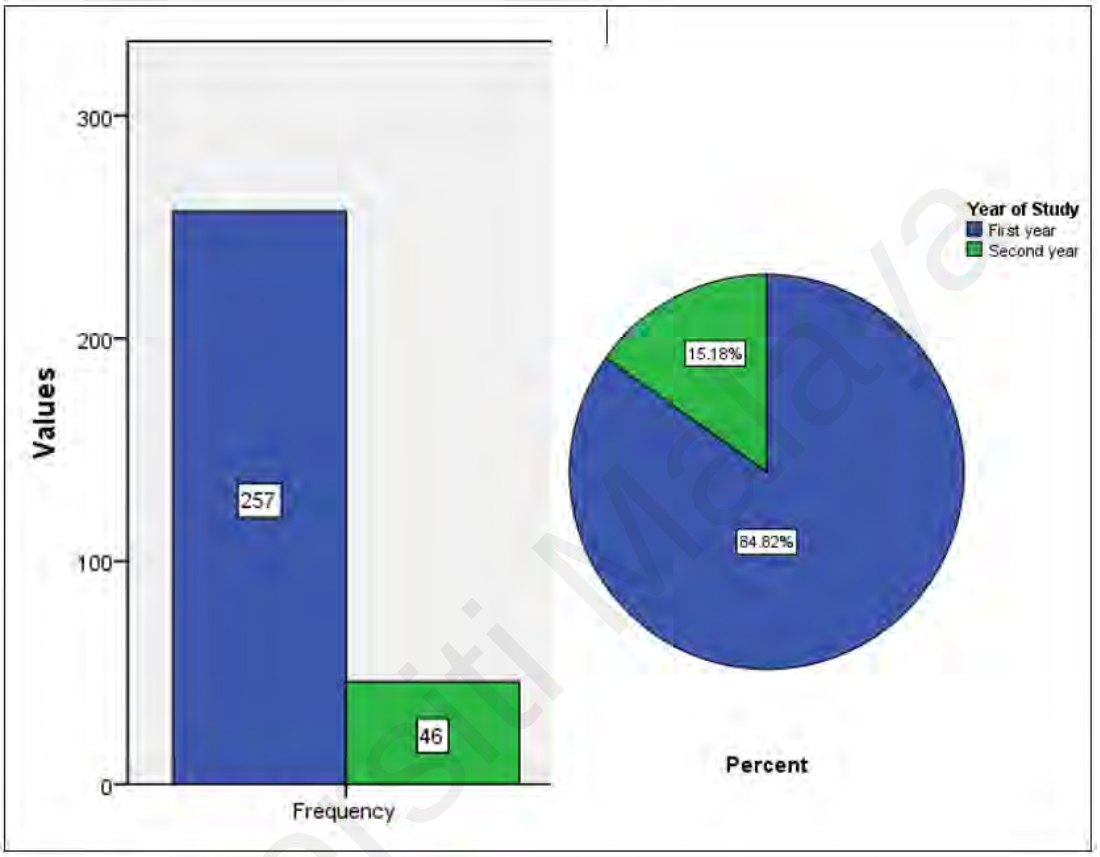

Figure 4.3 Frequency and Percentage for Year of Study

Some of the top reasons why students choose to study at this institution is they are interested in the course they selected. That makes the majority of 82.2% or 249 students. Other reasons sighted were "My parent(s) asked me to take this course" which has 24 students (7.9%), "I don't know what other courses to take" 21 students (6.9%), "My friend(s) is(are) taking this course, only 2 students (0.7%) and about 7 students or 2.3% sighted other reasons. This is represented in Figure 4.4 below.

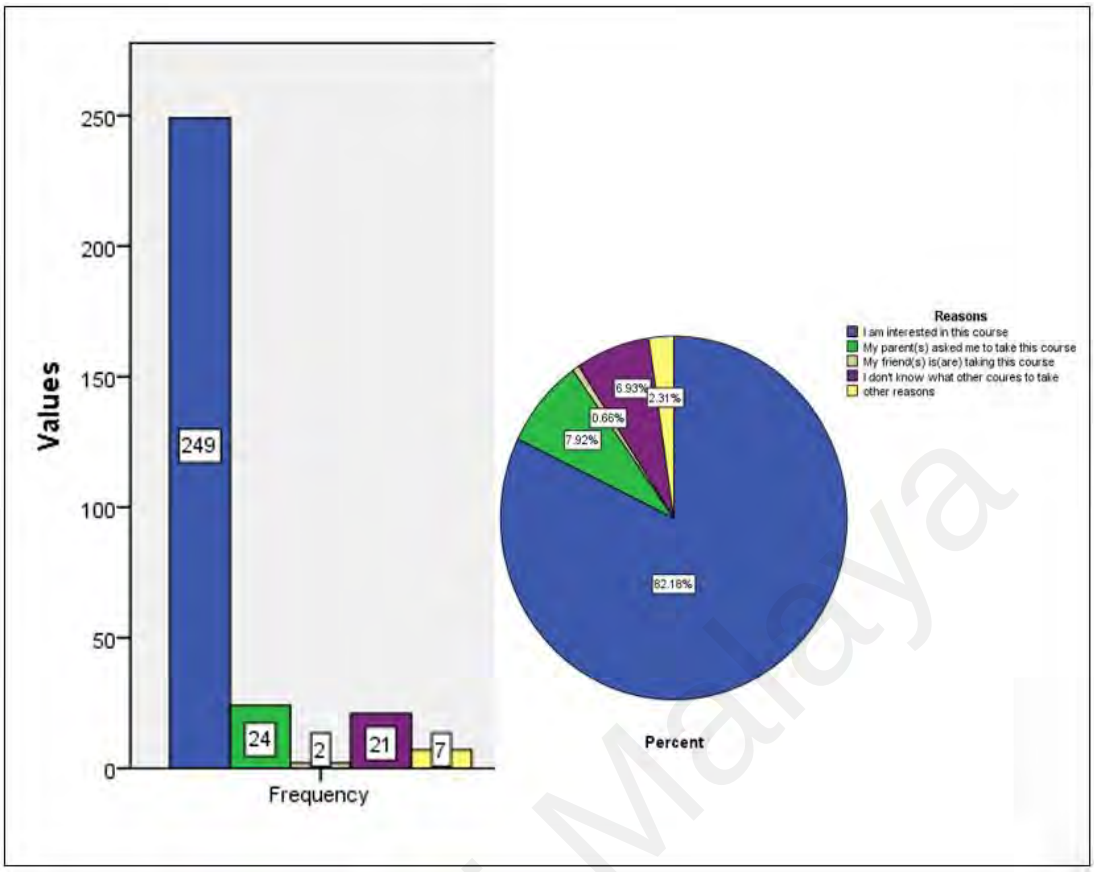

Figure 4.4. Frequency and Percentage for Reasons for Further Studies

Of the 303 students in this study, 223 students (73.6%) attended the P2P program whereas 80 students (26.4%) did not attend. This is represented in Figure 4.5.

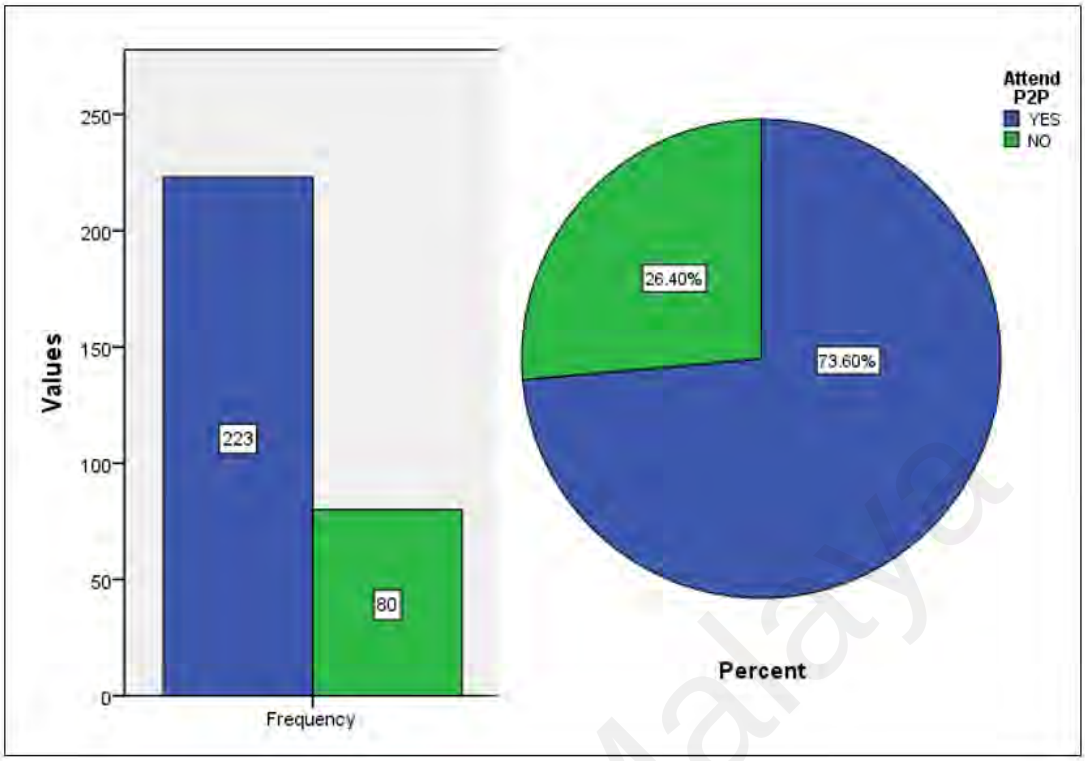

Figure 4.5. Frequency and Percentage for P2P Program Attendance

This study is an experimental study employing a pre-test post-test method with a treatment and a control group. The treatment group will be that of students who will receive the treatment of the peer-to-peer program and the control group will be that of students who did not receive the peer-to-peer program. Based on the data gathered, there are 223 students in the treatment group and 80 students in the control group. The assignment of students into the treatment group and control group was done entirely voluntary by students themselves and without coercion. Hence, the numbers are not even for both the treatment and control group. A total of 68.6% for the students (208 students) were male while 95 students or 31.4% were female.

Majority of the students were from the Chinese ethnic group which made up of 222 students or 73.3%. Malay students were only 5.3% or about 16 students. Whereas the ethnic Indian students totalled 27 students or a percentage of 8.9. About 38

students were from the 'others' category which made up of about 12.5% and these were international students. This is shown in Figure 4.6 below.

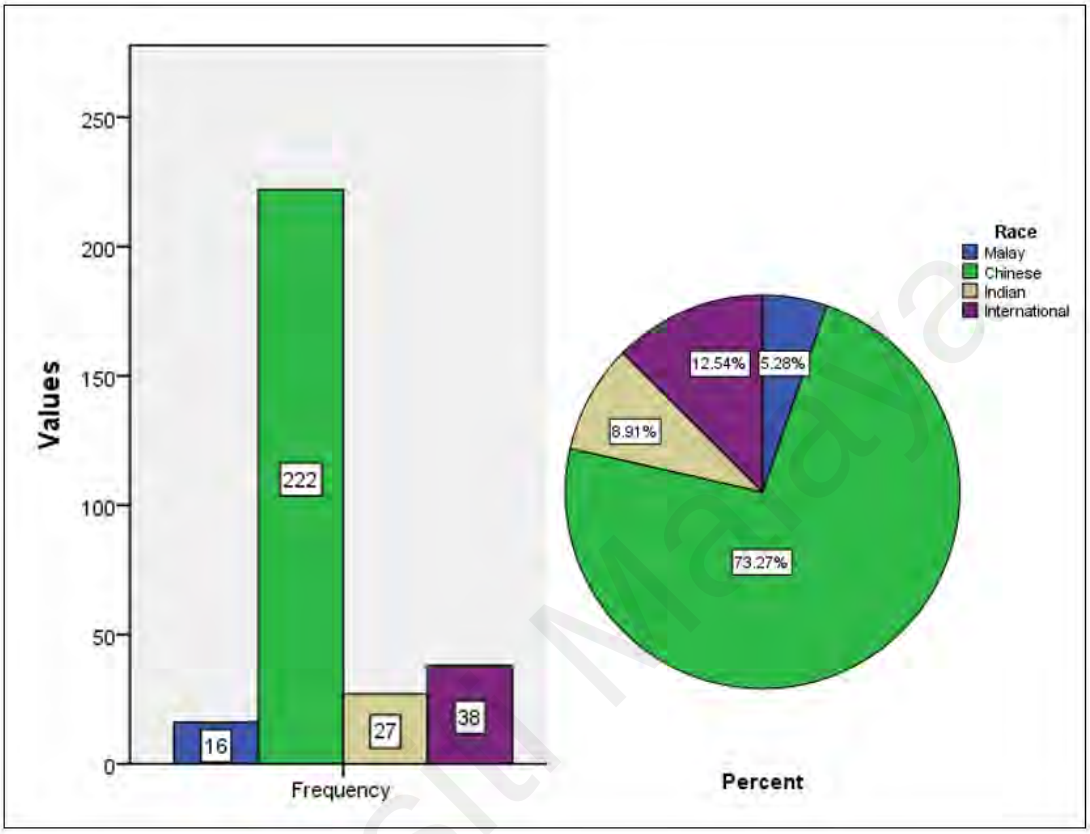

Figure 4.6. Frequency and Percentage for Race of Students

The majority of these students were from the science stream in their high school. They made up a total of 70.3% of students or 213 students while only 90 students were from the arts stream (29.7%). Although the majority was from the science stream, many students decided to go into the various business majors while in college. This is evident in the total number of students in this experiment from the Business faculty – 181 students from the total of 303 students or 59.7% which was more than half of the experiment population. See the Figure 4.7 below for academic stream when in high school..

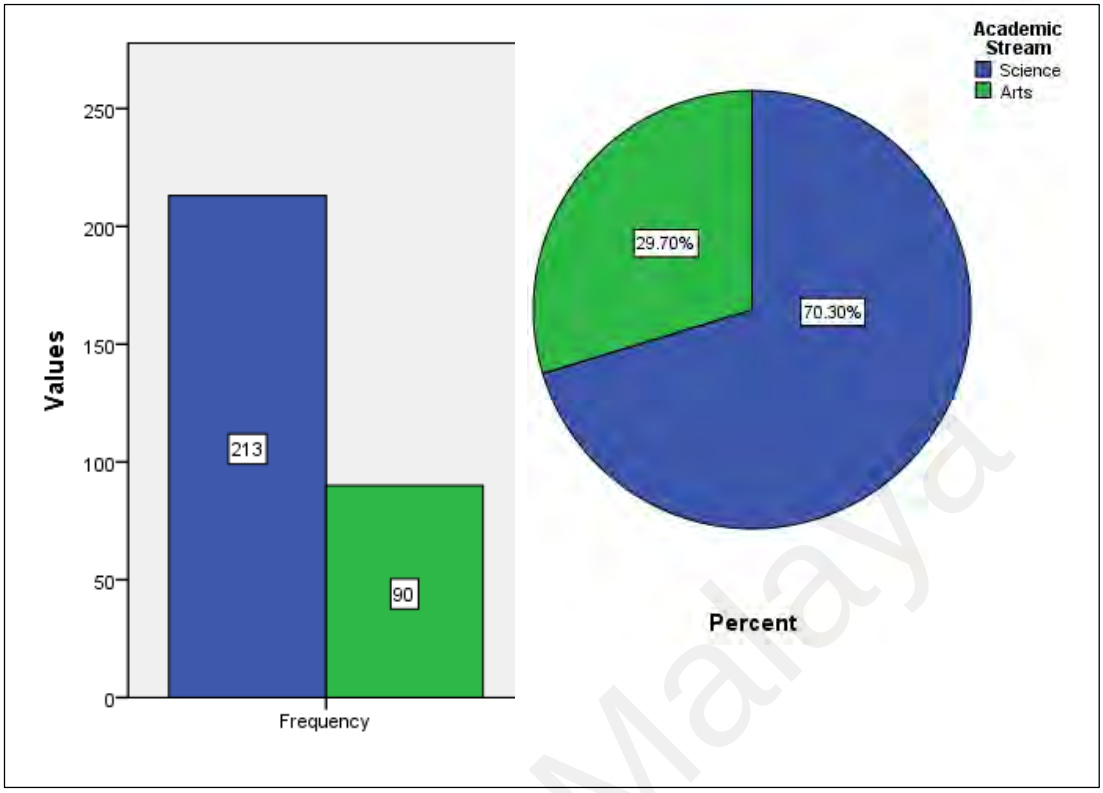

Figure 4.7. Frequency and Percentage for Academic Stream when in High School

When it comes to study time, a whopping 66.3% or 201 students admit that they only spend about an hour or less studying or revising their work. About 91 students (30%) says that they spend between 1 to 3 hours a day studying while only 11 students (3.6%) actually spend more than 3 hours a day studying . This is not inclusive of the time that they spend in class. Students in the classroom today are also known as the millennials or the internet generation. It is not surprising that majority of these students do not open a book and read but they spend most of their time online. The statistics is reflected in Figure 4.8 below.

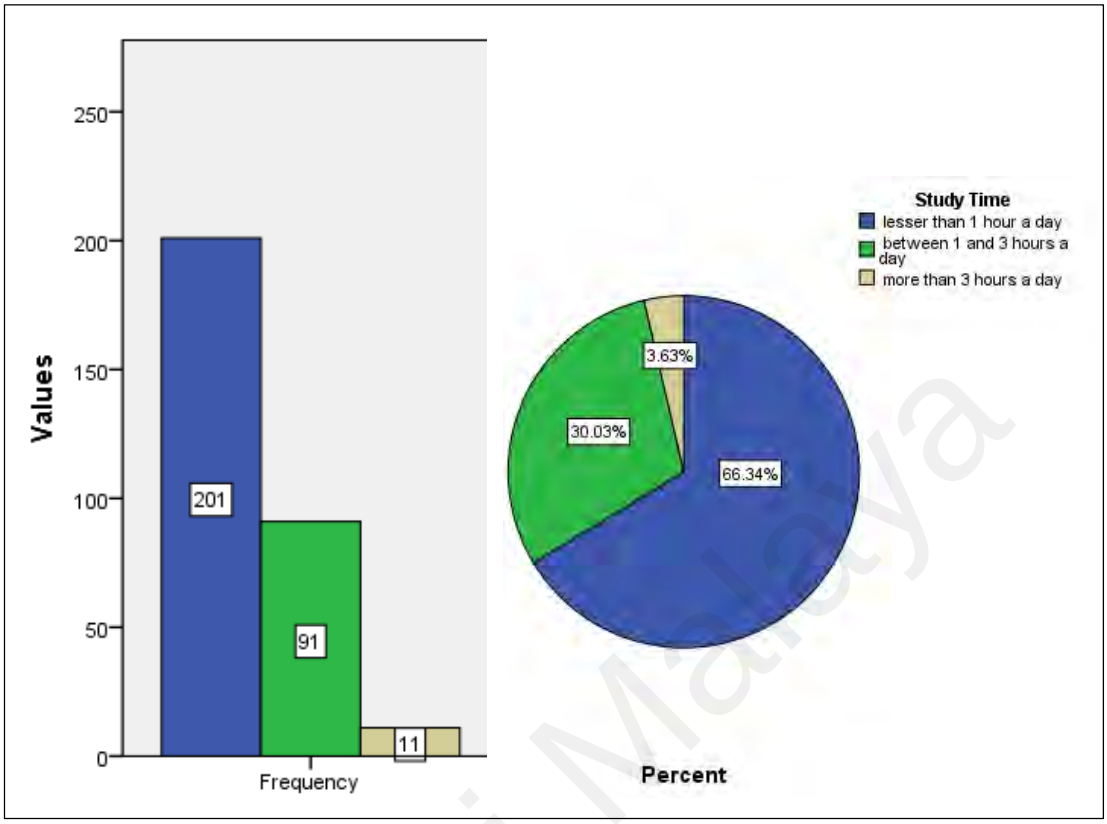

Figure 4.8. Frequency and Percentage for Study Time

The students who are at this institution are majority from the middle to lower income group. A total of 197 students or 65% have joint parents' income of RM5000 or lower. While the remaining 106 students come from families with above RM5000 monthly income. Figure 4.9 below represents the breakdown in parents combined income.

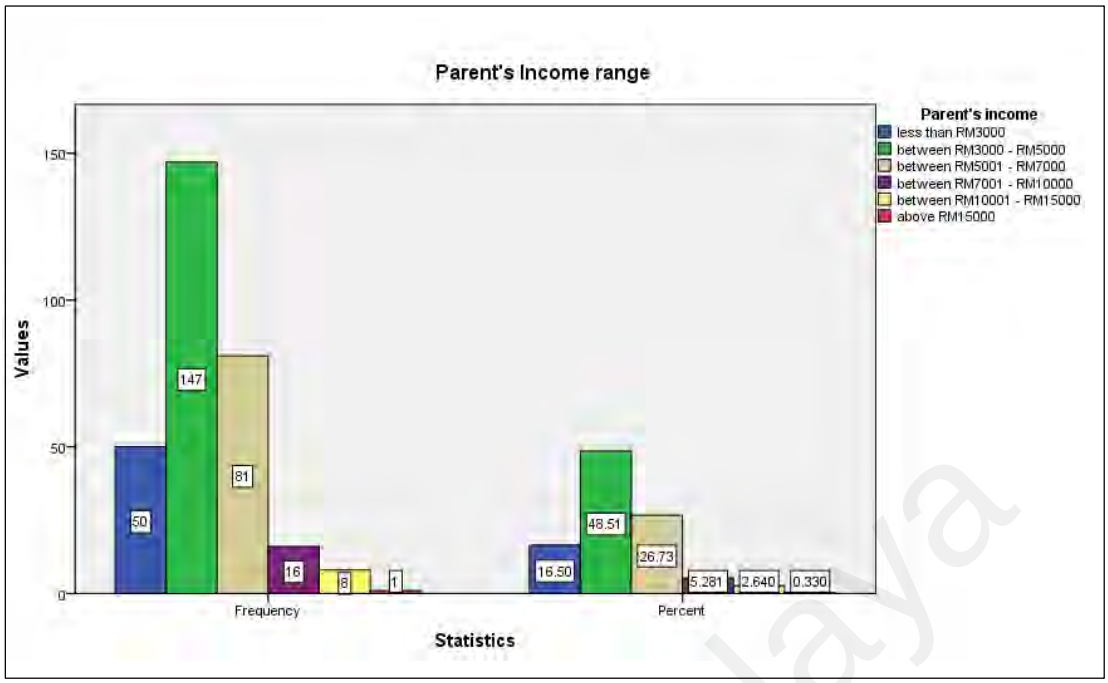

Figure 4.9. Frequency and Percentage for Parents' Income.

4.3 Normality of Data

Preliminary data analysis was done to test the normality of the data that is to see if the data is normally distributed. A normality test is done to determine if the sample data has been drawn from a normally distributed population (within given tolerance). Most statistical test is based on data sets that are normally distributed but if the data is not normally distributed then one will need to use a nonparametric version of the test which does not assume normality. If the data is normally distributed, it normally assumes a bell-shaped frequency distribution curve. This means that the data values in normal distribution tend to cluster around the mean. The further the data point is from the mean, the less likely it will occur.

There are four characteristics of normal distribution of data. They are asymptotic, symmetric, unimodal and the mean, median and mode as Figure 4.10 below illustrates.

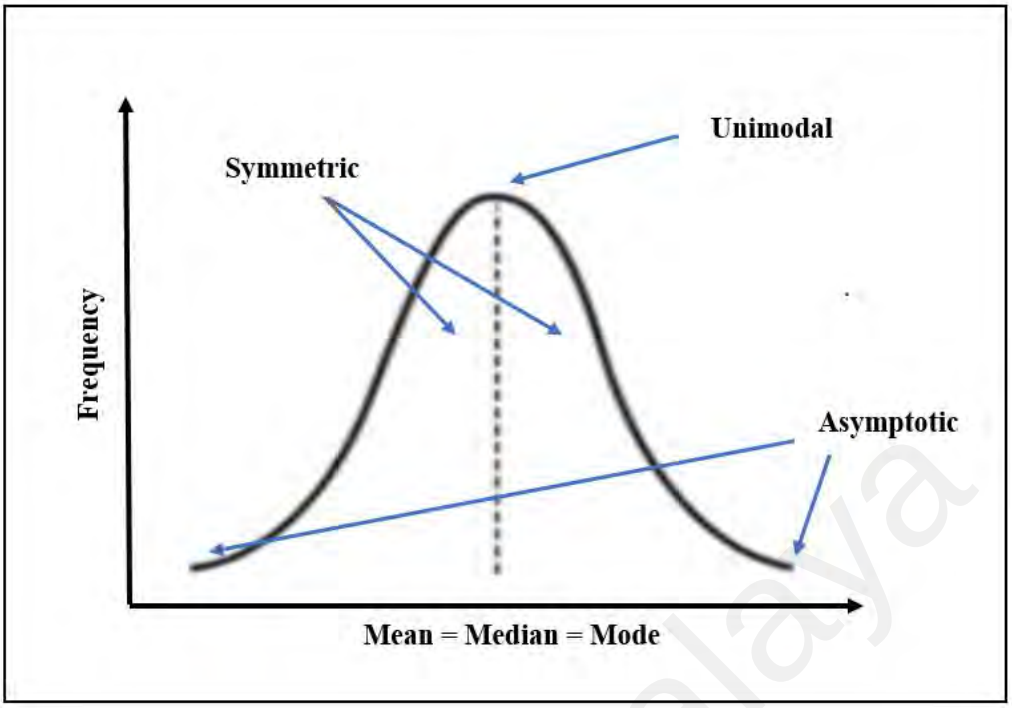

Figure 4.10. Normal Data Distribution

To illustrate further data can also be negatively or positively skewed as shown in Figure 4.11 below:

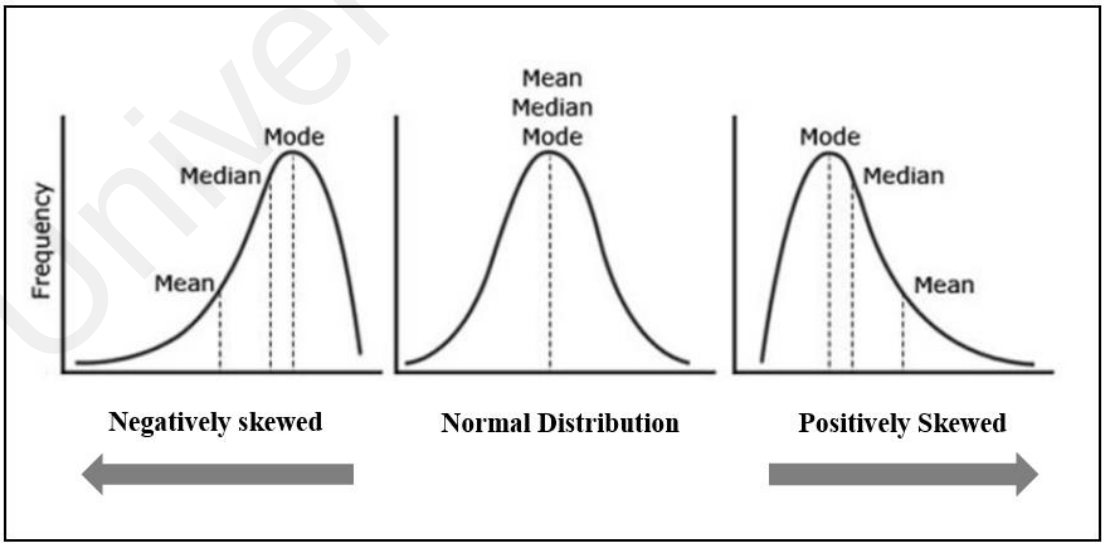

Figure 4.11. Abnormal Data Distribution

The data is considered normally distributed if the skewness value is <3.0 and kurtosis value is <10 (Kline, 2005). The analysis below for normality shows that the data is not all normally distributed. In experimental research, the data is seldom normally distributed.

Table 4.2 and Table 4.3 presents the normality analysis on the variables of the study.

Table 4.2

Case Processing Summary for Data Normality

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Resiliency	303	100.0%	0	0.0%	303	100.0%
Self-Efficacy	303	100.0%	0	0.0%	303	100.0%
Intrinsic Motivation	303	100.0%	0	0.0%	303	100.0%
Extrinsic Motivation	303	100.0%	0	0.0%	303	100.0%
Social Motivation	303	100.0%	0	0.0%	303	100.0%

Table 4.3

Descriptive Data for Data Normality

Descriptive				
			Statistic	Std. Error
Resiliency	Mean		5.7745	.04414
	95% Confidence Interval for Mean	Lower Bound	5.6877	
		Upper Bound	5.8614	
	5% Trimmed Mean		5.7383	
	Median		5.7200	

Table 4.3 (continued)

Resiliency			Statistic	Std. Error
	Variance		.590	
	Std. Deviation		.76828	
	Minimum		2.96	
	Maximum		9.64	
	Range		6.68	
	Interquartile Range		.44	
	Skewness		.993	.140
	Kurtosis		4.522	.279
Self-Efficacy	Mean		4.6375	.06585
	95% Confidence Interval for Mean	Lower Bound	4.5079	
		Upper Bound	4.7671	
	5% Trimmed Mean		4.5382	
	Median		4.1667	
	Variance		1.314	
	Std. Deviation		1.14630	
	Minimum		2.17	
	Maximum		10.00	
	Range		7.83	
	Interquartile Range		1.50	
	Skewness		1.418	.140
	Kurtosis		2.353	.279
Intrinsic Motivation	Mean		4.9791	.08293
	95% Confidence Interval for Mean	Lower Bound	4.8159	
		Upper Bound	5.1423	
	5% Trimmed Mean		4.8367	
	Median		4.3333	
	Variance		2.084	
	Std. Deviation		1.44354	
	Minimum		3.00	
	Maximum		16.33	
	Range		13.33	
	Interquartile Range		1.00	
	Skewness		2.652	.140
	Kurtosis		13.021	.279

Table 4.3 (continued)

Descriptive				
			Statistic	Std. Error
Extrinsic Motivation	Mean		5.6398	.08573
	95% Confidence Interval for Mean	Lower Bound	5.4711	
		Upper Bound	5.8084	
	5% Trimmed Mean		5.4904	
	Median		5.0000	
	Variance		2.227	
	Std. Deviation		1.49221	
	Minimum		2.83	
	Maximum		15.67	
	Range		12.83	
	Interquartile Range		1.33	
	Skewness		2.253	.140
	Kurtosis		7.979	.279
Social Motivation	Mean		5.5237	.06916
	95% Confidence Interval for Mean	Lower Bound	5.3876	
		Upper Bound	5.6598	
	5% Trimmed Mean		5.4254	
	Median		5.0000	
	Variance		1.449	
	Std. Deviation		1.20387	
	Minimum		3.00	
	Maximum		10.00	
	Range		7.00	
	Interquartile Range		1.00	
	Skewness		1.492	.140
	Kurtosis		2.205	.279

The results indicates that the skewness and kurtosis of the variables are normally distributed (skewness <3.0 and kurtosis <10.0), except intrinsic motivation which shows a little higher than the benchmark (skewness = 2.652, kurtosis = 13.021). Overall, the data for the variables of the study are relevant to be analysed with the parametric test, SPANOVA)

The following section presents the findings of the research results and data analysis based on the research questions.

4.4 Research Question 1:

What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students?

To answer the research question 1 on what are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students, the data is analysed and presented with the means and standard deviation score in Table 4.4.

Table 4.4

Mean Scores for Resiliency, Self-efficacy, Intrinsic Motivation, Extrinsic Motivation and Social Motivation

Variables	Means	Standard Deviation (SD)
Resiliency	5.77	0.77
Self-Efficacy	4.64	1.15
Intrinsic Motivation	4.98	1.44
Extrinsic Motivation	5.64	1.49
Social Motivation	5.52	1.20

Note: In the 10 point likert scale, the scale is explained as follows: 1-2: very low; 3-4: low; 5-6: moderate; 7-8: high; 9-10: very high

In Table 4.4 above shows the means level of each of the variable of Resiliency, Self-efficacy, Intrinsic Motivation, Extrinsic Motivation and Social Motivation. The levels are reflected in the mean scores of each of the variable. The level of Resiliency is 5.77, Self-efficacy is 4.64, Intrinsic Motivation is 4.98, Extrinsic Motivation is 5.64

and Social Motivation is 5.52. This means all of the variables are between low to moderate levels. The highest is Resiliency at 5.77 and lowest is Self-Efficacy at 4.64. The data is represented in the graph chart below in Figure 4.12.

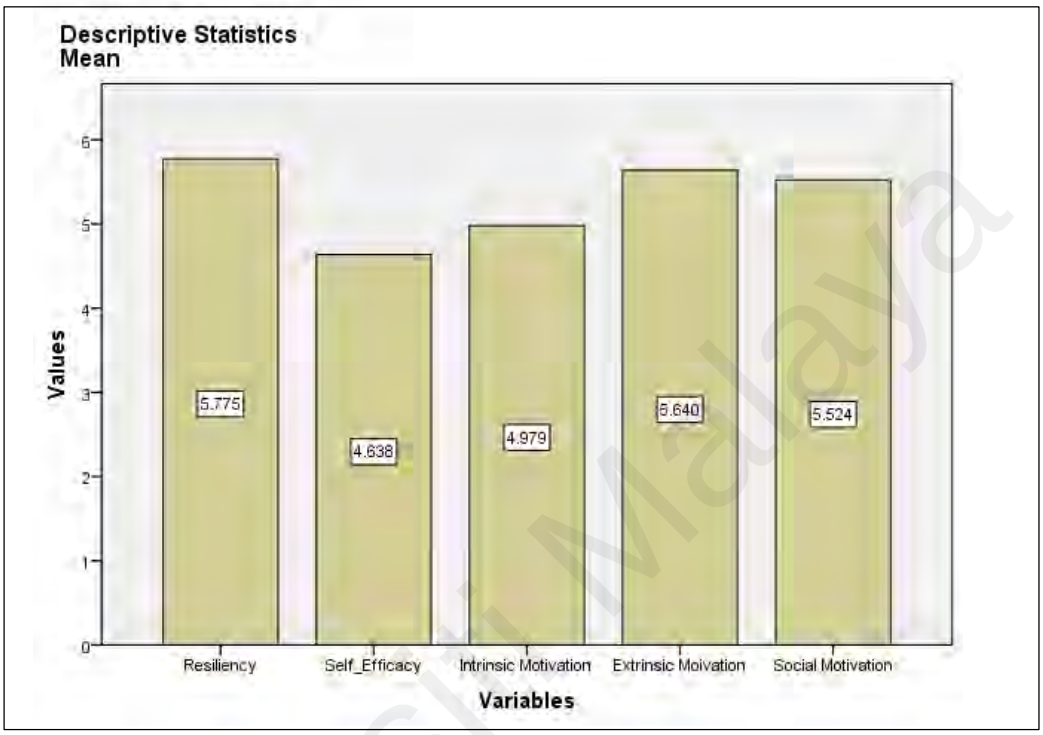

Figure 4.12. Mean Scores for Resiliency, Self-Efficacy, Intrinsic Motivation, Extrinsic Motivation and Social Motivation.

4.5 Research Question 2:

Are the P2P leaders knowledgeable in the subject matter?

This research question hopes to discover the levels of competency in subject knowledge of the P2P leader. Descriptive statistics was used to find the mean score of each of the items in the questionnaire. Table 4.5, shows the mean score of each of the items in the P2P Leader's Knowledge construct. The levels are reflected in the mean scores of each of the items. All the items have a very high mean score which reflects the strong competence in subject knowledge of the P2P Leaders and the

students recognize the strength of their respective P2P course leaders. The results are presented in Figure 4.13.

Table 4.5

Mean scores of P2P Leader's Knowledge

Statements	Mean scores
My P2P leader is very knowledgeable on the subject.	8.14
My P2P leader is very well prepared for every session.	8.06
MyP2P leader listens to our problems relating to the subject.	8.26
My P2P leader plans for the session very well each week.	8.66
My P2P leader is very creative in designing the activities for the session.	8.31
My P2P leader is my role model.	8.26

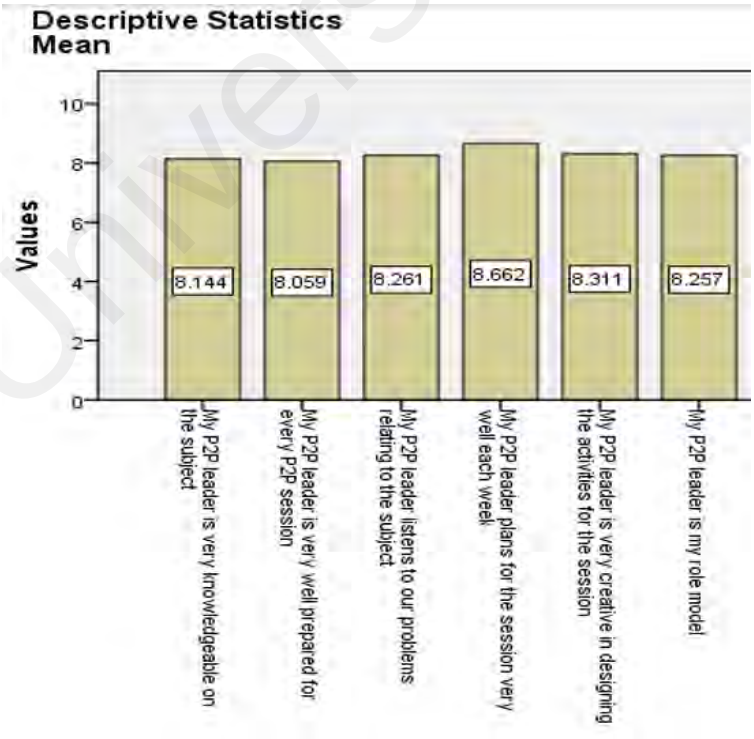

Figure 4.13. Mean scores of P2P Leader's Knowledge

4.6 Research Question 3:

Do the knowledge level of the students increase after attending the P2P sessions?

Table 4.6 and Figure 4.14 below shows the mean score of students' knowledge before and after attending the P2P sessions. It is obvious that before attending any P2P sessions the students' knowledge level was low at 4.88 but after attending the P2P sessions which was designed to help students learn better techniques to understand the subject better, the mean score has increased to 8.22. This clearly shows that the P2P session has had an impact on the students' knowledge level of the subject matter. The P2P sessions have contributed significantly to the improvement of their knowledge level.

Table 4.6

Mean Score of Students' Knowledge before and after attending P2P

	Statement	Mean
Pair 1	My knowledge of the subject before attending P2P	4.88
	My knowledge of the subject after attending P2P	8.22

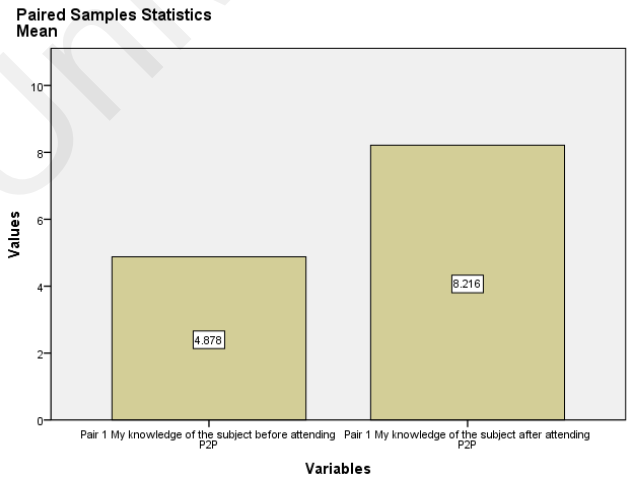

Figure 4.14 Mean Score of Students' Knowledge before and after attending P2P

The increase in the mean score of students' knowledge is represented by the histogram in Figure 4.14 above. It shows the increase of the level of knowledge amongst the students from before attending the P2P sessions to after attending the P2P sessions. This indicates that there is growth or increase in the knowledge level after they have gone through the P2P sessions.

A paired sample T-test was conducted on the before and after of the treatment and it showed a significant increase in the mean scores. Before attending the P2P session, the score was 4.88 and after attending the P2P sessions the mean increased to 8.22. This means that the P2P sessions has a significant contribution towards improvement of subject matter knowledge. Table 4.7 presents the result of the t-test.

Table 4.7

Paired samples T-test of Student's Knowledge after attending P2P

Paired Samples Test					
		Paired Differences			
		Mean	t	df	Sig. (2-tailed)
Pair 1	My knowledge of the subject before attending P2P - My knowledge of the subject after attending P2P	-3.33784	-23.621	221	.000

4.7 Research Question 4:

Are students more confident in passing their exams after attending the P2P sessions?

Table 4.8 and Figure 4.15 shows the mean score of students' confidence level of passing their exams after attending the P2P sessions. After the treatment, their mean

score for their confidence level is much higher as compared to before the treatment. This shows that the P2P program is indeed effective in raising the confidence levels of the students in the subject, which shows that students are more confident and ready to sit for their exams. This finding is supported by the earlier results from research question 3 which states that the knowledge levels of the students have increased after attending the P2P sessions. With the increase in the knowledge levels of the subject matter, students are more confident in passing their exams.

Table 4.8

Mean score for Students' confidence level after attending P2P

	Statement	Means
Pair 2	Before the treatment: My confidence level in passing the test at the end of the semester.	5.33
	After the treatment: My confidence level in passing the test at the end of the semester.	8.17

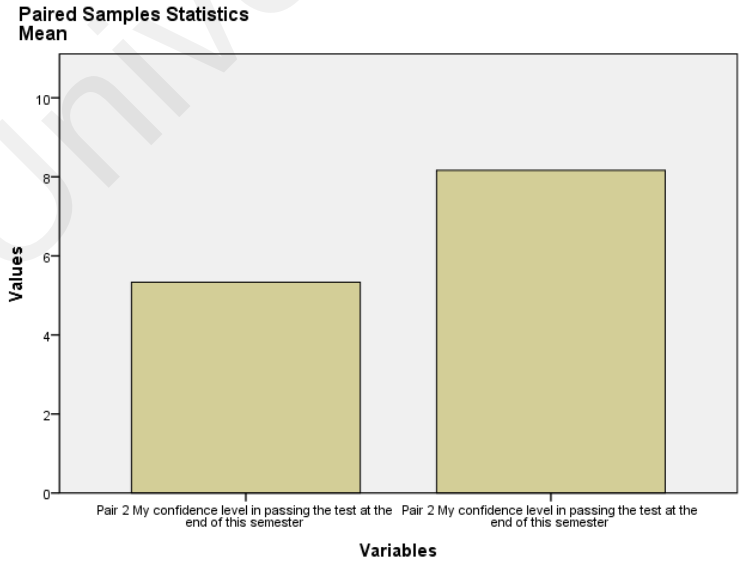

Figure 4.15. Mean score of Student's confidence level after attending P2P

Figure 4.15 represents the increase of the level of confidence in passing the exams amongst the students from before attending the P2P sessions to after attending the P2P sessions in histogram format. This indicates that there is growth or increase in the confidence level after they have gone through the P2P sessions.

To examine whether there is a difference of the two scores, a paired sample T-test was conducted on the before and after of the treatment and it showed a significant increase in the mean scores (Table 4.9). Before attending the P2P session, the score was 5.33 and after attending the P2P sessions the mean increased to 8.17. This means that the P2P sessions has a significant contribution towards the confidence levels of the students in passing the course for the final exams.

Table 4.9

Paired samples T-test on Students' confidence level in passing their test after attending P2P

Paired Samples Test					
		Paired Differences Mean	t	df	Sig. (2-tailed)
Pair 1	My confidence level in passing the test at the end of this semester - My confidence level in passing the test at the end of this semester	-2.83333	-22.995	221	.000

4.8 Research Question 5:

Is there any effects of the P2P programme on students' resiliency?

To answer research question 5, descriptive statistics was used to find out the mean and mean difference score. Table 4.6 below displays the means, standard deviations as well as the mean difference of resiliency for both pre-test and post-test. The data shows that for resiliency, the mean for pre-test scores in the Treatment Group is 5.617 and in the Control Group (without treatment) is 5.636. The group with treatment shows a slightly lower mean score than the group without treatment. Although the difference at the beginning of the experiment is very small, this data is consistent with the students who chose not to take the P2P program. They feel that they are confident enough and do not need any extra help with the course, hence they chose not take the P2P. For the students who did sign up for the P2P program may have some insecurities about the course or understanding the subject, hence they signed up for the P2P program. This could also be due to the transitioning issues and adjustment issues between high school and university

In Table 4.10, The mean for the post-test scores in Treatment Group is 7.4271 whereas for the Control Group (without treatment) is 6.473. After the P2P, the group of students with the treatment felt that the P2P helped them to be better prepared and may be more resilient to face the course, the program and their academic journey. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 1.81 and the Control Group is 0.836. The mean score for the Treatment Group is higher. This shows that the P2P program does have a positive effect on students' resiliency. It has helped to improve their resiliency from when they first

started the course to after the P2P. Resiliency helps students to navigate themselves through the difficulties they face throughout the semester.

Table 4.10

Mean Resiliency in Treatment and Control Group

Resiliency						
	Treatment Group (with P2P)			Control Group (w/o P2P)		
Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)
Resiliency	5.617 (0.719)	7.427 (0.827)	1.81	5.636 (0.764)	6.473 (1.092)	0.836

Note: MD = Mean Difference

A SPANOVA test was next conducted to examine the effect of the treatment intervention (P2P) on students' resiliency (see Table 4.11). Multivariate test was conducted to determine if the interaction effect of the independent variables was significantly different. The significant level was set at 0.05.

The test results show that the multivariate test is significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students' resiliency between those who had the P2P treatment versus those who did not have P2P. This means that the P2P program is effective in increasing resiliency amongst students.

Table 4.11

Multivariate Test for Resiliency

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Resiliency	Pillai's Trace	.640	536.226	1.000	301.000	.000	.640
Resiliency * Treatment	Pillai's Trace	.194	72.561	1.000	301.000	.000	.194

Design: Intercept + Treatment
Within Subjects Design: Resiliency
Exact Statistic

According to Encarta (2009), "Effect" means a change or changed state occurring as a direct result of action by something or somebody. "Size" is the degree of change of something in terms of how big or small it is. "Effect size" is simply a way of quantifying the size of the difference between two groups. It is particularly valuable for quantifying the effectiveness of a particular intervention relative to some comparison. It allows us to move beyond the simplistic question of 'does it work or not?' to the far more sophisticated, 'how well does it work in a range of contexts?'

Knowing the magnitude of an effect allows us to ascertain the practical significance of any statistical significance. Can any research always reach statistical significance if there is a large enough sample size, unless the effect size is 0. Even a large effect may not be statistically significant if the sample size is too small.

Table 4.12

Magnitude of Effect Partial Eta Squared

Effect Size	Small	Medium	Large
η^2 (Partial Eta Square)	0.010	0.060	0.140

Source: Cohen (1988)

The effect size of the treatment is show by Partial Eta Squared. As shown in table 4.8, large effect is 0.140 and above. Moderate effect is between 0.060 – 0.139 and a small effect is between 0.010 to 0.059.

In the study to test the effect size of P2P on resiliency, the effect of both with the P2P treatment and without P2P treatment is large. In Table 4.11 earlier shows without P2P treatment is 0.640 and with P2P treatment is 0.194. Therefore the effect size is large which means that with the P2P treatment, it has increased the resiliency of the students.

Table 4.13 shows the mean score between the treatment and control group. It clearly shows that the treatment group has a higher mean score of 6.522 compared to the control group of 6.054.

Table 4.13

Mean Score for Treatment and Control Group

			95% Confidence Level	
Treatment	Mean	Std. Error	Lower Bound	Upper Bound
Control	6.054	.078	5.901	6.207
Treatment	6.522	0.47	6.430	6.614

Table 4.14 shows the mean score for the pre-test and post-test to measure resiliency. The pre-test score shows a mean Resiliency of 5.627 while the post-test shows a higher mean Resiliency of 6.950. This shows that after the P2P treatment the resiliency amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

Table 4.14

Mean Score for Pre and Post Resiliency

			95% Confidence Level	
Resiliency	Mean	Std. Error	Lower Bound	Upper Bound
Pretest	5.627	.048	5.533	5.720
Posttest	6.950	.059	6.834	7.066

Interaction effect in Table 4.15 shows the combined effect of two or more predictor variables on an outcome variable. Figure 4.16 illustrates the profile plot on the differences in the resiliency scores between P2P and no-P2P groups. The shape of the graph indicates that mean scores for both control and treatment groups had increased from the pre-test to the post-test suggesting that both groups (with P2P treatment and without P2P treatment) may have an effect on the students' resiliency but the effect of the group with the treatment had a more significant effect compared to the group without treatment.

Table 4.15

Interaction Effect of Treatment and Resiliency

				95% Confidence Level	
Treatment	Resiliency	Mean	Std. Error	Lower Bound	Upper Bound
Control	Pre-test	5.636	.082	5.475	5.797
	Post-test	6.472	.101	6.273	6.672
Treatment	Pre-test	5.617	.049	5.521	5.713
	Post-test	7.427	.061	7.308	7.546

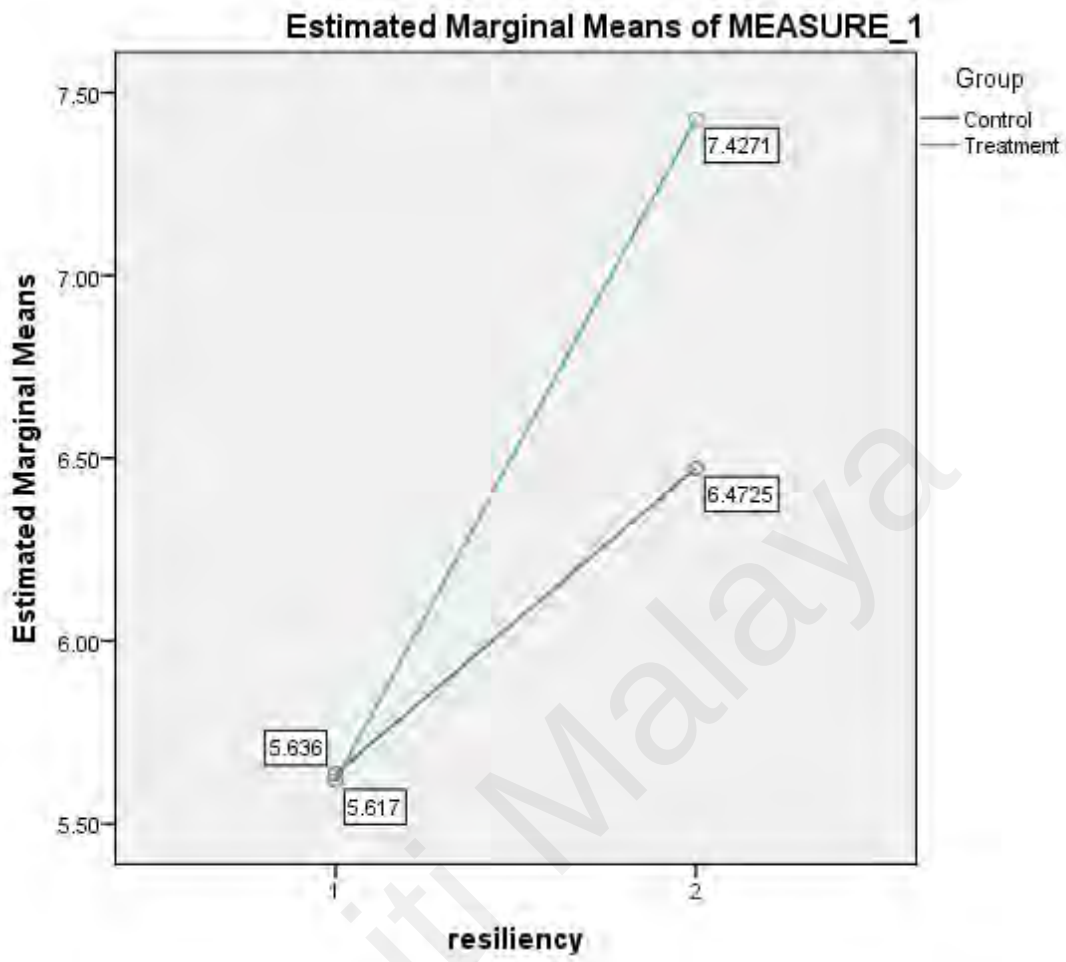

Figure 4.16. Split-plot ANOVA for Resiliency

Since both groups showed improvement in the post-test scores, the improvement might be due to historical or maturation effects. Historical effect is an effect that occurs after the participants are exposed to some external events outside of the study or experiment and have some memory gain or affects participants' learning attitude and behaviours. These external events may include prior exposure to the subject matter, recalling material from high school. Maturation effect is the change that occurs in the participants during the course of the experiment or between measurement, for example self-revision, group study, attending classes, or lecturers going through the course materials with the students.

However by comparing the improvement of the two groups, the P2P treatment shows a steeper gradient which suggests a greater gain in resiliency than the non-P2P group and the results of the split-plot ANOVA test was found to be statistically significant, multivariate Pillai's Trace test, [$F(1,301)= 536.226$; $p< .001$]. Thus, this means that the treatment of the P2P program is significantly effective in increasing resiliency of the students.

The advantage of using the split-plot ANOVA analysis or SPANOVA is that for the pre-test, post-test and between subjects (control and treatment), the historical effects, maturity effects, testing effects and other external effects like self-learning and internal effects like demographics differences of respondents are neutralized. Both groups of the control and the treatment groups are assumed to have the same experiences on this experimental study. The results indicated that there was a positive treatment effect of P2P on students' resiliency.

The split-plot graph indicate that the post-test of the treatment group out-performed the control group. The data in Table 4.16 presents the Split-Plot ANOVA analysis results of the effect of P2P on students' resiliency. The results from the multivariate Pillai's trace test revealed that there is an interaction effect between P2P treatment and resiliency.

Table 4.16

Split-Plot ANOVA Analysis of the Effect of P2P on Student's Resiliency

	Treatment Group		Control Group		Multivariate Pillai's Trace Test	
Item	Pre-test Mean	Post-test Mean	Pre-test Mean	Post-test Mean	F-ratio value at (df = 1, 194)	*p*
Resiliency	5.617	7.427	5.636	6.473	72.561	0.00

This means that the P2P treatment is effective significantly to improve resiliency and the effect is positive.

4.9 Research Question 6:

Is there any effects of the P2P program on students' self-efficacy?

To answer research question 6, descriptive statistics was used to find out the mean and mean difference score. Table 4.17 below displays the means, standard deviations as well as the mean difference of self-efficacy for both pre-test and post-test. The data shows that for self-efficacy, the mean for pre-test scores in the Treatment Group is 27.269 and in the Control Group (without treatment) is 29.375. The group with treatment shows a lower mean score than the group without treatment. This data is consistent with the students who chose not to take the P2P program. They feel that they are confident enough to complete the course and do not need any additional help with the content, hence they did not sign up for the P2P. But the students who did sign up for the P2P may have some concerns about the course and content or understanding the subject, hence they signed up for the P2P program to help support their learning.

In Table 4.17, the mean for the post-test scores in Treatment Group (with the P2P treatment) is 42.435 where as for the Control Group (without P2P treatment) is 34.350. After the P2P treatment, the group of students who received the treatment felt they are better prepared and have better self-efficacy to face the course and the program. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 15.166 and the Control Group is only a mere 4.975. The mean score for the Treatment Group is significantly higher than that of the Control

Group. This shows that the P2P program does have a significant effect on students' self-efficacy. These findings tie in with the earlier discussion relating to their confidence levels after attending the P2P. The students' belief that they are able to accomplish difficult task on their own. The training the students may have received in the P2P program helped improve their self-efficacy.

Table 4.17

Mean for Self-Efficacy in Treatment and Control Group

Self-Efficacy						
	Treatment Group (with P2P)			Control Group (w/o P2P)		
Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)
Self-Efficacy	27.269 (6.163)	42.435 (7.233)	15.166	29.375 (8.412)	34.350 (10.287)	4.975

Note: MD = Mean Difference
SD = Standard Deviation

A SPANOVA test was next conducted to examine the effect of the treatment intervention (P2P) on students' self-efficacy (see Table 4.18). Multivariate test was conducted to determine if the interaction effect of the independent variables was significantly different. The significant level was set at 0.05.

The test result shows that the multivariate test is significant (p-value = .0000). This results supports the conclusion that there are significant differences in students' self-efficacy between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing self-efficacy amongst student.

Table 4.18

Multivariate Test for Self-Efficacy

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Self-Efficacy	Pillai's Trace	.453	248.838	1.000	301.000	.000	.453
Self-Efficacy * Treatment	Pillai's Trace	.175	63.707	1.000	301.000	.000	.175

Design: Intercept + Treatment
Within Subjects Design: Self_efficacy
Exact Statistic

In the study to test the effect size of P2P on self-efficacy, the effect of both with the P2P treatment and without P2P treatment is large. In Table 4.18 above shows that the Partial Eta Squared values for without P2P treatment is 0.453 and with P2P treatment is 0.175. According to Cohen (1988) if the Partial Eta Squared is larger than 0.140 the effect size is considered large. Therefore, it means that the self-efficacy has increased with a large effect resulting from the treatment of the P2P programme.

Table 4.19 shows the mean score between the treatment and control group. It clearly shows that the treatment group has a higher mean score of 34.852 compared to the control group of 31.863.

Table 4.19

Mean score for treatment and control group

			95% Confidence Level	
Treatment	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	34.852	.382	34.101	35.603
Control	31.863	.637	30.609	33.116

Table 4.20 shows the mean score for the pre-test and post-test to measure Self-efficacy. The pre-test score shows a mean Self-efficacy of 28.322 while the post-test shows a higher mean Self-efficacy of 38.392. This shows that after the P2P treatment the self-efficacy amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

Table 4.20

Mean score for Pre and Post Self-Efficacy

			95% Confidence Level	
Self-Efficacy	Mean	Std. Error	Lower Bound	Upper Bound
Pretest	28.322	.445	27.447	29.197
Posttest	38.392	.531	37.348	39.437

Interaction effect is the combined effect of two or more predictor variables on an outcome variable. Figure 4.17 illustrates the profile plot on the differences in the self-efficacy scores between P2P and non-P2P groups. The shape of the graph indicates that mean scores for both control and treatment groups had increased from the pre-test to the post-test suggesting that both groups (with P2P treatment and without P2P treatment) may have an effect on the students' self-efficacy but the effect of the group with the treatment had a more significant effect compared to the group without treatment.

Since both groups showed improvement in the post-test scores, the improvement might be due to certain historical or maturation effects. As discussed earlier historical effect is an effect that occurs after the participants are exposed to some external events that is outside of the study or experiment and have some memory

gain or affects participants' learning attitude and behaviours as a result of exposure. These external events may include prior exposure to the subject matter and recalling material from what they learned previously. Maturation effect is the change that occurs in the participants during the course of the experiment or between measurement, for example self-revision, group study, attending classes, or lecturers going through the course materials with the other students.

However by comparing the improvement of the two groups, the group with the P2P treatment shows a steeper incline which suggests a greater gain in self-efficacy than non-P2P and the results of the split-plot ANOVA test was found to be statistically and positively significant with multivariate Pillai's Trace test [$F(1,301)=248.838$; $p< .001$]. Thus, this means that the treatment of the P2P program is effective to increase self-efficacy of the students.

As discussed, one of the main advantage of using the split-plot ANOVA analysis or SPANOVA is that for the pre-test, post-test and between subjects (control and treatment), the historical effects, maturity effects, testing effects and other external effects like self-learning and internal effects like demographics differences of respondents are neutralized. Both groups of the control and the treatment groups are assumed to be equal and have the same experiences in this experimental study. The results indicated that there was a positive treatment effect of P2P on students' self-efficacy.

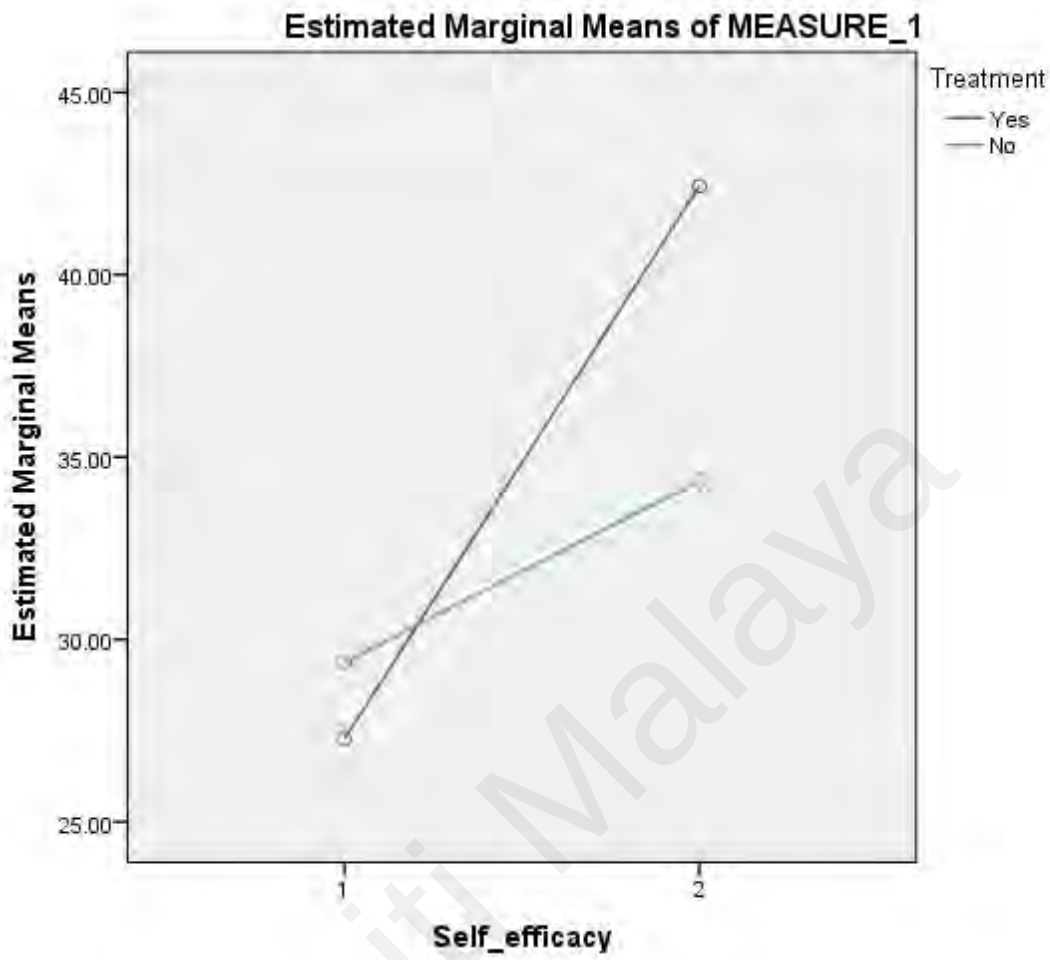

Figure 4.17. Split-plot ANOVA for Self-efficacy

Note: Yes: with P2P treatment (treatment group)
No: without P2P treatment (control group)

The split-plot graph in Figure 4.17 indicate that the post-test of the treatment group out-performed the control group. The results from the multivariate Pillai's trace test in Table 4.18 revealed that there is an interaction effect between P2P treatment and self-efficacy. This means that the P2P treatment is effective significantly to improve self-efficacy and the effect is positive.

4.10 Research Question 7:

Is there any effects of the P2P program on students' motivation in terms of intrinsic, extrinsic and social motivation?

To answer research question 7, the research will be divided into 3 parts, first we will discuss on intrinsic motivation, then extrinsic motivation and social motivation.

4.10.1 Intrinsic Motivation

Descriptive statistics was used to find out the mean and mean difference score for Intrinsic Motivation. Table 4.21 below displays the means, standard deviations as well as the mean difference of intrinsic motivation for both pre-test and post-test. The data shows that for intrinsic motivation, the mean for pre-test scores in the Treatment Group (with P2P treatment) is 29.327 and in the Control Group (without P2P treatment) is 31.400. The group with treatment shows a lower mean score than the group without P2P treatment at Week 1 before the experiment. This finding is consistent with the students who did sign up for the P2P as discussed previously. These students are majority in Year 1, fresh out of high school and may not be that well prepared for university life. The transitioning process may have caused some students to experience some insecurities and unpreparedness about the course or understanding the subject content, hence they signed up for the P2P program. On the other hand the students who chose not to take the P2P program may feel that they are confident enough to handle the subject matter and do not need any additional help with learning the course; hence they chose not take the P2P.

The mean for the post-test scores in Treatment Group (with P2P treatment) is 43.757 whereas for the Control Group (without P2P treatment) is 36.062. After the

P2P treatment, the group of students with the treatment felt they are better prepared and have higher intrinsic motivation. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 14.43 and the Control Group is 4.66. The mean score for the Experimental Group is higher. This shows that the P2P program does have an effect on students' intrinsic motivation. This is shown in Table 4.21. This supports the earlier data which shows that students who participated in the P2P sessions have shown improvements in the knowledge level of the subject matter and have higher confidence in passing their exams. This may be inferred to their increased level of intrinsic motivation levels after taking the P2P program.

Table 4.21

Mean for Intrinsic Motivation in Treatment and Control Group

Intrinsic Motivation						
	Treatment Group (with P2P)			Control Group (w/o P2P)		
Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)
Intrinsic Motivation	29.327 (8.668)	43.757 (8.848)	14.43	31.400 (8.510)	36.062 (9.687)	4.662

Note: MD = Mean Difference
SD = Standard Deviation

A SPANOVA test was next conducted to examine the effect of the treatment intervention (P2P) on students' intrinsic motivation. Multivariate test was conducted to determine if the interaction effect of the independent variables was significantly different. The significant level was set at 0.05.

The test results in Table 4.22 shows that the multivariate test is significant (p-value = .000, which is less than the criterion value of 0.05). This analysis states that there is a significant difference in students' intrinsic motivation between those who had the P2P treatment versus those who did not have the P2P treatment. The results shows that the P2P program is indeed effective in increasing the intrinsic motivation amongst students. The motivation to succeed comes from within the students themselves. When the students experience the benefits that the P2P program brings them, they will feel the motivation and urge to continue the program and continue to succeed.

Table 4.22

Multivariate Test for Intrinsic Motivation

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intrinsic Motivation	Pillai's Trace	.376	181.574[b]	1.000	301.000	.000	.376
Intrinsic Motivation * Treatment	Pillai's Trace	.136	47.524[b]	1.000	301.000	.000	.136

Design: Intercept + Treatment
Within Subjects Design: Intrinsic Motivation
Exact Statistic

The effect size of the treatment is show by Partial Eta Squared. As shown in table 4.12 previously, according to Cohen (1988), large effect is 0.140 and above, moderate effect is between 0.060 – 0.139 and a small effect is between 0.010 to 0.059. In the study to test the effect size of P2P on intrinsic motivation as shown in Table 4.22 the effect without P2P treatment is large, at 0.376 but the effect size of intrinsic motivation with the P2P treatment is moderate in size which is 0.136.

Table 4.23 shows the mean score between the treatment and control group. It clearly shows that the treatment group has a higher mean score of 36.543 compared to the control group of 33.731. This concludes that the students in the treatment group with P2P have a higher intrinsic motivation as compared to the students from the control group.

Table 4.23

Mean score for treatment and control group

			95% Confidence Level	
Treatment	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	36.543	.468	35.622	37.464
Control	33.731	.781	32.193	35.269

Table 4.24 below shows the mean score for the pre-test and post-test to measure Intrinsic motivation. The pre-test score shows a mean intrinsic motivation of 30.364 while the post-test shows a higher mean intrinsic motivation of 39.910. This shows that after the P2P treatment the intrinsic motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester. This finding is once again supported by the earlier analysis stating that after going through the P2P program, he students will be indeed perform better and have better confidence in passing the exams. This stamps from the their intrinsic motivation to do well.

Table 4.24

Mean score for Pre and Post Intrinsic Motivation after the P2P program.

			95% Confidence Level	
Intrinsic Motivation	Mean	Std. Error	Lower Bound	Upper Bound
Pretest	30.364	.562	29.257	31.470
Posttest	39.910	.591	38.746	41.074

Interaction effect in Table 4.25 is the combined effect of two or more predictor variables on an outcome variable. Figure 4.19 illustrates the profile plot on the differences in the intrinsic motivation scores between P2P and non-P2P groups. The shape of the graph indicates that mean scores for both control and treatment groups had increased from the pre-test to the post-test suggesting that both groups (with P2P treatment and without P2P treatment) may have an effect on the students' intrinsic motivation but the effect of the group with the P2P treatment had a more significant effect compared to the group without the P2P treatment (control group).

Table 4.25

Interaction effect of treatment and intrinsic motivation

				95% Confidence Level	
Treatment	Intrinsic Motivation	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	Pre-test	29.327	.578	28.190	30.464
	Post-test	43.758	.608	42.562	44.954
Control	Pre-test	31.400	.965	29.502	33.298
	Post-test	36.063	1.015	34.066	38.059

Since both groups showed improvement in the post-test scores, these improvements as explained previously might be due to historical or maturation effects of the variable over time. Historical effect is an effect that occurs after the participants are exposed to some external events previously outside of the study or experiment period resulting in some memory gain or improved participants' learning attitude and behaviours. These external events may include prior exposure to the subject matter or recalling material from high school. Maturation effect is the change that occurs in the participants during the course of the study or experiment or between measurement, for example self-revision, group study, attending classes, or lecturers going through the course materials with the students and attending any tutorial sessions.

However by comparing the improvement of the two groups, the P2P treatment shows a steeper gradient which suggests a greater gain in intrinsic motivation than non-P2P and the results of the split-plot ANOVA test was found to be statistically significant, multivariate Pillai's Trace test [$F(1,301)=181.574$; $p< .001$]. Thus, this means that the treatment of the P2P program is effective to increase intrinsic motivation of the students. The results indicated that there was a positive treatment effect of P2P on students' intrinsic motivation.

The split-plot graph in Figure 4.18 indicate that the post-test of the treatment group out-performed the control group. The results from the multivariate Pillai's trace test revealed that there is an interaction effect between P2P treatment and intrinsic motivation. This means that the P2P treatment is effective and significant to improve intrinsic motivation and the effect is positive.

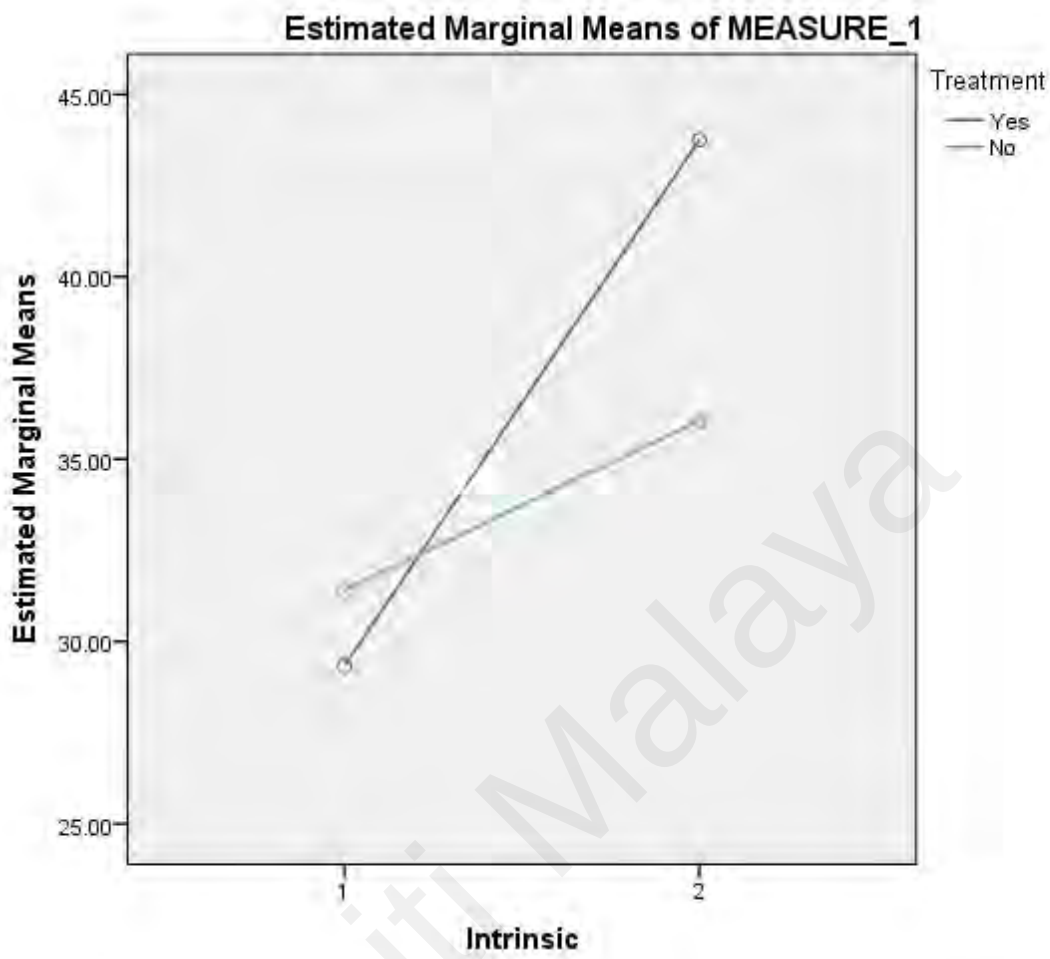

Figure 4.18. Split-plot ANOVA for Intrinsic Motivation

Note: Yes: with P2P treatment (treatment group)
No: without P2P treatment (control group)

4.10.2 Extrinsic Motivation

Descriptive statistics was used to find out the mean and mean difference score for extrinsic motivation of the students. Table 4.26 below displays the means, standard deviations as well as the mean difference of extrinsic motivation for both pre-test and post-test. The data shows that for extrinsic motivation, the mean for pre-test scores in the Treatment Group (with P2P treatment) is 33.171 and in the Control Group (without P2P treatment) is 36.605. The group with treatment shows a lower mean score than

the group without treatment at Week 1 before the experiment. These findings are consistent with the students who chose not to take the P2P program. They feel that they are confident enough to handle the subject matter and do not need any extra help with the course, hence they did not take the P2P. But the students who did sign up for the P2P may have some insecurities about the course or understanding the subject. They need extra help and think that the P2P may be able to help them, hence they chose to join the program. These students are majority in Year 1, fresh out of high school and may not be that well prepared for university life, hence they signed up for the P2P program.

The mean for the post-test scores in Treatment Group (with P2P treatment) is 48.175 whereas for the Control Group (without P2P treatment) is 41.618. After the P2P treatment, the group of students with the treatment felt they are better prepared and have higher extrinsic motivation. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 15.004 and the Control Group is 5.013. The mean score for the Treatment Group is higher. This shows that the P2P program does have an effect on students' extrinsic motivation. These results could be attribute to success they see achieved by the P2P leader and their other peers within the program. The leader is successful, someone selected based on his/her knowledge on the subject matter and has good leadership skills. The student may want to emulate the leader. They could be motivated by the recognition given to these leaders and if they do well, they too may have the opportunity to be selected as a peer leader.

Table 4.26

Mean for Extrinsic Motivation in Treatment and Control Group

Extrinsic Motivation						
	Treatment Group (with P2P)			Control Group (w/o P2P)		
Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)
Extrinsic Motivation	33.171 (7.875)	48.175 (6.985)	15.004	36.605 (11.425)	41.618 (10.807)	5.013

Note: MD = Mean Difference
SD = Standard Deviation

A SPANOVA test was next conducted to examine the effect of the treatment intervention (P2P) on students' extrinsic motivation. Multivariate test was conducted to determine if the interaction effect of the independent variables was significantly different. The significant level was set at 0.05.

The test results in Table 4.27 shows that the multivariate test is significant (p – value = .000). This results supports the conculsion that there are significant differences in students' extrinsic motivation between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing the extrinsic motivation amongst student.

Table 4.27

Multivariate Test for Extrinsic Motivation

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Extrinsic Motivation	Pillai's Trace	.408	200.154[b]	1.000	290.000	.000	.408
Extrinsic Motivation * Treatment	Pillai's Trace	.147	49.865[b]	1.000	290.000	.000	.147

a. Design: Intercept + Treatment
Within Subjects Design: Extrinsic Motivation
b. Exact Statistic

The effect size of the treatment is shown by Partial Eta Squared. In the study to test the effect size of P2P on extrinsic motivation, the effect of both with the P2P treatment and without P2P treatment is large. In Table 4.27 above shows without P2P treatment is 0.408 and with P2P treatment is 0.147. According to Cohen (1988) if the Partial Eta Squared is larger than 0.140 the effect size is considered large. The large effect means that the extrinsic motivation amongst students increased when the students were exposed to the treatment of the P2P programme.

Table 4.28 shows the mean score between the treatment and control group. The treatment group has a slightly higher mean score of 40.674 compared to the control group of 39.112.

Table 4.28

Mean score for Treatment and Control Group

			95% Confidence Level	
Treatment	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	40.674	.456	39.776	41.571
Control	39.112	.769	37.599	40.625

Table 4.29 shows the mean score for the pre-test and post-test to measure extrinsic motivation. The pre-test score shows a mean extrinsic motivation of 34.888 while the post-test shows a higher mean extrinsic motivation of 44.897. This shows that after the P2P treatment the extrinsic motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

Table 4.29

Mean score for Pre and Post Extrinsic Motivation after P2P program

			95% Confidence Level	
Extrinsic Motivation	Mean	Std. Error	Lower Bound	Upper Bound
Pretest	34.888	.595	33.716	36.060
Posttest	44.897	.543	43.828	45.967

Interaction effect in Table 30 is the combined effect of two or more predictor variables on an outcome variable. Figure 4.20 illustrates the profile plot on the differences in the extrinsic motivation scores between P2P and non-P2P groups. The shape of the graph indicates that mean scores for both control and treatment groups had increased from the pre-test to the post-test suggesting that both groups (with P2P treatment and without P2P treatment) may have an effect on the students' extrinsic motivation but the effect of the group with the P2P treatment had a more significant effect compared to the group without the P2P treatment (control group).

Table 4.30

Interaction effect of treatment on extrinsic motivation

				95% Confidence Level	
Treatment	Resiliency	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	Pre-test	33.171	.608	31.975	34.367
	Post-test	48.176	.554	47.085	49.267
Control	Pre-test	36.605	1.024	34.589	38.621
	Post-test	41.618	.935	39.779	43.458

Since both groups showed improvement in the post-test scores, the improvement might be due to historical or maturation effects. Historical effect is an effect that occurs after the participants are exposed to some external events outside of the study or experiment and have knowledge improvement or improve participants' learning attitude and behaviours. These external events may include prior exposure to the subject matter or recalling material from high school or prior learning. Maturation effect is the change that occurs in the participants during the course of the experiment or between measurement, for example self-revision, group study, attending classes, or lecturers going through the course materials with the students or increased interaction amongst peers, finding information online and attending any tutorial sessions.

However by comparing the improvement of the two groups, the P2P treatment shows a steeper gradient which suggests a greater gain in extrinsic motivation than non-P2P and the results of the split-plot ANOVA test was found to be statistically significant, multivariate Pillai's Trace test [$F(1,290)=200.154$; $p< .001$]. Thus, this means that the treatment of the P2P program is effective to increase extrinsic motivation of the students. The results indicated that there was a positive treatment effect of P2P on students' extrinsic motivation.

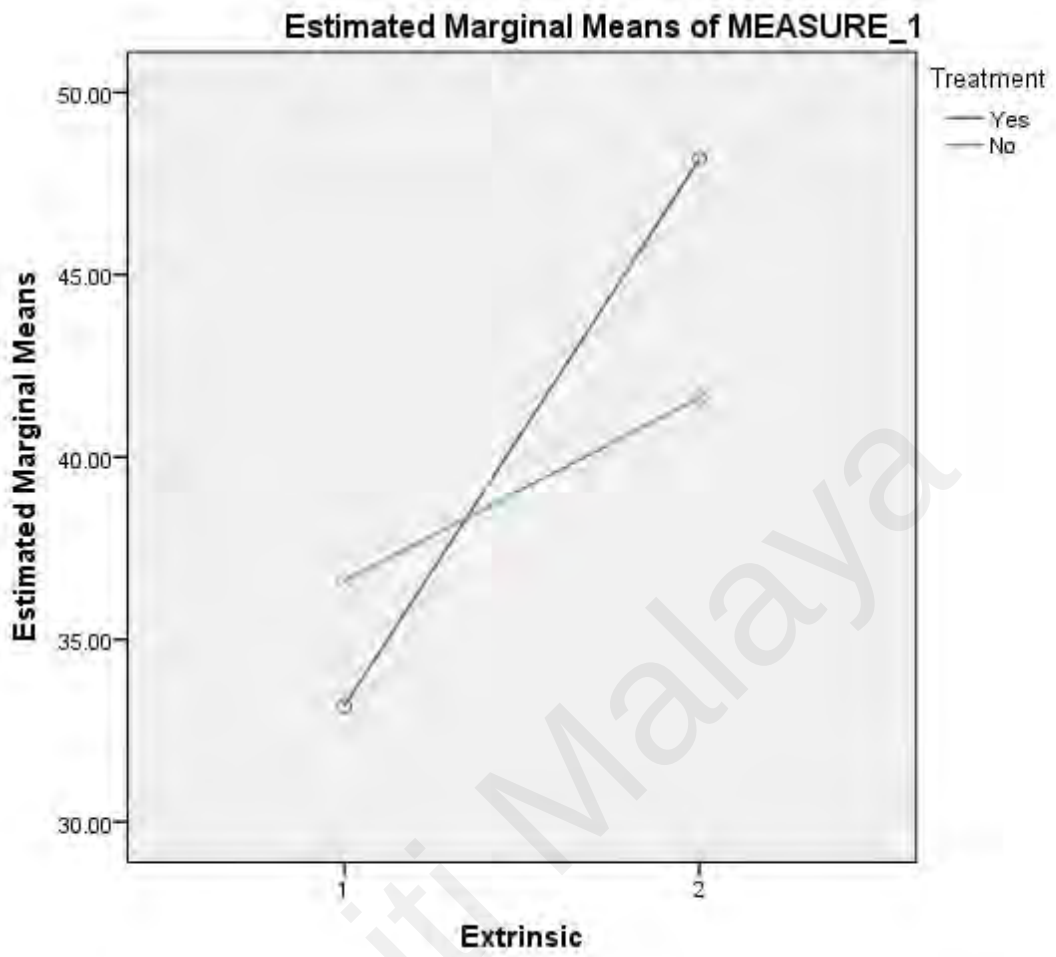

Figure 4.19. Split-plot ANOVA for Extrinsic Motivation

Note: Yes: with P2P treatment (treatment group)
No: without P2P treatment (control group)

The split-plot graph shown in Figure 4.19 above indicate that the post-test of the treatment group out-performed the control group. The results from the multivariate Pillai's trace test revealed that there is an interaction effect between P2P treatment and extrinsic motivation. This means that the P2P treatment is effective significantly to improve extrinsic motivation and the effect is positive.

4.10.2 Social Motivation

Descriptive statistics was used to find out the mean and mean difference score. Table 4.31 below displays the means, standard deviations as well as the mean difference of social motivation for both pre-test and post-test. The data shows that for social motivation, the mean for pre-test scores in the Treatment Group (with P2P treatment) is 32.349 and in the Control Group (without P2P treatment) is 35.350. The group with treatment shows a slightly lower mean score compared to the group without treatment at Week 1 before the experiment. This finding is consistent with the students who chose not to take the P2P program. They feel that they are confident enough to handle the subject matter and do not need any extra help with the course, hence they did not take the P2P program. But the students who did sign up for the P2P may have some insecurities about the course or understanding the subject. These students are majority in Year 1, fresh out of high school and may not be that well prepared for university life, hence they signed up for the P2P program.

The mean for the post-test scores in Treatment Group (with P2P treatment) is 46.780 whereas for the Control Group (without P2P treatment) is 40.350. After the P2P treatment, the group of students with the treatment felt they are better prepared, socialised more and have higher social motivation score. This is supported by the mean difference between pre-test and post-test scores for Experimental Group is 14.43 and the Control Group is 5. The mean score for the Experimental Group is higher. This shows that the P2P program does have an effect on students' social motivation score. Due to the nature of the program which is centered around social learning, it is not surprised that the social interaction amongst the students have increased significantly after attending the P2P sessions. The success of the peers and the group enhances the social motivation for the students to want to perform better.

Table 4.31

Mean for Social Motivation in Treatment and Control Group

Social Motivation						
	Treatment Group (with P2P)			Control Group (w/o P2P)		
Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (MD)
Social Motivation	32.349 (6.441)	46.780 (6.212)	14.431	35.350 (8.726)	40.350 (9.529)	5

Note: MD = Mean Difference
SD = Standard Deviation

A SPANOVA test was next conducted to examine the effect of the treatment intervention (P2P) on students' social motivation. Multivariate test was conducted to determine if the interaction effect of the independent variables was significantly different. The significant level was set at 0.05.

The test results in Table 4.32 shows that the multivariate test is significant (p-value = .000). This results shows that there are significant differences in students' social motivation between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing social motivation amongst student. They are motivated by the success of their peers within the program.

Table 4.32

Multivariate Test for Social Motivation

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Social Motivation	Pillai's Trace	.534	344.562[b]	1.000	301.000	.000	.534
Social Motivation * Treatment	Pillai's Trace	.212	81.165[b]	1.000	301.000	.000	.212

a. Design: Intercept + Treatment
Within Subjects Design: Social Motivation
b. Exact Statistic

The effect size of the treatment is shown by Partial Eta Squared. As shown in table 4.12 previously according to Cohen (1988), large effect is 0.140 and above, moderate effect is between 0.060 – 0.139 and a small effect is between 0.010 to 0.059.

In the study to test the effect size of P2P on extrinsic motivation, the effect of both with the P2P treatment and without P2P treatment is large. In Table 4.33 above shows without P2P treatment is 0.534 and with P2P treatment is 0.212. Both according to Cohen (1988) if the Partial Eta Squared is larger than 0.140 the effect size is considered large.

Table 4.33 shows the mean score between the treatment and control group. The treatment group has a slightly higher mean score of 39.565 compared to the control group of 37.850. The students who attend the P2P program which is based on social learning theory did in fact improve their social interaction and also their motivation.

Table 4.33

Mean score for treatment and control group

			95% Confidence Level	
Treatment	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	39.565	.398	38.782	40.348
Control	37.850	.664	36.543	39.157

Table 4.34 below shows the mean score for the pre-test and post-test to measure social motivation. The pre-test score shows a mean social motivation of 33.850 while the post-test shows a higher mean extrinsic motivation of 43.565. This shows that after the P2P treatment the social motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

Table 4.34

Mean score for Pre and Post Social Motivation after P2P program

			95% Confidence Level	
Social Motivation	Mean	Std. Error	Lower Bound	Upper Bound
Pretest	33.850	.463	32.938	34.762
Posttest	43.565	.471	42.638	44.492

Interaction effect in Table 4.35 is the combined effect of two or more predictor variables on an outcome variable. Figure 4.21 illustrates the profile plot on the differences in the social motivation scores between P2P and non-P2P groups. The shape of the graph indicates that mean scores for both control and treatment groups

had increased from the pre-test to the post-test suggesting that both groups (with P2P treatment and without P2P treatment) may have an effect on the students' social motivation but the effect of the group with the P2P treatment had a more significant effect compared to the group without the P2P treatment (control group).

Table 4.35

Interaction effect of Treatment on Social Motivation

				95% Confidence Level	
Treatment	Resiliency	Mean	Std. Error	Lower Bound	Upper Bound
Treatment	Pre-test	32.350	.476	31.412	33.287
	Post-test	46.780	.484	45.827	47.733
Control	Pre-test	35.350	.795	33.785	36.915
	Post-test	40.350	.809	38.759	41.941

Since both groups showed improvement in the post-test scores, the improvement might be due to historical or maturation effects. Historical effects as discussed earlier is an effect that occurs after the participants are exposed to some external events which has taken place prior to the study or experiment time frame and have had some memory gain and improvements in participants' learning attitude and behaviours as a result of that prior exposure. These external events may include prior exposure to the subject matter, previously learning similar subject content from their high school. Maturation effect is the change that occurs in the participants during the course of the experiment or between measurement, for example self-revision, group study, attending classes, or lecturers going through the course materials and socializing with new friends and other peers. However by comparing the improvement of the two

groups, the P2P treatment shows a steeper gradient which suggests a greater gain in social motivation than non-P2P and the results of the split-plot ANOVA test was found to be statistically significant, multivariate Pillai's Trace test, [F(1,301)=344.562; p< .001]. Thus, this means that the treatment of the P2P program is effective to increase social motivation of the students.

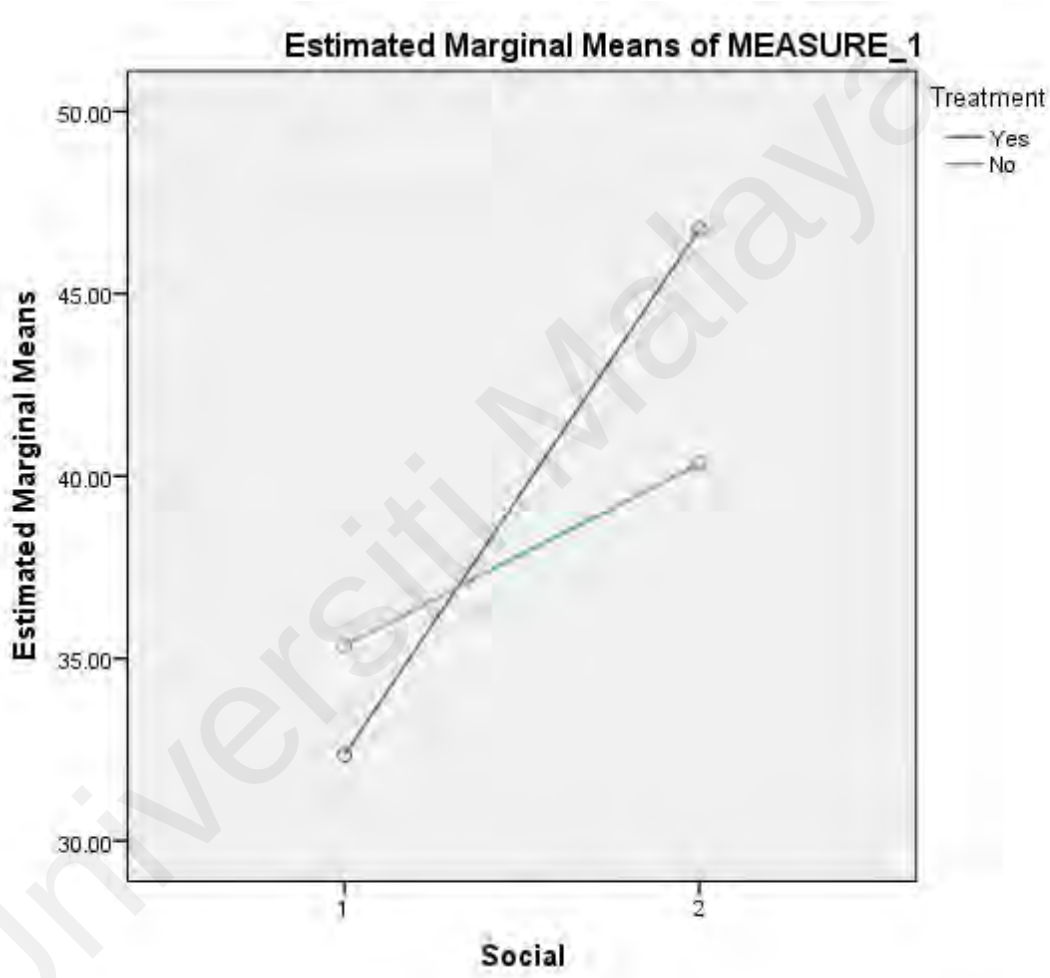

Figure 4.20. Split-plot ANOVA for Social Motivation

Note: Yes: with P2P treatment (treatment group)
No: without P2P treatment (control group)

The split-plot graph in Figure 4.20 indicate that the post-test of the treatment group out-performed the control group. The results from the multivariate Pillai's trace

test revealed that there is an interaction effect between P2P treatment and social motivation. This means that the P2P treatment is effective significantly to improve social motivation and the effect is positive.

The historical effects, maturity effects, testing effects and other external effects like self-learning and internal effects like demographics differences of respondents in the pre-test, post-test and between subjects are neutralized when split-plot ANOVA is used. Both groups of the control and the treatment groups are assumed to have the same experiences on this experimental study. The results indicated that there was a positive treatment effect of P2P on students' social motivation.

4.11 Research Question 8:

Do the five demographic variables which are gender, age, academic stream in high school, parent incomes and study time have any moderating effects on the relationship between the independent variable and dependent variable?

This research question was intended to address the effect of students' demographic characteristics such as gender, age, academic stream when in high school, their parents' income and their study time in the relationship between attending P2P sessions (independent variable) and resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation (dependent variable). Moderating variable is the variable that affects the direction or the strength of the relation between an independent variable and a dependent variable (Baron & Kenny, 1986). A moderator is a third variable that affects the zero-order correlation between two other variables. It influences the strength of a relationship between the two other variables. Partial Least Squares-Structural Equation Modelling (PLS-SEM) was used to perform the

moderation analysis in this study. PLS-SEM is a statistical data analysis method used to analyse relationships among multiple variables in a research model. It is a non-parametric analysis and suitable for large data sample of more than 100 respondents. It was utilized to test the direct effect and moderating relationship between students who attend the P2P sessions (independent variable), and their resiliency level, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation (dependent variable) moderated by the students' characteristics such as gender, age, academic stream while in high school, parents' income and study time (moderating variable).

A moderation model includes the moderating variable and the significance of the direct effect and moderating effect that are then checked using bootstrapping method. Bootstrapping is used to analyse the significance of PLS-SEM parameters. For bootstrapping, significance of the relationship is calculated based on t-values. The moderating effect is measured through t-statistics as PLS-SEM generates t-statistics for significance testing between interaction effect of the moderator and the independent variable on the dependent variable. If the interaction effect is significant, the moderator has a significant moderating effect on the relationship between students attending the P2P sessions and their resiliency levels, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Hence, it can be concluded that the moderating effect exist and the moderator could be confirmed as having significant moderating effect. In the following sections, the researcher would perform the moderating effect test of students' demographic variables (gender, age, academic stream in high school, parents' income and study time) on their level of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

4.11.1 Moderation effect of Gender between attending the P2P sessions and Resiliency of students.

The moderating model for gender on the relationship between students attending the P2P sessions and their resiliency is as shown in Figure 4.21. In addition, t-statistics for the relationship between students attending P2P, gender and their resiliency is presented in Table 4.36.

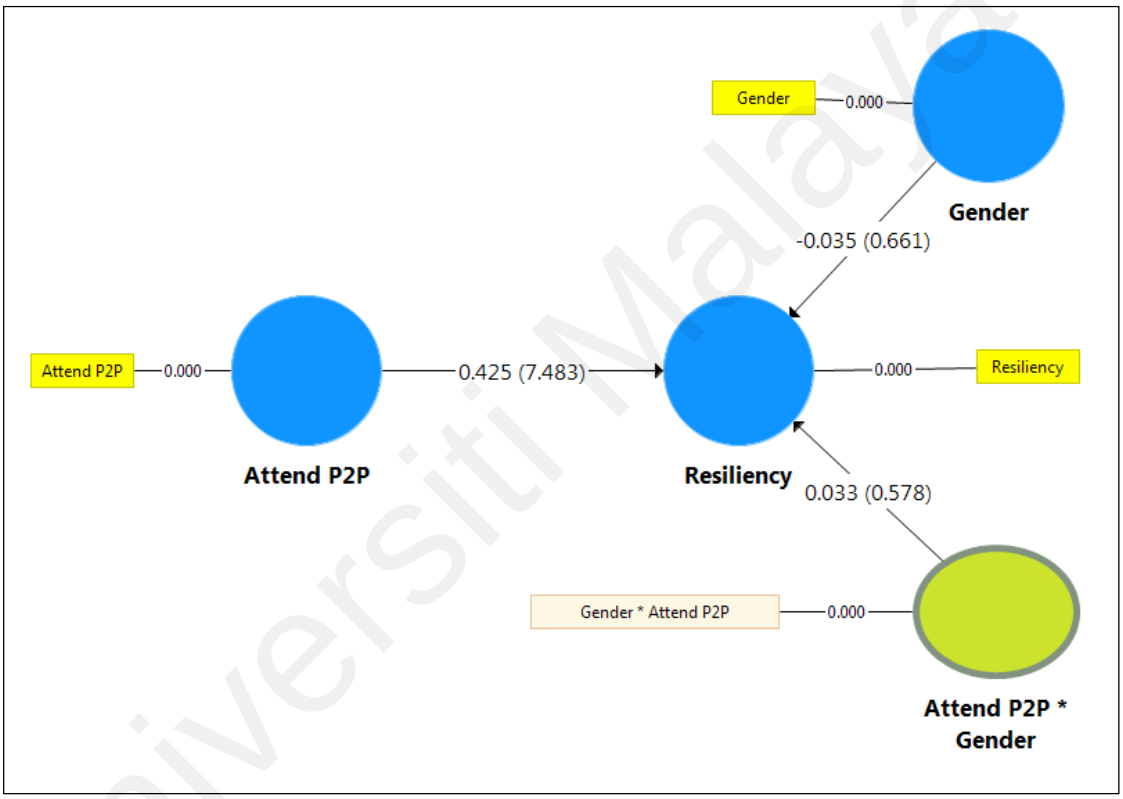

Figure 4.21. Moderation model for Gender on the relationship between Attending P2P sessions and Resiliency of students.

Table 4.36

T-statistics of Gender as Moderating Variable on the Relationship between Attending P2P sessions and Resiliency

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P	→	Resiliency	7.483***	Significant	0.425
Gender	→	Resiliency	0.661	Not Significant	-0.035
Attend P2P * Gender	→	Resiliency	0.578	Not Significant	0.033

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.36 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=7.483) at .001 level (p<.001). However, the interaction between attending P2P sessions and gender are not significant (t=0.578, p>.05). Results show that Gender is not a significant moderator (Attend P2P * Gender: β=0.033, p>.05) on the effect of Attending P2P and students Resiliency (β=0.425, p<.001).

The results indicate that there is no moderating effect of gender on the relationship between attending P2P sessions and resiliency. The relationship between Attending P2P sessions and Resiliency is similar for the male and female groups.

4.11.2 Moderation effect of Age between attending the P2P sessions and Resiliency of students.

The moderating model for age on the relationship between students attending the P2P sessions and their resiliency is as shown in Figure 4.22. In addition, t-statistics for the relationship between students attending P2P, age and their resiliency is presented in Table 4.37.

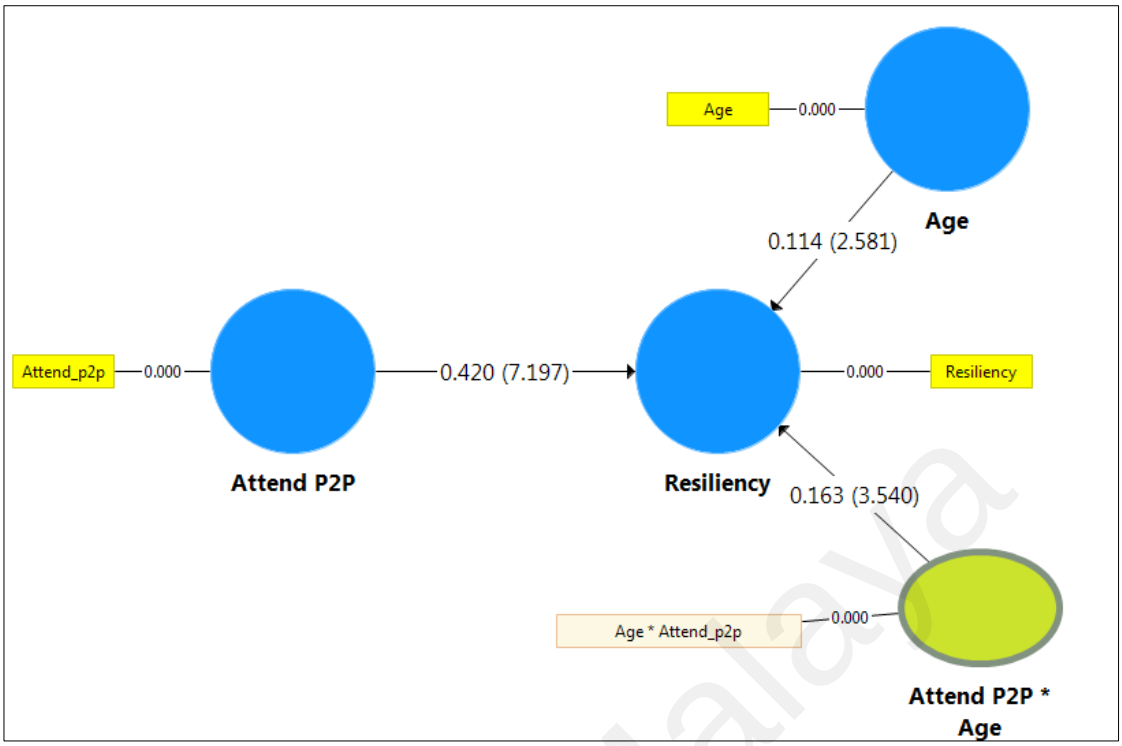

Figure 4.22. Moderation model for Age on the relationship between Attending P2P sessions and Resiliency of students.

Table 4.37

T-statistics of Age as Moderating Variable on the Relationship between Attending P2P sessions and Resiliency

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P	→	Resiliency	7.197***	Significant	0.420
Age	→	Resiliency	2.581**	Significant	0.114
Attend P2P * Age	→	Resiliency	3.540***	Significant	0.163

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.37 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=7.197, β=0.420) at the .001 level (p<.001). The interaction between attending P2P sessions and age is also significant

(t=3.540, β=0.163, p<.001). Results show that Age is a significant moderator (Attend P2P * Age: β=0.163, p<.001) on the effect of Attending P2P and students Resiliency (β=0.420, p<.001).

The results indicate that there is a moderating effect of age on the relationship between attending P2P sessions and resiliency. The relationship between Attending P2P sessions and Resiliency is different for student with different age groups.

4.11.3 Moderation effect of Academic Stream between attending the P2P sessions and Resiliency of students.

The moderating model for Academic Stream on the relationship between students attending the P2P sessions and their resiliency is as shown in Figure 4.23 below. In addition, t-statistics for the relationship between students attending P2P, Academic Stream and their resiliency is presented in Table 4.38 below.

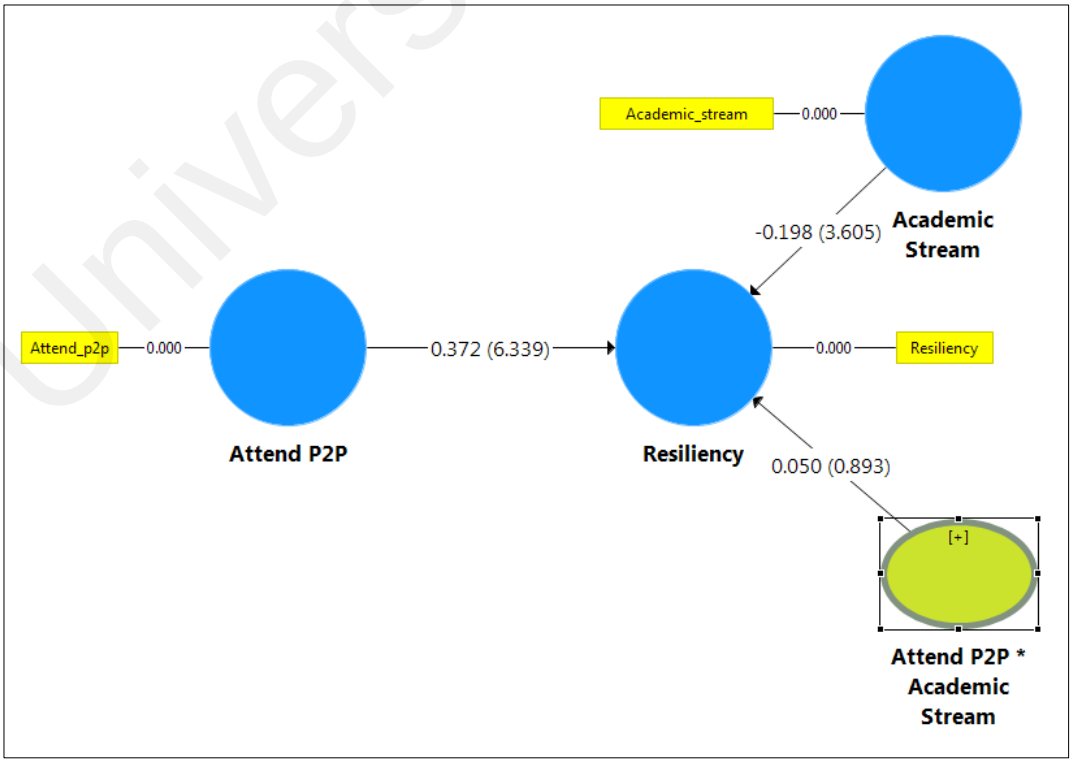

Figure 4.23 Moderation model for Academic Stream on the relationship between Attending P2P sessions and Resiliency of students.

Table 4.38

T-statistics of Academic Stream as Moderating Variable on the Relationship between Attending P2P sessions and Resiliency

Regression Path	T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P → Resiliency	6.339***	Significant	0.372
Academic Stream → Resiliency	3.605***	Significant	-0.198
Attend P2P * Academic Stream → Resiliency	0.893	Not Significant	0.050

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.38 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=6.339, β=0.372) at the .001 level (p<.001). However the interaction between attending P2P sessions and Academic Stream is not significant (t=0.893, β=0.050, p>.05). Results show that Academic Stream is not a moderator (Attend P2P * Academic Stream: β=0.050, p>.05) on the effect of Attending P2P and students Resiliency (β=0.372, p<.001).

The results indicate that there is no moderating effect of Academic Stream on the relationship between attending P2P sessions and resiliency. The relationship between Attending P2P sessions and Resiliency is similar for students from the Science stream as well as Arts stream when they were in high school.

4.11.4 Moderation effect of Parents' income between attending the P2P sessions and resiliency of students.

The moderating model for Parents' income on the relationship between students attending the P2P sessions and their resiliency is as shown in Figure 4.24

below. In addition, t-statistics for the relationship between students attending P2P, Parents' income and their resiliency is presented in Table 4.39 below.

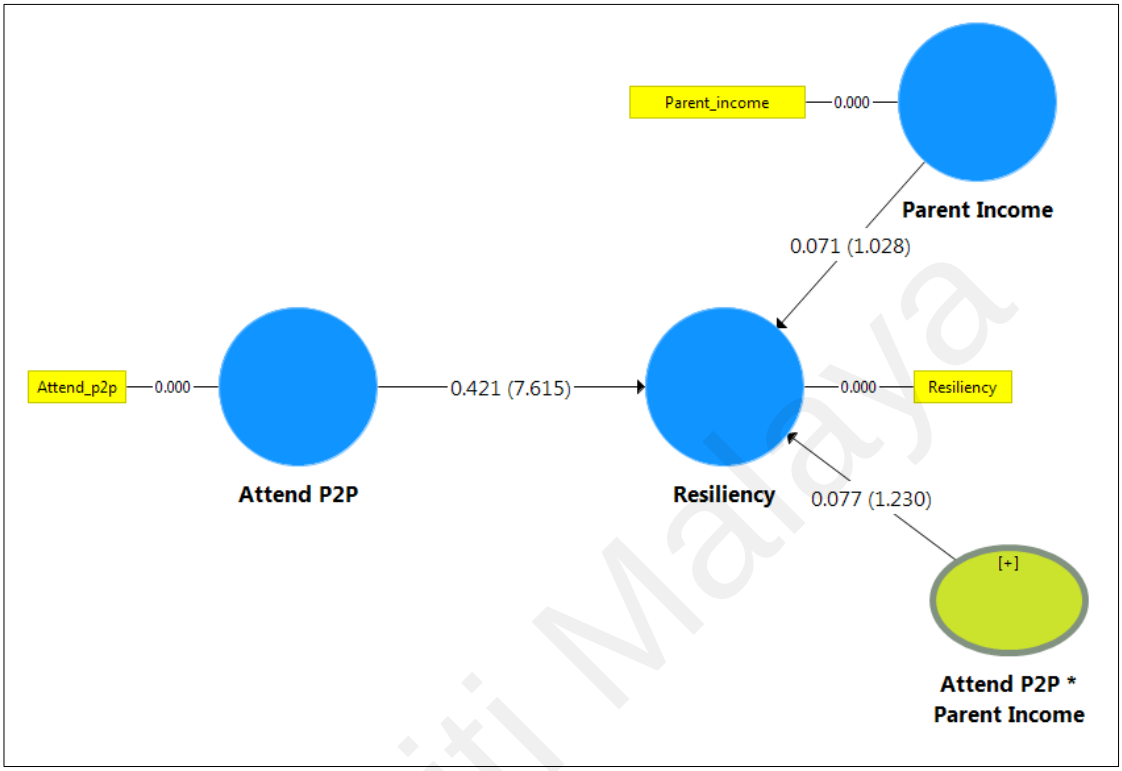

Figure 4.24. Moderation model for Parents' Income on the relationship between Attending P2P sessions and Resiliency of students.

Table 4.39

T-statistics of Parents' Income as Moderating Variable on the Relationship between Attending P2P sessions and Resiliency

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Resiliency	→	7.615***	Significant	0.421
Parents' Income Resiliency	→	1.028	Not Significant	0.071
Attend P2P * Parents' Income Resiliency	→	1.230	Not Significant	0.077

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.39 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=7.615, β=0.421) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Parents' Income is not significant (t=1.230, β=0.077, p>.05). Results show that Parents' Income is not a moderator (Attend P2P * Parents' Income: β=0.077, p>.05) on the effect of Attending P2P and students Resiliency (β=0.421, p<.001).

The results indicate that there is no moderating effect of Parents' Income on the relationship between attending P2P sessions and resiliency. The relationship between Attending P2P sessions and Resiliency is similar for students whose parents' income bracket differ.

4.11.5 Moderation effect of Study Time between attending the P2P sessions and Resiliency of students.

The moderating model for Study Time on the relationship between students attending the P2P sessions and their resiliency is as shown in Figure 4.25 below. In addition, t-statistics for the relationship between students attending P2P, Study Time and their resiliency is presented in Table 4.40 below.

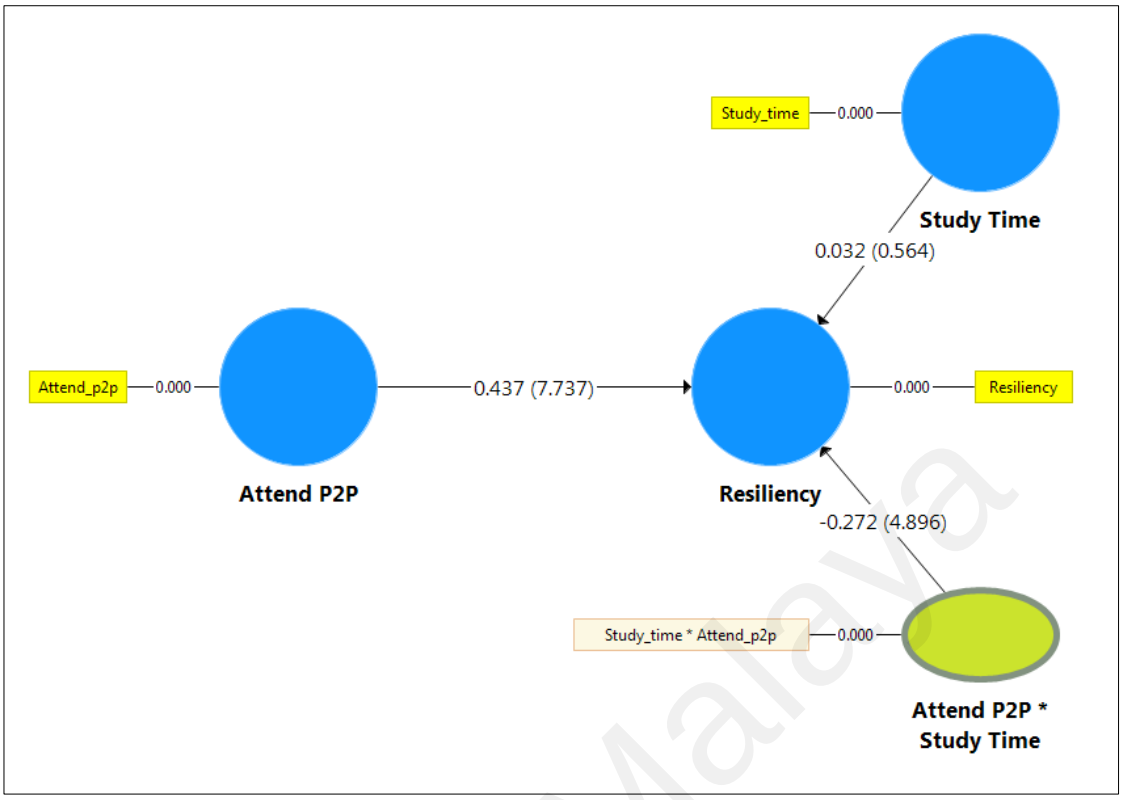

Figure 4.25. Moderation model for Study Time on the relationship between Attending P2P sessions and Resiliency of students.

Table 4.40

T-statistics of Study Time as Moderating Variable on the Relationship between Attending P2P sessions and Resiliency

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P	→	Resiliency	7.737***	Significant	0.437
Study Time	→	Resiliency	0.564	Not Significant	0.032
Attend P2P * Study Time	→	Resiliency	4.896***	Significant	-0.272

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.40 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=7.737, β=0.437) at the .001 level (p<.001).

The interaction between attending P2P sessions and Study Time is also significant (t=4.896, β=-0.272, p<.001). Results show that Study Time is a moderator (Attend P2P * Study Time: β=-0.272, p<.001) on the effect of Attending P2P and students Resiliency (β=0.437, p<.001).

The results indicate that there is a moderating effect of Study Time on the relationship between attending P2P sessions and Resiliency. The strength of the relationship between Attending P2P sessions and Resiliency is different with different hours of study time.

4.11.6 Moderation effect of Gender between attending the P2P sessions and Self-Efficacy of students.

The moderating model for Gender on the relationship between students attending the P2P sessions and their Self-Efficacy is as shown in Figure 4.26 below. In addition, t-statistics for the relationship between students attending P2P, Gender and their Self-Efficacy is presented in Table 4.41 below.

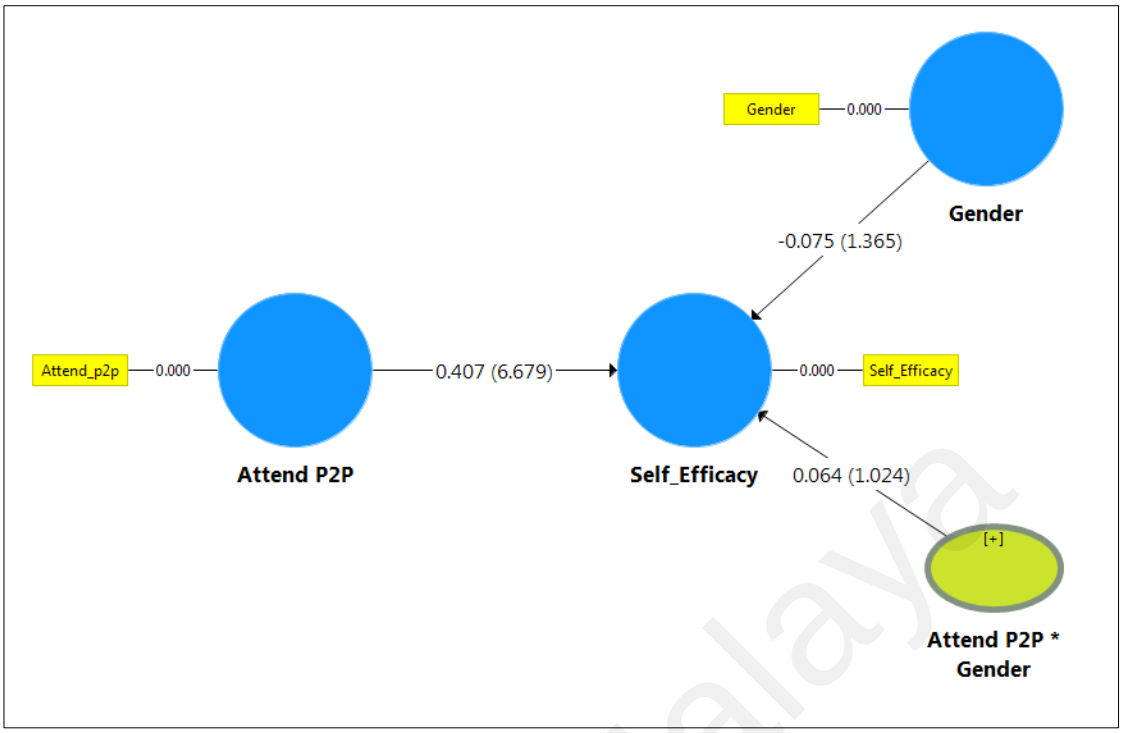

Figure 4.26: Moderation model for Gender on the relationship between Attending P2P sessions and the Self - Efficacy of students.

Table 4.41

T-statistics of Gender as Moderating Variable on the Relationship between Attending P2P sessions and Self – Efficacy

Regression Path	T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P → Self - Efficacy	6.679***	Significant	0.407
Gender → Self - Efficacy	1.365	Not Significant	-0.075
Attend P2P * Gender → Self - Efficacy	1.024	Not Significant	0.064

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.41 above, it shows that the direct effect of attending P2P towards resiliency is statistically significant (t=6.679, β=0.407) at the .001 level (p<.001).

However, the interaction between attending P2P sessions and Gender is not significant (t=1.024, β=0.064, p>.05). Results show that Gender is not a moderator (Attend P2P * Gender: β=0.064, p>.05) on the effect of Attending P2P and students Self - Efficacy (β=0.407, p<.001).

The results indicate that there is no moderating effect of Gender on the relationship between attending P2P sessions and Self - Efficacy. The strength of the relationship between Attending P2P sessions and Self - Efficacy is similar for both the male and female student groups.

4.11.7 Moderation effect of Age between attending the P2P sessions and Self-Efficacy of students.

The moderating model for Age on the relationship between students attending the P2P sessions and their Self-Efficacy is as shown in Figure 4.27. In addition, t-statistics for the relationship between students attending P2P, Age and their Self-Efficacy is presented in Table 4.42 below.

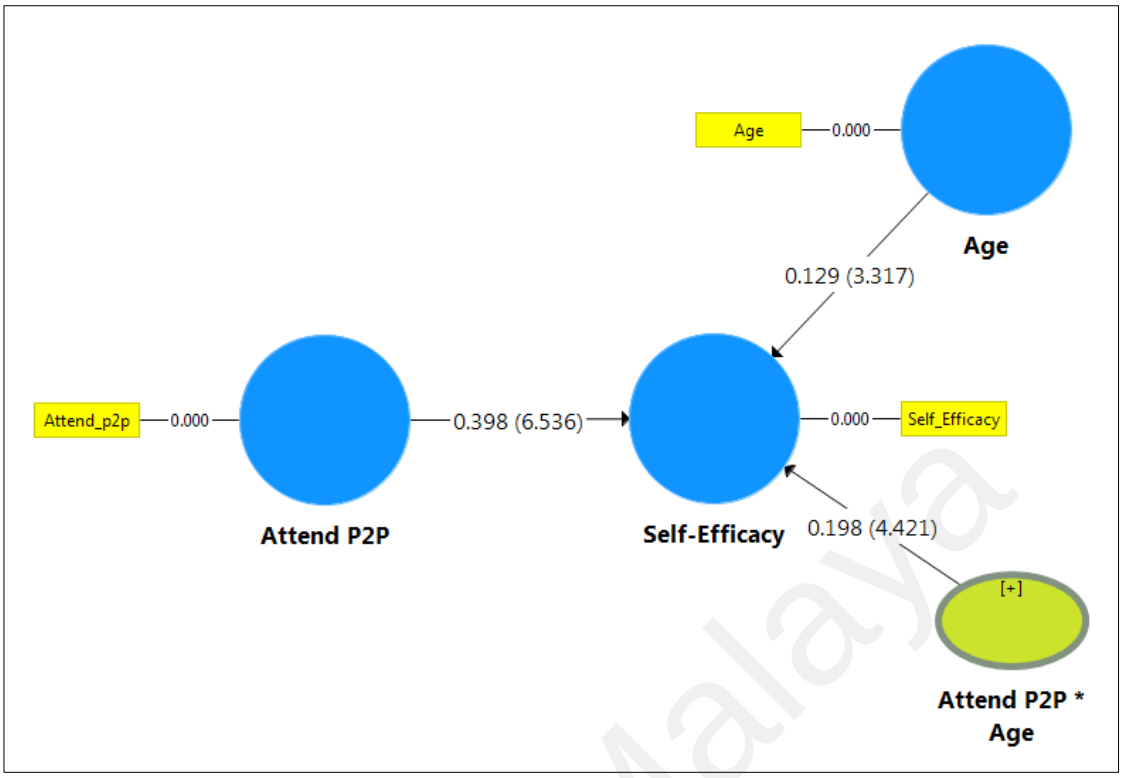

Figure 4.27. Moderation model for Age on the relationship between Attending P2P sessions and the Self - Efficacy of students.

Table 4.42

T-statistics of Age as Moderating Variable on the Relationship between Attending P2P sessions and Self – Efficacy

Regression Path	T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P → Self - Efficacy	6,536***	Significant	0.398
Age → Self - Efficacy	3.317***	Significant	0.129
Attend P2P * Age → Self - Efficacy	4.421***	Significant	0.197

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.42 above, it shows that the direct effect of attending P2P towards Self - Efficacy is statistically significant (t=6.536, β=0.398) at the .001 level (p<.001). The interaction between attending P2P sessions and Age is also significant (t=4.421, β=0.198, p<.001). Results show that Age is definitely a moderator (Attend P2P * Age: β=0.198, p<.001) on the effect of Attending P2P and students Self - Efficacy (β=0.398, p<.001).

The results indicate that there is a moderating effect of Age on the relationship between attending P2P sessions and Self - Efficacy. The relationship between Attending P2P sessions and Self - Efficacy is different for students in different age groups.

4.11.8 Moderation effect of Academic Stream between attending the P2P sessions and Self-Efficacy of students.

The moderating model for Academic Stream on the relationship between students attending the P2P sessions and their Self-Efficacy is as shown in Figure 4.28 below. In addition, t-statistics for the relationship between students attending P2P, Academic Stream and their Self-Efficacy is presented in Table 4.43 below.

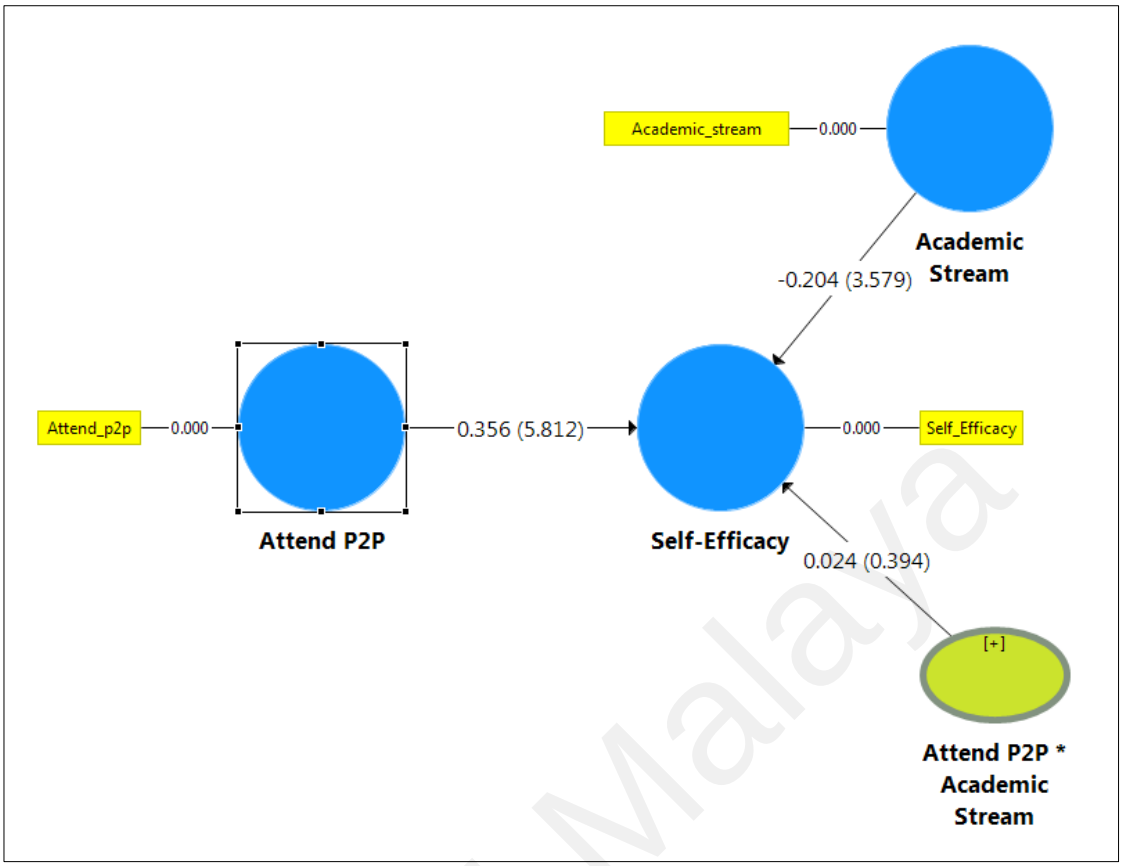

Figure 4.28. Moderation model for Academic Stream on the relationship between Attending P2P sessions and the Self - Efficacy of students.

Table 4.43

T-statistics of Academic Stream as Moderating Variable on the Relationship between Attending P2P sessions and Self – Efficacy

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Self - Efficacy	→	5.812***	Significant	0.356
Academic Stream Self - Efficacy	→	3.579***	Significant	-0.204
Attend P2P * Academic Stream Self - Efficacy	→	0.394	Not Significant	0.024

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.43 above, it shows that the direct effect of attending P2P towards Self - Efficacy is statistically significant (t=5.812, β=0.356) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Academic Stream is not significant (t=0.394, β=0.024, p>.05). Results show that Academic Stream is not a moderator (Attend P2P * Academic Stream: β=0.024, p>.05) on the effect of Attending P2P and students Self - Efficacy (β=0.356, p<.001).

The results indicate that there is no moderating effect of Academic Stream on the relationship between attending P2P sessions and Self - Efficacy. The relationship between Attending P2P sessions and Self - Efficacy is different for students in different age groups.

4.11.9 Moderation effect of Parents' Income between attending the P2P sessions and Self-Efficacy of students.

The moderating model for Parents' Income on the relationship between students attending the P2P sessions and their Self-Efficacy is as shown in Figure 4.29 below. In addition, t-statistics for the relationship between students attending P2P, Parents' Income and their Self-Efficacy is presented in Table 4.44 below.

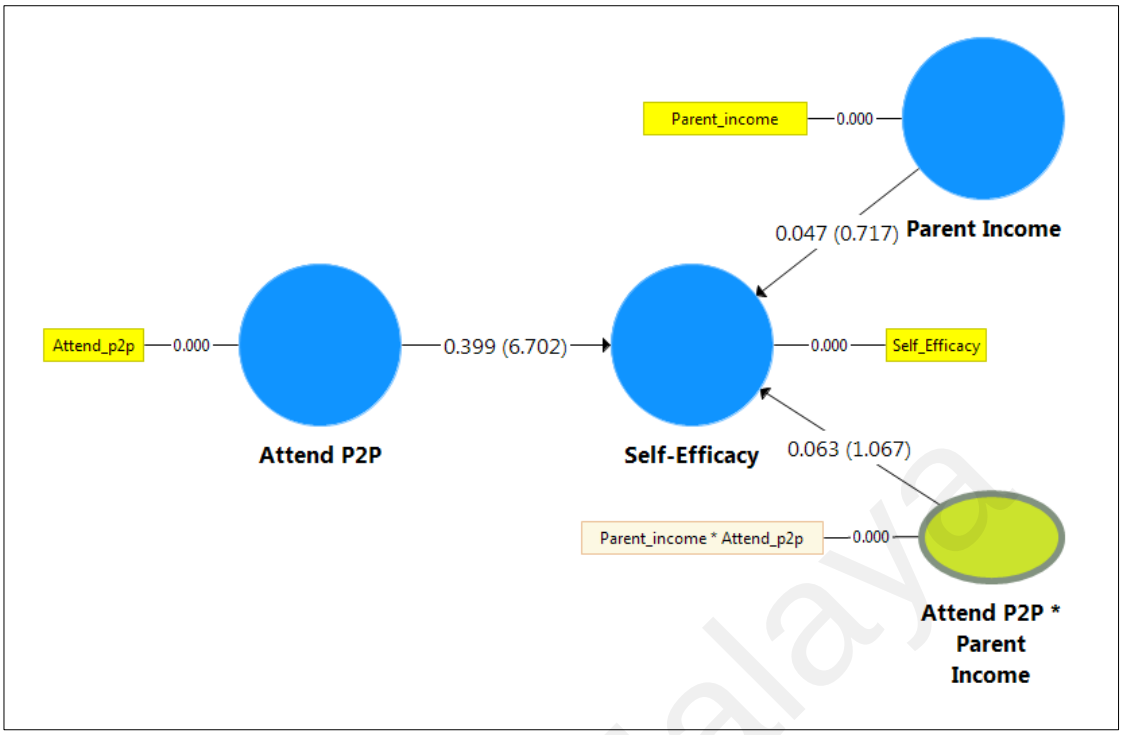

Figure 4.29. Moderation model for Parents' Income on the relationship between Attending P2P sessions and the Self - Efficacy of students.

Table 4.44

T-*statistics of Parents' Income as Moderating Variable on the Relationship between Attending P2P sessions and Self – Efficacy*

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P - Efficacy	→	Self	6.702***	Significant	0.399
Parents' Income - Efficacy	→	Self	0.717	Not Significant	0.047
Attend P2P * Parents' Income - Efficacy	→	Self	1.067	Not Significant	0.063

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.44 above, it shows that the direct effect of attending P2P towards Self - Efficacy is statistically significant (t=6.702, β=0.399) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Parents' Income is not significant (t=1.067, β=0.063, p>.05). Results show that Parents' Income is not a moderator (Attend P2P * Parents' Income: β=0.063, p>.05) on the effect of Attending P2P and students Self - Efficacy (β=0.399, p<.001).

The results indicate that there is no moderating effect of Parents' Income on the relationship between attending P2P sessions and Self - Efficacy. The relationship between Attending P2P sessions and Self - Efficacy is similar for students whose parents who are in different income brackets.

4.11.10 Moderation effect of Study Time between attending the P2P sessions and Self-Efficacy of students.

The moderating model for Study Time on the relationship between students attending the P2P sessions and their Self-Efficacy is as shown in Figure 4.30 below. In addition, t-statistics for the relationship between students attending P2P, Study Time and their Self-Efficacy is presented in Table 4.45 below.

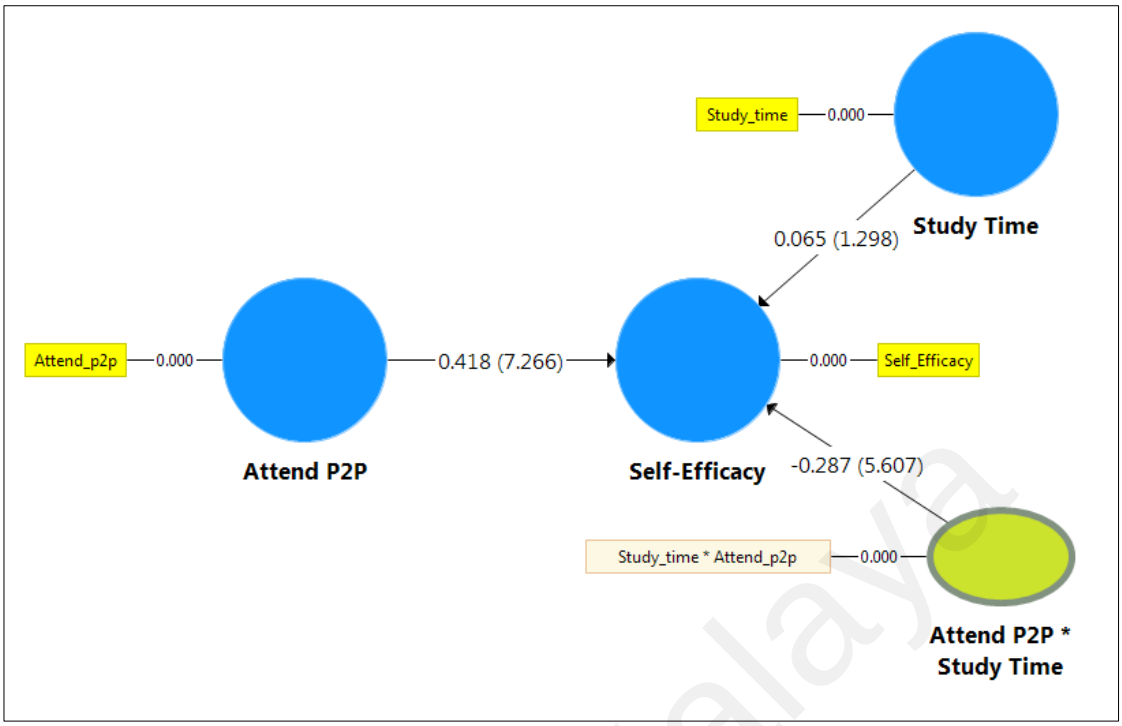

Figure 4.30. Moderation model for Study Time on the relationship between Attending P2P sessions and the Self - Efficacy of students.

Table 4.45

T-statistics of Study Time as Moderating Variable on the Relationship between Attending P2P sessions and Self – Efficacy

Regression Path	T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P → Self - Efficacy	7.266***	Significant	0.418
Study Time → Self - Efficacy	1.298	Not Significant	0.065
Attend P2P * Study Time → Self - Efficacy	5.607***	Significant	-0.287

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.45 above, it shows that the direct effect of attending P2P towards Self - Efficacy is statistically significant (t=7.266, β=0.417) at the .001 level (p<.001). The interaction between attending P2P sessions and Study Time is also significant (t=5.607, β=-0.287, p<.001). Results show that Study Time is indeed a moderator (Attend P2P * Parents' Income: β=-0.287, p<.001) on the effect of Attending P2P and students Self - Efficacy (β=0.418, p<.001).

The results indicate that there is a moderating effect of Study Time on the relationship between attending P2P sessions and Self - Efficacy. The relationship between Attending P2P sessions and Self - Efficacy is different for student who spend different amount of time studying.

4.11.11 Moderation effect of Gender between attending the P2P sessions and Intrinsic Motivation of students.

The moderating model for Gender on the relationship between students attending the P2P sessions and their Intrinsic Motivation is as shown in Figure 4.31 below. In addition, t-statistics for the relationship between students attending P2P, Gender and their Intrinsic Motivation is presented in Table 4.46 below.

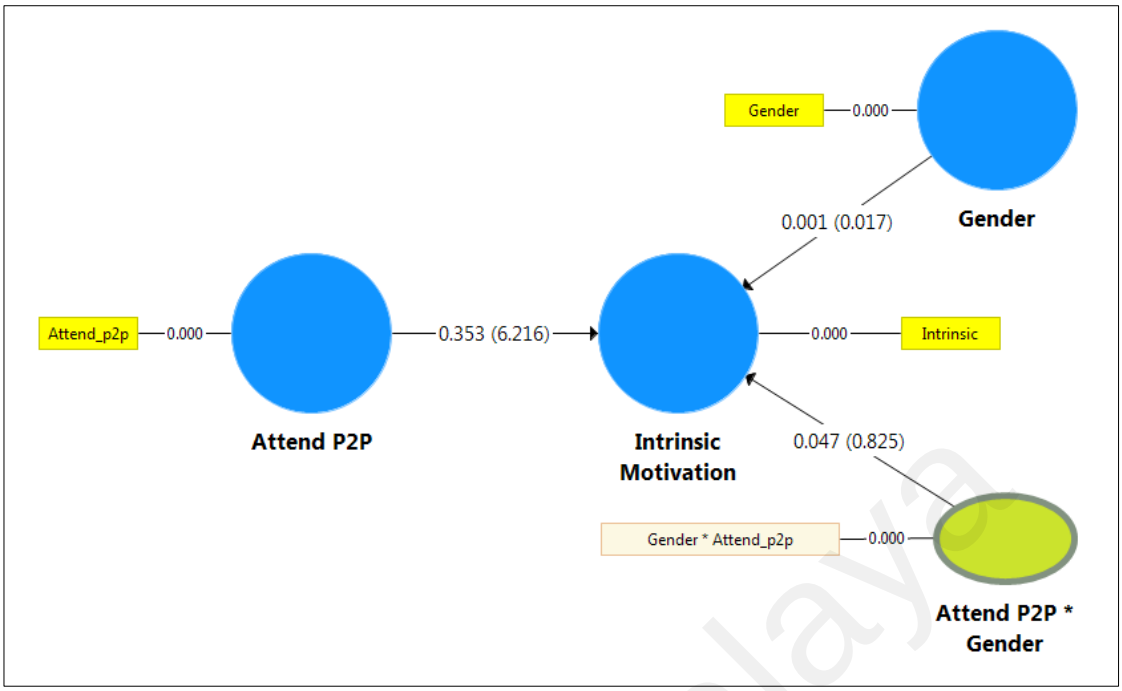

Figure 4.31. Moderation model for Gender on the relationship between Attending P2P sessions and the Intrinsic Motivation of students.

Table 4.46

T-statistics of Gender as Moderating Variable on the Relationship between Attending P2P sessions and Intrinsic Motivation.

Regression Path	T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P → Intrinsic Motivation	6.216***	Significant	0.353
Gender → Intrinsic Motivation	0.017	Not Significant	0.001
Attend P2P * Gender → Intrinsic Motivation	0.825	Not Significant	0.047

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.46 above, it shows that the direct effect of attending P2P towards Intrinsic Motivation is statistically significant (t=6.216, β=0.353) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Gender

is not significant (t=0.825, β=-0.047, p>.05). Results show that Gender is not a moderator (Attend P2P * Gender: β=-0.047, p>.05) on the effect of Attending P2P and students Intrinsic Motivation (β=0.353, p<.001).

The results indicate that there is no moderating effect of Gender on the relationship between attending P2P sessions and Intrinsic Motivation. The relationship between Attending P2P sessions and Intrinsic Motivation is similar for both the male and female student groups.

4.11.12 Moderation effect of Age between attending the P2P sessions and Intrinsic Motivation of students.

The moderating model for Age on the relationship between students attending the P2P sessions and their Intrinsic Motivation is as shown in Figure 4.32 below. In addition, t-statistics for the relationship between students attending P2P, Age and their Intrinsic Motivation is presented in Table 4.47 below.

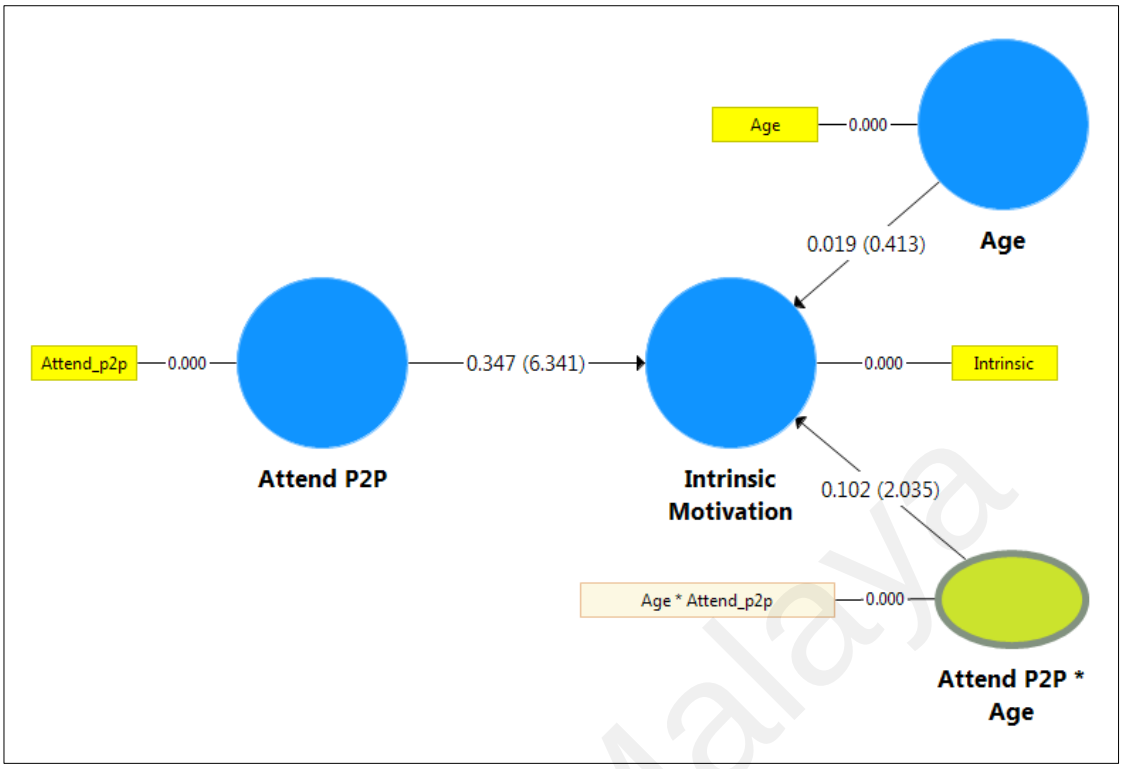

Figure 4.32. Moderation model for Age on the relationship between Attending P2P sessions and the Intrinsic Motivation of students.

Table 4.47

T-statistics of Age as Moderating Variable on the Relationship between Attending P2P sessions and Intrinsic Motivation.

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Motivation	→	Intrinsic	6.341***	Significant	0.347
Age Motivation	→	Intrinsic	0.413	Not Significant	0.019
Attend P2P * Age Motivation	→	Intrinsic	2.035*	Significant	0.102

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.47 above, it shows that the direct effect of attending P2P towards Intrinsic Motivation is statistically significant (t=6.341, β=0.347) at the .001

level ($p<.001$). The interaction between attending P2P sessions and Age is also significant ($t=2.035$, $\beta=0.102$, $p<.05$). Results show that Age is a moderator (Attend P2P * Age: $\beta=0.102$, $p<.05$) on the effect of Attending P2P and students Intrinsic Motivation ($\beta=0.347$, $p<.001$).

The results indicate that there is a moderating effect of Age on the relationship between attending P2P sessions and Intrinsic Motivation. The relationship between Attending P2P sessions and Intrinsic Motivation is different for students from different age groups.

4.11.13 Moderation effect of Academic Stream between attending the P2P sessions and Intrinsic Motivation of students.

The moderating model for Academic Stream on the relationship between students attending the P2P sessions and their Intrinsic Motivation is as shown in Figure 4.33 below. In addition, t-statistics for the relationship between students attending P2P, Academic Stream and their Intrinsic Motivation is presented in Table 4.48 below.

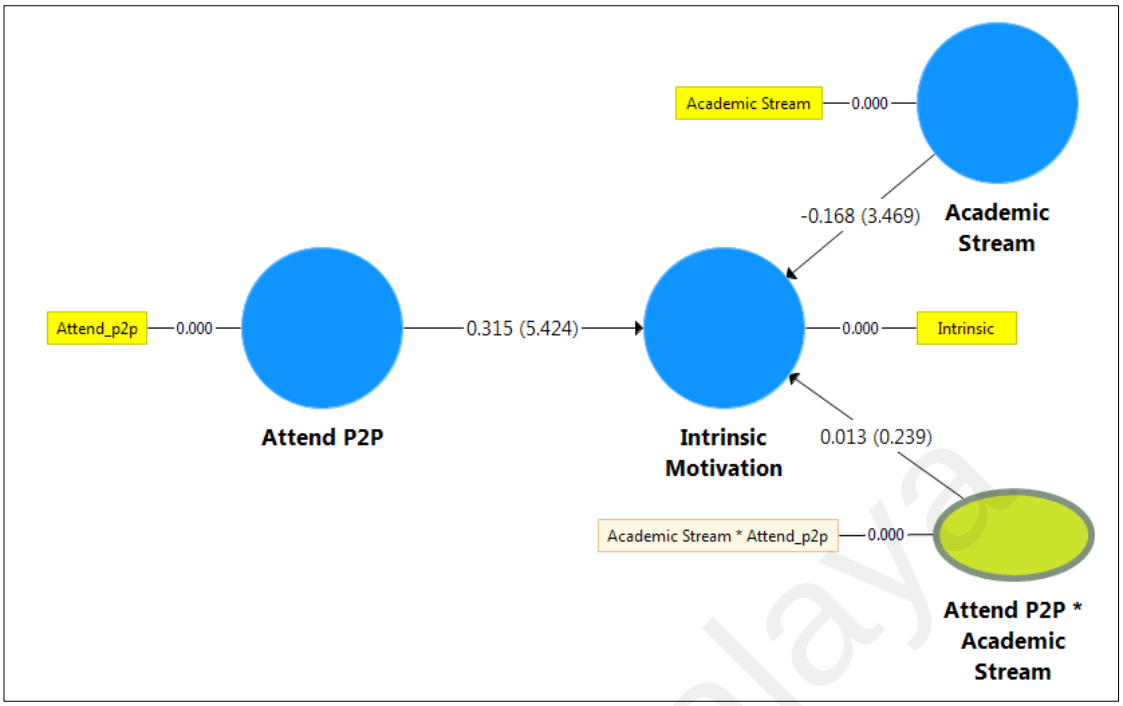

Figure 4.33. Moderation model for Academic Stream on the relationship between Attending P2P sessions and the Intrinsic Motivation of students.

Table 4.48

T-statistics of Academic Stream as Moderating Variable on the Relationship between Attending P2P sessions and Intrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Intrinsic Motivation	→	5.424***	Significant	0.315
Academic Stream Intrinsic Motivation	→	3.469***	Significant	-0.168
Attend P2P * Academic Stream Intrinsic Motivation	→	0.239	Not Significant	0.013

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.48 above, it shows that the direct effect of attending P2P towards Intrinsic Motivation is statistically significant (t=5.424, β=0.315) at the .001

level ($p<.001$). However, the interaction between attending P2P sessions and Academic Stream is not significant ($t=0.239$, $\beta=0.013$, $p>.05$). Results show that Academic Stream is not a moderator (Attend P2P * Age: $\beta=0.013$, $p>.05$) on the effect of Attending P2P and students Intrinsic Motivation ($\beta=0.315$, $p<.001$).

The results indicate that there is no moderating effect of Academic Stream on the relationship between attending P2P sessions and Intrinsic Motivation. The relationship between Attending P2P sessions and Intrinsic Motivation is similar for students from Arts or Science based streams during their high school.

4.11.14 Moderation effect of Parents' Income between attending the P2P sessions and Intrinsic Motivation of students.

The moderating model for Parents' Income on the relationship between students attending the P2P sessions and their Intrinsic Motivation is as shown in Figure 4.34 below. In addition, t-statistics for the relationship between students attending P2P, Parents' Income and their Intrinsic Motivation is presented in Table 4.49 below.

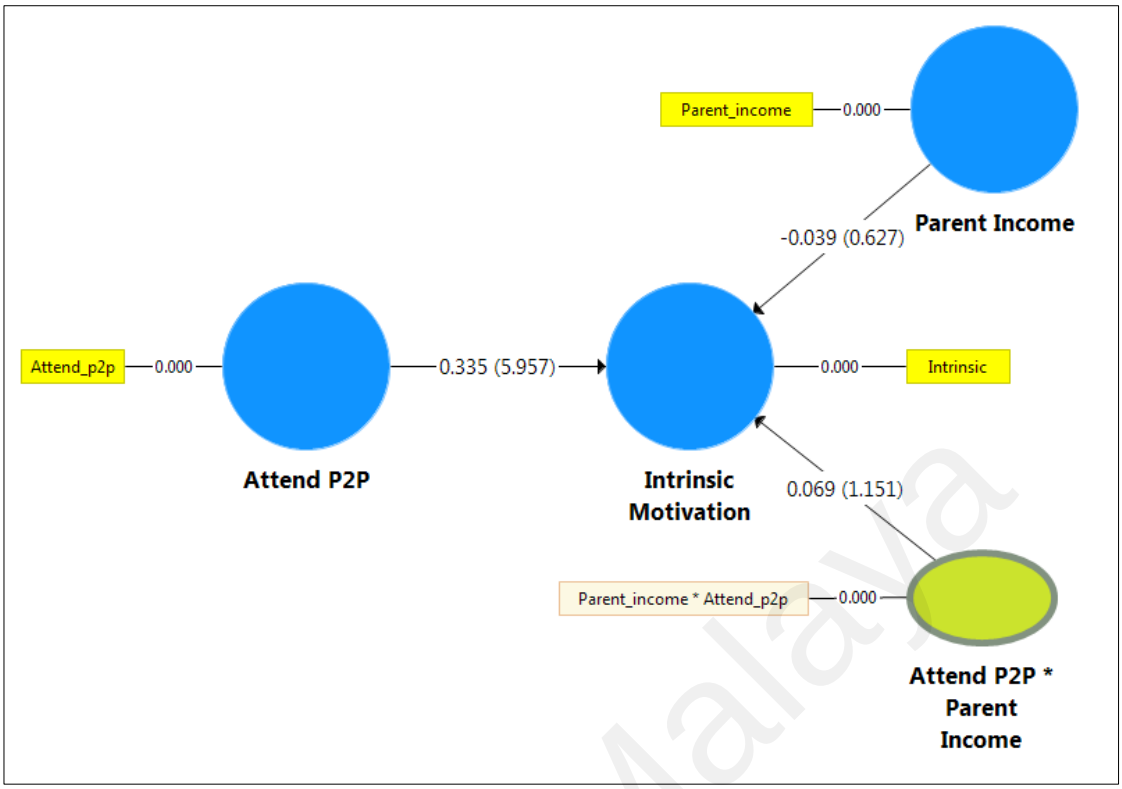

Figure 4.34. Moderation model for Parents' Income on the relationship between Attending P2P sessions and the Intrinsic Motivation of students.

Table 4.49

T-statistics of Parents' Income as Moderating Variable on the Relationship between Attending P2P sessions and Intrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Intrinsic Motivation	→	5.957***	Significant	0.335
Parents' Income Intrinsic Motivation	→	0.627	Not Significant	-0.039
Attend P2P * Parents' Income Intrinsic Motivation	→	1.151	Not Significant	0.069

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.49 above, it shows that the direct effect of attending P2P towards Intrinsic Motivation is statistically significant (t=5.957, β=0.335) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Parents' Income is not significant (t=1.151, β=0.069, p>.05). Results show that Parents' Income is not a moderator (Attend P2P * Parents' Income: β=0.069, p>.05) on the effect of Attending P2P and students Intrinsic Motivation (β=0.335, p<.001).

The results indicate that Parents' Income is not a moderator on the relationship between attending P2P sessions and Intrinsic Motivation. The relationship between Attending P2P sessions and Intrinsic Motivation is similar for students with parents from different income group.

4.11.15 Moderation effect of Study Time between attending the P2P sessions and Intrinsic Motivation of students.

The moderating model for Study Time on the relationship between students attending the P2P sessions and their Intrinsic Motivation is as shown in Figure 4.35 below. In addition, t-statistics for the relationship between students attending P2P, Study Time and their Intrinsic Motivation is presented in Table 4.50 below.

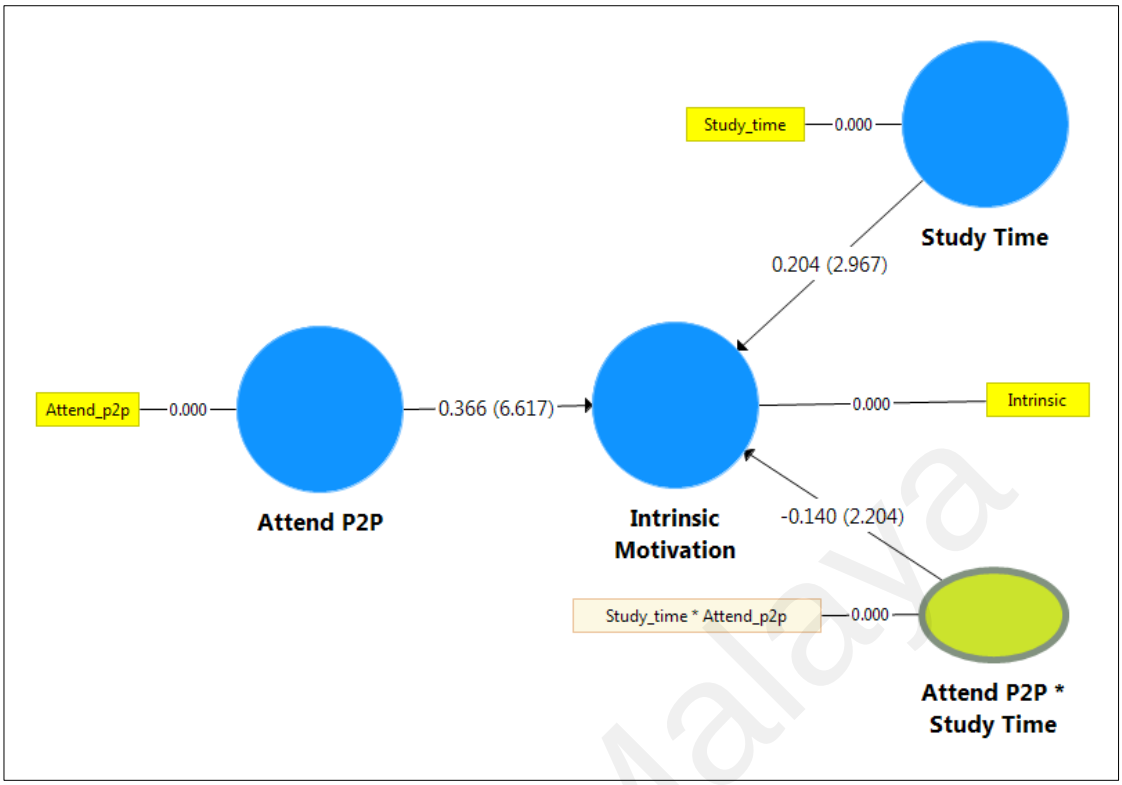

Figure 4.35 Moderation model for Study Time on the relationship between Attending P2P sessions and the Intrinsic Motivation of students.

Table 4.50

T-statistics of Study Time as Moderating Variable on the Relationship between Attending P2P sessions and Intrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Intrinsic Motivation	→	6.617***	Significant	0.366
Study Time Intrinsic Motivation	→	2.967**	Significant	0.204
Attend P2P * Study Time Intrinsic Motivation	→	2.204*	Significant	-0.140

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.50 above, it shows that the direct effect of attending P2P towards Intrinsic Motivation is statistically significant (t=6.617, β=0.366) at the .001 level (p<.001). The interaction between attending P2P sessions and Study Time is also significant (t=2.204, β=-0.140, p<.05). Results show that Study Time is definitely a moderator (Attend P2P * Study Time: β=-0.140, p<.05) on the effect of Attending P2P and students Intrinsic Motivation (β=0.366, p<.001).

The results indicate that Study Time is a moderator on the relationship between attending P2P sessions and Intrinsic Motivation. The relationship between Attending P2P sessions and Intrinsic Motivation is different for students to spend different amount of time on their studies.

4.11.16 Moderation effect of Gender between attending the P2P sessions and Extrinsic Motivation of students.

The moderating model for Gender on the relationship between students attending the P2P sessions and their Extrinsic Motivation is as shown in Figure 4.36 below. In addition, t-statistics for the relationship between students attending P2P, Gender and their Extrinsic Motivation is presented in Table 4.51 below.

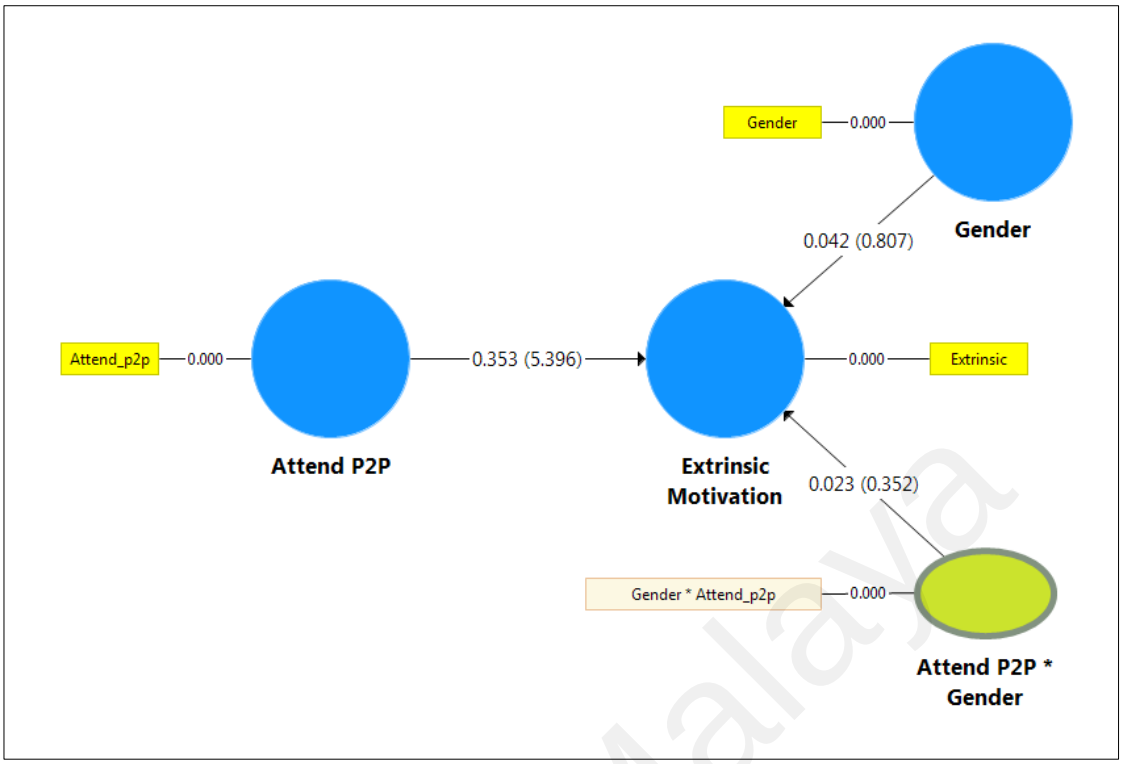

Figure 4.36. Moderation model for Gender on the relationship between Attending P2P sessions and the Extrinsic Motivation of students.

Table 4.51

T-statistics of Gender as Moderating Variable on the Relationship between Attending P2P sessions and Extrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Extrinsic Motivation	→	5.396***	Significant	0.353
Gender Extrinsic Motivation	→	0.807	Not Significant	0.042
Attend P2P * Gender Extrinsic Motivation	→	0.352	Not Significant	0.023

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.51 above, it shows that the direct effect of attending P2P towards Extrinsic Motivation is statistically significant (t=5.396, β=0.353) at the .001

level ($p<.001$). However, the interaction between attending P2P sessions and Gender is not significant ($t=0.352$, $\beta=0.023$, $p>.05$). Results show that Gender is not a moderator (Attend P2P * Gender: $\beta=0.023$, $p>.05$) on the effect of Attending P2P and students Extrinsic Motivation ($\beta=0.353$, $p<.001$).

The results indicate that Gender is not a moderator on the relationship between attending P2P sessions and Extrinsic Motivation. The relationship between Attending P2P sessions and Extrinsic Motivation is similar for both male and female students.

4.11.17 Moderation effect of Age between attending the P2P sessions and Extrinsic Motivation of students.

The moderating model for Age on the relationship between students attending the P2P sessions and their Extrinsic Motivation is as shown in Figure 4.37 below. In addition, t-statistics for the relationship between students attending P2P, Age and their Extrinsic Motivation is presented in Table 4.52 below.

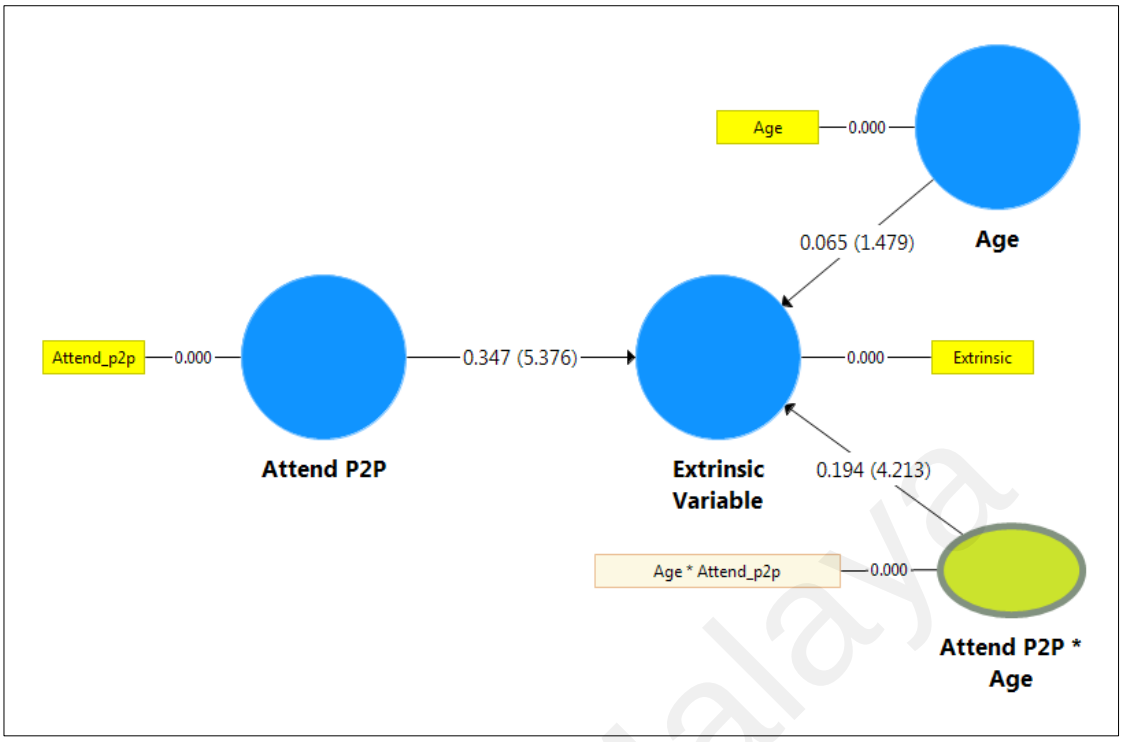

Figure 4.37. Moderation model for Age on the relationship between Attending P2P sessions and the Extrinsic Motivation of students.

Table 4.52

T-statistics of Age as Moderating Variable on the Relationship between Attending P2P sessions and Extrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Extrinsic Motivation	→	5.376***	Significant	0.347
Age Extrinsic Motivation	→	1.479	Not Significant	0.065
Attend P2P * Age Extrinsic Motivation	→	4.213***	Significant	0.194

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.52 above, it shows that the direct effect of attending P2P towards Extrinsic Motivation is statistically significant (t=5.376, β=0.347) at the .001

level ($p<.001$). The interaction between attending P2P sessions and Age is also significant ($t=4.213$, $\beta=0.194$, $p<.001$). Results show that Age is a moderator (Attend P2P * Age: $\beta=0.194$, $p<.001$) on the effect of Attending P2P and students Extrinsic Motivation ($\beta=0.347$, $p<.001$).

The results indicate that Age is indeed a moderator on the relationship between attending P2P sessions and Extrinsic Motivation. The relationship between Attending P2P sessions and Extrinsic Motivation differs for students in different age groups.

4.11.18 Moderation effect of Academic Stream between attending the P2P sessions and Extrinsic Motivation of students.

The moderating model for Academic Stream on the relationship between students attending the P2P sessions and their Extrinsic Motivation is as shown in Figure 4.38 below. In addition, t-statistics for the relationship between students attending P2P, Academic Stream and their Extrinsic Motivation is presented in Table 4.53 below.

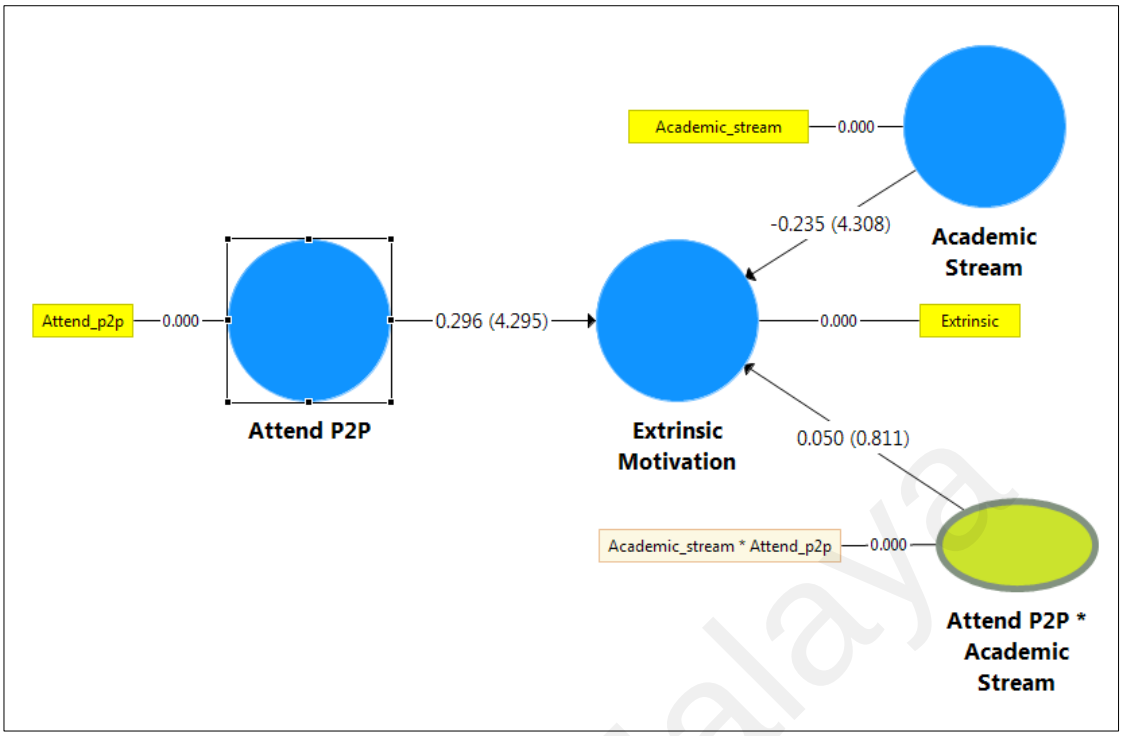

Figure 4.38 Moderation model for Academic Stream on the relationship between Attending P2P sessions and the Extrinsic Motivation of students.

Table 4.53

T-statistics of Academic Stream as Moderating Variable on the Relationship between Attending P2P sessions and Extrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Extrinsic Motivation	→	4.295***	Significant	0.296
Academic Stream Extrinsic Motivation	→	4.308***	Significant	-0.235
Attend P2P * Academic Stream Extrinsic Motivation	→	0.811	Not Significant	0.050

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.53 above, it shows that the direct effect of attending P2P towards Extrinsic Motivation is statistically significant (t=4.295, β=0.296) at the .001 level (p<.001). The interaction between attending P2P sessions and Academic Stream however not significant (t=0.811, β=0.050, p>.05). Results show that Academic Stream is therefore not a moderator (Attend P2P * Academic Stream: β=0.050, p>.05) on the effect of Attending P2P and students Extrinsic Motivation (β=0.296, p<.001).

The results indicate that Academic Stream is not a moderator on the relationship between attending P2P sessions and Extrinsic Motivation. The strength of the relationship between Attending P2P sessions and Extrinsic Motivation is the same for students from both academic streams, arts and sciences while in their high school.

4.11.19 Moderation effect of Parents' Income between attending the P2P sessions and Extrinsic Motivation of students.

The moderating model for Parents' Income on the relationship between students attending the P2P sessions and their Extrinsic Motivation is as shown in Figure 4.39 below. In addition, t-statistics for the relationship between students attending P2P, Parents' Income and their Extrinsic Motivation is presented in Table 4.54 below.

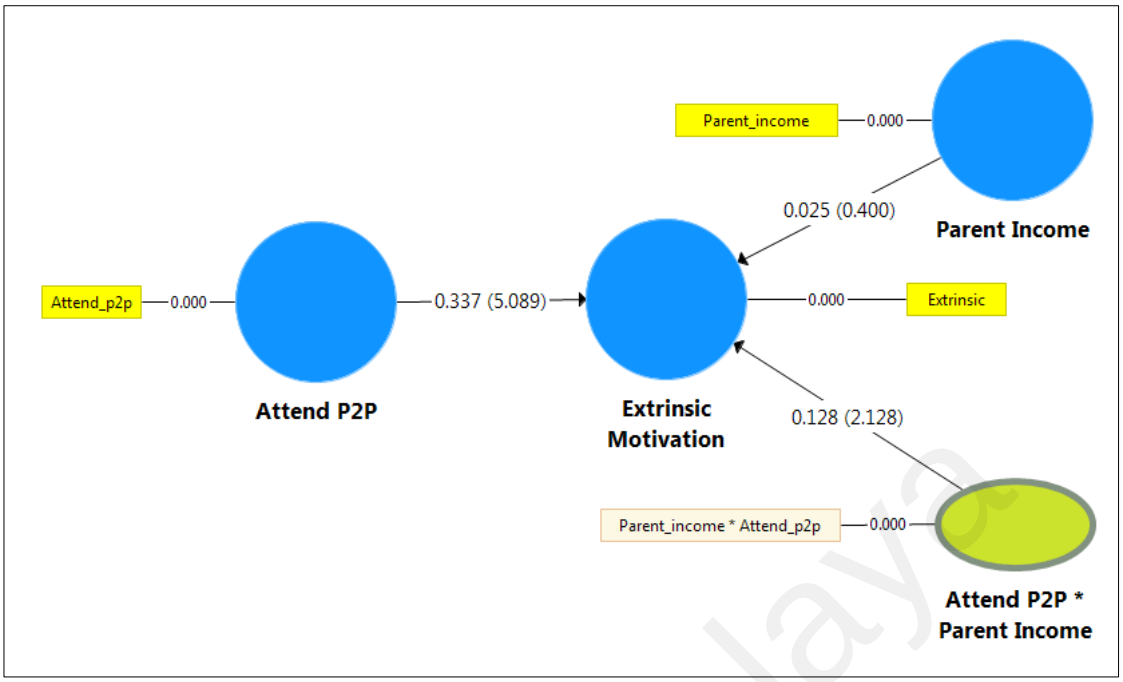

Figure 4.39. Moderation model for Parents' Income on the relationship between Attending P2P sessions and the Extrinsic Motivation of students.

Table 4.54

T-statistics of Parents' Income as Moderating Variable on the Relationship between Attending P2P sessions and Extrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Extrinsic Motivation	→	5.089***	Significant	0.337
Parents' Income Extrinsic Motivation	→	0.400	Not Significant	0.025
Attend P2P * Parents' Income Extrinsic Motivation	→	2.128*	Significant	0.128

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.54 above, it shows that the direct effect of attending P2P towards Extrinsic Motivation is statistically significant (t=5.089, β=0.337) at the .001 level (p<.001). The interaction between attending P2P sessions and Parents' Income

is also significant (t=2.128, β=0.128, p<.05). Results show that Parents' Income is therefore a moderator (Attend P2P * Parents' Income: β=0.128, p<.05) on the effect of Attending P2P and students Extrinsic Motivation (β=0.337, p<.001).

The results indicate that Parents' Income is a moderator on the relationship between attending P2P sessions and Extrinsic Motivation. The strength of the relationship between Attending P2P sessions and Extrinsic Motivation is different for students whose parents' come from different income brackets.

4.11.20 Moderation effect of Study Time between attending the P2P sessions and Extrinsic Motivation of students.

The moderating model for Study Time on the relationship between students attending the P2P sessions and their Extrinsic Motivation is as shown in Figure 4.40 below. In addition, t-statistics for the relationship between students attending P2P, Study Time and their Extrinsic Motivation is presented in Table 4.55 below.

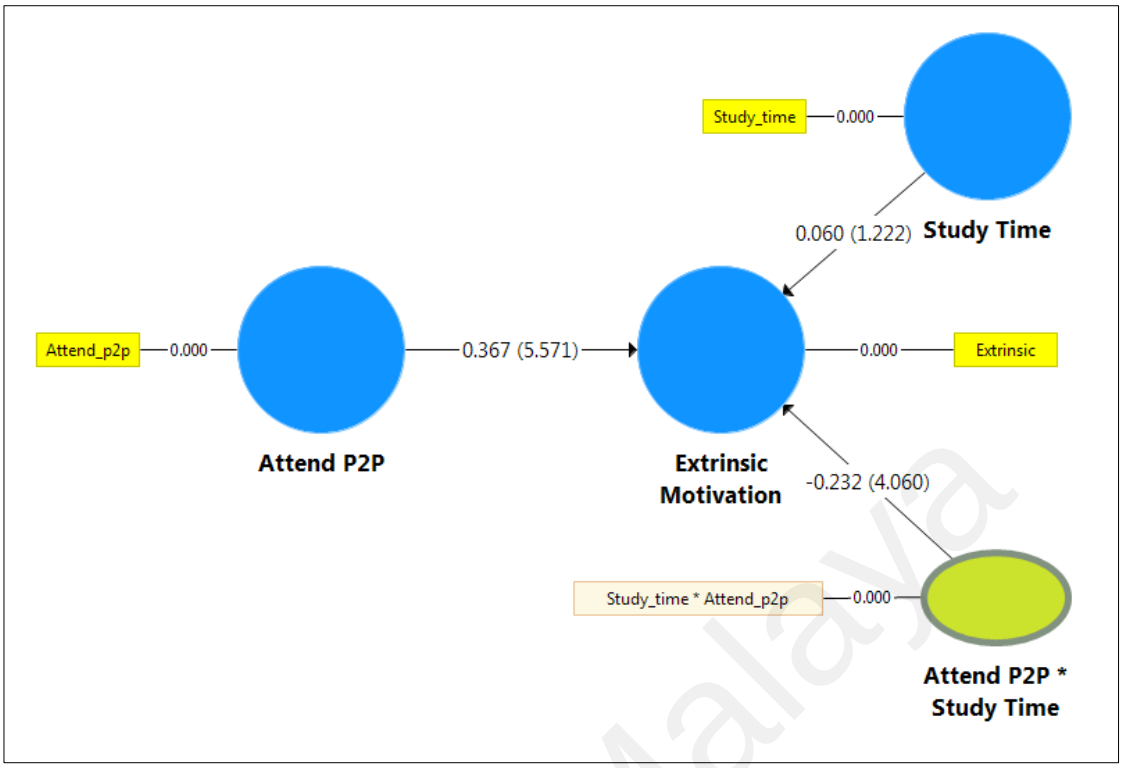

Figure 4.40. Moderation model for Study Time on the relationship between Attending P2P sessions and the Extrinsic Motivation of students.

Table 4.55

T-statistics of Study Time as Moderating Variable on the Relationship between Attending P2P sessions and Extrinsic Motivation.

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Extrinsic Motivation	→	5.571***	Significant	0.367
Study Time Extrinsic Motivation	→	1.222	Not Significant	0.060
Attend P2P * Study Time Extrinsic Motivation	→	4.060***	Significant	-0.232

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.55 above, it shows that the direct effect of attending P2P towards Extrinsic Motivation is statistically significant (t=5.571, β=0.367) at the .001 level (p<.001). The interaction between attending P2P sessions and Study Time is also significant (t=4.060, β=-0.232, p<.001). Results show that Study Time is therefore a moderator (Attend P2P * Study Time: β=-0.232, p<.001) on the effect of Attending P2P and students Extrinsic Motivation (β=0.367, p<.001).

The results indicate that Study Time is indeed a moderator on the relationship between attending P2P sessions and Extrinsic Motivation. The strength of the relationship between Attending P2P sessions and Extrinsic Motivation is different for students who spend different amount of time studying.

4.11.21 Moderation effect of Gender between attending the P2P sessions and Social Motivation of students.

The moderating model for Gender on the relationship between students attending the P2P sessions and their Social Motivation is as shown in Figure 4.41 below. In addition, t-statistics for the relationship between students attending P2P, Gender and their Social Motivation is presented in Table 4.56 below.

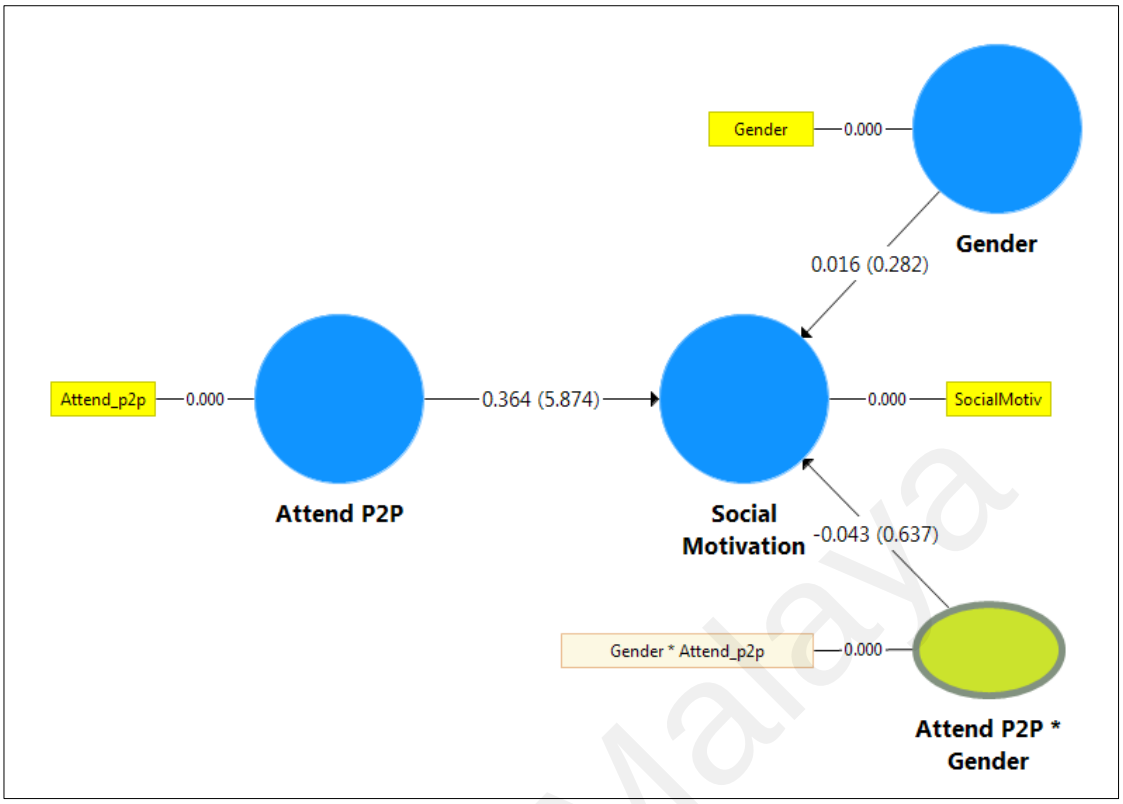

Figure 4.41. Moderation model for Gender on the relationship between Attending P2P sessions and the Social Motivation of students

Table 4.56

T-statistics of Gender as Moderating Variable on the Relationship between Attending P2P sessions and Social Motivation

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Social Motivation	→	5.874***	Significant	0.364
Gender Social Motivation	→	0.282	Not Significant	0.016
Attend P2P * Gender Social Motivation	→	0.637	Not Significant	-0.043

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.56 above, it shows that the direct effect of attending P2P towards Social Motivation is statistically significant (t=5.874, β=0.364) at the .001 level (p<.001). The interaction between attending P2P sessions and Gender is however not significant (t=0.637, β=-0.043, p>.05). Results show that Gender is therefore not a moderator (Attend P2P * Gender: β=-0.043, p>.05) on the effect of Attending P2P and students Social Motivation (β=0.364, p<.001).

The results indicate that Gender is not a moderator on the relationship between attending P2P sessions and Social Motivation. The strength of the relationship between Attending P2P sessions and Social Motivation is the same for both the male students and female students.

4.11.22 Moderation effect of Age between attending the P2P sessions and Social Motivation of students.

The moderating model for Age on the relationship between students attending the P2P sessions and their Social Motivation is as shown in Figure 4.42 below. In addition, t-statistics for the relationship between students attending P2P, Age and their Social Motivation is presented in Table 4.57 below.

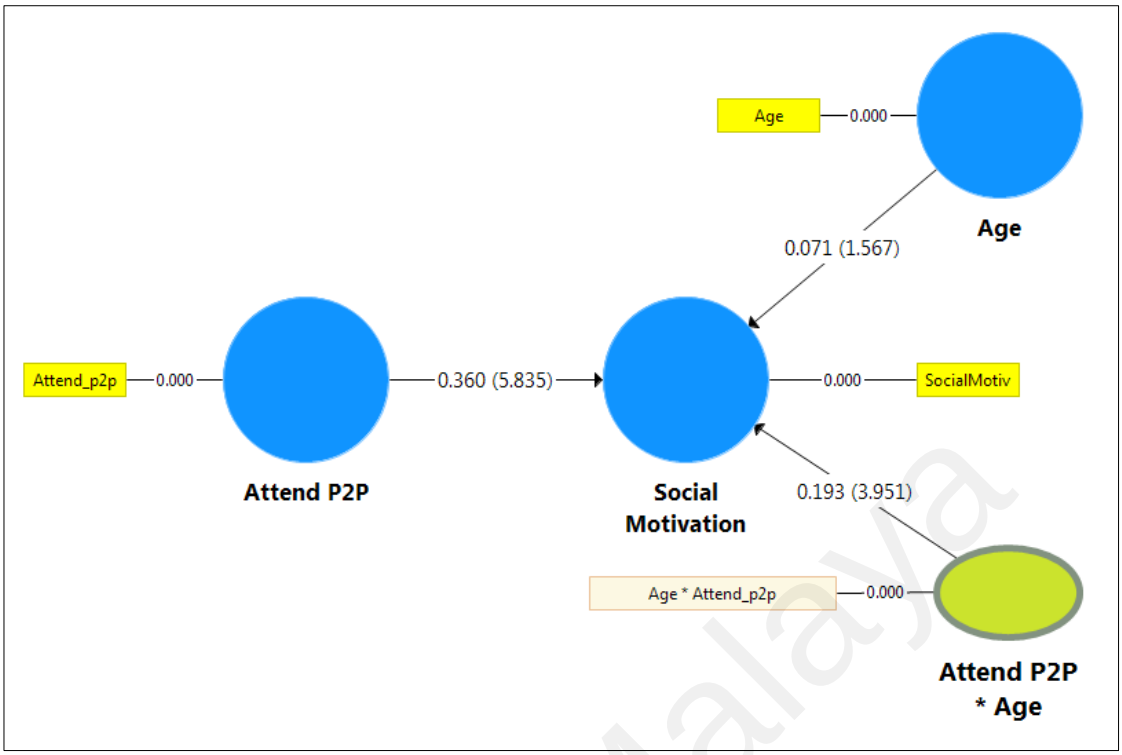

Figure 4.42. Moderation model for Age the relationship between Attending P2P sessions and the Social Motivation of students

Table 4.57

T-statistics of Age as Moderating Variable on the Relationship between Attending P2P sessions and Social Motivation

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Social Motivation	→	5.835***	Significant	0.360
Age Social Motivation	→	1.567	Not Significant	0.071
Attend P2P * Age Social Motivation	→	3.951***	Significant	0.193

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.57 above, it shows that the direct effect of attending P2P towards Social Motivation is statistically significant (t=5.835, β=0.360) at the .001 level (p<.001). The interaction between attending P2P sessions and Age is also significant (t=3.951, β=0.193, p<.001). Results show that Age is therefore a moderator (Attend P2P * Age: β=0.193, p<.001) on the effect of Attending P2P and students Social Motivation (β=0.360, p<.001).

The results indicate that Age is a moderator on the relationship between attending P2P sessions and Social Motivation. The strength of the relationship between Attending P2P sessions and Social Motivation is different for students from the different age groups.

4.11.23 Moderation effect of Academic Stream between attending the P2P sessions and Social Motivation of students.

The moderating model for Academic Stream on the relationship between students attending the P2P sessions and their Social Motivation is as shown in Figure 4.43 below. In addition, t-statistics for the relationship between students attending P2P, Academic Stream and their Social Motivation is presented in Table 4.58 below.

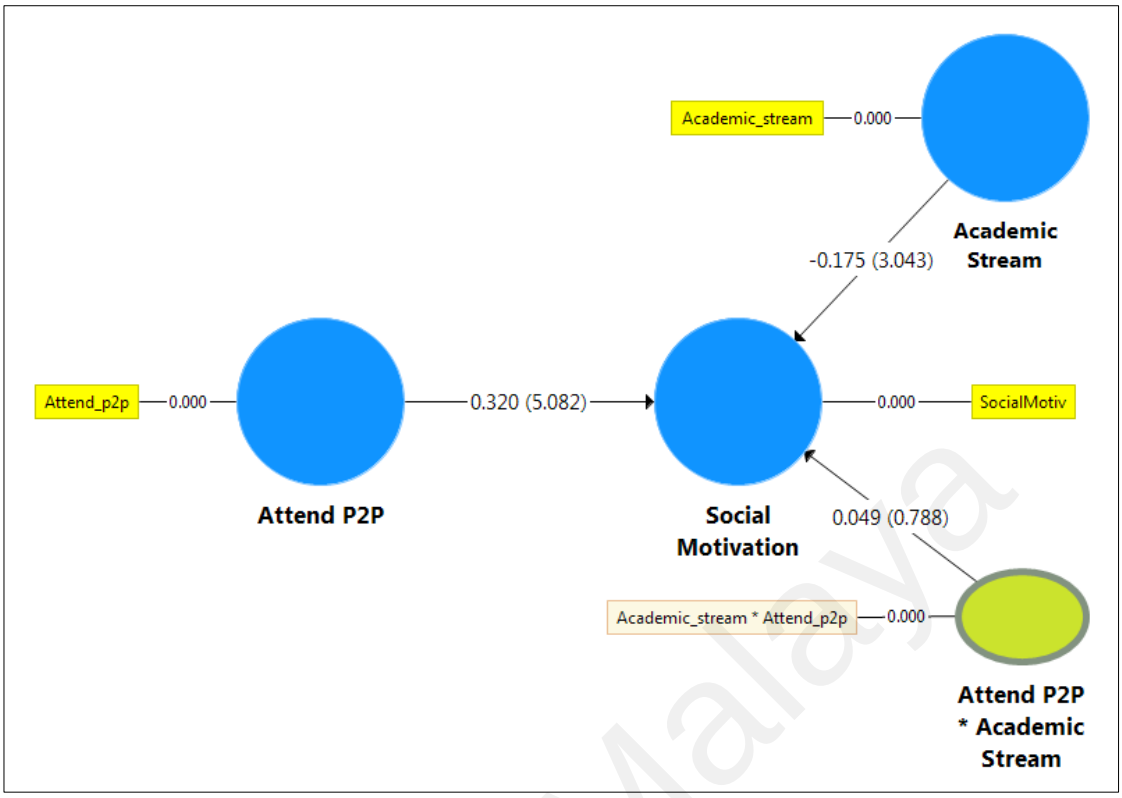

Figure 4.43. Moderation model for Academic Stream the relationship between Attending P2P sessions and the Social Motivation of students

Table 4.58

T-statistics of Academic Stream as Moderating Variable on the Relationship between Attending P2P sessions and Social Motivation

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Social Motivation	→	5.082***	Significant	0.320
Academic Stream Social Motivation	→	3.043**	Significant	-0.175
Attend P2P * Academic Stream Social Motivation	→	0.788	Not Significant	0.049

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.58 above, it shows that the direct effect of attending P2P towards Social Motivation is statistically significant (t=5.082, β=0.320) at the .001 level (p<.001). However, the interaction between attending P2P sessions and Academic Stream is not significant (t=0.788, β=0.049, p>.05). Results show that Academic Stream is therefore not a moderator (Attend P2P * Academic Stream: β=0.049, p>.05) on the effect of Attending P2P and students Social Motivation (β=0.320, p<.001).

The results indicate that Academic Stream is not a moderator on the relationship between attending P2P sessions and Social Motivation. The strength of the relationship between Attending P2P sessions and Social Motivation is the same for students who were either from the arts or science streams.

4.11.24 Moderation effect of Parents' Income between attending the P2P sessions and Social Motivation of students.

The moderating model for Parents' Income on the relationship between students attending the P2P sessions and their Social Motivation is as shown in Figure 4.44 below. In addition, t-statistics for the relationship between students attending P2P, Parents' Income and their Social Motivation is presented in Table 4.59 below.

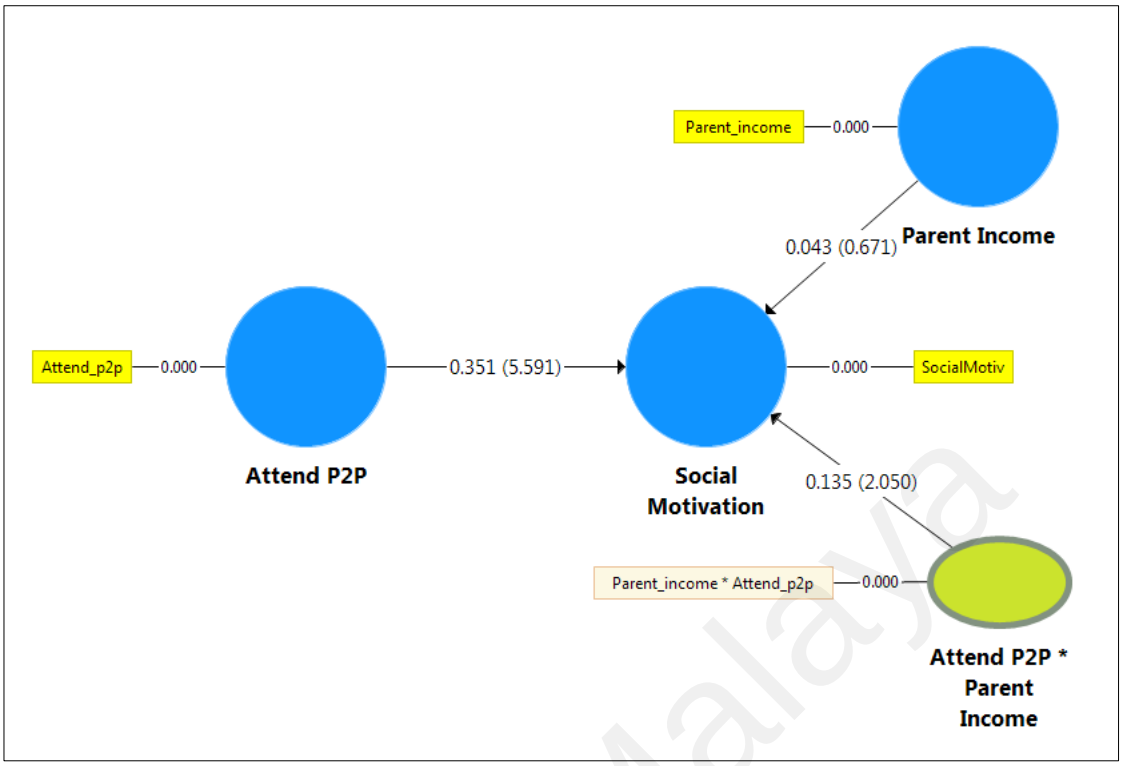

Figure 4.44. Moderation model for Parents' Income the relationship between Attending P2P sessions and the Social Motivation of students

Table 4.59

T-statistics of Parents' Income as Moderating Variable on the Relationship between Attending P2P sessions and Social Motivation

Regression Path		T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P Social Motivation	→	5.591***	Significant	0.351
Parents' Income Social Motivation	→	0.671	Not Significant	0.043
Attend P2P * Parents' Income Social Motivation	→	2.050*	Significant	0.135

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.59 above, it shows that the direct effect of attending P2P towards Social Motivation is statistically significant (t=5.591, β=0.351) at the .001 level (p<.001). The interaction between attending P2P sessions and Parents' Income is also significant (t=2.050, β=0.135, p<.05). Results show that Parents' Income is therefore a moderator (Attend P2P * Parents' Income: β=0.135, p<.05) on the effect of Attending P2P and students Social Motivation (β=0.351, p<.001).

The results indicate that Parents' Income is definitely a moderator on the relationship between attending P2P sessions and Social Motivation. The strength of the relationship between Attending P2P sessions and Social Motivation is different for students whose parents are from different income bracket.

4.11.25 Moderation effect of Study Time between attending the P2P sessions and Social Motivation of students.

The moderating model for Study Time on the relationship between students attending the P2P sessions and their Social Motivation is as shown in Figure 4.45 below. In addition, t-statistics for the relationship between students attending P2P, Study Time and their Social Motivation is presented in Table 4.60 below.

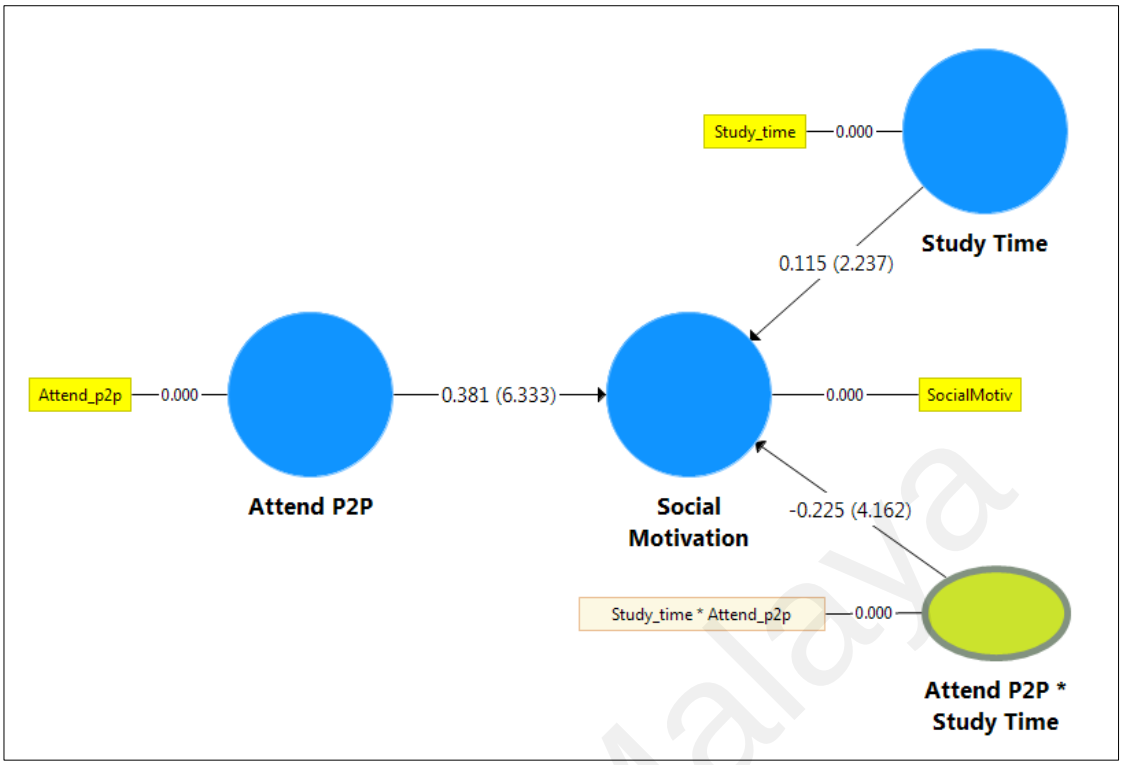

Figure 4.45. Moderation model for Study Time the relationship between Attending P2P sessions and the Social Motivation of students

Table 4.60

T-statistics of Study Time as Moderating Variable on the Relationship between Attending P2P sessions and Social Motivation

Regression Path			T-statistics (Bootstrapping Value)	Result	Standardized Regression weight (β)
Attend P2P	→	Social Motivation	6.333	Significant	0.381
Study Time	→	Social Motivation	2.237	Significant	0.115
Attend P2P * Study Time	→	Social Motivation	4.162	Significant	-0.225

*Significant at p<.05; **Significant at P<.01; ***Significant at p<.001

Based on Table 4.60 above, it shows that the direct effect of attending P2P towards Social Motivation is statistically significant (t=6.333, β=0.381) at the .001 level (p<.001). The interaction between attending P2P sessions and Study Time is also significant (t=4.126, β=-0.225, p<.001). Results show that Study Time is therefore a moderator (Attend P2P * Study Time: β=-0.225, p<.001) on the effect of Attending P2P and students Social Motivation (β=0.381, p<.001).

The results indicate that Study Time is definitely a moderator on the relationship between attending P2P sessions and Social Motivation. The strength of the relationship between Attending P2P sessions and Social Motivation is different for students spend different amount of time on their studies.

4.11.26 Summary of results

This summary presents the findings of the significance of the moderator variables of Gender, Age, Academic Stream when in high school, Parents's Income and Study Time between the independent variable of Attending P2P sessions and the dependent variables of students Resiliency, Self – Efficacy, Intrinsic Motivation, Extrinsic Motivation and Social Motiation. For this purpose the PLS-SEM was used for moderation analysis. The findings for the significance of each of the moderator variables on each of the independent variables are summarized in Table 4.61.

Table 4.61

Summary of Significance of Moderating Variables on Dependent Variables

Moderators on relationship between IV and DV	Research Findings
Gender on Attending P2P and Resiliency	Not Significant
Age on Attending P2P and Resiliency	Significant
Academic Stream on Attending P2P and Resiliency	Not Significant
Parents 'Income on Attending P2P and Resiliency	Not Significant
Study Time on Attending P2P and Resiliency	Significant
Gender on Attending P2P and Self - Efficacy	Not Significant
Age on Attending P2P and Self - Efficacy	Significant
Academic Stream on Attending P2P and Self - Efficacy	Not Significant
Parents 'Income on Attending P2P and Self - Efficacy	Not Significant
Study Time on Attending P2P and Self - Efficacy	Significant
Gender on Attending P2P and Intrinsic Motivation	Not Significant
Age on Attending P2P and Intrinsic Motivation	Significant
Academic Stream on Attending P2P and Intrinsic Motivation	Not Significant
Parents 'Income on Attending P2P and Intrinsic Motivation	Not Significant
Study Time on Attending P2P and Intrinsic Motivation	Significant
Gender on Attending P2P and Extrinsic Motivation	Not Significant
Age on Attending P2P and Extrinsic Motivation	Significant
Academic Stream on Attending P2P and Extrinsic Motivation	Not Significant
Parents 'Income on Attending P2P and Extrinsic Motivation	Significant
Study Time on Attending P2P and Extrinsic Motivation	Significant
Gender on Attending P2P and Social Motivation	Not Significant
Age on Attending P2P and Social Motivation	Significant
Academic Stream on Attending P2P and Social Motivation	Not Significant
Parents 'Income on Attending P2P and Social Motivation	Significant
Study Time on Attending P2P and Social Motivation	Significant

Generally, the results were quite consistent for all the dependent variables except for Extrinsic Motivation and Social Motivation. The moderator of Parents' Income yielded significant effect on these two dependent variables.

4.12 Summary of Findings of Analysis

This section gives an overview of the findings from this chapter. For research question 1, the current levels of the variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation range from low to moderate levels as depicted in Table 4.62. This is consistent with the level of the level of study of these respondents. 84.8% for the respondents are first year students. First year students who are mostly fresh from high school many not have high levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

Table 4.62

Dependent Variable Pre-Test

Variables	Means	Levels
Resiliency	5.77	moderate
Self-Efficacy	4.64	low
Intrinsic Motivation	4.98	low
Extrinsic Motivation	5.64	moderate
Social Motivation	5.52	moderate

Research question 2 was to find out if the abilities of the of peer leaders in the P2P program was good as it would have a significant effect on the learning outcomes of the students. The analysis did confirm that the peer leader's knowledge and abilities were high as reflected in the mean score shown in the Table 4.63.

Table 4.63

P2P Leaders abilities

Statements	Mean scores
My P2P leader is very knowledgeable on the subject.	8.14
My P2P leader is very well prepared for every session.	8.06
MyP2P leader listens to our problems relating to the subject.	8.26
My P2P leader plan for the session very well each week.	8.66
My P2P leader is very creative in designing the activities for the session.	8.31
My P2P leader is my role model.	8.26

Research question 3 showed a significant improvement in students' knowledge before attending the P2P sessions and after attending the P2P sessions. Before attending the P2P sessions, their knowledge of the subject matter was low with a mean of 4.88 but it increased to 8.22 after attending the P2P sessions. Table 4.64 clearly shows that the students' knowledge increased with the help of the peer leader who is the 'more capable other' based on Vygotsky's theory.

Table 4.64 *Students' Knowledge Pre-Test and Post-Test*

Statement	Mean
My knowledge of the subject before attending P2P	4.88
My knowledge of the subject after attending P2P	8.22

For research question 4, the research wanted to find if the students felt that they were better prepared to sit for the exams after taking the P2P sessions as compared to before attending any P2P sessions. The results showed an improved means score after the students received the P2P treatment. The initial means score before the treatment was at 5.33 but after the 11 weeks of treatment, the students were definitely more confident. This is shown in Table 4.65.

Table 4. 65

Students' Confidence Pre-Test and Post-Test

Statement	Means
Before the treatment: My confidence level in passing the test at the end of the semester.	5.33
After the treatment: My confidence level in passing the test at the end of the semester.	8.17

Research questions 5, 6 and 7 looked into the effects that the P2P program had on the variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. The findings showed that the P2P program did indeed have

significant effects on each of the dependent variables as summarized below in Table 4.66.

Table 4.66

Effects of P2P on the Dependent Variables

Variable	Pre-test Mean (SD)	Post-test Mean (SD)	Significant	Relationship
Resiliency	5.617	7.427	Significant	Positive
Self-Efficacy	27.269	42.435	Significant	Positive
Intrinsic Motivation	29.327	43.757	Significant	Positive
Extrinsic Motivation	33.171	48.175	Significant	Positive
Social Motivation	32.349	46.780	Significant	Positive

Research question 8 discussed on the effects that moderating variables of gender, age, academic stream and parents' income and study time would have on the dependent variables and the findings in Table 4.67 show the moderators which have a significant moderating effect between the independent variable and the dependent variable.

Table 4.67

Moderating factor that were found to be significant between Independent and Dependent Variable

Moderators on relationship between IV and DV	Research Findings
Age on Attending P2P and Resiliency	Significant
Study Time on Attending P2P and Resiliency	Significant
Age on Attending P2P and Self - Efficacy	Significant
Study Time on Attending P2P and Self - Efficacy	Significant
Age on Attending P2P and Intrinsic Motivation	Significant
Study Time on Attending P2P and Intrinsic Motivation	Significant

Table 4.67 (continued)

Moderators on relationship between IV and DV	Research Findings
Age on Attending P2P and Extrinsic Motivation	Significant
Parents 'Income on Attending P2P and Extrinsic Motivation	Significant
Study Time on Attending P2P and Extrinsic Motivation	Significant
Age on Attending P2P and Social Motivation	Significant
Parents 'Income on Attending P2P and Social Motivation	Significant
Study Time on Attending P2P and Social Motivation	Significant

The moderating variables of Age, Study Time and Parents income has a significant effect on the relationship between the independent variables of attending P2P session on the dependent variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

4.13 Summary of Chapter 4

Chapter 4 gave an overview of the analysis used in the study. Descriptive statistics was used to show the profile of the respondents. Several analysis techniques was employed to analyze the eight research questions namely descriptive statistics, multivariate test, split-plot anova and structural equation modelling. It then looked into the analysis and explanation of each of the eight research questions. The results and summary of findings was explained.

Next, Chapter 5 presents the discussions on the findings of the study, their implications and suggestions for future study.

CHAPTER 5: DISCUSSIONS, IMPLICATIONS AND SUGGESTIONS

5.1 Introduction

This chapter will discuss the summary of this study by presenting the purpose of the study, the theoretical and conceptual framework of the study, research design, population, sampling procedures, data analysis procedures, findings and implications and suggestions. The summary of the major findings is presented based on the research questions of the study. Next, the discussion on the results of the study supported by relevant literature through interpretation of data analysis results in chapter four is presented. The discussions were based on the objectives of the study outlined in chapter one and the accomplishment of the research objectives once again reported in the summary of the findings.

5.2 Summary of the Study

The main purpose of this study is to investigate the effects of the peer-to-peer program on the resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation of undergraduate students. The focus is on undergraduate students as these are the group of students who are faced with challenging academic expectations, and uncertainty of future work opportunities. Education institutions are tasked with providing sound education for the future generation so that the country will continue to grow and prosper with the brightest minds and talents in the country. In order to help students succeed in university, the institutions need to have programs in place that not only build on their academic abilities but teach them the skills they will need to thrive in the present and in the future.

Numerous studies have shown that peer tutoring or peer-lead-peer programs are effective and beneficial to students in helping them do well in university and succeed academically (Zarifnejad, Mirhaghi, & Rajabpoor, 2018); (Geerlings, et al., 2016); (Tzu-Chieh et al, 2011). The study wanted to find out if the P2P programme is able to build resiliency, self-efficacy and motivation in students. Many of the previous studies have shown the effectiveness of such programs in getting better grades or helping students to move from a fail to pass (Rogan, 2009); (Reames, 2015); (Dawyer and Larkin, 2016); (Laurs, 2018) but there are very minimum studies to conducted to see if such peer lead peer progammes can build skills that students need to hone to do well academically, personally and socially. Hence the objective of this study is to find out the following:

1. To assess the level of students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.
2. To examine the P2P leaders' effectiveness in conducting the P2P sessions.
3. To examine the effects of the P2P program on resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.
4. To examine the moderating effects of demographic variables and study time on the effectiveness of the P2P program on students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

Students were measured on these variables based on their involvement in the P2P programme or lack thereof. This study on peer-to-peer learning is based on the Social Learning Theory (Bandura, 1971, 1977 & 2001); Theory of Resiliency (Rutter,

2013); Self-Efficacy (Bandura,1982); Maslow's Motivation Theory and Theory of Involvement (Astin, 1999).

The development of the conceptual framework of this study is supported by literature among the seven variables in the study. They are the students' demographic characteristics, study time, resiliency, self-efficacy, intrinsic motivation, extrinsic motivation, social motivation and the student leadership in peer-to-peer program. The students' demographic variables of gender, age, academic stream while in high school and parents' income are included into the study as well as study time, which is the number of hours the student devote to studying in a week as the moderating variables in this study. The variables in this study are as follows:

IV: Peer-to-peer programme (with P2P as the treatment group and without P2P as the control group)

DV: Resiliency, Self-Efficacy, Intrinsic Motivation, Extrinsic Motivation & Social Motivation

MV: Gender, Age, Academic stream when in high school, Parents' income and study time.

The dependent variable of resiliency was measured using a 24-item resiliency attitude scale developed by Pinheiroa et al., (2015). The other dependent variables of self-efficacy, intrinsic motivation, extrinsic motivation and social motivation was measured on a 24-item scale adapted form questionnaire developed by Aribah (2014).

This study employs a quasi experimental research approach with the use of survey technique. A set of questionnaire has been developed by the researcher for data collection. The instrument which was specifically designed for this study contained seven parts namely

(a) demographic variables,

(b) items measuring resiliency,

(c) items measuring self-efficacy,

(d) items measuring intrinsic motivation,

(e) items measuring extrinsic motivation,

(f) items measuring social motivation and

(g) items measuring the peer leadership in the peer-to-peer program.

The target population for this study comprised of undergraduate students in a private university in Kuala Lumpur which is capital of Malaysia. As discussed earlier, only courses with high failure rates was the target of the peer-to-peer program. A total of ten courses within the three faculties were identified to have failure rates of above 25% and some as high at 40% and hence they were included in the study. All the students in the ten courses are automatically offered to participate in this experiment. This totals to 303 students. Of the total target audience, 223 students voluntarily joined the P2P program and the remaining 80 students opted out of the program. Once again this P2P program mirrors the peer-led-peer program based in the United States and

Australia where the participation in the program was entirely voluntarily and no force or coercion was exercised. Students need to want it and take charge of their own learning. Details of the peer-to-peer program was informed to the students in those 10 classes before the treatment commenced and the students were given the choice to join or not.

A pilot study was conducted first in order to test the reliability and validity of the survey instrument. Data was analyzed using the Statistical Package for Social Sciences or SPSS version 21.0 for internal consistency of the instrument and SEM-PLS 3 was used to analyze the quantitative data collected via the survey questionnaire.

For the actual study, a survey questionnaire was administered to the classes of each of the selected courses at the beginning of the semester before the P2P program commenced and the same set of questionnaire was again given to the same students in the selected courses at the end of the semester. The questionnaire had a pre P2P session and a post P2P session so the researcher was able to find out the pre and post effects of the P2P program on the dependent variables. The pre-test questionnaire was administered at Week 3 of the semester and the post-test questionnaires was administered at Week 13, which is the last week of the study semester. A total of 11 weeks of treatment has been given to the Treatment group which is in addition the the regular classes whereas the control group only attended the regular classes and they did not join the P2P programme.

5.2.1 Discussion of the Major Findings

Peer learning has been proven to help students learn better and score better grades in the exams. Numerous studies have shown that peer learning has helped students improve their grades. The relationship between peer learning and student

passing their examinations, earning better grades, or moving up to the next grading scale for example from a grade D to a grade C, of from grade C to a grade B or even grade B to a grade A has been proven to be good (Rogan, 2009). However, those studies may have been better if the boundaries of the research were to be expanded to include wider variables such as the possibility to affect other outcomes and also the degree of strength to those outcomes with influence from moderating and mediating variables. This would make the study more valuable and provide better insights into the degree of positive outcomes and relationships that peer learning can provide.

Thus this study was designed with that interest in mind. The researcher wanted to understand if peer learning creates positive outcomes in building resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. In addition to that the researcher wanted to test the moderating effect of gender, age, academic stream when in high school, study time and parents income on the relationship between the independent variable of peer to peer learning to the dependent variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. This study is designed to be an experimental study with two group; the control group which is the group that did not receive any peer learning program and the treatment group which is the group that received the P2P program.

There are eight research questions that have been formulated to meet the four research objectives outlined earlier. The questions are as follows:

1. **Research question** 1:

   What are the levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation amongst students?

This is to answer **Research objective 1**: To assess the level of students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation.

2. **Research Question 2**:

   Are the P2P leader knowledgeable in the subject matter?

3. **Research Question 3**:

   Do the knowledge level of the students increase after attending the P2P sessions?

4. **Research Question 4**:

   Are students more confident in passing their exams after attending the P2P sessions?

   Research Questions 2, 3 and 4 answers **Research Objective 2**: To examine the P2P leaders' effectiveness in conducting the P2P sessions.

5. **Research Question 5**:

   Is there any effects of the P2P programme on students' resiliency?

6. **Research Question 6**:

   Is there any effects of the P2P programme on students' self-efficacy?

7. **Research Question 7**:

   Is there any effects of the P2P programme on students' motivation in terms of intrinsic, extrinsic and social motivation?

   Research Questions 5, 6 and 7 answers **Research Objective 3**: To examine the effects of the P2P programme on resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation

8. **Research Question 8**:

   Do the four demographic variables which are gender, age, academic stream in high school, parent incomes, and study time have any moderating effects between the independent variable and dependent variable?

   This is to answer **Research objective 4**: To examine the moderating effects of demographic variables and study time on the effectiveness of the P2P program on students' resiliency, self-efficacy and motivation levels.

In **Research Question 1**, the researcher sought to find out the existing level of students' resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation for all students for the control group and for the treatment group. This is to test if there will be changes to those variables after they have gone through the treatment. The levels are reflected in the mean scores of each of the variable. The level of Resiliency is 5.77, Self-efficacy is 4.64, Intrinsic Motivation is 4.98, Extrinsic Motivation is 5.64 and Social Motivation is 5.52. This means all of the variables are between low to moderate. The highest is Resiliency at 5.77 and lowest is Self-Efficacy at 4.64. The existing levels were between low to moderate. This would be the level expected since all the students are mostly first year students, fresh from high school entering university or college for the very first time.

The new environment, new system, different expectations for these students is linked to the transition issues mentioned earlier in this research (Wismath & Newberry, 2019); (Thou et al., 2017). Hence the findings for research question one is supported by previous literature. Based on Geerlings, et. al, (2016), transitioning into university life can be difficult for students and many struggle when faced with mandatory first-

year subjects that are heavy in content. Is is consistent with the high failure rates of the selected courses for this study. The majority was first year courses and they had between 25% - 40% failure rate.

When students enter college or university, they are moving into a brand new environment which is different from their high school. They choose their courses, they select which timetable they want, their assignments require them to work in teams with people whom they don't know. They need to speak up and ask questions and not just to follow what the teachers tell them. It challenges their high school norm for the majority and hence when they enter into this new realm of adulthood in college or university, they may be overwhelmed. This may cause their initial levels of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation to be low. Hence, Topping (2005) suggested that having proper peer support in the learning can be effective in helping students transition to life in university. Therefore, this research has proposed the peer-to-peer (P2P) program to be introduced as an intervention to test if it will affect the levels of those variables.

For **Research Question 2**, the researcher wanted to find out the knowledge of the P2P leaders in their respective courses that they were facilitating. The levels are reflected in the mean scores of each of the items. All the items have a very high mean score which reflects the strong competence in subject knowledge of the P2P Leaders and the students recognize the strength of their respective P2P course leaders. It is important that these student leaders are knowledgeable in their respective subject areas as they will be guiding the students in their learning.

The role of a P2P leader is indeed very important. They plan, organize and facilitate engaging peer learning sessions which revisits but not reteach course content,

important topics and concepts, guide students to develop learning and studying strategies and foster peer to peer relationships (Chilvers, L., 2016; Dawson et al., 2014). They need to have sound subject knowledge in order to plan for the learning activities for a particular module.

What makes these leaders good is how the role they play has impacted their own development. As the leaders enrich themselves, their knowledge, skills and abilities grow and it translates to better facilitation of the P2P programme. It becomes a positive cycle. The findings of the study include: increasing leaders own learning and academic performance (Alberte, Cruz, Rodriguez, & Fitzer, 2012; Arendale, 2014; Capstick, 2004; Guyon et al., 2015; PcPhail, Despotovic, & Fisher, 2012); feeling a sense of satisfaction from helping their peers (Gill &McConnell, 2016); a sense of belonging and enculturation to their course community (Alberte et al., 2012); developing positive peer relationships (Couchman, 2009; Stout & McDaniel, 2006); increased retention and graduation rates (Alberte et al., 2012; Arendale, 2014). These positive research outcomes is proof of the leaders capability of affecting change in their respective sessions. The confidence levels of the students towards the subject area have also significantly increased. In addition to that, the students have also indicated gains in their confidence in public speaking and in their leadership, communication and facilitation skills (Liou-Mark, et al., 2018). As chosen peer leaders, the P2P programme leaders have the responsibility to help and guide the students who are looking up to them as role models for guidance and advise on subject matter. Student see these leaders as role models and they want to emulate them, hence it is important for leaders to demonstrate strong knowledge and leadership in the subject.

For **Research Question 3**, the researcher wanted to find out did the knowledge level of the students increase after attending the P2P sessions. A paired sample T-test was conducted on the before and after of the treatment and it showed a significant increase in the mean scores. Before attending the P2P session, the score was low at 4.88. but after attending the P2P sessions the mean increased to 8.22. This means that the P2P sessions has a significant contribution towards improvement of subject matter knowledge. This results can be tied back to all of the dependent variables of resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. After the treatment of the P2P, the findings for the previous research questions shows that the levels of the students' resiliency, self-efficacy, intrinsic, extrinsic and social motivation has increased. With these supporting factors increase, the students is now more prepared to face courses, more resilient in the face of challenges and would be more motivated to move forward. and would have better understanding of the subject area. Hence the knowledge level of the students have increased by at least 40% according to the findings.

These findings were supported by Astin (1999) Theory of Involvement and Vygotsky's Social Development Theory (Vygotsky, 1980). The theory of involvement explains that when students are involved and invested in doing something they enjoy; it translates to positive outcomes. When students are involved with the P2P program and engage with the course, the faculty and the leaders, the more connected they will be with the course. Baik, Naylor, and Arkoudis (2015) and Menzies and Nelson (2012) agreed that when students become more involved and connected with what they do, they outcomes are valuable. The other theory which supports this outcome is the Social Development Theory by Lev Vygotsky. The theory posits that social interaction paves the way for development. Cognizance is the end

product of socialization and social behavior (Vygotsky, 1980). The concept of the Zone of Proximal Development, also introduced by Lev Vygotsky is an area of development that occurs when a person is assisted by a teacher or a peer with a higher skills set or someone more knowledgeable. The learning of new information or skills set is assisted by a more capable person. The more capable person helps to scaffold the learning for the student so that the level of understanding and knowledge increases until the assistance of the other more capable person is no longer needed. In this study, the more capable other is the peer leader of the P2P program. The peer leader is someone who is more knowledgeable and knows the content of the course very well and therefore has been selected to be the leader for the P2P program. They will facilitate the learning of course content for the students till the level for required understanding is achieved. The figure 5.1 helps to explain about the zone of proximal development.

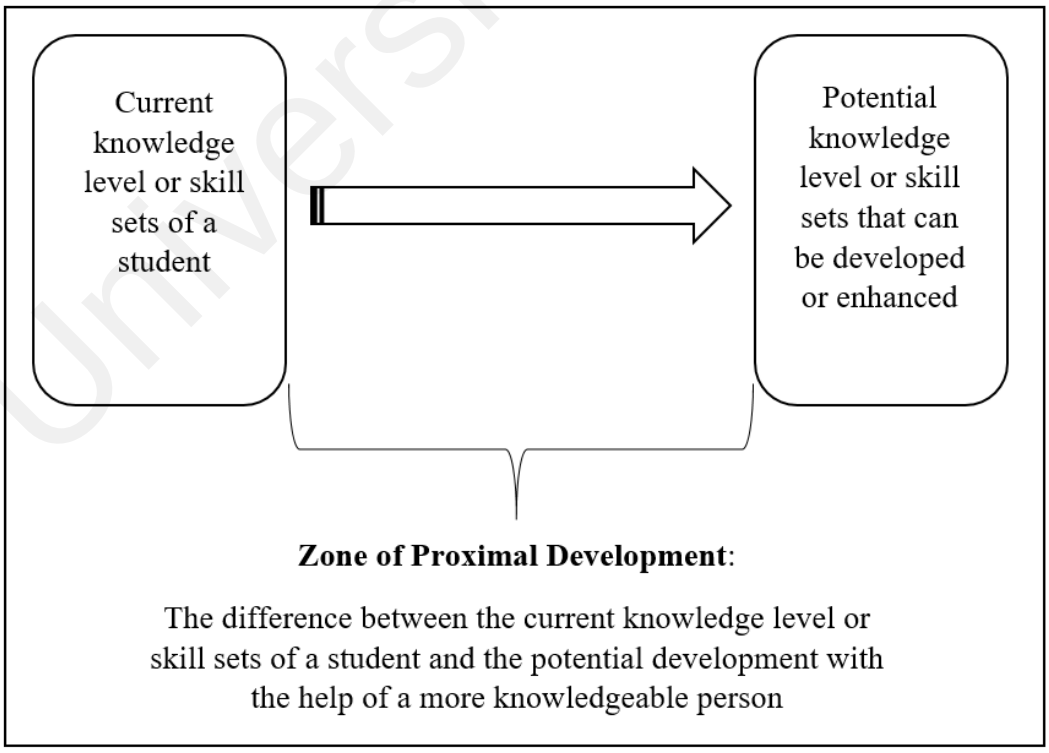

Figure 5.1. Zone of Proximal Development

For **Research Question 4**, the researcher wanted to find out if the students were more confident in passing their exams after attending the P2P sessions.

A paired sample T-test was conducted on the before and after of the treatment and it showed a significant increase in the mean scores. Before attending the P2P session, the score was 5.33 and after attending the P2P sessions the mean increased to 8.17. This means that the P2P sessions has a significant contribution towards the confidence levels of the students in passing the course for the final exams. This finding is also tied to the other dependent variables of increased levels of resiliency of the students', increased levels of self-efficacy of the students', increased levels of intrinsic, extrinsic and social motivation levels of the students'.

This is also supported by Astin (1999) Theory of Involvement and Vygotsky's Social Development Theory (Vygotsky, 1980). As discussed in the previous findings, students who more involved have higher chances of succeeding. Astin (1999) also mentioned that it is not merely being a participant in the program that will help but the level of involvement the individual puts into to doing the activity is what matters. In the P2P programme, the peer leaders will ensure each student participates. There are no observers in the programme. Every student will be given a chance at attempting to answer questions, solve problems and provides explanations to answers. In doing so, students are actively involved in the learning process and learning is reinforced if they are the center of the learning. As mentioned in Chapter 2, a learning theorist by the name of John Dewey supports the idea of learning by participating and experimenting rather than just taking in information passively (Tarrant & Thiele, 2016). This clearly reflects on what P2P programme and the leaders are doing – involving the student learners and making them the center of the learning activity. The students are not just

passive observers or participants in the P2P programme but every student what joins the programme, must be ready to participate and be actively involved every week.

With the positive increase of these variables and the significant contribution of the P2P programme and the peer leaders, it is no doubt that the students will feel confident in passing their exams after they have participated in the P2P programme.

For **Research Question 5**, the researcher wanted to find out if the P2P program had any effect on the students' resiliency. The mean for the post-test scores in Treatment Group is 7.4271 whereas for the Control Group (without treatment) is 6.473. After the P2P, the group of students with the treatment felt they are better prepared and may be more resilient to face the course and the program. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 1.81 and the Control Group is 0.836. The mean score for the Treatment Group is higher. This shows that the P2P program does have an effect on students' resiliency. The peer relationship which was built during the P2P has helped to build resiliency amongst students. The will and determination to continue to succeed is strong once they have seen and experience the positive effects of the program.

The multivariate test conducted also showed that it is significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students' resiliency between those who had the P2P treatment versus those who did not have P2P. This means that the P2P program is effective in increasing resiliency amongst student. This proves that after the P2P treatment the resiliency amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

This is supported by previous literature stating that having a role model and having good social support is important and helps to build resilience for the students. Having a good role model to look up to, for example, the peer leader who is guiding them. Those students who have a role model in mind can draw strength from their desire to emulate this person. If the peer leader is also a role model to their students, it helps the students to want to be like the peer leader and they strive to do their best. The P2P program also provides a social support to students where the social support from peers are significant predictors of resilience hey have a group of friends who they can learn from and learn together with. Hamdan-Mansour, et al., (2014) found that social support from peers are significant predictors of resilience.

During the P2P sessions, these peer leaders will facilitate active learning amongst the students in their session by encouraging group members to work together towards shared understanding (Laurs, 2018). There have been numerous research on the social and development benefits for participants of 'learning how to learn' (Capstick, 2004; Ette, Burmeister & Elder, 2001). Students who are led by these peer leaders grow in their knowledge and understanding of the subject matter. Hence with every improvement, they build confidence, and the more confident they are, the more they learn, they can build their resilience during their academic journey.

For **Research Question 6**, the researcher wanted to find out if the P2P program had any effect on the students' self-efficacy. We learned that self-efficacy is a belief about what one is capable of achieving. Individual access their skills and capabilities to translate those skills into actions. Self-efficacy is about perceptions of one's capabilities to initiate actions. The findings for this questions shows that the mean for the post-test scores in Treatment Group (with treatment) is 42.435 where as for the

Control Group (without treatment) is 34.350. After the P2P, the group of students with the treatment felt they are better prepared and have better self-efficacy to face the course and the program. This is supported by the mean difference between pre-test and post-test scores for Experimental Group is 15.166 and the Control Group is 4.975. The mean score for the Experimental Group is so much higher than the Control group. This shows that the P2P program does have an effect on students' self-efficacy. The multivariate test conducted also showed that it is significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students' self-efficacy between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing self-efficacy amongst student. This proves that after the P2P treatment the self-efficacy amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

These findings can be explained when self-efficacy (personal) interacts with behavior, research shows that self-efficacy beliefs influences achievement behaviours such as choice of tasks, persistence, amount of effort expensed and skill acquisition (Schunk & Pajares, 2002). When the students have a higher self-efficacy, they will try harder to perform better and to get better grades. Higher self-efficacy induces the student to choose to act in a manner that will be favorable to them. This is further supported by Crain (2011) citing Bandura on the self-efficacy appraisals which affects levels of motivation. According to him the sources of self-efficacy appraisals are actual performance, vicarious experiences, verbal persuasion and physiological cues. Explaining this through participation in the P2P programme means that when students participate and answer questions or slove problems based on what they have experienced and observed through social and observational learning and they get those

questions right, they succeed, their self-efficacy will go up. The more the model that positive behavior and see positive results, their self-efficacy will increase. When the students see that other students in the group can succeed at answering questions, they too will be motivated to try as their vicarious experiences tells them that if others of similar background and knowledge can do it, so can they. When the P2P leader commends the students and tell them that they have done a good job and will be able to do it again, the student's self-efficacy will increase and they are motivated to try again. Finally, physiological cues like practicing questions volunteering to provide answers to help their fellow peers will give the image that they are able to handle the questions given them with ease. This shows that the P2P program does have an effect on students' self-efficacy. The peer relationship which was built during the P2P has helped to enhance self-efficacy amongst students. The constant approval and feedback given by the P2P leaders in the session reinforces their ability and believe in self that they are able to succeed.

For **Research Question 7**, the researcher wanted to find out if the P2P program had any effect on the students' motivation levels especially with regard to their intrinsic motivation, extrinsic motivation and social motivation.

As discussed earlier, intrinsic motivation is the act or urge of doing something because it gives a reward internally. According to Orvis, Sturges, Tysinger, Riggins and Landge (2018), intrinsic motivation is when a person does an activity because it in inherently satisfying and enjoyable. There is no separable outcomes or contingencies that initiate and maintain the behaviour but it it is intrinsically motivated behaviours occur spontaneously and it leads to interest, excitement and enjoyment of having performed that behaviour. We choose to do something because it give

enjoyment or because it is interesting and not because of an outside incentive or pressure to do it. The findings of this study for intrinsic motivation, the mean for the post-test scores in Treatment Group (with P2P treatment) is 43.757 whereas for the Control Group (without P2P treatment) is 36.062. After the P2P treatment, the group of students with the treatment felt they are better prepared and have higher intrinsic motivation. This is supported by the mean difference between pre-test and post-test scores for Treatment Group is 14.43 and the Control Group is 4.66. The mean score for the Experimental Group is higher. This shows that the P2P program does have an effect on students' intrinsic motivation. The multivariate test conducted also showed that it is significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students' intrinsic motivation between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing the intrinsic motivation amongst student. This shows that after the P2P treatment the intrinsic motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

For extrinsic motivation, the mean for the post-test scores in Treatment Group (with P2P treatment) is 48.175 whereas for the Control Group (without P2P treatment) is 41.618. After the P2P treatment, the group of students with the treatment felt they are better prepared and have higher extrinsic motivation. This is supported by the mean difference between pre-test and post-test scores for Experimental Group is 15.004 and the Control Group is 5.013. The mean score for the Experimental Group is higher. This shows that the P2P program does have an effect on students' extrinsic motivation. The multivariate test is also significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students'

extrinsic motivation between those who had the P2P treatment versus those who did not have the P2P treatment. Orvis, et al (2018) states that for extrinsic motivation, a person does and activity because it leases to a separable outcome of consequence such as receiving an award or avoiding punishing, there is an external push factor to it. This means that the P2P program is effective in increasing the extrinsic motivation amongst student. The pre-test score shows a mean extrinsic motivation of 34.888 while the post-test shows a higher mean extrinsic motivation of 44.897. This shows that after the P2P treatment the extrinsic motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester. When students see the results of their effort, when they feel the sense of satisfaction in seeing success, they strive to do more because they want to receive the same feeling of achievement.

As for social motivation, the mean for the post-test scores in Treatment Group (with P2P treatment) is 46.780 whereas for the Control Group (without P2P treatment) is 40.350. After the P2P treatment, the group of students with the treatment felt they are better prepared, socialised more and have higher social motivation score. This is supported by the mean difference between pre-test and post-test scores for Experimental Group is 14.43 and the Control Group is 5. The mean score for the Experimental Group is higher. This shows that the P2P program does have an effect on students' social motivation score. The multivariate test is significant (p-value = .000). This results supports a decision to conclude that there are significant differences in students' social motivation between those who had the P2P treatment versus those who did not have the P2P treatment. This means that the P2P program is effective in increasing social motivation amongst student. The pre-test score shows a mean social motivation of 33.850 while the post-test shows a higher mean extrinsic motivation of

43.565. This shows that after the P2P treatment the social motivation amongst the students who have gone through the P2P program is much higher compared to when they first started the semester.

This findings for intrinsic, extrinsic and social motivation is indeed supported by literature as according to Ramm, Thomson, & Jackson, 2015; Secomb, 2008; Stone, Cooper, & Robyn. (2013); Goodman et al., 2011; Orvis et al., 2018 all found that peer-to-peer education has been positively associated with increase in students confidence levels and self-awareness. In addition to that Fuchs, Fuchs, Mathes, and Martinez (2002) states that socialization experiences that occur during peer tutoring can benefit both the tutor and the tutee by encouraging students to learn increase their social standing among peers. Peer tutoring was found to be helpful in socialization experience as the level of interaction among students both inside and outside the classroom improved significantly. Topping (2010) also found that peer-to-peer learning serves as an effective way to improve self-esteem amongst students and aids interaction among peers not only academically but also socially. This shows that the P2P program does have an effect on students' overall motivation in terms of intrinsic motivation, extrinsic motivation and social motivation. The peer relationship which was built during the P2P has helped to build motivation amongst students. The social support and constant checking in with the group members help motivate the students to progress.

For **Research Question 8**, the researcher wanted to know if the four demographic variables of gender, age, academic stream in high school and parents' income and also study time have any moderating effects on the relationship between the independent variable and dependent variable. The analysis show that only few

moderators have a significant effect on the relationship between attending the P2P session and the dependent variables of intrinsic motivation, extrinsic motivation and social motivation. The moderators which has a significant effect on the relationship between the independent variable and dependent variable are age and study time on resiliency; age and study time on self-efficacy; age and study time on intrinsic motivation; age, parents' income and study time on extrinsic motivation; age, parents' income and study time on social motivation.

The moderating variables of age, study time and parents income seem to have the most significant impact on the relationship between attending P2P and the resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation of students.

The moderators which has does not have a significant effect on the relationship between the independent variable and dependent variable are gender, academic stream in high school and parents' income on resiliency; gender, academic stream in high school and parents's income on self-efficacy; gender, academic stream in high school and parents' income on intrinsic motivation; gender and academic stream in high school on extrinsic motivation; gender and academic stream in high school on social motivation.

It is quite consistent that gender, academic stream while in high school and parents income is not significant on the relationship between attending the P2P session on the resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Generally, gender is not a significant moderator. This is also verified by a study done by Malm, et. al. (2018) whereby students who attended a peer-led-peer learning program had their chances of graduating on time increase by 20-35% and

the risk of students dropping out also reduced by approximately 20-40% and these results were independent of prior academic achieve and gender.

However, according to Geerlings, et.al. (2016), who conducted a study on Peer Assisted Study Sessions (PASS) program in two first-year undergraduate course, a business course and a statistics based course and they found that female statistics students improved their final marks in response to attending a higher number of PASS sessions per semester while their male counterparts achieved lower marks on average. Although several studies have shown that, in several similar peer-to-peer learning programs, gender is not a significant factor relating to achievement but Geerling, et. al findings suggested otherwise. They are suggesting that the observed differences in achievement attributed to gender may arise from other complex gender-related issues, for example, gender stereotypes, student gender ratios in class, the gender of the teacher relative to the gender of the students, and gender-related motivation, engagement and subject choice.

This may be attributed to the fact that when Parents' Income brackets are different, students may experience different levels of extrinsic and social motivation. Malm, Bryngfors & Fredriksson (2018) also confirmed in their research that students would definitely benefit from attending peer led peer programs independent of prior academic achievement and gender. These findings are also consistent with Abdulraheem, Yusuf, & Odutayo (2017) where they found that peer tutoring has no gender bias with respect to improving students' academic performance and that it did not favor male over female or vice-versa. However, a study done by Madu (2003) and Yager and Tamir (1993) as quoted in AbdulRaheem et.al. (2017) suggested otherwise. They found out that there was indeed a significant difference in the academic

performance of male and female students when exposed to a peer tutoring instructional strategy.

Overall the major findings in this study was consistent to the previous study conducted by researchers in the different regions around the world, in the United States of America, in European universities and also closer to home amongst Asian institutions. Peer learning does indeed help with improving grades, increasing changes of student success and building confidence. The research by Hensen & Shelley (2003) found that pre-entry qualification did not have an impact on the ability of the SI participants to succeed. This study also found that that was no significant connection between the students previous performance or high school qualification on their current achievement and students who attended the P2P did in fact outperform students who did not attend the P2P. Chen and Liu (2011) found that reciprocal peer tutoring program has been successful in regard to tutors and tutees' achievements, motivation and attitudes. The findings of this study corroborated with the previous study indicating that there was a significant contribution of increase levels of resiliency, self-efficacy and motivations for students who attended the P2P. In the study by Malm, Bryngfors, and Morner (2011), students attending SI session have better success in the courses compared to non-SI attendees. This was also supported in this study, showing that students levels of knowledge and confidence in the course and passing the course was higher for students who attending the P2P program compared to the non-P2P students. Dawyer and Larkin's (2016) and Baik, Naylor, and Arkoudis's (2015) study concentrated on the importance of supporting students in first year university or transitioning students and creating positive first year experience for the students. According to them, these groups of first year students are more likely to leave their studies, drop out or get demotivated in the first year itself if they did not become

integrated into the university community. Extending from that research, this one found that incorporating peer learning support programs in the first year itself helped students to build their levels of resiliency so they do not drop out easily, build their self-efficacy and the belief that they can succeed and increasing the motivation of the students so that they continue to thrive and stick with the program and not give up easily.

5.2.2 Significance of findings

There are several significant findings that emerged from this research. The more significant findings are the moderating effects of age, study time and parents' income on the relationship between attending the P2P program on resiliency, self-efficacy, intrinsic motivation and extrinsic motivation. Let us discuss the three moderating variables that are significant. The moderating variable of age is noted that with age, resiliency, self-efficacy and motivation seems increase significantly. According to Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012), students were at risk of disengaging from university studies if they were mature age students (not traditional age students), yet this research seem to proof otherwise. The non-traditional aged student seems to be more resilient, have better self-efficacy and is more motivated compared to the younger students. This finding imply that the mature students understand that they have more to lose if they do not do well and succeed in university. In providing support of their students, the leadership for learning framework would then suggest that institution leaders may need to think about putting resources in place to encourage these students to thrive and continue. Resources like scholarships or discounts to help students who are in need or to create more on campus jobs for students to work in exchange for payments that would help the needy students to continue to focus on their studies and not be sidetracked.

The next moderating variable that was significant is study time. The more hours that students focus on learning, the more it helps them to build their resiliency, self-efficacy and motivation levels. When students spend more time interacting with their learning materials, the more equip they are in understanding and remembering content. In the case of the peer learning program of PASS or Peer Assisted Study Sessions, studies done by Rogan (2009) and Stout and McDaniel (2006), confirmed that "an hour studying in the PASS program is worth three hours studying alone". It means studying in a group and with peers is better than spending more hours studying alone. When one is studying amongst peers, there is an pportunity to seek clarification and ask questions, and learn in a friendly, non-threatening environment, versus studying alone where there is no opportunity to discuss ideas and clarify concepts. This finding imply that students who put in time to learn but as a group, will be more likely to succeed as they are will be more resilient in facing difficulties, they have friends to work through their problems with, they will have higher self-efficacy and be more confident in their own abilities to succeed and will be more motivated intrinsically, extrinsically and socially to continue to thrive and grow. The institution must create more opportunities where students are able to learn collectively.

Finally, parents' income was also a significant moderator for the relationship between attending P2P and resiliency, self-efficacy and intrinsic, extrinsic and social motivation. Larkin and Dwyer (2016), Menzies and Nelson (2012) and O'Brien, et al. (2012) mentioned that students who were at risk of disengaging from university studies were usually experiencing financial hardships at home. If parents' income were low and there is not enough for the family to get by, students may feel stressed and not able to focus as they may feel that they have to work to help supplement the income for the family. Working and studying is not easy and will affect the student's concentration,

performance and their grades ultimately. The higher their parents' income, the more resilient they are, have better self-efficacy and be more motivated. This finding will alert the intuition to be more sensitive of the socio economic status of the students. While most institutions are for profit, leaders need to have that sense of responsibility and provide opportunities for students to continue to study and be able to have a clear focus on their academic journey.

5.3 Significance of the Study

This study was much needed by the institution for three main reason. Firstly, the institution is working towards being the leading institution in Asia as the centre for peer research, hence the initial findings from this study would help to provided data for action plans and strategies. Secondly, based on the feedback by regulatory bodies that the peer program provided a strong support for the weaker students, the institution should use the feedback as support to expand the program. The program helped students do better and earn better grades and many who were failing initially passed the course after the results were released. This feedback endorsed by regulatory body would provide substantial weight for the institution in helping them achieve the first point of working towards being the centre for peer learning and research in Asia. The third importance is the need to discover the other possible benefits that such peer learning programs would bring. Apart from improving grades and achieving academic success, it will be beneficial if the program can help develop other areas for the students.

From the various importance of the need for this study, the contributions are obvious. From the analysis done, we find that the peer learning program has contributed to helping students to adjust to university life, providing a positive

experience in the first year of university, increasing student engagement, improving passing rate, building resilience amongst students, improving self-efficacy and help to develop intrinsic motivation, extrinsic motivation and social motivation amongst the students. These will ultimately translate to graduate success. These importance were also sighted by Zarifnejad, Mirhaghi and Rajabpoor (2018), Miao, Henderson, and Supple (2017), Larkin and Dwyer (2016), Zamberlan and Wilson (2015) and Baik, Naylor, and Arkoudis (2015).

The benefits are of this program are many and it is not only for the students, their peers, the community, the university and ultimately the industry as the flow is likened to a positive chain reaction. When students do well and succeed in school, their group will do well, their program receives higher passing rates and the university receives recognition and accolades from their students' success. The industry who receives them after they graduate will benefit from the ideas and contribution these brilliant young minds bring to the table.

With the support of these research findings, it can be evidence for the university to offer a structured peer-to-peer program for its first year students.

5.4 Implications

Higher education plays an important role in educating the students for a brighter tomorrow. With technological disruptions and mindset shifts, institutions of higher learning have an even more important role to play in ensuring that they prepare these students for tomorrow and for the future of work. To meet the demands of corporations and industry, colleges, universities or institutions of higher learning must introduce, implement or incorporate various programs that will help students improve and succeed in their studies. The knowledge and skills they learn in colleges or universities

is only the foundation or the tip of the iceberg, but if done correctly, it forms a strong base and foundation for these students to succeed in the future.

The results of these findings not only benefits the students, but also the institution and this can extend to corporations or industries who hire these fresh graduates. There have been numerous reports that graduates leave the company less than a year of service and these companies have to spend extra to hire and train the new staff. The reason could be linked to no right job fit, inadequate knowledge or skills, lack critical thinking and problem solving skills or lack technical knowledge. Let us look into the implications for different stakeholders on the benefits of instituting peer learning.

5.4.1 Implication for students

The idea of peer lead peer helps the students in that it gives a safe, comfortable and non-judgmental assistance to all students who need help. As discussed, a peer is someone of similar level or status as the student but they may be more capable or have better knowledge, skills or understanding of a certain subject matter as compared to the student. They are then able to guide, coach or mentor the other students to help them fit in, improve to succeed or just be someone they can talk to. These peer assistance can come in forms of a peer leader, a peer mentor or even a buddy system put in place to help a fellow student. Since the peer is also a student, these students who need help, will not feel too intimidate is may be more open to working with these peer leaders, mentors or buddies. If this concept is introduced widely around the university, it can help students academically, emotionally and even mentally. It may even help reduce cases of stress, depression and suicide tendencies. Peer mentoring can be introduced to different areas of student involvement for example, buddy system

for First-Year experience (FYE) programme, peer assistance for academic help programmes, and other social settings like clubs and societies. It is easier for students to gain access to other students as compared to a staff. This helps build confidence, communication skills, problem solving skills, creative thinking and other 21-centry skills set needed for employability.

5.4.2 Implication for the institution

For the institution, the benefits of having widely introduced peer programs will help in terms of reduction of failure rates, increase retention and reduced attrition rates. Universities around the world all lament that attrition rates are high especially amongst the first year students as coping and resilience may not be the same for all. With such programs managed and run by peer students, it may help students feel at ease or have the comfort that help is just a text away. Students who are better supported will be able to perform better, improve grades, improve passing rates and ultimately the prestige of the institution. Parents will also feel more confident in sending their students to the university and they know that their child will be taken care of academically, physically and mentally. These initiatives also shows that the institution is genuinely interested in helping their students do well and succeed. Word of mouth is very important and it can either make or break an institution. Student satisfaction will be reflected well if the institution provides good support and facilities to all its students. Peer support is part of the first year experience support provided by the institution. The first year experience support must be sealed in for every student. As discussed earlier, a good first year experience for students is the corner stone for ensuring their success and this also translates to better management for the institution. The following areas according to Cuseo (2015) helps build a comprehensive first year experience for the university, their programs, and improves practices. These areas are

program mission, new-student orientation, classroom teaching and learning, academic advisement, curriculum, academic support services, student co-curriculum, faculty-student contact outside the classroom, administrative leadership, policies and practices and program assessment. This brings a huge implication to the university as there are opportunities for continuous improvements in these areas.

Referring back to Chapter 1 where this study introduced Generation Z who are currently now in the classroom. These students are hyper connected and socially conscious. They want to do things, to be seen, heard and accepted by the wider community. Therefore when their institution recognize their needs and supports them, they will have an enjoyable learning journey ahead.

5.4.3 Implication for the industry

For the industry, many organizations find it a challenge to attract and maintain generation Z who are graduating and going out to the workforce. With their unique characteristics and preference, attracting good staff, motivating and keeping them is always a challenge. The managers and leadership team in most organizations are people born in different generations, namely baby boomers and generation X and there tends to be a generation gap with the baby boomers and gen-Xers not being able to fully understand gen- Z employees. There is a disconnect in terms of definitions of work, collaboration and expectations. With these issues in mind, organizations too can introduce peer assistance or peer mentor or peer buddy into their recruitment program to help and guide the new recruit so that they are able to understand the company culture and expectation and it helps to learn faster on the job requirements. This can lead to having career advisors, coaches or mentors. With these in place, it will be

easier for the new staff to get a better grasp of the organization and the expectation on them to perform better.

5.5 Limitations

There are a number of limitations in this experimental study. Firstly, this study only included 303 students meaning that this analysis only reflects a small sample of the student population of the campus and cannot be generalised to the entire institution. Secondly, it is only conducted in one of the campuses out of the 6 campuses nationwide. This does not allow of generalisation geographically as the sample only comes from a campus in an urban city campus environment. Thirdly the study is only done in 1 semester of 16 weeks. The findings cannot be used to draw conclusions about the impact the program has in building resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation. Finally, the semester selected was the August to December semester. The demographics and characteristics of students joining the August semester may be different from the students joining the January or April or May semesters. Thus, the August semester students may not be a true reflection of the first semester cohort.

This study was purely experimental and did not take into account that this type of peer learning program is typically a voluntary decision, and as such is influenced by individual characteristics – observed and (crucially) unobserved to the program evaluator or the researcher – that may affect the findings.

Also controlled experiments that have equal participation in P2P and no-P2P are difficult to implement, especially outside the clinical or laboratory setting. There are major ethical and practical considerations in conducting social experiments.

Consider, for instance, the face that there is some evidence that P2P can improve student outcomes. It would be difficult to ethically justify depriving a random group for students access to P2P simply because we want to evaluate its impact, hence participation in this experiment was purely voluntary resulting in uneven distribution in student numbers between those students who received the P2P treatment and those who did not.

5.6 Recommendations

It is evident that the peer learning programme helps with improving the resiliency, self-efficacy, intrinsic motivation, extrinsic motivation and social motivation of the students in the university. Based on the findings from this study, it is recommended that the university continue to offer the peer-to-peer learning programme. The programme should be offered not only for first year university students but it should be expanded to include students in different years of study. This peer learning programme not only helps improve academic results but also helps to improve the resiliency amongst students, their self-efficacy, their motivation levels in terms of intrinsic, extrinsic and social. Hence, the university should look into developing the peer-to-peer program strategies to engage all students a more meaningful learning process that develops young minds into successful, accomplished and engaged global citizens as a result of having a wholesome education experience from the first year of university right up to graduation. The skills they learn in the peer to peer program can be replicated into their other courses hence the learning and studying strategies will help to students to be successful.

In addition to this Miao, Henderson and Supple (2017) found that an early intervention of pre-departure peer learning helped the students to prepare themselves

Therefore it is recommended for this university to continue offering this program and to expand it to all years of study. When students feel supported in their first year for studies and also for subjects with high failure rate or deemed to be very difficult, the students will feel motivated to continue to thrive and do well for their entire academic journey.

From the previous studies in Australia, it has also been reported that student leaders have noted that they developed a range of graduate attributes such as communication, critical thinking, and ethical responsibility, due to the extra responsibility and leadership involved in being in an authentic work environment. The researcher concurs that co-curricular programmes such as PASS and P2P can provide useful additional opportunities for students to acquire and develop graduate attributes. While not every student will have the opportunity to participate as student leaders in these peer mentoring programmes, these findings can inform other programmes for fostering graduate attributes. If these programmes offer authentic responsibilities to participating students, they may be more effective at fostering graduate attributes (Scott, McLean and Golding, 2019)

5.7 Suggestions for Future Study

The researcher would like to suggest a few ideas for future study expanding on this research. First, it is suggested to include a qualitative methodology to the study. Qualitative research complements quantitative in that it helps to provide a more in-depth understanding of the student behaviours in the P2P programme. Through interviews or focus group discussions, meaningful data or themes may emerge for a better insight into how students think, act and behave the way they do.

Second alternative is to introduce a mixed method study. With the evidence from quantitative questionnaire survey coupled with in-depth verbalisation through interviews, panel discussions, focus groups, a better triangulation of findings can be reported.

Thirdly, the study can be done on different geographic location to test if there is a difference in behaviours and outcomes from students in different states, rural or urban setting. A comparative study would yield interesting results.

Finally, the study can test for different demographic variables to look at mediating and moderating effects of peer learning.

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