EFFECT OF SELF-DIRECTED LEARNING ON STUDENTS' RESEARCH SKILLS AT HIGHER EDUCATION LEVEL

By

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Candidate of **Master of Philosophy** at the National University of Modern Languages do hereby declare that the thesis "**Effect of Self-directed Learning on Students' Research Skills at Higher Education Level"** submitted by me in partial fulfillment of M.Phil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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In the Name of Allah, the Most Merciful, the Most Compassionate, all praise be to Allah, the Lord of the worlds, and prayers to Muhammad (PBUH) and his progeny, His servants and messengers. I am completely sure that this work would have never become truth, without His guidance. Foremost, I am deeply thankful to my parents; Mr Ishtiaq Ahmad and Mrs Yasmin Ishtiaq, for being my biggest support throughout the whole life, for having faith in me and trusting me in every aspect of life. My parents have always been a source of inspiration and guidance for me. I own a deep debt of gratitude to my university for giving me an opportunity to complete this work. I would like to pay homage to my supervisor, Dr. Farkhanda Tabassum who has been devoted and generous during all phases of research and development of this manuscript. Besides this, I am also highly obliged to have had her motivational and encouraging words which greatly boosted my confidence throughout the learning process.

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DEDICATION

I dedicate my thesis to my beloved parents and siblings who have always been my biggest support.

ABSTRACT

The current study aimed to find out the effect of self-directed learning on students' research skills at higher education level. Objectives of this research were, to identify self-directed learning of students at higher education level; to investigate students' research skills at higher education level and to find out the effect of self-directed learning on students' research skills at higher education level. Self-directed learning was selected as independent variable and research skills selected as dependent variable. Conceptual framework was based on two theories; first theory given by Garrison's (1997) the three-dimensional model of self-directed learning as cited by (Shahrouri, 2016) and second theory for research skills selected for this study is based on the research work of (Griffioen, 2020). Target population of the study were 319 university level students, out of which a sample size of 175(n) was finalized from three Faculties; Faculty of Social Sciences, English and Management Sciences of three public sector universities of Islamabad, National University of Modern Languages, AIR and International Islamic University. These universities were selected due to the four common departments, i.e. Department of English, Education, Psychology and Management Sciences. Nature of the study was descriptive and quantitative survey research method was employed for which; two adapted questionnaires were used, first questionnaire had 23 survey statements and the second had 30 statements measured through Likert scale 1-5. Stratified random sampling technique was used by the researcher. A range of statistical tests including demographic evaluation, descriptive statistics, mean and linear regression were applied to analyze the data through SPSS. Findings lead to conclude that there exist significant effect of self-directed learning on research skills of students at higher education level. Similarly, results signify that there exist significant effect of self-management on research skills of students at higher education level. There exist significant effects of self-monitoring on research skills of students at higher education and there exist significant effect of motivation on research skills of students at higher education level. It is recommended that, Higher Education Commission and Universities may organize workshops and seminars that could grant students learning autonomy to support their self-directed learning. Students need to participate in their education programs whole-heartedly to learn new research skills.

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LIST OF ABBREVIATIONS

Abbreviations	Terms
SDL	Self-Directed Learning
BS	Bachelors of Science
M.A	Master of Arts
M.Phil	Master of Philosophy
MS	Master of Science
QSDL	Questionnaire about Self-Directed Learning
QRSS	Questionnaire about Research Skills of Students
SPSS	Statistical Package for Social Sciences
HE	Higher Education
NUML	National University of Modern Languages
IIUI	International Islamic University Islamabad
TDL	Teacher directed learning
EFL	English as a foreign language
IT	Information technology

CHAPTER 1

INTRODUCTION

1.1. Background

In current years, obtaining and exploiting information have undergone substantial change since it is accessible from manifold sources. The old belief that information is hard to change is replaced with the idea of self-directed learning that depends upon learning achievement of students (Jeong, 2022). This type of learning has attracted many faculty members and students since it makes them able to be responsible, independent and accountable for their actions (Noh & Kim, 2019).

Today, it is highly expected from teachers to impart complex research skills, among their students during the course of implementation of new views about learning as well as teaching authentic research strategies. With regard to Research Skills, university graduates are found uninformed about the countless information resources under their belt in their respective university library; therefore, many students depend upon freely available internet sites with regard to their research needs (Quarton, 2003).

In life-long education, self-directed learning is recognized as a major component in learning sector. It is a process that make individuals to take initiatives of their learning by themselves. SDL refers to a learning process in which learners undertake the control to implement, plan and examine their learning activities (Stockdale, 2003). Some researches defined it as a degree of one's knowledge of his or her achievement in multiple subjects. Concept of this learning strategy has been investigated by educators for many years, students of psychology has shown keen interest in self-directed learning. Learning that has multiple elements including self-initiated, self-planned and independent learning is subjected to be self-directed learning.

SDL denotes a process that takes individuals to undertake planning, ongoing as well as evaluating their learning experiences as a primary charge. This kind of learning takes on the concern to shifting learning from the external source i.e., teacher, towards the personnel. For instance; learning as well as peer tutoring provide good examples to capture the essence of SDL. Students need a learning contract to use it as a tool to plan their learning goals as well as learning actions.

Furthermore, SDL enables to enhance the already existing previous stock of educational experiences; focusing on the information that was not possible via passive observation (Shahrouri, 2016). Mental process and behavioural activities involved in searching of information is self-directed learning. This process makes students responsible to make decisions about their aims and efforts (Bhat et al., 2007). SDL enables students to be independent in their learning journey and makes them able to recognize their interests and curiosities. At the same time students creates their own principles to have in-depth knowledge.

Self-directed learning helps individuals who needs to acquire higher education to meet their learning needs without any limit or hurdle (Qadri & Pasha, 2021). Most of the students are expected to undertake research in their academic careers. Complex research skills and great deal of time is required to write a good research paper that includes ability to locate, extract and evaluate relevant information. Expertise to find the solution to the problems and collecting information related to the topic and analysing and interpreting the information to get the solution is known as research skills.

In this information age, students need to have competencies in research skills to excel in their professional fields. Now a days in some universities it is important for students to opt additional courses in using computer as well as research methods. When entering to post graduate level it is essential for learners to develop their research skills beforehand. Important research skills are: writing, information and communication skills (Meerah et al., 2012).

At higher level it is necessary part of completion of degree to conduct research projects and thesis writing which has multiple phases that are literature review, data collection and analysing it, and for this purpose students need to be trained to know different research skills (Agricola et al., 2018). Academic writing is notable research skills of 21st century. Students who are new in the field of research they must have to learn the techniques to gather data from authentic resources to use them in their assignments and thesis writing.

Students are not that much competent like other writers and knowledgeable scientific staff and do not have sufficient information about the material they gather from the online resources, so that is the reason it is imperative for learners to master research skills during their studies.

This research showed its determination to ascertain the impact of self-directed learning as an explicit development of research skills amid students of higher education. Moreover, phenomenon of SDL causes transfer of research skills that influence the attitudes as well as sustainable behaviours of graduates of higher education. This scenario necessitates the need to

get an evidence-based practice that may expedite SDL and subsequent transfer of research skills.

Following the guidelines issued by European Higher Education Area (EHEA) that emphasize to recognize qualifications throughout Europe special emphasis is placed to acquire competences at university level students (EHEA, 2018). The EHEA conveys the reality that the student is the pivot in the process of the learning process guided by teacher that emphasizes upon students to show more participation during their education enabling to take on responsibility to acquire the professional competencies related with their studies (Rascón-Hernán, 2019).

This needs self -directed learning (SDL) seeks growth and development through students to access high professional skills. More such strategies aim to enhance students' attitudes along with skills that is what andragogy model of Knowles (1975) stresses upon. This model deals with the adult, who aims to get learning from real experiences of life, sets out to pursue and achieve their self-learning objectives; SDL, therefore, advances on self- instruction as well as self -teaching (Knowles et al., 2005). According to Fisher et al., (2001), individuals those are well trained in SDL due to their inherent attitudes, skills and individual characteristics raise to the sublime of faculties of self-management as well as self-control with extreme quest for learning. Hence, learners take on responsibility to seek their indigenous learning, whilst teachers engage in active negotiation and conducting exchange of opinions among them, avail resources and produce validated results throughout this process (Cerda & Osses, 2012).

SDL, therefore, refers to as a way of instruction that culminates in lifelong learning. SDL enables to develop skills by facilitating the people inclusion in the information society being a natural process of learning that is considered useful for personal growth as well as professional success (Zhoc et al., 2018). The research reported that intelligent students with more emotions prove more ambitious to manage their self-learning and refer more satisfaction with their experience during university tenure (Zhoc et al., 2018). Alharbi (2018) established with regard to research on nurses that highly motivated students reflect high potential for reflecting self-control despite having low SDL readiness amongst nursing students. Deliberations given above provide sufficient grounds to find rationale of the study.

1.2. Rationale of the Study

Modern learning strategies are important to improve learning in new generation. SDL is one of the effective learning strategies that enhances research skills of the students. Self-directed learning is connected with upper-level thinking. When learners monitor learning process themselves it is known as self-directed learning. Previous studies shows that many researches have been conducted on SDL with different variables that are "Self-directed learning and achievement in information technology" (Jaleel, 2017). "Relationship between self-efficacy and SDL of adults in under graduate programs" (Langshaw, 2017). "Effectiveness of self-directed learning program using blended coaching among nursing students" (Noh & Kim, 2019). "SDL and academic achievement in secondary online students" (Carson, 2012). "An investigation of self-directed learning skills of undergraduate students" (Tekkol & Demirel, 2018).

During the course work the researcher being a student realized that self-direction in education is essential to master research skills at higher level, because it is unfeasible to earn a higher degree without knowing certain research skills. At higher level, teachers are not always responsible to teach very single word to students. Hence, it is imperative for students to remain self-directed and ought to become responsible of their learning with or without seeking support of their teachers. Therefore, the researcher conducted this study to find out the effect of self-directed learning on student's research skills at higher level.

However, very few research studies have been conducted on the effect of self-directed learning on students' research skills at university level. Moreover the researcher used the self-management, self-monitoring and motivation as direction of independent variable (Self-directed leaning) and Research skills as dependent variable with dimensions (research attitude, research activities and research context). It is therefore, the study intended to investigate the research skills of MS/M.Phil students that whether self-directed learning effects their research skills or not and if do so in what ways.

1.3. Significance of the Study

Self-directed learning is considered as a major component of 21st century. The researchers stated the every student must possess this quality in order to excel in their student life and face incoming challenges. It is a skill that can be learned, developed and taught to student through particular techniques (Asfar & Zainuddin, 2015).

The current study threw light on how and in which ways self-directed learning effects research skills of MS/M.Phil students. The study provided awareness to the students that through the use of self-directed learning technique they can enhance their critical thinking, academic writing which are known as research skills and this awareness is very beneficial and important at university level because at this level most of the students are supposed to be the future researchers.

This study may be helpful for Students, because Self-directed learning is one's own ability and motivation to learn in which students take an initiative to acquire new skills and enhance their existing knowledge. This strategy also encourages students to enhance their knowledge through extensive research and application of skills. Through this technique, they collect information such as data collection through surveys, research and then perform experiments and helps them to gather pertinent information through best approaches.

This study may also be beneficial for teachers as they can raise responsibility and ownership in learners through the use of self-directed learning activities in classrooms that promote design thinking and makes them able to think critically which develops awareness of self-interests and helps them to learn new sources of information.

The current study may also benefit Educational theorists, and those who intend to do research in the same area because the current research study may help them while doing research in the same area with different variables through review of literature.

This study might be helpful for Curriculum planner, they can enhance curriculum by adding self-directed learning based activates in curriculum that can increase students involvement in the classrooms.

1.4. Statement of the Problem

The dilemma of our education system is that the students totally depend on their teachers and they do not put their efforts to be self-directed learners. Although students face numerous complexities during their research work even at higher level; it is imperative to learn important research skills, the contemporary learning techniques and strategies equip them to overcome these difficulties. Self-directed learning can be one of the useful modern learning strategies that enables researchers to cope with these complexities.

Hence, the current study planned to explore the effect of self-directed learning on students' research skills at higher education level. This study pivots to ascertain self-directed learning among students of higher education and its effect on research skills of these students.

1.5. Research Objectives

1. To identify self-directed learning of students at higher education level.
2. To investigate research skills of students at higher education level.
3. To find out the effect of Self-directed learning on students' research skills at higher education level.

1.6. Research Questions

1. What is Self-directed learning of students at higher education level?
2. What are Research skills of students at higher education level?

1.7. Null Hypotheses

Ho1: There is no significant effect of self-directed learning on students' research skills at higher education level.

1.7.1. Sub-Hypotheses

Ho1a: There is no significant effect of self-management on students' research skills at higher education level.

Ho1b: There is no significant effect of self-monitoring on students' research skills at higher education level.

Ho1c: There is no significant effect of motivation on students' research skills at higher education level.

1.8. Delimitations

1. The study was delimited to only MS/M. Phil coursework students of three public sector universities NUML, IIUI and AIR.
2. The study was delimited to three Faculties, Faculty of English, Social Sciences and Management Sciences.

3. The study was delimited to four departments, Department of English, Education, Psychology and Management Sciences because these are the common departments in the selected universities.
4. The study was delimited to students enrolled in session, 2021.
5. The study was delimited to the public sector universities only located in Islamabad.

1.9. Conceptual Framework

Conceptual framework relies on two theories; first theory is based on Garrison's (1997) the three-dimensional model of SDL as cited by (Shahrouri, 2016). These three dimensions are self -management, self- monitoring of and motivation. The second theory for research skills selected for this study is based on the research work of (Griffioen, 2020); in which three dimensions are research attitude, research activities and research context. The researcher intended to find out the effect of SDL on students' research skills. The researcher felt need to develop a conceptual frame work for the current study because both variables were not available in one theory.

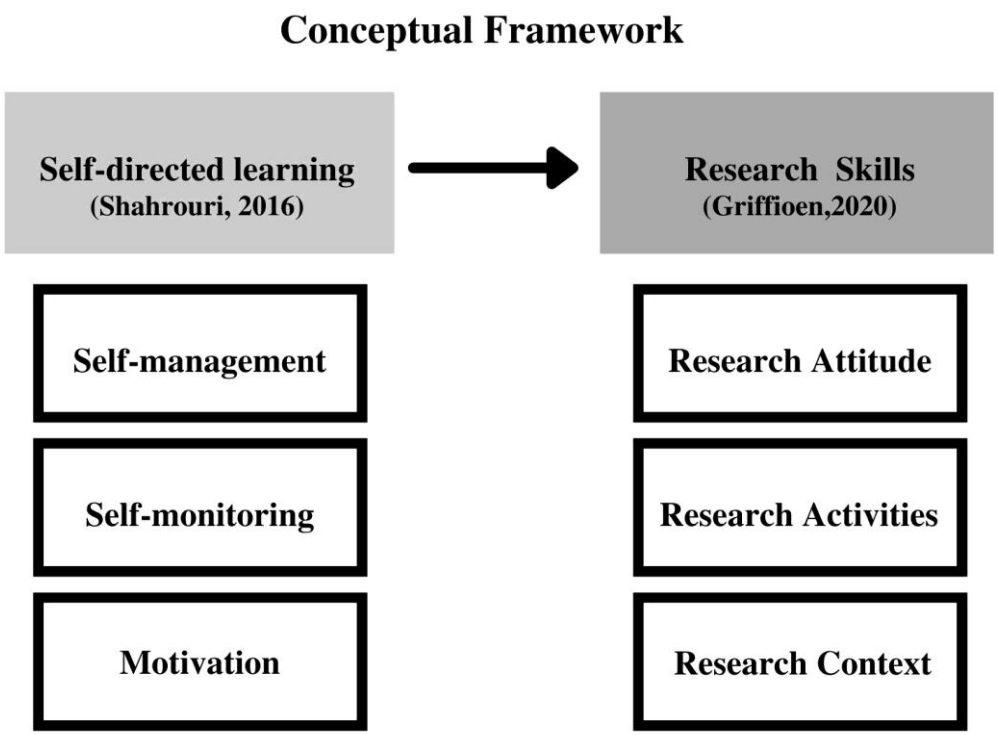

Figure 1: Conceptual framework of the study

1.10. Operational definitions

1.10.1. Self-directed learning

SDL is a course of action followed by the students to make progress with the support of anyone or totally on their own efforts, in line of their knowledge requirements, setting objectives, recognising human along with material assets.

1.10.2. Research Skills

Capacity to locate and extract applicable information, proficiency to find the solutions to the problems and gathering information and analysing related to topic.

1.10.3. Self-management

Self-management is also known as self-control. Having control on your emotions, thoughts and behaviour in multiple conditions refers to self-management

1.10.4. Self-monitoring

Self-monitoring refers to the responsibility one takes of their own behaviour and also known as a personality trait and behavioural management technique. Self-monitoring is a habit that evaluate someone's thoughts and behaviour to control the performance in different areas.

1.10.5. Motivation

Motivation is a process that sustains internal conditions of an individual that arouses the activity in order to achieve something to bring changes in their performance and energy output that satisfies their needs.

1.10.6. Research attitude

It contains elements such as beliefs, knowledge related to negative and positive behaviour of the people.

1.10.7. Research Activities

Activities refer to those activities which ensure the formation of new knowledge or utilize the existing knowledge in fresh, innovative and artistic way, in order to develop new concepts,

understanding and methodologies. These activities embrace synthesis and analysis of old research which leads to new and innovative results.

1.10.8. Research Context

The research context actually answers the three main research questions for the audience which are; Where, Who and What. These questions make it easier and effective for the researcher to have an in-depth knowledge about the background of on-going research. The research context is also credited as a lens through which the findings, arguments, methodological approach along with conclusion and recommendations of the on-going study can be viewed.

1.10.9. Higher education level

Numerous types of education given in tertiary learning institutions and affording at a closure of course of study, a renowned degree or certificate of higher studies is known as higher education. MS means Masters of Science and MPhil means Master of Philosophy.

1.11. Research Methodology

1.11.1. Research Design

It was quantitative descriptive research design.

1.11.2. Population

All public sector Universities of Islamabad were the population of the study.

1.11.3. Target population

319 MS/M.Phil course work students of three Faculties; i.e. Faculty of Social Sciences, English and Management Sciences of three public sector Universities of Islamabad, i.e. NUML, AIR and IIUI. These universities were selected due to four common departments, i.e. Department of English, Education, Psychology and Management Sciences.

1.11.4. Sample

The sample size of the study was 175 MS/M.Phil students from three Faculties i.e. Faculty of Social Sciences, English and Management Sciences of three Islamabad based public sector universities.

1.11.5. Sampling Technique

Stratified random sampling technique was used by the researcher.

CHAPTER 2

LITERATURE REVIEW

The chapter highlights the significance and effect of self-directed learning on students' research skills at higher educational level through a review as well as analysis of pertinent literature.

Undoubtedly, education sector across the globe is facing rampant developments with the induction of distance learning-based education, which supports educational values to grow through the rise of self-directed learners. In this vein, it is incumbent upon educators as well as learners to support and promote self-directed learning that will further effect research skills among students particularly of higher education. Hence, there is a need to induct more effective distance learning-based programs and courses to expedite research skills of students. This becomes vital based on the fact that developing new educational plans shall result into opening new research venues and augment self-directed learning. Finally, approaches to quantify self-directed learning will see further improvement in employing modern approaches. Though self-directed learning refers to a critical process and has a tremendous role in higher education, less attention has been given to SDL for ascertaining its effect on students researching skills. To get more understanding about SDL and determine its relevance with students' research skills, this research is determined to look for a review of conception of SDL, and underlying its progression that support students' research skills.

The literature review is divided into two sections

1. Self-directed learning
2. Research skills

2.1. Self-Directed Learning

SDL is the intended cooperation between students and teachers through which individual achieves academic success. Self-directed learning demands both learners and teachers to be accountable for their academic success. This learning strategy makes students able to achieve their academic goals in multiple learning environments.

Self-directed learning was recognized as model for development and implementation of process of successful learning resources in early 70's (Wiggins, 2015). Self-directed learning involves individuals in different learning projects that includes these components: help of

teacher for successful learning results, self-directed inquiry development and identification of learning needs and offers individual limitless chances of growth. Students use self-directed learning as procedure for self-adjusting and monitoring when needed and it permits them to actively learn by acknowledging, what is working and what is not and what measures should be taken by them to become better learners. Those individuals who are more self-directed remains more successful in lives.

It is a current approach that is much reliable and easily accessible for student's academic success. This approach is supported by the researchers since it is seemed to be appropriate for non-traditional and traditional learners who are lacking an understanding of self-assessment in learning. This technique considers an honest self-assessment that is based on awareness of the students in order to reach their goals and purpose (Wiggins, 2015).

2.2. Concept of SDL:

The concept of Self-directed Learning was first proposed by Malcom Knowles in 1975. He explained that in this type of learning, learners take initiative of their leaning any internal or external support, identify learning needs and set goals. According to Knowles, cited in Williams, 2015 self-directed learning is adult learning strategy, he stated that when students mature with the age they want to their work without the guidance and interference of others and stop depending on others. It develops confidence and self-reliance to know about their learning capabilities which enables them to learn from different experiences in their educational career (Williams, 2015).

2.2.1. Key dimensions for S.D. Learner:

A SDL is a student that spearheads one's own path in education by motivating oneself to seek the most effective means of acquiring knowledge. Self-directed learners proactively facilitate their own learning, rather than relying on other individuals to plan it for them. The core component of SDL is the concept of "Intrinsic Motivation", which is described by Réka et al. (2015) as "doing an activity for the inherent satisfaction of the activity itself". Regardless of whether an individual is a distance student (such as a Uo People student) or a fulltime student (such as a traditional on-campus college student), Réka et al. (2015) found that students who are motivated through the prospect of learning for its own sake tend to perform more highly on measures of academic performance than students who are motivated by external considerations. Additional aspects of self-directed learning include the incorporation of

critical thinking, which allows a student to participate in a “deep approach” to learning makes a student to use the concepts they learn from the course in novel circumstances (University of Waterloo, 2012). Self-directed learners are able to motivate themselves by mapping out the scope of their learning, tracking their learning progress, and exposing themselves to topics within the subject that appeal to them (Briggs, 2015). The self-directed learning process may be enhanced through creative thinking, which allows the student to learn through unorthodox methods. For example, a student can plan and complete an out-of-class project to apply the knowledge they have gained from the material they have studied.

Students generally ignore the importance of time management and do not focus the knowledgeable areas; this may hamper their ability to become a Self-directed learner. In order to become SDL and show responsibility as a learner, it is incumbent upon a student to plan its learning schedule round the week to accommodate his assignment as well as other obligations.

Self-direction is therefore, an acknowledged element of higher-level learning activities. Various authors have defined the concept of self-directed learning that are: (Caffarella, 2000), (Brockett, 2018). It refers to a procedure of taking obligation of driving themselves using their learning by themselves also to undertake the control to implement, plan and examine their learning activities (Stockdale, 2003).

2.3. SDL Model

As a theory Garrison SDL model is a part of this study. But before defining this theory in detail; self-directed learning has other theoretical models which will be explained first.

2.3.1. PRO SDL Model

Personal responsibility-orientation model was introduced by (Brockett, 2018). Instructional method process along with characteristics of personality of learners toward self-learning have been defined briefly. These elements operate within the social environment of learners

Contributing production of learning in self-direction .PRO SDL model highlights that the learning procedure deals with activities in which teachers are also the part of students learning experiences when evaluating and planning learning goals, besides this element of self-directed learning explains that learners have control on their learning. The PRO model postulates that humans can add personal skills to their own learning. Scholars such as Brockett & Himstra (2018), Abraham Maslow and Carl Rogers, refers to the human ability to make meaningful

personal choices given heredity, personal history and environmental constraints. In learning circumstances learner having command to learn using his own capabilities regulates S.D.L.

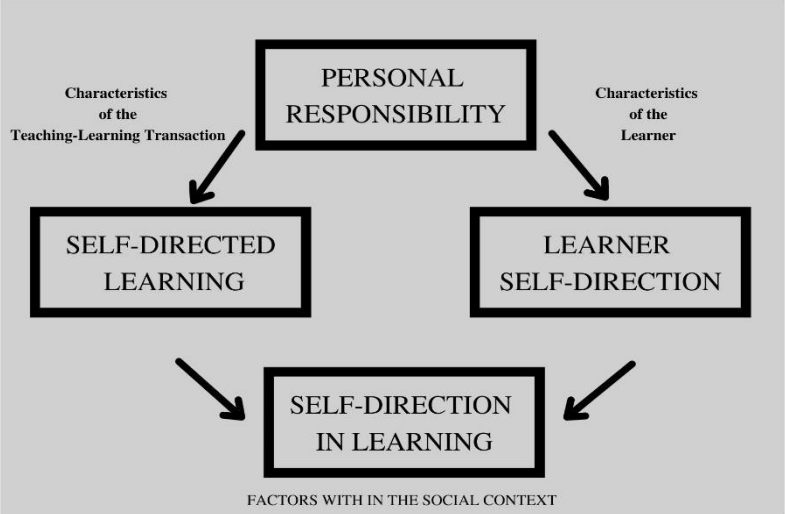

Figure 2: PRO Model of SDL (Brockett & Hiemstra, 2018).

2.3.2. Candy Four-Dimensional Model:

According to Candy, adults conceptualize self-directed learning in different perspectives, he stresses that S.D.L is also a process with the goal additionally (Candy, 2004) and (Brockett, 2018) insisted that SDL is a continuous process that keeps on going with the time. Candy's model has four dimensions, first one is personal autonomy this dimension says that an individual cannot always be self-directed he or she can behave differently in the learning context (Brockett, 2018).

Self-management as well as learner-control emerge as the 2nd and 3rd elements that constitute the model presented by Candy' model. Self-management is known by the skills as well as abilities possessed by a learner that has faith in self-reliance backed up by internal willingness as well as competence to managing self-learning. While the other side, Learner-control depends upon the degree of guidance provided by the instructor and inherent self-directedness possessed by the individual. Whilst making a learner distinct from his or her self-management, the author refers to it as a tactical approach to get learning as well as to plan instruction that guides the students to take the reins of the process of learning whereas self-management indicates the student' internal willingness and potential to accomplish learning along with planning. Furthermore, learner to get control of learning carries a number of advantages that includes

higher inquisitiveness in addition to critical thinking, improved retention as well as comprehension, with high quality learning outcomes.

Model presented by Candy has auto-didaxy as the last element that represents the independent learning as well as self-education. Candy, (2004) opined that auto-didaxy is extensively widespread and expands to unending opportunities. Candy takes inferring from auto-didaxy in the respective social contexts and established; for the minimum, a few autodidactic projects take birth from the perspective of contextual membership of a group. Criticism on model presented by Candy points to the missing of a theoretical research model linked with the framework. In evaluating the model belonged to Candy, (Banz, 2009) presented that his work was not integrated with the model or theoretic research framework that had application with SDL.

2.3.3. Grow' multi-stage SDL Model

Grow 1991, states, as cited in (Hall, 2011), self-direction expands in students with the help of teachers in the development stage. Grow has defined four stages of his model that are: Involved, Dependent, Interested and Self-directed. In Grow's model first stage learners need an expert that's enables them to be clear and oblivious in achieving their face-to-face learning goals. Heading towards second stage at this stage student become more confident are always involved and motivated to complete their home tasks that are being assigned to them but there is absence of deep knowledge of the topic or the content.

In the third stage learners possess both understanding and expertise to engage in their own learning, yet they need the counselling and advice of their teachers. At this stage it is essential for learners to grow deeper self-esteem and strong expertise and capabilities to learn from others and work with them (Grow, 1991). In the fourth stage Grow (1991) stated as cited in (Hall, 2011) that learners are responsible of their own learning they set their goals and the quality of their achievement. They spend their time to become a better and confident learner and use the resources in a right way to become an independent learner with self-consideration.

2.3.4. Garrison' Model relating to S.D.L:

Alike Brockett & Hiemstra' version of S.D.L, Garrison also believed SDL as both learning procedure and personal feature, according to Garrison, personal responsibility of learning should be the part of the concept of SDL theory. He stressed upon the learning process in

context of both motivational and cognitive elements. Garrison proposed three dimensions of SDL that are: self-management, self-monitoring as well as motivation (Hall, 2011).

1. Self-Management:

This element of Garrison' model relates with the matter of exterior task control. These subjects relate to the initiation and usage of learning objectives as well as resources. Garrison suggested that knowledge gained from SDL might involve service of facilitators to give direction and guidance, therefore, to produce learning experience that is collaborative.

2. Self-Monitoring:

Self-monitoring is the element of the model of Garrison, that explains that through self-monitoring learners develop both cognitive and metacognitive abilities. Cognitive ability is more important because it enables students to develop self-confidence and without having this ability a student cannot succeed or keep on going in the learning process.

3. Motivation:

Motivation is an essential and extensive part of Garrison's model that bifurcates into two halves such as inward bound motivation and task-based motivation. Garrison states that, when choices related to educational objectives are offered to students, the higher level of entering motivation is achieved by them. Motivation achieves higher level when students identified their learning goals and attains them. The 2nd dimension of motivation is known as task-based motivation.

Volition represents deliberate effort or meticulousness with perceptive attitude linked with SDL. Garrison says, volition is "meta-motivational in guiding and sustainable effort towards attaining learning objectives. Brockett & Hiemstra (2018), Grow, and Garrison (1997) each highlighted the student's insights of motivation and control. They also recognized the significance of the transaction between teaching and learning in student's growth.

However, (Brockett, 1991) PRO model as cited in (Hall, 2011) was criticized by Garrison, advocating to deliver into the psychological breadth of SDL. Garrison identified as well as integrated cognitive along with metacognitive process` through his model, later worked for the PRO model based on self-directed learning (Hall, 2011).

2.4. Research Skills

Skills relating to SDL comprise the capability to accomplish learning tasks without the direction and involvement of others. It was hypothesized that students having low scores will get improvement in an organized environment that demonstrated the type of learning skills utilized by past self-directed learners (Mahasneh, 2020).

Research skills therefore, mention the capability to conduct search, find, excerpt, organize, assess and utilize information found relevant with the stated topic. It includes rigorous search, inquiry, and critically analyzing the specific research questions and hypothesis. Research Skills help people to make identification of the problem, gather information resources to resolve the problem, assess the resources to attain quality as well as relevance to seek an optimal solution to the confronted problem (Mahasneh, 2020). While demarcating online search from research skills, research mostly aims to advance the world through forming a systematic foundation on which new knowledge can be attained, current knowledge can be improved with development of new techniques as well as processes. The other side, search refers to a random process that involves identification of something for which no systematic pattern is desired.

Soft skills seem like hard skills for youth particularly students that need these skills to muster their career but they prefer to avoid these though these open new vistas of opportunities. Ethics at work, human attitude, communication skills, and emotional intelligence along with a set of personal attributes comprise the soft skills that contributes to holistic development of an individual. Soft skills refer to character traits along with interpersonal skills that aid to go into dealings with fellow people in an effective and harmonious manner (Succi & Canovi, 2020). Soft skills therefore, signify relationship among fellow-people. These equip individuals to work along others in groups, resolve problems, make use of your time, and become accountable of your work. Soft skills grant criticality to equip with expressive ways to become competitive as well as productive. (Succi & Canovi, 2020).

In plain terms, research skills denote describing information in depth, thorough analysis and appropriate advice on the certain topic after conducting extensive research on that area. It comprises to formulate the problem statement, mentioning the good sources, explain your findings as well as observations in a compact report form (Willison, Zhu, Xie, Chen, Zhang & Sabir, 2020)

2.5. Importance of Research Skills

People get identification of problems through using research skills, to gather sources of information to address the issue, determine resource quality as well as relevance and find solution to the stated problem. Apart from developing research papers, these skills prepare individual students to guide to resolve issues at workplace (Willison, et al., 2020).

2.6. Developing Research Skills

1. Define your objective clearly:

Before joining the research process, one may identify its goals as well as objectives and manage to define them clearly. Getting clarity with your objectives, one can move ahead in the research proceedings with a clearly stated research questions along with the research gaps with necessitating the rationale to go for this research.

2. To explore:

As you get clarity about your research, indulge yourself in serious reading. An extensive knowledge will enable to get more knowledge and deliver more knowledge through offline search and online reading of appropriate papers, books, articles, reliable blogs, and reports the ideas gathered on a particular area.

3. Gather the key findings:

Write down the findings as you spot them, so that these could be referred at the end to accomplish the notes.

4. Consult the experts:

As you come across with conducting research, it becomes vital to seek the relevant experts of the field of investigation and consult them. A researcher can get an insight on his ocular witness-based observation that is hard to find in a research journal and you will be able to jolt findings to reach the conclusion.

5. List your network:

Research provides an opportunity to meet with a new face every time. Expand your relational network to get more experts that can provide you the key information and advance your research.

6. Develop a habit of organizing information:

Try to collect and manage to recycle information and increase the stock of information.

7. Do not spoil yourself in plagiarism:

Always refer to the source of acquiring research information. Without reference, this information will be considered as your original work. In case of otherwise, one may face the charges of plagiarism that is a grave crime in mostly countries. Therefore, copying must be avoided if used, reference them (Willison, et al., 2020).

Research skills have become imperative in today life phases either one is in school, college or university or at workplace, but one should not be taken it as tedious or problematic. To muster the complexity of research skills, an advance planning and stayed organized help to daunt research task easy. One may employ the time he or she needs, be systematic, and relish the benefits of research process.

Another study indicates that the reason of being self-directed learner is to be ownership of learning since students can set learning target for him/herself, articulate learning gap and identify four learning tasks to achieve their studies. What is more, another reason is that it can be management and monitoring of own learning. Students will know which parts he/she does not understand before studying, look for more information to help themselves understand the lesson better, complete their homework on time for reflecting learning as well as using feedback to improve their schoolwork. Last but not least, extension of own learning is also the reason of being self-directed learner. Learner students find out more than what their teacher find out more than what their teacher teach them in teach them in school. What is more, they find the way in order to improve their learning by using computer contacting personnel beyond their institute to get ideas about their course sharing ideas with them and getting ideas from other websites regarding their course.

2.7. Necessity of research skills

Apart from the research and higher education, research skills aim to relocate known information as well as record new information along with research results. Academic writing provides the maiden step to formulate research foundation (Lemke, 2003). This is an imperative skill specifically in the contemporary age of internet when higher education students are among abundance of information, formal and informal, but they feel difficulty in selecting the right

content with certainty from a credible and related source. Pursuing this, higher education serves as a solitary node amongst the diverse learning contexts accessible to students (Bransford, 2006). In other sense, research skills serve as an essential form of skills in the field of higher education that give way to learning.

The role attributed to educators becomes more important in this progressing ecology of learning; in this backdrop, teachers require to have complete understanding about informal learning possessed by their students along with their habits as well as daily routines for utilizing the Internet, so that to integrate this learning with other contexts of formal learning.

Moreover, teachers required to support students for developing experience as well as skills in steering towards learning relating to digital environments. This level of information literate, with regard to abilities required from individual students recognize the need of information with locating, evaluating, and use of effective utilization of the required information (Ariola, 2017), that becomes a prerequisite to get research skills to use internet. However, despite availability of abundant information online, inexperience students feel it difficult to select valid as well as reliable sources with certainty. Such skills are free of involving traditional filters with credibility like publisher or library that help to make selection before forwarding the material to the users. On account of this cause, online researching through Google search engine might face reduction to the few links on checked by the teachers; Wikipedia is in the reduction list (Topalov, 2013).

While discussing content that contribute to develop research skills of students, according to (Manning, 2007) state that students require awareness from the diverse sources for information that may be university libraries, virtual as well as digital libraries, along with online sources, have capability of identifying the strengths as well as weaknesses of different sources, noting bibliographic details consumed in books, articles as well as websites used by them for the process related to preparation as well as research. Keeping in view of the volume of data and diversity of sources found online, students require to grow their skills to assess the content credibility they get and take decisions concerning the status as well as pertinence of large texts (Alexander, 2008).

The factors mentioned by (Alexander, 2008) give criteria to assess the point of credibility 1st and pertinence of the sources given as follows: authority, access ease, reliability, volume of information, plus time. Authority denotes the source or kind of the platform that provides a

definite article or else text. For instance, the authority linked with a text available on a blog immensely different from the text available on Science Direct or else J. Stor.

Ease to access, offers a prominent feature to students during conducting research online, as there lies misleading: texts often that has easy access, without any cost involved, but carries no scientific weight, until open access papers; on the contrary, articles downloaded through academic platforms present difficulty to access straightway and involves payment otherwise seek downloading through library or university network, as adequate scientific sources are available for downloading requisite information. This inclines to the criterion reliability, perusing the realm of hosting the text: In case, the domain represents the academic one, for instance, education, in that case, text needs high credibility and relevancy. The information carried by the text speaks of its academic appropriateness that is due to the textual fact denotes intellectual sources implying scientific weightage reflected in references. Lastly, the time of involving a written text with publication play a noteworthy role as obsolete sources are not able to serve the newest and most pertinent information on the subject field.

2.8. Three Dimensions of Research Skills

Research skills encompasses three popular dimensions these are research attitudes, research activities, and research context.

2.8.1. Research attitude:

Research has acknowledged that education has its role to develop fundamental research skills among HE students in Less Developing Countries (LDCs). Learning from experiential learning is imperative to achieve comprehending concepts as well as acquiring skills instead of recalling facts (Lander, 2019). Attitude signifies nature of an individual through his or her reaction towards a specific object, behaviour, individual, institution, or any particular event relating to the individual (Ajzen, 1993)

Ajzen pointed towards a number of definitions on attitude viewed by different theorists, however, about attitude, there is found unanimity among the researchers that attitude bears an evaluative dimension that has the probability of measuring and evaluation. Students get an opportunity by skilling through research activity; this reflects their attitude towards research skills with the view:

a) To improve professional approach to existing scientific skills.

b) To expedite research skills to determine their necessity.

c) To seek information and gather evidences to solve research problems.

d) To observe, and assess information for linking it with research problems.

(Ajzen,1993) documented that although attitude is unreachable to observations as it is implicit in individual mind and it remains hidden that is measurable by taking individual responses and reactions that reflects their attitude which may reflect favourable or unfavourable reactions towards the personnel, object, organizations and situations. Past research divided the responses into three categories, cognitive, affective as well as conative responses. These manifest noticeable or dormant attitude that is hard to observe (Ajzen 1993).

Cognitive element indicates the beliefs as well as thoughts on the given subject or object, or conditions that provides stated perceptions as well as information about the person. Affective element of attitude reflects an emotional reaction for the subject, or event under observation. It informs about the feeling of one towards the object, subject, an individual or an institution.

It presents a kind of psychological reaction expressed through verbal as well as nonverbal reaction relating to the object. Such reaction may reflect negativity or positivity. While cognitive element of attitude points the effect of these attitudes on developing the behavioural intention and explains how this attitude influences one's behaviour. These may comprise plans, intentions as well as commitments towards a planned behaviour. These reflect the three elements of attitude denoting attitude as a multidimensional construct.

A question arises how the attitude got its origin and what is its starting point? According to findings of (Ajzen,1993), a person gets such attitude subsequent of viewing television program or exposing to certain experiences. Another researcher (Abun) raised an argument to seek answers to settle environmental problem. The researcher states that environmental issues are caused by human behaviour while unconducive human behaviour is the product of culture prevalent in the society hence for resolving environmental issues one has to re-examine the culture that influences people' mind from the environment. Further contends that attitude is mostly linked with the culture where a person is upraised.

The argument raised sought support from the ideas forwarded by anthropologists like (Donald, 2002), and (Brown, 1995) Cited Hofstede, it was argued by (Donald, 2002) that culture plays a cleansing role in functioning and structure of our brain. Further said that language grossly impacts the brain structure but role of culture on brain functioning is grossly

involved.

The social environment involves many factors that impact development, from developing bonding as well as competitive stress enabling the social facilitation for learning. These affect brain functioning in different ways, but generally not directly influences architecture and brain functioning.

Culture effectively connects functional subsystems in the brain that does not exist otherwise. The idea linked with culture to affect brain functioning highlights the power exercised by culture on the mind formation and ideas around people (Abun) Views of Donald are in line with Hofstede as stated by (Brown, 1995) That culture is based on the joint programming that builds a human mind and distinguishes one member from the other.

Hofstede clearly pointed out that culture reflects the way people think, how they perceive the world around people and build their attitude. While expanding the idea presented by Hofstede, (Gallagher, 1996) found an association amid cultural dimensions as well as ethical perceptions. This offers meaning that a specific culture tends to form an ethical attitude. One perceives a specific object or person or a subject, as positive or negative, favourable or unfavourable as taught through the culture of the society in which an individual lives. In summary, students consume a precious amount of time online, undertaking different things, this gives them the imprint that they have got pertinent skills in undertaking academic research. In actuality, students reflect low level of knowledge about digital or virtual libraries as well as conducting online research, in spirit, students have limited research skills in reality. They are not able to conduct deep research, this debility further limits their validity.

2.8.2. Research activities:

Research Activities includes reporting, building design, directing, or referring to research in consultation of human subjects (Lander, 2019). Research Activities refers to an investigation conducted systematically, comprising research development, testing as well as evaluation, designed in a way to develop and make contribution to generalizable knowledge. According to (Lander, 2019) these activities revolve round developing suitable methods drifting amid research methods i.e. quantitative or qualitative or mixed. Basic research activities in the research process begin with identification and developing a topic for your research, following it, an initial search is undertaken for information with locating materials, evaluation of

resources, develop notes, start writing your paper, cite the related sources and undertake proofreading.

Consequently, research activities culminate in creating new knowledge along with the usage of current knowledge in a novel as well as creative fashion for generating new concepts, methodologies as well as understandings. This includes synthesis as well as analysis of preceding research to the degree of leading new as well as creative outcomes. Mostly this seemed in case of focus groups: many participants desired qualitative research methods in addition to a grounded theory, whilst many argued in favour of requiring a balance amid these approaches. The research process involves different phases and their integration despite considered as separate, these necessities the need to understand the research process. Participants show their trust in the format of research activities with regard to its integration and give their reflection through planning and execution (Lander, 2019).

2.8.3. Research context

University education takes into account end results given by students and reflects heavy dependence on their direct and responsible approach towards the education (Peinado, 2014). Methods towards approaching results continue to remain flexible; the key factor is to ascertain your target to achieve from students (Polit DF, 2014) Like every research that has its own context, a research project involves collection, search and save information, but manage to predict probable results while using these matters (Polit DF, 2014). For establishing research skills, the way students get research skills at their higher educational context of Serbia, taking 135 students from the English Language & Literature department. The researchers conducted a survey questionnaire using 22 MCQs items, taking into account the research skills among the students and their correlation with the study tenure as well as students' habits for using internet (Tapalov, 2013).

A range of variables such as utilization of electronic resources, difficulty in using digital as well as virtual libraries, searching paging and their allied results coming out of online search, hours consuming online, chat rooms inclination, blogs, social networking, e-shopping, live streaming, gaming, news, music and making utilization of internet. The study looked at readiness of students for utilizing electronic resources, difficulty met while using online resources. The study found that web pages browsed by the students during online search presents a stimulating fact as sampled study from the 3rd and 4th years of their education visited most of the web pages as well as sites. This reflects that in higher education, experience does

count particular such senior students have feedback from teachers on the assignments given to them, and they were guided by their teachers to embark on deep online research. The factor of online search experience becomes critical on the point of the frequency as well as readiness for utilizing electronic resources. Students those use electronic resources frequently are better placed to explore the digital as well as libraries that can be made better through practice during online researching under the instructions of their teachers (Tapalov, 2013).

Furthermore, on the same grounds, senior students better use the electronic resources easy comparing to the young ones. Therefore, students' research skills can be better understood by contextualizing their daily habits by means of the Internet, academically and non-academically. Their rate of using Internet reflect high turnover, while above 1/3rd of students use internet for three hours or more daily.

The commonly occurring research happenings covering entire students was observed relating with general browsing or reading the general news and teachers' guided research activities, but students were found visiting blogs as mostly are under use of teachers for disseminating assignments and assignments content (Taplov,2013).

2.9. S.D. L & Intellectual attainment

Students those remain in an environment where they could learn on their own were found highly driven to learn, inform the learned material and show more vigour to learn as compared to those nurture in a restricted environment. In a journal written by Chou & Chen (2008), six cases were conducted related to the effect of SDL on intellectual attainment in web-based education environments. The results showed that the impact is not always positive. However, they did mention that many studies about this relationship gave optimistic results. Thus, he would not renounce the previous studies instead, they suggested that many 'empirical' studies should be conducted more about this matter.

World has shown persistent interest in acquiring research skills at higher level of education (Lee, Hu & Bilszta, 2020). However, there is lacking any consensus on anticipated research skills among students of higher education. A systematic review was conducted to ascertain the aims as well as Envisioned Learning Outcomes (ELOs) among students of higher education taking along the teaching, assessment, as well as evaluating these programs (Lee, et al., 2020).

Research skills denote a kind of academic events among teaching faculty of HE teachers. Irrespective of the knowledge taught by them, this warrants the need to keep observation,

reflection, selection, analysing as well as communicating scientific results employing technological advances. By integrating ICT with the process of education not only demands from teachers to acquire digital skills for adequate teaching as well as evaluating students (Guillén-Gámez, 2020), but to ensure that they carry the required research skills.

Regarding searching scientific information, organizing, analysing and communicating the information required for knowledge generation (Reyes.E, 2019) in that case, utilizing ICT features (Molina, 2014). The university instructors if remain successful to impart these skills to their students, they are in a better position to develop scientific work, publicizing their research works, through conference participation and publishing through scientific journals (Hampden-Thompson, 2013). In this vein, using ICT in research enables teachers to show healthier academic performance, rather it will causes more update knowledge generation to the body of literature (Zia, 2018). In relation to students acquiring these skills, their orientation, in form of university teachers, must reflect the required researching skills; this helps to use technological resources appropriately and experimentally further allowing them to execute tasks to select, organize and analyse information, along with sharing and circulate their (Reyes, 2019) research findings. Therefore, the study aimed to understand the role of HE teachers in utilizing ICT resources to acquire digital research skills gender-wise regarding their respective knowledge area.

Several authors tried to explain research competence in terms of specific skills set required for research, in line of the logic given by a scientific method (Chu, 2008); (Ain, 2019); (Basilio, 2019). In this backdrop, (Rubio, Torrado, Quiros &Valls, 2018) strived to develop an instrument to cover Self-perceived mastery with regard to research skills comprising the given dimensions: (1) Universal concepts along with allied processes; (2) Bibliographic Google based searching or additional specialized indexing; (3) Techniques to utilize questionnaires to extract information, interviewing or opinion; (4) Analysing information with the help of quantitative or else qualitative software; (5) Ethically treating information as well as academic writing regarding perceptive use of reference to cite texts as per APA while concluding. However, the instrument was short to have psychometric properties regarding reliability as well as validity; furthermore, focus remained on non-utilization of ICT resources in supporting research. Working on similar lines, (Alvarado, 2016), (Ricardo Velázquez, 2019) worked to develop comparable instruments like earlier ones to quantify researching skills possessed by university level students. Yet, such instruments did neither motivate HE teachers, nor considering utilization of ICT features of research. A number of research studies worked on

analysing research skills through ICT resources and used accessible samples mainly among university students (Seraji, 2017); (Akuegwu, 2018); (Robelo, 2018).

Diverse teaching programs accentuated a number of challenges in explaining core competencies required in relation to research skills of HE students. Incomplete reporting confines the evidence to get real education regarding research skills; it is therefore, recommended to design and report educational interventions using some established criteria to report to delineate the outcomes. Even if students like to study through personal doing, suggesting and criticizing, a sound program design needs to create a balance amid educating, assessing, as well as evaluating methods, among goals, as well as outcomes. Peer-reviewed journals as well as demonstrations help to highlight only a single feature of the researching practice possessed by students. For instance, on researching utilization of ICT resources in research among university, school teachers and PhD students in Ukraine (127 N), the results found that mostly employed Google Scholar to searching the information while other social networks were utilized little for sharing articles as well as results to create researchers' profiles in ORCID. The style of any journal was hardly adapted (Strutynska, 2017). However, studies conducted by (Huamani-Navarro, 2011) & (Wu, 2012) determined conflicting results when lack of confidence was found among university level students regarding conducting literature searches and they preferred to search through Google or academic Google or utilizing a specialized as well as dependable listing.

In the alike setting, (Reyes, 2019) resorted to analyse research skills by using ICT among 39 PhD level students. The outcomes informed the students' nearly 1/2 in numbers employed scientific repositories while searching information.

Regarding using bibliographic managers, nearly 1/3rd of the university students did not employ Mendeley, EndNote, or Zotero comparatively. Another study by Rubio et al., (2018) examined the perceptions of one hundred and nine students on research skills and found that students had competent perceptions about themselves for conducting searches through Google searches, and less through academic Google searches as well as besides any specialized databases. The results further reveal extra competency in using the quantitative approach and less competent on using scale as well as collecting information through questionnaire like tools, analysing quantitative data through SPSS. Additionally, students observe them less proficient in using bibliographic administrators. The identical background, (Guillén-Gámez, 2020) researching

using two hundred seventeen sampled university level students they made a little use of software to conduct data analysis, similarly used medium to low utilizing digital libraries.

Self-directed learning was considered as a valued skill and refers to learning ability at workplaces as well as school settings. People having high degree of SDL ability have self-motivated learners subsist on learning resources for solving problems relating learning tasks. Regarding the different kinds of learning environments, high S.D. learners become good to resolve problems relating to acquire and manage knowledge (Gibbons, 2003).

Past studies reflect that SDL refers to a sturdy factor that influence learning outcomes of students in conventional learning settings or distance learning milieus. The current literature provides fewer empirical evidence on students' strides to gain SDL abilities to achieve learning, unrelatedly to learning settings. Litzinger et al. (2005) and Stewart (2007) are considered pioneers to explore the association of engineering students on SDL abilities as well as academic performances. The study conducted by Litzinger' engineering undergrad students' SDL abilities found significant correlation with their grade on the basis of point average. Stewart' study highlights the linkage of students' SDL abilities with learning outcomes that is of positive nature. Encouraged on past two pertinent studies, for the purpose of adding to knowledge base on SDL to currently prevalent engineering research, the research takes a shift from conventional learning towards online learning settings. The research focuses to find the correlation as well as cause-effect associations of students' SDL abilities as well as learning outcomes.

A single factor comprised of contrary items represented by Factor 1. This remark advised that avoiding undesirable response denotes a factor regarding SDLRS. Considering the prospect of revising entire the opposite items to remove this factor; though, finding these items imperative to avert the common issues in responding to answering these items.

Leeb proposed about her population that was highly degree of education representing the 8th items uncorrelated with any study.

According to Frey, (2018), the self-directed learning highlights a phenomenon in which individuals feel no need to seek assistance from any quarter and remain in the mode of taking action directly as per their level of SDL, in the light of their perceptive learning needs, establishing learning goals, identification of resources both human as well as nonhuman required for learning, to select and implement suitable learning strategies, and evaluate the

learning outcomes. In other words, it points to the matter of choice possessed by learners according to an instructional state.

Recognizing the stage of a learner in seeking self-direction is vital to determine the suitable activities as well as support. Stage 1 involves classification of learners as dependent. Neimeyer, & Taylor, (2019) established that such learners need an expert figure as authority to direct learning explicitly. Grow attributes this to paucity of related knowledge, motivation, and may be self-confidence. Stage 2 involves learners as interest able: willingly doing assignments, self-assured, but unawareness about the subject matter.

Stage 3 point to learners those are skilful and have knowledge to go for active learning; however, they seek to have a guide, and such learners "need to develop a deeper self-concept, more confidence, more sense of direction, and a greater ability to work with (and learn from) others. Stage 4 has the learners that take responsibility as well as set their indigenous goal and achieve standards. These students have skills in time as well as project management, undertake self-evaluation and conduct monitoring, to identify utilization of resources. Neimeyer, & Taylor, (2019) in response, said that he "has a working faith that a teacher can reasonably estimate a student's learning stage from classroom behavior and work submitted". He further specified he was "suspicious of concepts that draw major conclusions from simple quantitative measurements". Garrison (2003) "has the individual taking responsibility for constructing meaning while including the participation of others in confirming worthwhile knowledge. Cognitive ability takes the lead and proposes that "learners will not succeed and persist in their learning without cognitive abilities and available strategies".

Garrison (2003) deliberates the role of intrinsic as well as extrinsic motivation and their effects on self-direction. It was noted that direct external tasks may decrease willingness among learners to accept responsibility about their learning. Therefore, it was suggested that the "challenge is to have students internalize external goals and rewards which are often more dominant during the entering stages of learning. Garrison accomplishes with the subsequent observation.

Motivation as well as responsibility move with each other in a reciprocal manner and aided through transaction occurring by controlling education. Problems like motivation, accountability, and controlling become key to pass through the conception of SDL. However, self-direction is thought to enable a deeply profound learning outcome. Learners find themselves intrinsically motivated to take on responsibility to construct meaning as well as to

understand on exercising the same after experiencing the learning. Understanding the strategic educational goals, SDL becomes a vital factor for students those want to gain persistent learning and really want to learn.

2.10. Early Descriptive & Conceptual Literature

The investigation done in North American on adult education about the SDL nature of adult learning dates back to (Cazan & Schiopca, 2014) addressing the inquiring Mind. Houle led to identify and interview twenty-two 22 adult learning members. The information retrieved from the interviews, projected three categories regarding learning orientations for explaining students' participation to continue education opportunities:

(a) goal-based learners that follow educational opportunities to achieve another goal, (b) activity-based learners that help to avail opportunity to get social interaction related to the activity, and (c) learning-seekers learners participate the educational activities in order to get learning.

Houle defined serving to avail ongoing educational opportunities to get learning itself (learning-orientation). Brockett & Hiemstra, (2018) studied self-teaching of adults and discovered that self-teachers do not learn in seclusion. A study conducted later, worked to investigate the self-planning nature of adults comparing with learning activities of individuals. Gervais, (2019) highlighted self-teaching in the course of self-planning, to look into the scope of learning activities particularly, traditional classroom learning imperative to realize learning projects. Tough later interviewed 66 applicants coming from varied backgrounds and their engagement in projects based on self-planned learning in the preceding years. The resulted outcome specify that adults remained engaged in the learning projects developed on self-planning round the year. The most repeated cause behind execution of these projects was quest for the new knowledge. According to another finding, research conducted by Tough reflected a long-lasting impact. (Brockett, 2018) proposed that the most notable outcome coming out of Tough' (1979) study is to throw light on the question to whom responsibility is drawn to conduct planning for the learning projects. The mostly projects as identified afterwards of Tough study almost to the extent of 68% attributed to the individual efforts of learners themselves.

Several studies attempt to replicate the results aired by Tough on different populations divided between rural as well as urban adults. A thorough review of such replica studies was carried

out in the work of (Campos Cruz, 2018). Following the seminal work of (Zia, 2018) stated that presence of the independent chase of learning in natural settings were established without any reservation. (Machado, 2008) recognized the presence and rate of recurrence of self-direction in learning projects of adults, while (Knowles, 1975) projected a process of linear description of the activity. This level of research work led to quantify as well as measure self-directed learning and this was beginning in earnest.

Reviewing two scales, (Stockdale, 2011) derived that published articles nearly to the extent of 70% involved measuring self-directed learning through a Self-Directed Learning Readiness Scale (SDLRS). It is therefore, hard to underrate the significance of this scale that made a tangible attempt to quantify as well as measure self-directed learning. As a matter of fact, Fuad and Hamid, (2019) suggested to construct self-directed in several ways to make the scale operational.

Different research studies are carried out in different fields regarding self-directed learning. According to study conducted by Douglass and Morris (2014) on students' perceptions based on SDL (Douglass & Morris, 2014). He found that there was a proactive nature in students which facilitates SDL both outside and inside the classroom. Moreover, the principles of SDL are applied successfully to bachelor's programs in pharmacy, business, medical sciences, electrical engineering and business (Levett-Jones, 2005)

In Hong Kong, a research study was carried out on university students revealed a positive correlation between computer technology and SDL constructs. The three constructs introduced this study was learning management, learning control and learning desire. However, the construct learning desire was highly affected by usage of computer. According to different research studies, students or learners in self-directed learning developed their own questions with respect to their domains with learning actions which depend on their own ideas. These ideas help them to support their self-determination (Rebbin, 2015)

2.10.1. SDL and Academic Achievement

The research was conducted to focus the relationship between SDL and academic achievement and to differentiate between self-directed leaning via online and conventional university learning. Findings showed that there was a significant difference between SDL of online and conventional university students. Also, co-relation of SDL with academic performance was high in students learning via online compared to that of conventional university students. The

study suggested that using SDL as teaching approach to develop students' abilities to self-regulate their teaching-learning process. On testing the null hypothesis so that association of SDL with academic achievement could be identified among target students of university.

The result indicated that there was a little but positive correlation was found amid variables. Subsequent thereof, conclusion was made that the traditional universities in their traditional set ups have a positive connection was SDL that is mostly driven by the teachers towards execution of tasks. Further found that students having entree to web content were found more ready for SDL. They were also capable of achieving high grades as compared to conventional students (Khalid et al., 2020)

Most of the college future instructors input their pre-carrier teaching training with very little expertise of the complexities of their profession. Assumption based on literature found out that case-based coaching can assist college student's instructors with greater skills to train and help them to develop. Data analyzed that case-based coaching hold affordances for self-directed learning. IT has its roots from adult education. The 1st year scholar instructors lack abilities related to self-directed learning. Argued the teaching ambiance and methods can beautify self-direction and in depth learning and declared that case-based learning may help scholars in achieving career demands (Mentz et al., 2016).

2.10.2. SDL, Personality Traits and Academic Achievement

A research project was carried out by Cazan and Schiopca, 2014 for the analysis of the relationship between self-directed learning, academic achievement and personality traits. Sample size was 121 which include the undergraduate students from the Romanian university. The research was conducted by using IPIP-50 and self-rating scale of self-directed learning (SRSSDL). In this research academic achievements were measured by the results collected from all of the participants at the end of the academic session. The results also showed that personality traits and self-directed learning were correlated and academic achievement was predicted by SDL. The results of this study stated the importance of the construct of self-directed learning and could prove its role as a personality trait (Lounsbury et al., 2009). Self-directed learners found to earn higher grades (Cazan & Schiopca, 2014; Lounsbury, Levy, Park, Gibson, & Smith, 2009). In specific, it is vital to ascertain that SDL owns specific skills set that has room for development.

Self-directed learning has a different association with personality traits and is not associated with only one personality trait. The research also revealed that self-rating scale of SDL can be consider as a beneficial tool in the identification of student learning needs for the academic improvements. It is vital that both learners and educators have an understanding of the nature and concept of SDL skills for its further growth (Williamson, 2007).

2.10.3. Association between SDL Readiness and Academic Achievement

A research project was conducted for the investigation of association among SDL readiness and academic achievements of learners. The total sample size included 510 students and all belong to master's studies from the Institute of Education and Research, enrolled in the 2017 to 2019 session. After using multistage sampling only 300 students were selected for research. The results revealed that high SDL readiness was exhibited by student-teachers. But there was no significant relationship between self-directed learning readiness and academic achievements of learners.

Moreover, results revealed that SDLR does not change with respect to demographical variables (Hussain et al., 2019).

2.10.4. SDL and Creative Writing

A research study was conducted by Tu, 2021 to analyze the development of SDL through creative writing which examined the three self-directed learning strategies of learners in a Chinese language classroom in particular college. The analysis used include the focus group and interviews in order to understand hoe the students identify their own learning weaknesses and strengths, what strategies they need to develop during the process of self-directed learning, how much they are aware of learning contexts during the adoption of self-directed learning and how their practice SDL with respect to their daily life (Tu, 2021). The results of study revealed that the disconnection between self-directed learning strategies and learning goals, technology fluency and learners were not aware of their learning strengths which could affect the individual agency related to self-directed learning strategies.

Creative writing offers different opportunities for learners for the creation of different genres types with respect to self-expressive ideas for the performance of academic competence. Different disciplines have added creating writing in instructions. But it is unknown whether learners from college are capable to implement self-directed learning competencies for the fulfillment of academic requirements in context with creating writing.

Creative writing is considering as a trans disciplinary practice for learners for the integration of their different competence which include academic competence, literacy competence and self-directed learning competence for writing assignments. The creative writing provides freedom and flexibility which allow learners to practice their autonomies while presenting texts. It might weaken learner's performance because of poor self-directed learning competence.

2.10.5. Emotional Intelligence and Self-Directed Learning

A research study was carried out to examine the role of different parameters of emotional intelligence for starting the self-directed learning process among the people working in Bhailai Steel Plant (Bansal, 2021). The results revealed that a change in transforming organization was carried out by individual. Work productivity in a company could be increased with respect to emotional intelligence level of workers. Emotional intelligence level of workers would help in the determination of the emotional stability among the workers and the proportion to which they perform work in cooperation. The different dimensions of emotional intelligence include:

1. Self-Awareness: It is considering as an exact assessment of own emotions which help for the identification of an individual weakness and strengths therefore developing a sense of self-worth.

2. Self-Management: Self-Management can be defined as a keeping impulse under control. It helps component of flexibility for the adaption to change situations and indicates an inner drive for performance and attain standards of excellence. It helps in development of innovation capabilities and positive thinking.

3. Social Awareness: Social awareness belongs to society awareness. It involves the ability for the assessment of the changes in an organization and understanding the requirements of the others.

4. Social Skills: Social skills are ability cultivate a culture of collaboration and build bonds and teamwork. Self-motivation acts as a catalyst in order to create synergies among people.

According to research, it has been understood that self-awareness, motivation and intuition played a vital role for managing the change in induction of self-directed learning. The emotional intelligence was identified as an important factor for self-directed learning.

2.10.6. Positive Emotions and Self-Directed Learning

Positive emotions are vital psychological components that stimulate meta-cognition and cognition and motivation which help to influence the learning behavior (Boekaerts, 2007; Efklides et al., 2018; Hascher & Hagenauer, 2018). The positive emotions could help in widening social resources and led to positive outcomes based on broaden-and-build theory (Baumeister & Vohs, 2007)

Research carried out by Schweder & Raufelder in (2019) , revealed the importance of support of teachers when self-directed learning was conducted in school. The research revealed that support of teacher helps in the reduction of effects between learning behavior and positive behavior. Those students who had weaker positive emotions were also supported in self-directed learning (Schweder & Raufelder, 2019).

2.10.7. Instructional Innovation and Self-Directed Learning

Instructional innovation and self-directed learning are significant credits of internet learning. The motivation behind this examination was to analyze the connection between proceeding with training experts' (undergraduates) self-coordinated learning (SDL) capacity and instructional innovation (IT) competency in courses of graduate degree online projects. The examination likewise explored the inspiration and learning techniques that the undergraduates used to get familiar with the innovation in an online course, and their relationship with SDL ability. The research depended on a one gathering, pre-post-test plan. It included appraisal of the undergraduates' IT competency and self-reflected evaluation of their SDL capacity twice during the investigation, toward the start and the finish of the online courses. It additionally included self-reflected evaluation of the inspiration and learning systems utilized for learning IT in the online courses. The examination included looking over 198 undergraduates who took the online courses in an enormous Midwest state university.

The after effects of the investigation demonstrated a little, however measurably critical improvement of the undergraduate’s IT competency towards the completion of their online course. The outcomes likewise demonstrated genuinely critical, positive relationship between self-directed learning capacity and level of IT competency in the undergraduates with SDL. Also, the investigation recommended that, paying little mind to the undergraduates' degree of self-directedness, inspiration is by all accounts a central point for learning IT in an online

course followed by the specific learning methodologies (as was estimated by the altered rendition of the Motivated Strategies for Learning Questionnaire).

Among the four components of the inspiration, the segments of inherent objective direction and self-viability for learning and performance were the most connected with the way towards learning IT. Moreover, learning methodologies of exertion guideline and guideline of time and study climate were the most connected with learning IT. The after effects of the investigation likewise recommended potential varieties in the learning techniques that undergraduates with various degrees of SDL capacity applied for learning IT in an online course. Intellectual learning methodologies of metacognitive self- guideline, elaboration, and basic speculation showed up as significant components in learning IT for the undergraduates with SDL capacity over the normal capacity, methodologies of friend learning, practice, and help looking for showed up as more significant elements in learning IT than the psychological strategies.

Given the developing fame of online guidance in both corporate and advanced education settings, instructional innovation competency and self-Directed learning capacity have become significant characteristics for effective internet learning. Subsequently, the discoveries of this examination could add to the plan of online guidance that contemplate contrasts in undergraduates SDL capacity and IT competency. Such guidelines incorporated exercises that advanced self-directed learning and improved undergraduate's IT competency.

The discoveries of this examination could assist HRD experts with picking and planning internet preparing exercises that think about inexplicit necessities to learn IT and give the most ideal conditions to oblige learning of the innovation and advance SDL (Shinkareva & Benson, 2006).

2.10.8. Relationship between Self-Efficacy and SDL

Langshaw, 2017 conducted a study in the United States to found the relationship between self-efficacy and self-directed learning. According to Langshaw, 2017 SDL is becoming an important element in continuous learning process. Promotion of SDL through behavioral element. Findings of this work suggested that changes are needed to be done in curriculum in order to make learnersmore self-directed. Other factors age, sex was also involved in the study that were examined. The relationship of both variables were evaluated through the PRO model of self-directed learning using learning scales. It was a correlational study which showed that there was powerful significant relationship between both variables (Langshaw, 2017).

2.10.9. Level of Self-Efficacy and Self-Directed Learning.

Research conducted to explore association linking self-efficacy, elements of self- directed learning demographic components that are linked with adult learning satisfaction in the area of digital learning. The aim of the research was to survey non-traditional scholars who were attending the courses which were being provided to them through use of web-based materials and the survey was also conducted to identify the relationship of these variables in order to check the level of self-efficacy and self-directed learning. Further, more the study found out the elements that contributes to the ongoing learning (McCoy, 2001).

2.10.10. Teacher-Directed Learning (TDL) and Self-Directed Learning (SDL)

A research study carried out in Pakistan to explore the barriers and implications related to the transition of TDL and SDL in the EFL classrooms which reflect the teachers training on both levels such as academic and attitudinal level (Yasmin et al., 2019). This research was conducted to examine teacher's views regarding the viability and nature of implementation of SDL approach for teaching English in Pakistan. The data collection was carried out by qualitative approach such as semi-structured interviews for the study. The sample size was 16 which include English Language Teachers from four main public universities. The results revealed that Pakistani education system, learners' psychological aspects and cultural background created difficulties in processing transition from TDL to SDL. However, the teachers of Pakistan viewed self-directed learning as a potential which can help to make students autonomous and self-sufficient. Teachers in different institutes must be trained and instructed to overcome the barriers between them and their learners. Teachers should be prepared in order to shift the responsibility to their students (Yasmin et al., 2019). Moreover, the main goal of teachers is to provide goal orientation, a conducive environment, motivation, and to strengthen the sense of self-mastery and self-efficacy.

The university teachers of Pakistan were already aware of the SDL concept and its benefits regarding learning process yet they were still unable to practice concept of SDL in their classrooms because of the different major restrictions. These restrictions were

1. Educational constraints such as untrained teachers, obsolete curriculum and heavy work-load,
2. Socio-political constraints such as lack of resources, policies and class system,

3. Psychological constraints such as confidence, lack of motivation and sense of responsibility,
4. Cultural constraints such as authoritative teachers.

Hence, it involved all the stakeholders such as teachers, learners, educational authorities and parents for the removal of cultural, institutional and psychological restrictions. The outcome of study also revealed that learners in Pakistan lack autonomy of learning. Similarly, according to research training could be carried out in the form of workshops which would help people to enhance their self-directed learning (Raley et al., 2020). The research also showed that in Pakistan, all authorities lie with elders such as teachers in schools and parents in home. Moreover, all the decisions in schools are carried out by teachers. However, the Asian culture which continuously turned learners to be passive and submissive result in reduction of self-directed learning.

2.10.11. Teacher Support in Self-Directed Learning

Teacher support play a vital role in self-directed learning. Different research studies were carried out to elaborate the relationship between teacher support and self-directed learning. According to the research, SDL was introduced in school, teacher could respond individual feedback based on already existing abilities and psychological state. Teacher assistance was provided in order to overcome the insecurities in how to impulses or act when applying learning and controlling activities (Kramarski, 2018).

According to research, in self-directed learning teachers were consider as a contact person and they support students in different tasks such as discovering goals and learning actions related to goals, orientation of the goal in past knowledge, and preparation of learning actions regarding this and then implementation of these actions, continuously adapting them and then finally reflection on them. Teachers provided an idea to students with respect to partial results with past actions which help to make it easier for students to make decision whether to maintain or update their learning actions and goals. Teachers also gave feedback related to orientation of the students' individual beginning point for their learning processes (Bolhuis & Voeten, 2001).

Moreover, when teachers act like this, it would have a positive effect on volition of students (Schunk & Zimmerman, 2012), control strategies and elaboration (Vansteenkiste et al., 2004).

2.10.12. Self-Directed Learning and English-as-a-Second Language (ESL)

A research study conducted by Robles, 2008 focused on the applicability of SDL skills in an English-as-a-Second Language (ESL) classroom and determined that weather self-directed learning was an appropriate learning approach to use with students whose native language was not English. The main goal of research was to help those students become more independent, able to think critically, and become self-initiating learners. SDL was tested within an overall institutional setting. He considered that informal and personal acquisition of knowledge is acquired through self-initiative (Robles, 2008).

According to him self-directed has an informal nature, hence it can be practiced anywhere. In formal education, a self-directed learner is equally responsible for his or her own learning as the instructor or facilitator. Hence, Self-directed learning is a highly adaptable and applicable approach to a variety of learning situations and needs. He encouraged independent learning, self-awareness, and self-reflection in higher education by incorporating current educational literature on teaching approaches. Robles indicates that Self-directed learning approach has predominantly been practiced in the West where the focus was on personal choice.

2.10.13. Self-Directed Learning among Secondary Online Students

A study was conducted by Carson which was aimed to briefly explain self-directed learning among secondary online students which examined that whether the students which were enrolled in online learning, linked with academic achievement. So, through the results schools would be able to provide additional support to the online learners who are self-directed towards their learning goals that increased the chance to academic excellence in online learning. The data analyzed in the study was gathered through the students of secondary schools in the South-eastern United States.

The concept of self-directed leaning was introduced to the online learners. It was a correlational study; attributes of self-directed learning were examined in the students of grade 8 till grade 12. The aim behind the study was to investigate whether self-directed learning classes exists and is there any significant difference related to gender, grade level and ethnicity in completion of online courses. The results found out that according to ethnicity and gender there was no significant difference in SDL. Further significant difference was shown at grade level, in academic achievement indicated by GPA and final online course grades (Carson, 2012).

2.11. Assessment of Self-Directed Learning with the Garrison model

A study was carried out for assessing the effect of SDL model of Garrison which assessed academic self-concept of undergraduate students OF AUE through using scale of self – perception. Study defined the three components of self-directed learning along with the model. This study concluded that, implementing Garrison's model will be helpful to enable students to become more motivated and engaged in their learning process and it will help AUE faculty to excel academically (Shahrouri, 2016).

2.11.1. Self-Directed Learning by Pre-schoolers

Three studies were carried out for the investigation of ability of preschoolers' self-directed learning in a naturalistic context (Foushee et al., 2021). Experiment 1 involve the exposure of 4.5 to 6-year-old student to 6 arbitrary facts and 4 novel words related to a set of co-present toys. Experiment 2 include 3 to 4.5-year-old children who heard 3 facts and 5 nouns. Moreover, there are two conditions such as Pedagogical condition, in which the information was taught to students with the help of multiple pedagogical cues and overhearing condition, in which children had to focus and listen to a single side phone call for learning the information. The children having age from 4.5 to 6 years learned all items in both conditions. However, the children having age from 3 to 4.5 years learned words in pedagogical condition but were not able to learned in the overhearing condition. Experiment 3 revealed that younger children face difficulty in learning new words in overhearing condition not only when hear from one side of the phone but also it was difficult for them when phone was on speaker. The results also revealed that 4.5 to 6 years old children were capable of understanding the words in overhearing condition while 3 to 4.5 years old preschoolers were not able learned word in overhearing condition due to lack of attention. Moreover, this study revealed that, children having age of 5 could learn multiple words and facts in both pedagogical and overhearing condition (Foushee et al., 2021). So, the ability of self-directed learning depends on being capable for the coordinating attention between surrounding environment and speech which is the capacity to develop throughout preschool.

2.11.2. Understanding of Self- Directed Learning at Higher Level

Hall, 2011 conducted a study in South Florida University to check the understanding of self-directed learning at higher level. Student's retention and integration theories were studied from Tinto and Austin. Personal Responsibility model was used as a framework to understand the

concept of SDL. This model quantitatively measured self-directed learning from the members of FSI program. Further, researcher evaluated the changes and link between self-directed learning in terms of age, ethnicity and gender and found out that there is no statistically significant measure found between pre and post-test administration model of PRO- SDL. Scores, and academic achievement had correlational relationship between each other, However, there was no relationship found linking age, gender, ethnicity and PRO-SDL scores.

Hall suggested that Curriculum should be based on self-learning habits of students instead of rote learning so it makes learners highly self-directed towards their learning. Further, the teaching methods reconditioned for the evolution of national benchmarks and guidelines to make summer bridge programs more effective (Hall, 2011).

2.11.3. SDL between Conventional Curriculum Vs Integrated Modular

SDL readiness is the proportion up to which learners can possesses this ability for controlling over the quality of SDL. A research study was carried out in Pakistan for the identification of self-directed learning readiness in learners and for the comparison of readiness of SDL between learners of integrated modular curriculum and traditional curriculum. The study involves cross-sectional quantitative study among MBBS learners or students of first year and fourth year in University College of Medicine and Dentistry, The University of Lahore. A questionnaire survey was carried out in order to identify the self-directed learning readiness with the help of Pre-Validated Questionnaire Scale (SDLRS) among students of 1st year and 4th year. The result revealed that there was a significant difference among self-directed learning readiness between traditional system and modular system. Similarly, higher the readiness of SDL among 1^{st} year students as compared to 4^{th} year students. This research study also revealed that there was a positive response of integrated modular curriculum leaners toward self-control, self-management and desire of learning (Arooj et al ,2021).

2.11.4. Relationship between Team Based Learning and Self-Directed Learning

Team based learning (TBL) is a multiphase educational methodology that requires dynamic cooperation and joint effort. There is proof of improvement in students results with team-based learning (TBL), yet research on the effect of TBL on students learning practices is restricted. In particular, the degree to which TBL advances self-directed learning: limit with regards to students to sort out, direct, and execute learning exercises.

The motivation behind this examination was to inspect how much TBL, in two essential undergrad nursing courses, influenced their self-Directed learning availability and scholarly execution. A semi exploratory post-test configuration was utilized to evaluate the impact of TBL on self-Directed learning. A comfort inspecting of undergrad nursing students tried out a huge rural college were enlisted to take an interest in this investigation. The benchmark group was taught utilizing customary educating and learning systems of generally address based guidance, and the trial bunch got TBL mixed educational program during one school semester. Self-Directed learning preparation was evaluated utilizing the Self-Directed Learning Readiness Assessment, an estimation device for which approval research has created good legitimacy and dependability. The usage of TBL plan and personnel help were assessed to guarantee devotion. Results indicated that the TBL mediation fundamentally expanded student's self-Directed learning availability. Also, in the TBL bunch scholastically outflanked in the benchmark group on a public normalized assessment. These discoveries uphold the utilization of TBL instructional method in primary college classes to improve students' scholastic execution and upgraded self-directed learning availability, an ideal trait of the college alum (Janotha, 2015).

2.11.5. Age and Gender-Related Differences and Self-Directed Learning

Self-directed learning is affected by behavioral and emotional reactions of students. Self-directed learning environment might be different both for male and female students as well as among early adolescence and middle adolescence because of the difference in neural-morphological in development (Romer & Walker, 2007). According to research, male learners had higher emotional arousal level as compared to female learners (Else-Quest et al., 2006). In case of control strategies, the age related differences were because of unequal development of abilities for control tasks (Gestsdottir & Lerner, 2008). Another research revealed that male students show less control strategies during adolescence as compared to female students (Wang et al., 2017).

The female students during adolescence had higher willingness to place efforts at school level learning in contrast to masculine students having similar age (Bugler et al., 2015). Age and motivation deficits show a direct relationship. According to a research, an increase in age will result surge the deficit in motivation in context of the learning needs formally drawn. (Wigfield & Wagner, 2005). A research study was carried out by Cornelius-White to show the difference

in age as well as gender as perceived by teacher. This study revealed that there was no difference in grade difference in case of leaner centered settings (Cornelius-White, 2007).

Topic oriented studies indicates females were less externally controlled with respect to academic actions, additionally intrinsic motivated and expressed high self-regulation academically as compared to males (Karsenti & Thibert, 1995). However, non-subject related study unveiled a lot of insignificant gender changes for academic self-regulation as well as intrinsically motivated. Moreover, a research study carried out on Norwegian students at

secondary level i.e. 6-11th grades revealed that female students were found reporting lower intrinsically motivated as compared to male students of math while with regard to verbal subjects, male students conveyed lower intrinsically motivated as compared to female. (Skaalvik & Skaalvik, 2004).

Study conducted on Korean students revealed that female feel less supported than male with respect to autonomy and competence at school (Jang et al., 2012). According to Moore (1986), self-directed learners specify their objectives and goals and set some required criteria for the achievement of their goals. They know the source and type of resources from where information can be gathered and required information could be utilized. They collect different ideas and practice different skills (Moore, 1986).

Self-determination is considered as a basic principle of self-directed learning and that was reflected through a great deal of competence as well as autonomy (Harackwiescz & Knnogler, 2017). A sense of relatedness in self-directed learning is also develop in students through feedback of elders and teachers and team work.

Neuroscientific studies revealed that institutes that offer self-directed learning are mostly belongs to adolescents' needs. So, the assumption that needs of specific gender are better supported in self-directed learning as compared to that of the teacher directed learning is also implied. In case of teacher directed learning, student have to follow a specific lesson planned by the teacher which assume that all students are learning with the same speed and all students have same learning actions. This environment creates an adverse effect on students by restricting the prospects for students exploiting their previous abilities as well as knowledge enabling them to deliver the desired outcome (Benson, 2013).

2.11.6. Self-Directed Learning (SDL) and Satisfaction among Adolescent Boys and Girls

A research study was carried out by Schweder & Raufelder, 2021 to analyzed the self-directed learning and satisfaction among adolescent boys and girls. The study showed that the motivation towards self-directed learning were strong by boys as compared to girls and few gender difference was present in need satisfaction and self-regulation in academic in self-directed learning intervention

2.11.7. Perspectives of Nursing Education towards SDL

Research executed by Baker comparing SDL with nurses' perspectives in relation to nursing education within classroom as well as clinics. From the previous studies researcher found that learning was limited to learner centered instructional methods. Self-directed learning instruction differs in terms of different learning environments (Baker, 2012). However, Baker aimed to determine that weather self-directed learning had any effect on both classroom and clinical ambiance, and found situational gaps that contributed to the theory of SDL. The research revealed that more usage of SDLR leads minimum amount of resistance using student centered instructional practices.

2.11.8. Problem Based Learning on Beginner Teacher's Self-Directed Learning Orientation

Research was undertaken for discovering influence of problem-based learning on beginner teacher's SDL orientation. Outcomes of this research indicated, that problem -based instruction eases beginner teachers in their self-directed learning. SDL is supported by eight themes of problem-based learning. SDL develops confidence in learners to take initiative to acquire knowledge and skills for future learning to succeed. Problem based learning plays significant role in facilitating self-directed learning (Wood, 1995).

2.11.9. Factors Associated with Self-Directed Learning among Undergraduate Nursing Students

A research study was carried out to analyze the effect of factors associated with self-directed learning. PRISMA process was used and total of 18 articles were selected from 1576 articles. The methodological quality of 18 selected articles was moderate. Factors related to self-directed learning were examined from both qualitative and quantitative evidences. The results of study revealed that self-directed learning was developed with the influence of environmental

interaction and personal influence. The interaction environmental influence includes study year, type of study programs and teaching-learning strategies and personal influence include personal characteristics such as gender and age and learning attributes such as problem solving ability, learning attitudes, self-efficacy and learning interest (Wong et al., 2021). The study also revealed that there is a direct relationship between all the identified factors and improvement of students' SDL. All the factors help in the improvement of self-directed learning in students.

2.11.10. Self-Directed Learning Constraints

According to cross, there are three main types of barriers or hurdles in implementing the self-directed learning in different institutes. These types are institutional, situational and dispositional barriers (Cross, 1981)

1. Institutional barriers belong to institute such as inconvenient schedule, higher fees, incompetent teachers, full-time studies and inaccessible locations.
2. Situation barriers belong to current situations and conditions which can be lack of time due to home, work or other socio-political commitments.
3. Dispositional barriers are related to attitudes, sense of insecurity, self-perceptions and bad environment.

According to different studies, researchers recognized a lot of limitations of SDL in the case of undergraduate medical learning. Moreover, several well-known researchers and educators were agreeing that self-directed learning was not embraced universally for all situations and all learners. The researchers also found that most of learners were rejecting openly the self-directed leaning approach (Frambach et al., 2012). According to research, the way of learning in Asian countries was also affected by culture influence.

A detailed study was conducted by Guglielmino on the common barriers came across by scholars in case of self-directed learning. Based on interviews, he revealed that most of the self-directed learning barriers bared by learners were lack of accessibility or adequacy of material resources and human, time, interactions with other people, technical difficulties or malfunctions, personal limitations, loss of interest and hurdles regarding use of formal learning opportunities. (Guglielmino et al., 2005).

Guglielmino (2003) further posited and a certain degree of confidence measure accurately readiness required in relation to SDR. However, various queries were raised regarding

methodological as well as validity issues. Though, Brockett, (2018) established that the SDL readiness contributed much to raise understanding about the phenomenon and generate substantial research. Mottonen, (2019) designed an instrument based on personality construct, SDL formulating the three theoretical developments delineating the motivational, affective, as well as cognitive attributes of the personality of SDL Its 1st dimension deals with proactive and reactive drive that takes into account proactive behaviours,

To initiate and persistent learning leads to reactive depending on external forces to stimulating learning, a propensity to terminate activity that encounter obstacles in the way of learning to see order to lower needs, and meet self-esteem. Its 2nd dimension deals with cognitive openness against defensiveness. Inside this dimension, features of SDL comprise opening new ideas, adeptness, and avoiding ambiguity. On the other side of the string, learners seem attributes of rigidity, fearing failure, and avoiding new activities. Its dimension 3 includes commitment to Learn against apathy. It throws light on the characteristics feature of personality of an SDL within the domain of dimension including attitude indicating variation in learning activities preferring leisure activities provoking insightful thought.

On reverse side, there are other learners that reflect hostile physical characteristics as well as attitudes towards learning and engaging in non-learning activities (Mottonen, 2019).

According to (Francis, 2012), variation in learning activities goes to the extent of 3% as foretold through the OCLI. West and Bentley asked the respondents to fill the SDLRS (Gervais, 2019). After investigating the association amid the two given sets based on the basis of scores of a scale, the researchers established that defining the instruments based on the conceptual differences, from the side of developers, the total group reflected correlation r =.38 recommended the measures that were not in common. It was further determined that a relatively weak association was reported by these findings amid the OCLI as well as SDL readiness, having incapability of predicting criterion variables, the research did not recommend that any of the instrument is used in the category of screening tools utilized in relation to SDL programs. Kasworm in response concluded that for a theory relating to adult self-direction ought to fasten with the internal acts of learners, action, as well as sense making. The researcher determined that using reflective interactions copies from reliable role models, students may get better learning independently and after identifying the information required to resolve problems, and remained to be self-directed on the course of learning duly learning from their experiences.

However, the instructions of SDL skills are associated with better job opportunities (Dean et al., 2017) and greater educational outcomes. In order to analyzed this association, a model named as Self-Determined Learning Model of Instruction (SDLMI) was generated by (Raley et al., 2020).

This model was generated for enabling teachers to foster skills in students and learners so they might set their goals, make plans and adjust their plans after their own evaluation.

Moreover, the training of teachers regarding self-directed learning can improve student's performance but still need to change the belief of teachers related to their methodology (Phipps & Borg, 2007). In Asian countries, where students read in foreign language, they face different difficulties regarding their culture and backgrounds as well as regarding their perceptions of the role of instructors in the educational institutes.

According to a study carried out by Borg & Al-Busaidi, the self-regulations and independence of learners were connected to their background and culture (Borg & Al-Busaidi, 2012). Similarly, in Pakistan, the independence of learners is not highly appreciated because the high value was given to elders and teachers (Yasmin & Sohail, 2018).

The higher education carries many aims, one of them is to motivate individuals in forming positive attitude towards the process of studying in order to quench the thrust of qualification and knowledge. The development in higher education resulted in immense growth in universities. This growth has resulted in establishing new models as well as educational methods side by side creating a number of challenges on efficiency and effectiveness of education delivered (Royal, 2011.).

The efficiency associated with higher education reveals the association amid society as well as higher education institutions and role of social, cultural, economic, and scientific factors in controlling higher education (Furst-Bowe, 2011). In this dynamic world, education with its quality reflects a persistent action depending upon the positive outcome amid the association amid different actors, such as parents, lecturers, students, state institutions, as well as private partners.

Research is vital for the economic growth of every country. It leads towards inventions and improvements in new technologies which enhances and resolves a lot of cultural, socio-economic, political, technological and environmental affairs. To possess essential skills and knowledge research needs human resources (Frantzen, 2000). Higher education plays an

important role in formation and diffusion of knowledge that transmits important research skills to students at higher education level. Research skills have been diagnosed one of the major graduate features as a part of higher education that needs to be absorbed and used by the students.

Currently, students of higher education in Pakistan have fewer opportunities to partake the research. No realization is found to create a formal path by any university or HEC for students to become researchers (Sheikh, 2020). In Pakistani universities, research avenues are strikingly minimal at the level of higher education. This research intends to highlight the role of self-directed learner in fostering research skills of students at higher educational level. In this backdrop, role of higher education (HEs) in Pakistan is still in the initial stage comparing with business, information technology (IT) as well as non-governmental organizations (NGOs) in developed world like the USA, Europe as well as Finland (Shafait, 2021). These countries have got empowerment to support rigorous research in higher education. On the other side Pakistan like a developing nation struggles to adopt and support at higher education level.

Developed nations, steer to gain economic as well as social development creatively through promoting research inside HEIs. Pakistan direly needs to adopt the same approach. (Naoreen, 2014) Validated that the Pakistan HEC strived to prompt practical measures to promote research skills among students of HE. In fact, the growth of research skills is considered continuous fundamental principle of graduate programs. (Garg, 2018)

Students of higher education meet daunting difficulties pertaining to their respective research skills, this may be attributed to their inexperience with research skills that include academic writing, report writing, finding credible sources from the internet, target data collection & analysis, planning and scheduling, interviewing and critical analysis.

Research refers to an activity rather a fundamental skill to be mustered in a lifetime with an instructional session while an activity depends upon rhetorical context. Research activity speaks to a theme of study that includes an area of investigation therein context has a greater consideration.

About the categories pertaining to research activities, most research is divided into three diverse categories: exploratory, descriptive also causal. Each has its distinct purpose and direction to move ahead in different ways. In the past, in the United States of America, engaging higher education students in research activities was supported by way of an innovative strategy to bring improvement in US higher education, this initiative was taken in

the wake of concerns to raise standard of education at undergraduate level that resulted in taking reform in US higher education. Following the publication of the (University of Tennessee, 2002) there was seen a marked rise in college as well as universities that managed to report research experiences.

This factor indicates that through reforms, improvement at undergraduate level of education is possible in a setting when different parties focus to improve specific areas. Though student engagement was found increased in terms of research activities in current years at some research universities, undergraduate students in various other institutions miss a number of facilities and relative advantages comparing to their peers at competitive institutions. Therefore, research universities are wishful in providing inspiring educational opportunities in line of their distinct research mission, they required to provide more inquiry-based educational opportunities to their students.

Besides knowledge acquisition, many observers state that research experience at undergraduate level will uncover students towards new ideas and thinking afresh to explore and discover new knowledge towards gaining higher education level (University of Tennessee, 2002). Deed, by involving in the research project at higher education level gets to draw desirable and associated effects in form of persistence, exposing to more research skills, and making a good career choice for future (Pascarella, 2005). (Nagda, 1998) Established that doing research under the supervision of a faculty member draws the student towards persistence at the University level.

A study conducted by (Nagda, 1998) recommended that participating the undergraduate research found positive relationship with the probability of seeking graduate education and doing research in the upcoming years. (Nnadozie, 2001) In the same way, described that success at undergraduate level research experiences was found to have positive association with higher education level success. (Pascarella, 2005) Submitted that research programs at undergraduate level present the following:

A fusion of situational as well as behavioral factors that open a window towards the scholar to begin his or her intellectual life and promote students to indulge and increase their learning stock, come closer to their research mentors, get more opportunities to learn theory and methods to solve problems, and invoke a thought-provoking intellectual activity. Based on the inquiry-based missions, research universities provide a relative advantage for providing quality research capabilities to their undergraduates (Gonzalez, 2001)).

A heartening fact is that mostly students acquired experiences afterward 2000 comparing the years after the Boyer Report of 1998. This trend gets in line with (Katkin, 2003) assessment to look into the influence of the Boyer Report. Though the report aimed to examine the criticality research universities, it may influence colleges as well as universities, advising to develop research experience for undergrad education. This is a kind of illustrating institutional isomorphism (Kuh, 2001) therein research universities require to set the tone for the whole system.

For better understand the human behaviour, (Worley, 2006) cited the idea presented by William James, a behavioural psychologist, that experience helps to shape human behaviour rather human brain or mind tend to shape it. Though James acknowledged that instincts rule over humans as animals do, but the way humans require to behave can make them different from animals. James explained that although humans and animals are alike on the basis of some common instincts but they do not react mechanically based on the instincts, as many mediocre animals do since humans do have the potential of mind and the reason. Based on the reason, that creates another impulse to counteract another impulse. To unveil what is beneath the human behaviour, (Ridley, 2011) focused the nature to trace answer to a popularly asked question: who is our creator and who we are? This question relates with the key question why humans like to behave as they do and how they are expected to behave as they do.

The quick answer to such questions speaks to differentiate a human being from animal based on mind or reason. (Hardy, 2003), in their research revealed four drivers that contribute to arise reason and shape human behaviour; these give way to understand why humans behave as they do. These drives proved conflicting in nature and work not in automation. These elements drive to make forced choices and take deliberate decisions involving a certain degree of freedom. This argument unveils that such qualities shape human behaviour at the first stage, focuses to get objective physically as well as emotional experience, upholding life to improve social status relating to others. Secondly, drives to develop relations, with a group creating relationship on long term basis and keep caring the others. Thirdly, looks to get an insight into understanding self and surroundings. Fourthly, urges to control as well as defend. Hence, these qualities help to understand human behaviour and its execution in a certain manner in case of otherwise, purposes may lead to drive human behaviour to accomplish, as animal do. The following argument points to the theory of planned behaviour presented by (Ajzen,1993).

2.12. Theory of planned behaviour

This theory (TPB) provides an addition in 'theory of reasoned action' to clarify the linkages amid attitudes as well as behaviour inside the domain of human action. Reasoned Action Theory (RAT) claims that the reason to act will reflect a prediction and in other way, an individual acts in certain condition or the basis of pre-conceived attitudes as well as behaviour intentions. The theory claims that an individual will act in reaction to the predictable results the individual is likely to attain subsequent to undertake such behaviour (Fishbein, 1976). IF RAT emphases upon the reason though the TPB has the key purpose to highlight an individual laden intention to undertake the required behaviour as a fundamental base. An intention has three independent features, the first determining factor pertains to attitude in the line of behaviour.

At the allied level, an individual that gives certain behaviour must assess about the favourability and non-favourability of the behaviour under investigation. Secondly, element to determine refers to a social factor in the category of subjective norms. At this level, the individual who reflects a certain behaviour must come make sure that the society favours this behaviour or not. The third element pertains to the new precursor of intention. This behaviour denotes the perceptive ease or difficulty involving as a result of adopting certain behaviour, confronted challenges as well as expected barriers besides problems while adopting this behaviour. It recommends based on a favourable attitude along with subjective norms regarding a behaviour along with reflecting high perceptive behavioural control, an individual actions would get more strength to follow the behaviour under testing (Ajzen,1993). In brief, the theory of planned behaviour raises argument that a stronger intention at individual level to behave in a certain condition and individual's intention to attain their respective behavioural goals, it is most likely that they would reflect the required behaviour. However, (Ajzen,1993) warned that success and its allied degree is not able to determine intention but indicates the circumstances that inform the occurrence of certain behaviour in the backdrop of opportunities as well as resources available like time management skills, funds acquisition, and other mandatory needs to undertake such behaviour.

These factors indicate the reflection of actual control on the behaviour. After this, as TPB deals with the perceptive behaviour, the specific perceptive behaviour if not executed that may occur due to paucity of flow of information about the behaviour, the necessities underwent a change and other unforeseen elements that relate with the situation. With

reference to psychology, an attitude refers to emotions, beliefs, as well as behaviours in an integrated form regarding a specific person, object, event or a thing (Heiphetz, 2013).

2.12.1. Learning research

Life cannot expect to last long and cruise at the current page without indulging in research. Research makes the life better as well as pleasurable, one can enjoy riding the airplane, motor car, motorcycle, vessel, cellular phone without understand research. On the lines of this development, it cannot be denied that one is distinct from the other from country to country, school to school, business to business and skills to skills that is research. For instance, America has robust and efficient mechanism due to technological advancement comparing rest of the world simply on the basis of research. According to (Ariola, 2017), research enables a human to lead a better life and makes human development inevitable to play a vital role in day to day human life. Works of (Bin Zarah, 2020) can be cited about role of research in building knowledge as well as facilitating learning. It helps to collect and analyse information on problem under consideration and to get its solution (Swindoll, 2012)

This concept highlights the extensive significance of research in gaining knowledge, and understanding about life issues and take appropriate decisions to solve issues effectively. In reality, research has become a business of everyone. In the context of academia, research does not represent an innate knowledge possessed by every human being as a natural right or simple in execution without employing a scientific method (Reddy, 2019) this means that research skills must be acquired through structured education knowing the theory and application of research methods into practical research. Solving problems to find new solutions need to adopt a structured research process that begins with the problem statement, hypotheses and methodology for investigating the problems prior to find solution to the research problem (Ariola, 2017). As stated earlier that research does not mean an innate knowledge but it needs to learn.

This brings to fore that education aims to teach people to execute research as the first stage to make understand to the research students at the time of entry into college or university. The core purpose is to make them familiarize with conducting an academic research, linked students with research, to motivate students as well as educators enabling them to get the real and broader canvass of learning, and support pedagogic culture (Sweeney, 2017)

2.12.2. Research in Pakistan

Pakistan has shown considerable increase in research productivity (Herciu, 2015). Last decade demonstrated through a rise of 2,000 research-based articles published from 2006-9,000 during 2015 (Mahmood, 2016). Research conducted by (Uddin, 2014) carrying out a scientometric analysis based on the research output of SAARC countries show research publications on advanced path and towards a steady and rising output. Drawn on these, Pakistan based on 69,783 articles published in the last decade captured the 2nd largest publisher after India (at 7000,217 articles) on the basis of output.

According to (Nauman, 2017) growing funding to support research is not likely to bring improvement in the research quality, this is in the wake of the fact that Pakistan has invested seriously in research with corresponding rise in publications. Rise in article output did not guarantee increase in quality, this may be attributed to lack of research skills particularly critically thinking skills. The research took on by (Raza, 2010) managed to collect data from 1,100 students belonged to six public as well as five private universities of Pakistan and resolved that the students were found dissatisfied with their research skills particularly in the area of intellectual development (how to start research to handle specific problems). These findings ought to be taken seriously at HEC level. Thus, dire is the need to develop research skills particularly critical thinking related skills using mindful effort to attain the required results (Memon, 2007).

Pakistan, like many developing countries, suffers from has inherent medical, psychosocial, as well as environmental issues that require to be fixed (Sabzwari, 2009). But those are entrusted to conduct research work found their basic research skills missing that need to be addressed on priority and touching international standards. Therefore, students need to enhance or obtain their skills to conducting research during the tenure of higher studies in order to establish the abilities to conduct research in the individual professional ground as well as amid other individuals that identify their skills through the research along with the knowledge as well as skills that students should obtain adequate research skills before starting as well as writing the research (Kardash, 2000) has also recognized the skills mandatory in his study on the development stage of research skills at undergrad level in research. Likewise (Bransford, 2006) have also identified the need of adopting graduate research skills that were thought to be more vital to learn by faculty members. Accessing the user-friendly information should be more

important for the progress of information communication technology which is compulsory for upcoming undergrad students to deal with the information.

A study found that the universities involve students to select that courses that needs creative information as well as mandatory course on research methodology to get the advantage and understand the research skills. Universities have placed sufficient resources as well as personnel to help out the students to conduct research skills as well as try to prepare as a graduate level of upcoming human capital and become a knowledge-based workers. A number of studies found that most students could not attain the required learning outcomes from methodology and pertinent courses of research in the fields of social science also education during the course of undergrads and postgrad programmes (Murtonen, 2003).

Research skills on using statistics were not achieved by the research students (Murtonen, 2005). Many reported a wholesome trouble while learning the research methodology. The culture guiding research has its importance in research and economic development of the country. It is vital for undergrads during the course of their development to post graduate level of education to hone their research skills at the initial stage (Gilmore, 2010). The key causes of facing difficulties by the postgrads was found linked with deficiency in preparedness in research skills before starting the research process. A review based on studies regarding research skills of upcoming researchers revealed some key research skills required with updating to undertake research. Following a sequence, a certain range of research skills was found vital to undertake research. Among the top of these skills, information in quest of skills, communicating (submitting a writing skills), methodological skills as well as data analytical skills required to undertake appropriate analysis as well as statistics). However, demand from evolving research skills among students of higher education remains less, until they are engaged in practical research work, but regardless of the educational level, providing a professional setting and engaging with practical work of research is highly imperative, it is therefore, vital to keep the students quipped with research skills and keep them engaged.

Conventionally undergrad research skills were taught via lectures then small-scale projects granted to the students along with tutorial support at individual level in the faculty related to education. Research conducted in the context of UK, explored a number of motivational factors supporting students for learning research skills using individually research projects aided by collaborative tutorials. Research has identified a long time ago group support, positive effect as well as supporting as vital to motivate and facilitate learning. Further, UK government set a

priority for itself in developing a number of key skills leading to address inquiry as well as operating with others.

However, setting this as an objective in other countries like Pakistan is linked with a specific context of conducting assessment as well as practice going on in higher education that further encourages individualist as well as instrumental perspectives to gain competencies as well as knowledge (Bin Zarah, 2020).

Argued that research and teaching proceed in a reverse direction against each other, as teaching is thought of transmitting knowledge while research is taken as an inquiry. It is imperative that students in initial years, like other practises of education, ought to have skills of inquiry to get sustained professional development in the vibrant context of education (Ferris, 2015). As an alternate to a customary teaching approach based on lecture as well as seminar using individual tutorials as well as assessment (Garg, 2018), the changed circumstances brought a change in the association amid tutor as well as students which is likely to create larger skill opportunities for students from the expertise of fellow individuals, peers as well as tutors (Bin Zarah, 2020). Previous research on enhancing student skills indicated that group situations can help to benefit their learning (Waite, 2004), representing a 'natural' form of inspiration to collaborate. However, other research (Crook, 2000) proposes that collaboration needs backing to flourish.

The context relating to task as well as socio emotional factors imposes motivation at individual level (Dembo, 2019) enabling group support as motivational to deliver collaborative benefits. Developing writing skills as a part of research skills was given serious concern since long at higher education (Brew, 2003). Students studying in research institutions for higher learning were found facing problems; mostly in writing that enables them to meet the skill standards of the institutions. However, such 'disadvantaged' students may not feel deprived of developing high order writing skills as a result of positive instructional attitudes by their teachers to overcome learner problems (Grabe, 2014).

2.13. Summary

Drawn from the above deliberations, Self-directed learning in broader sense denotes ability of individuals to take initiative for identifying their indigenous learning needs, to finalize learning goals, their capability to delimit the sources of learning, their aptitude to make selection of optimal learning strategies with evaluation of learning outcomes assisted by someone or not. About the research skills, students should be taught to utilize the online resources within their

access, by this kind of teaching, they are likely to learn the use of diverse search engines as well as data bases and the type of results they need to get and how to make utilization of these resources. At the end, this type of research skills would support students to develop critical thinking and increase awareness regarding academic credibility of target sources. Equipping with right research skills, would help them to avert issues likely to confront in the long run, in form of plagiarism, resultantly they come to understand the value of authorship as well as copyrights.

Through a brief review of related literature the researcher came to know that many studies have been conducted on self-directed learning with different variables. Therefore, researcher intended to find out the effect of self-directed learning on students research skills o at higher education level, which will add a new contribution to the existing literature.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

The chapter deals with the research approach, design, population, sampling, sampling technique and description about research instruments used in the study. Procedure of data collection, validity and reliability of the instruments, research ethics and data analysis techniques.

3.2. Research Approach

Research approach is the set of stages that range from general assumptions to precise methods for data gathering, analysis and interpretation (Creswell, 2013). The chosen approach for this research study was quantitative research approach.

3.3. Research Design

Research design provides a platform for overall research study that explains the topic of research and differentiate between the problem of research and questions that are acquired from the problem. Furthermore, it focuses on the importance of research study and the techniques used by the researcher (Scott & Morrison, 2007). The design chosen for this study is descriptive research design and to find out the effect of SDL on students' research skills regression is applied. Linear Regression analysis was applied because the researcher checked the effect of independent variable on dependent variable.

3.4. Population

It is comprising to have a set of people as well as items to isolate the elements or features desirous to study. The unit of analysis may be a group, person, country, object or any other form that you wish to draw conclusion about (Bhattacherjee, 2012). The population of the study were entire public universities located in Islamabad. For this purpose, necessary information regarding public sector universities located at Islamabad was explored from HEC website (www.hec.gov.pk) (Appendix L).

3.4.1. Target Population

The target population of the study were 319 MS/M.Phil coursework students of session 2021, of three Faculties 'i.e. Social Sciences, English and Management Sciences of three public sector Universities of Islamabad, NUML, AIR and IIUI due to the common departments, i.e. Department of English, Education, Psychology and Management Sciences. Researcher personally visited the selected universities and according to the information provided by the concerned departments, that there were total 319 coursework students in MS/M.Phil during the session, 2021.

Table 3.4.2

Table of Target Population

Name of Universities	Sector	Faculties	Departments	No of students
NUML, Islamabad	Public	English	English	59
		Social sciences	Education	18
			Psychology	8
		Management sciences	Management sciences	25
AIR, Islamabad	Public	English	English	28
		Social sciences	Education	10
			Psychology	18
		Management sciences	Management sciences	6
IIUI, Islamabad	Public	English	English	26
		Social sciences	Education	24
			Psychology	60
		Management sciences	Management sciences	37
		Total		**319**

3.5. Sampling Technique

Stratified Random Sampling technique was used by the researcher. Activities that are involved in choosing a group of people and things from the huge population refers to sampling. The sampling frame is chunked down into homogenous and non-over lapping subgroups called (strata) in stratified sampling. Within each subgroup, simple random sample is drawn. After applying the formula of (Kerjcie & Morgan, 1970) the selected sample of the study was 175 students which was collected randomly from the students of each department. The table of Kerjice & Morgan, 1970 is attached. (Appendix M). The researcher used stratified random sampling because students of common departments were taken as a sample of the study.

Table 3.5.1

Table of Sample

Name of Universities	Sector	Faculties	Departments	No of students
NUML, Islamabad	Public	English	English	24
		Social sciences	Education	12
			Psychology	8
		Management sciences	Management sciences	15
AIR, Islamabad	Public	English	English	17
		Social sciences	Education	10
			Psychology	12
		Management sciences	Management sciences	6
IIUI, Islamabad	Public	English	English	20
		Social sciences	Education	12
			Psychology	18
		Management sciences	Management sciences	21
		Total		**175**

3.6. Research Instruments

The researcher used two adapted questionnaires. The first questionnaire on self-directed learning was developed by Abd-El- Fattah, 2010 and second questionnaire on research skills was developed by Griffioen 2020.

The first section of the instrument related to demographic information that was (gender, age, qualification and information regarding university, faculty and department) and the second section was related to questionnaire about self-directed learning (QSDL) and had three dimensions and 23 items in total. The third section of the questionnaire was related to research skills (QRSS) that had three dimensions involving 30 items in total. Both questionnaires were based on five-point Likert scale.

Table 3.6.1

Table of self-directed learning questionnaire (QSDL) (N=23)

Dimensions	**Items**
Self-management	8
Self-monitoring	9
Motivation	6
Total	23

Table 3.6.2

Table of Research Skills Questionnaire (QRSS) (N=30)

Dimensions	**Items**
Research attitude	10
Research activities	10
Research context	10
Total	30

3.7. Validity of Tools

To check the reliability of both instruments pilot testing was conducted. Two adapted and standardized questionnaires were disseminated for data collection. Total 80 questionnaires were distributed among the students in three public sector universities of Islamabad by the researcher from which 70 responses were returned. The students of these universities were excluded from the final sample of the study.

To assure the face and content validity of both tools, the tools were validated by the eight experts in the field of education, all holding Ph.D. and having expertise in their respective fields. Researcher had meetings with them and briefly described these questionnaires. The suggested observations were incorporated by the researcher, after the approval of questionnaire by these experts, the researcher collected the data. The certificates of validation that were given by these experts are attached. (Appendix D to K).

The reliability of tools were checked by the researcher. The tables given below represents the reliability details of the tools.

Table 3.7.1

Reliability of Self-directed learning scale (QSDL) and its three dimensions (N=70) Pilot testing.

Scale	Dimensions	No of Items	Alpha Coefficient
Self-directed learning		23	.867
	Self-management	8	.727
	Self-monitoring	9	.817
	Motivation	6	.730

Table 3.7.1 represents the values of Cronbach's Alpha Reliability of self-directed learning scale and three dimensions of SDL. The Cronbach's Alpha reliability of self-directed learning scale was found .867. The self-management consisted of 8 items in which .727 reflects the alpha reliability of the self-management scale and found reliable. The self-monitoring consisted of 9 items thereby .817 shows high reliable value. Motivation consisted 6 items with .730 reflects highly reliable value.

Table 3.7.2

Item Total correlation of self-directed learning (Self-management, Self-monitoring, Motivation) Scale(N=70) pilot testing

Items code	R	Items code	R
SM1	.502**	**SMO5**	.591**
SM2	.440**	**SMO6**	.765**
SM3	.434**	**SMO7**	.441**
SM4	.391**	**SMO8**	.521**
SM5	.404**	**SMO9**	.647**
SM6	.539**	**M1**	.374**
SM7	.375**	**M2**	.506**
SM8	.424**	**M3**	.471**
SMO1	.389**	**M4**	.553**
SMO2	.537**	**M5**	.596**
SMO3	.696**	**M6**	.581**
SMO4	.529**		

The Table 3.7.2 represents the Item Total correlation of Self-directed learning scale. The highest correlation was item SMO6 (.765**) and the lowest correlation was item M1 (.374**).

Table 3.7.3

Inter-Scale Correlation of Self-directed learning (self-management, self-monitoring, motivation) (N=70) Pilot testing.

	Self-management	Self-monitoring	Motivation	Self-directed learning
Self-management	1			
Self-monitoring	.451**	1		
Motivation	.335**	.612**	1	
Self-directed learning	.742**	.889**	.769**	1

The table3.7.3 represents the inter item correlation of Self-Directed Learning scale (QSDL) and its dimensions. The table represents that all items were statistically correlated with each other at 0.01 level of significance. The highest correlation was between Self-Directed Learning scale (QSDL) and self-monitoring (.889**). The lowest correlation was between self-management and motivation (.335**).

Table 3.7.4

Reliability of Research skill scale (QRSS) and its three dimensions (N=70)

Scale	Dimensions	No of Items	Alpha Coefficient
Research Skills		30	.914
	Research attitude	10	.844
	Research activities	10	.821
	Research context	10	.803

Table3.7.4 represents the values of Cronbach's Alpha Reliability of research skills scale and its three dimensions of research skills. The research attitude consisted of 10 items where .844 shows the high alpha reliable value. The research activities comprising 10 items showing .821 the high alpha reliability value. The research context consisted of 10 items with .803 the high alpha reliability value for the current study.

Table 3.7.5

Item Total correlation of Research skills (Research attitude,, Research activities, Research context) Scale(N=70) pilot testing

Items Code	R	Items code	R
RAT1	.474**	**RA6**	.321**
RAT2	.462**	**RA7**	.614**
RAT3	.625**	**RA8**	.585**
RAT4	.595**	**RA9**	.641**
RAT5	.473**	**RA10**	.773**
RAT6	.575**	**RC1**	.468**
RAT7	.653**	**RC2**	.599**
RAT8	.551**	**RC3**	.631**
RAT9	.647**	**RC4**	.528**
RAT10	.583**	**RC5**	.538**
RA1	.480**	**RC6**	.361**
RA2	.473**	**RC7**	.492**
RA3	.412**	**RC8**	.457**
RA4	.512**	**RC9**	.549**
RA5	.597**	**RC10**	.605**

The table3.7.5 represents the Item total correlation of research skills scale. The highest correlation was item RA10 (.773**) and the lowest correlation was item RA6 (.321**).

Table 3.7.6

Inter-Scale Correlation of Research Skills(research attitude,research activities,researchcontext)(N=70)pilot testing

	Research attitude	Research activities	Research context	Research Skills
Research attitude	1			
Research activities	.629**	1		
Research context	.634**	.589**	1	
Research Skills	.875**	.858**	.856**	1

Table 3.7.6 represents the inter item correlation of Research Skills Scale (QRSS) and its dimensions. The table represents that all items were statistically correlated with each other at 0.01 level of significance. The highest correlation was between Research Skills Scale (QRSS) and research attitude (.875**). The lowest correlation was between research activities and research context (.589**).

3.8. Data Collection:

Upon getting permitted from the concerned departments of the selected universities, the researcher collected the data from MS/M.Phil coursework students from three public-sector universities of Islamabad using approved questionnaires. The researcher personally visited the identified universities. 200 questionnaires were disseminated among the students, out of which 175 responses were received.

3.9. Data Analysis

Upon completion of data collection through questionnaires, SPSS was used to analyze the data, various tests were applied to draw findings and results. Specifically Mean and Linear Regression were used by researcher to find out the results.

Table 3.9.1

Table of Research Objectives, Questions, Hypothesis and Tests

Objectives	Question	Hypothesis	Tests
1. To identify self-directed learning of students at higher education level.	What is self-directed learning of students at higher education level?		Mean
2. To investigate the research skills of students at higher education level.	What are research skills of students at higher education level?		Mean
3. To find out the effect of self-directed learning on students' research skills at higher education level.			
		Ho1 There is no significant effect of self-directed learning on students' research skills at higher education level	Linear regression
		Ho1a There is no significant of self-management on student's research skills at higher education level.	Linear regression
		Ho1b There is no significant effect of self-monitoring on students' research skills at higher education level	Linear regression
		Ho1c There is no significant effect of motivation on students' research skills at higher education level	Linear regression

3.10. Research Ethics

Before adapting and using the questionnaire for the current study the researcher took permission from the owners of the research studies from which questionnaires were taken. Permission letters are attached in (Appendix P and Q). Both questionnaires were being validated by the internal and external experts and after their approval the questionnaire was used for the data collection. Before data collection the letters were given to the respondents which assured them that their personal information and data will be kept confidential throughout the study (letter attached as Appendix N).

3.11. Summary

The chapter discussed research approach, design and methodology of the study. The population, sample and research tools used in the study were described. The chapter also discussed the validity and reliability of the tools briefly along with the pilot testing. The method used for data collection and analysis procedure was also explained.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1. Introduction

This chapter highlights data analysis along with interpretation regarding data gathered from respondents of research study on self-directed learning with students' research skills at higher education level. Variables selected for the study are self-directed learning as independent variable and students' research skills as dependent variable at higher education level. It presents an array of statistical tests including demographic statistics (Part I), Descriptive Statistics (Part II), and the use of Inferential Statistics, regression analysis (Part III). An adapted instrument was deployed to measure the given items on Likert scale from 1-5. The survey instrument adapted for this study is based on two sections, section-I deals with self-directed learning and section-II deals with research skills of students.

4.2. Part-I Demographic Statistics

Table 4.1

Gender Wise Demographics (N=175)

Gender	Frequency	Percent
Male	22	12.6
Female	153	87.4
Total	175	100.0

The results indicated above in Table 4.1 showed a total of 175 students that involves 153 (87%) female and 22 male (12%). Female students were in majority the research activities.

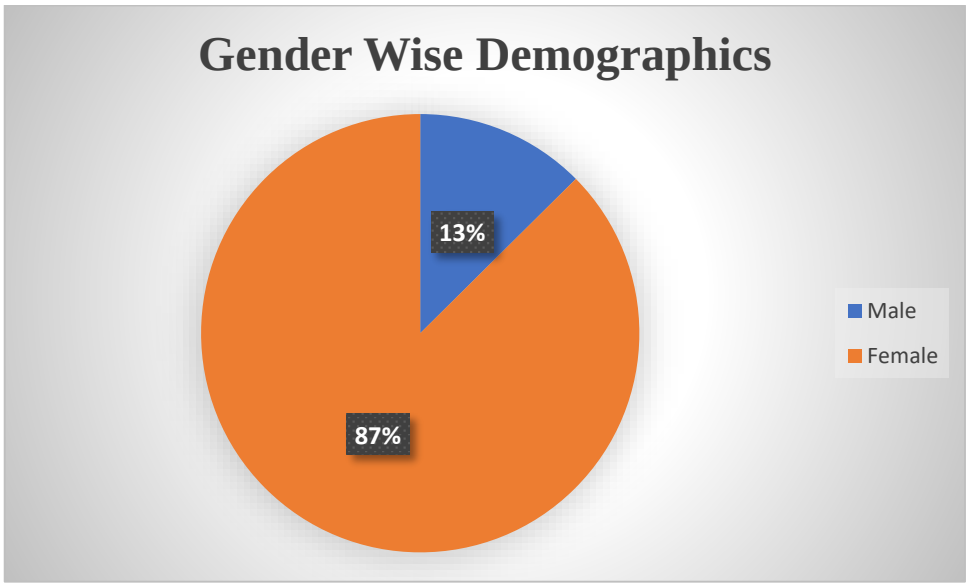

Figure 3

The above pie graph shows that 13% male and 87% female actively participated in the research activity.

Table 4.2

Age (Years) Wise Demographics (N=175)

Age (Years)	Frequency	Percent
Less than 24 Years	60	34.3
24-30 Years	97	55.4
30-35 Years	17	9.7
35-40 Years	1	0.6
Total	175	100.0

The results presented in table 4.2 indicated participation of four age groups of respondents involving total 175 participants in which 97 individuals belonged to 24-30 years, 60 students were > 24 years, 17 respondents belonged to the age group of 30-35 years while 1 (0.6%) had association with age group of 35-40 years.

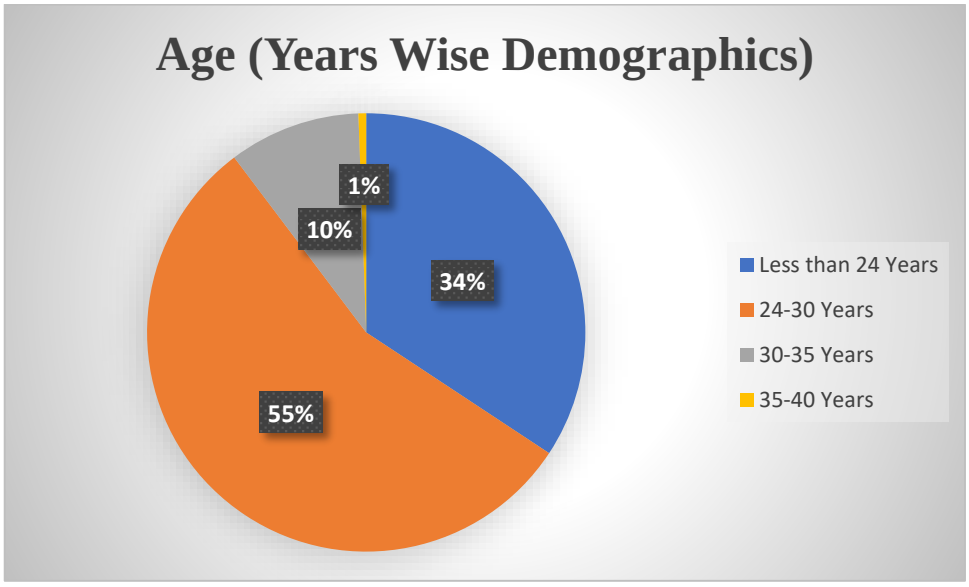

Figure 4

The above pie chart indicates that 55% respondents belong to the age group of 24 -30 which is higher as compared to rest of the age groups.

Table 4.3

University Type Demographics (N=175)

University	Frequency	Percent
NUML University, Islamabad	59	33.7
International Islamic University, Islamabad	71	40.6
Air University, Islamabad	45	25.7
Total	175	100.0

The results presented in above given Table 4.3 revealed University wise participation of students as the total number of students 175 (N) out of which 40% (71) belong to the International Islamic University, Islamabad, 33% (59) represented NUML University, Islamabad and 25% students (45) were from Air University, Islamabad of university individually.

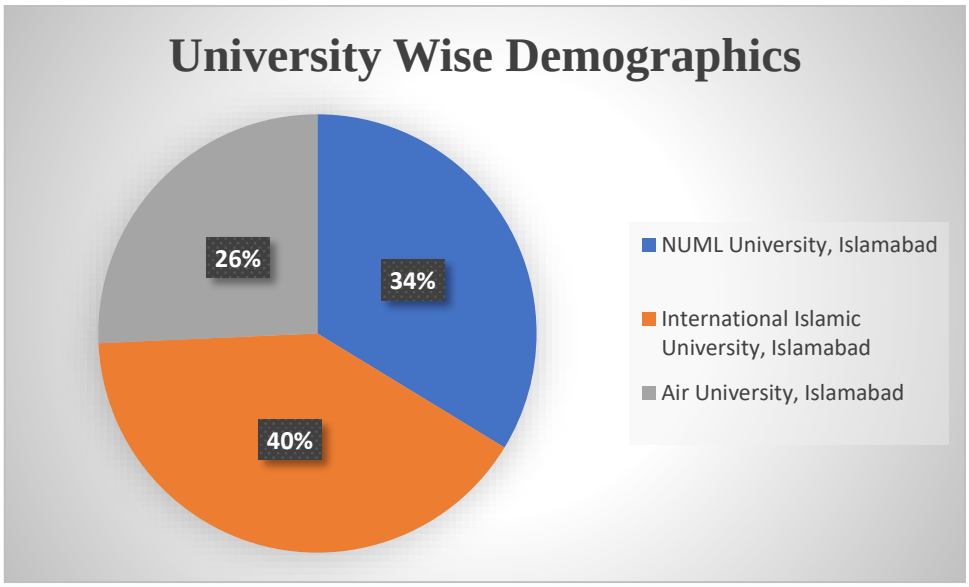

Figure 5

The given pie chart presents the above given results in graphical format. The respondents from the International Islamic University, Islamabad were in high percentage at 40%.

Table 4.4

Faculty Wise Demographics (N=175)

Faculty	Frequency	Percent
Faculty of English	43	24.6
Faculty of Social Sciences	80	45.7
Faculty of Management Sciences	52	29.7
Total	175	100.0

The results showed in Table 4.4 presented faculty wise participation of faculty in which 80 participants (45%) from the faculty of social sciences were more than 52 (29%) from among the faculty of management sciences and 43 (24.6%) from faculty of English department.

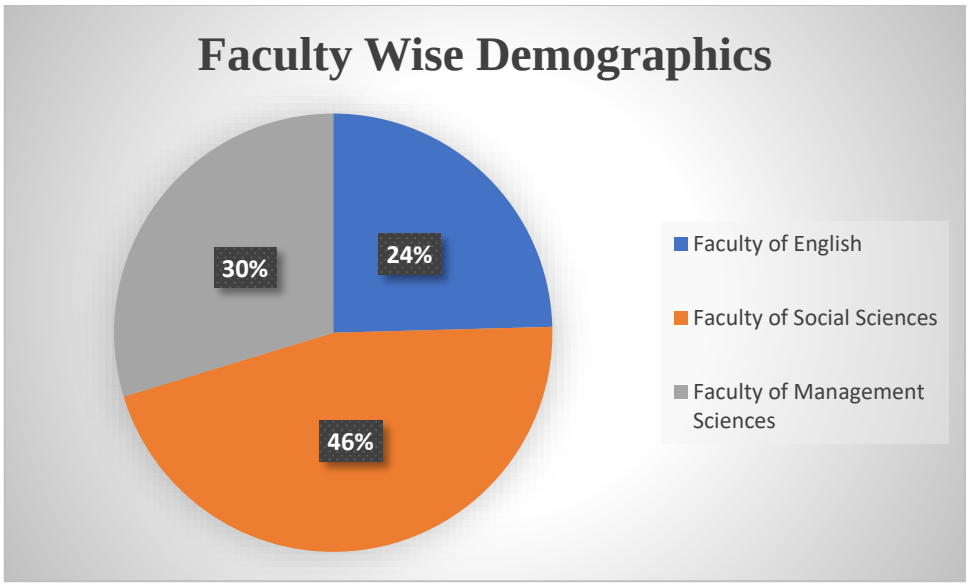

Figure 6

The above pie chart presents results of table 4.4 in graphical format; it presents 80 participants (45%) from the faculty of social sciences that were in majority than the other faculty.

Table 4.5

Departments Wise Demographics (N=175)

Departments	Frequency	Percent
English	43	24.6
Education	40	22.9
Psychology	40	22.9
Management Sciences	52	29.7
Total	175	100.0

The results showed in Table 4.5 given department wise distribution of a total sample of 175 research respondents that had high participation 52 (29%) from management sciences department compared to 43 (24%) from English department and 40 students (23%) from psychology and education departments respectively.

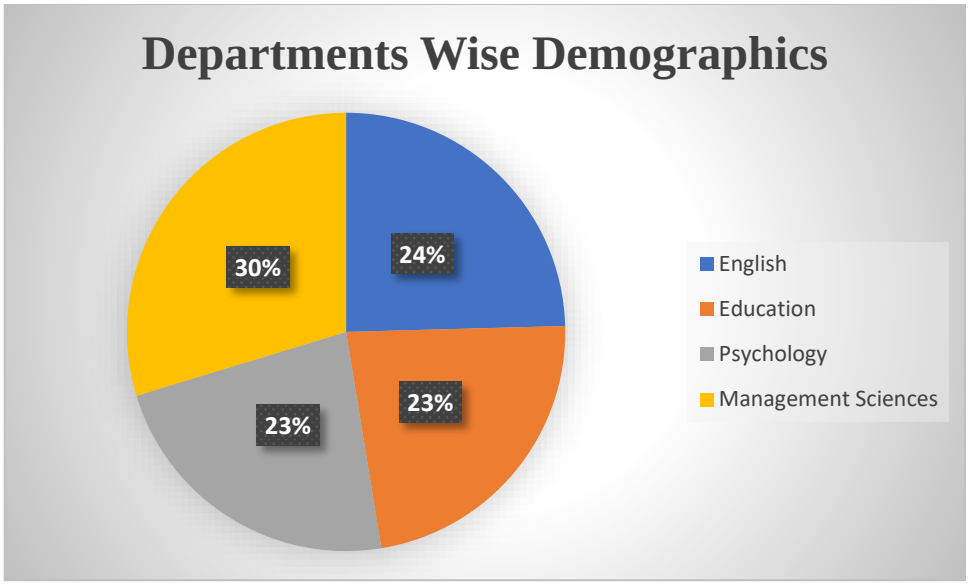

Figure 7

The results presented in table 4.5 depicted in pie chart format where yellow pie indicates the high number of participation (30%).

Table 4.6

Qualification Wise Demographics (N=175)

Qualification	Frequency	Percent
BS	88	50.3
M.A	50	28.6
Others	37	21.1
Total	175	100.0

The results presented in Table 4.6 indicated qualification wise distribution of respondents in which 88 (50%) had BS level qualification, 50 (28%) had M.A level qualification and 37 (21%) had others' level qualification.

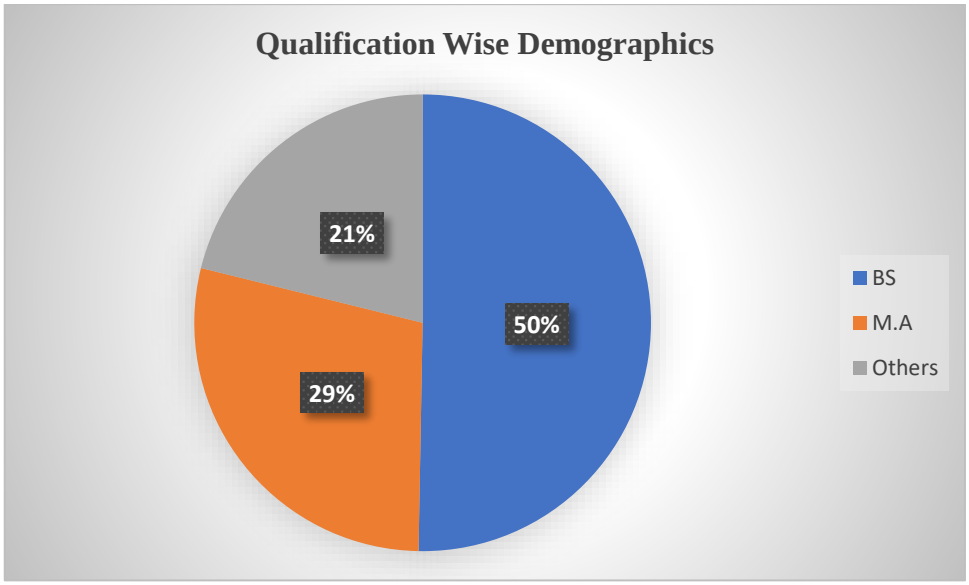

Figure 8

The results presented in Table 4.6 are depicted by pie chart in which blue pie shows majority of respondents 50% had BS level qualification.

4.3. Part-II Descriptive Statistics

Objective # 1: To identify self- directed learning of students' at higher education level.

Question 1: What is self-directed learning of students at higher education level?

Table 4.7

Descriptive Statistics (N=175)

Descriptive Statistics	Mean	Remarks
Self-Directed Learning	3.73	Agree
Self-Management	3.60	Agree
Self-Monitoring	3.77	Agree
Motivation	3.83	Agree

The above table 4.7 presents results in form of descriptive statistics covering variables investigated in the research study therein motivation presents high mean value 3.83 and self-Monitoring gives an output mean value 3.77. Self-Management, however presents low mean value at 3.60. Overall mean score of self-directed learning is 3.73. That reflects that students have abilities of self-directed learning.

Objective # 2: To investigate research skills of students' at higher education level.

Question 2: What are research skills of students at higher education level?

Table 4.8

Descriptive Statistics (N=175)

Descriptive Statistics	Mean	Remarks
Research Skills	3.69	Agree
Research Attitude	3.82	Agree
Research Activities	3.56	Agree
Research Context	3.70	Agree

The above table 4.8 provided results in form of descriptive statistics covering variables investigated in the research study. Research attitude presents higher mean value 3.82; research context gives an output mean value 3.70. Research activities, however presented low mean value at 3.56. This indicates that research activities were found the lag area that requires

attention. Overall mean value of research skills is 3.69. That indicates that students possess moderate research skills.

4.4. Part- III Inferential statistics

Regression Analysis

Effect of self-directed learning on students' research skills and effect of three dimensions of self-directed learning.

Objective # 3: To find out the effect of self-directed learning on students' research skills at higher education level.

$H_0$1 There is no significant effect of self-directed learning on students' research skills at higher education level.

Table 4.9

Coefficients Research Skills				
Self-Directed	β	t-value	Sig.	R Square
Learning	.757	13.489	.000[b]	.513

Results given in Table 4.10 showed that regression coefficient values at Beta value=.757, t=13.489 with *p* value .000 reflect the correlation between Self-Directed Learning and Research Skills (N=175) while R^2 value at .513 indicates 1% variation in Self-Directed Learning brings a change in research skills to the extent of 51%. On the basis of these results, H02 ‘‘There is no significant effect of self-directed learning on students' research skills at higher education level’’ stand rejected.

Hº1a "There is no significant effect of self-management on students' research skills at higher education level".

Table 4.10

Coefficients				
	Research Skills			
Self-Management	β	t-value	Sig.	R Square
	.501	8.530	.000[b]	.296

Results outlined above in table 4.10 showed that regression coefficient values at Beta value=.501, t=8.530 at *p* value .000 reflects the correlation between Self-Management and Research Skills (N=175) while R^2 value at .296 indicates variation in single element of self-management as a result of applying research skills to the extent of 29%. In view of these clear results, the hypothesis H^o2a There is no significant effect of self-management on students' research skills at higher education level **stand rejected.**

Hº1b ''There is no significant effect of self-monitoring on students' research skills at higher education level".

Table 4.11

Coefficients				
	Research Skills			
Self-Monitoring	β	t-value	Sig.	R Square
	.661	11.766	.000[b]	.445

Results drawn above displayed that regression coefficient values at Beta value=.661, t=11.766 at *p* value .000 reflect the correlation between Self-Monitoring and Research Skills (N=175) while R^2 value at .445 indicates variation in single element of self-Monitoring as a result of research skills to the extent of 44%. These results indicate that the hypothesis $H^0$1b ''There is no significant effect of self-monitoring on students' research skills at higher education level'' stand rejected.

H^{o1}c ‘‘There is no significant effect of motivation on students’ research skills at higher education level.’’

Table 4.12

Coefficients				
Research Skills				
Motivation	β	t-value	Sig.	R Square
	.613	12.410	.000[b]	.471

Results showed that regression coefficient values at Beta value=.613, t=12.410 at *p* value .000 presented the correlation between Motivation and Research Skills (N=175) while R^2 value at .471 indicated variation in single element of Motivation as a result of research skills to the extent of 47%. These results indicate that the hypothesis $H^0$2c ‘‘There is no significant effect of motivation on students’ research skills at higher education level’’ **stand rejected.**

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1. Summary

The study targeted to explore the effect of self-directed learning on research skills of students of higher education. The researcher established conceptual frame work based on SDL and research skills.

Self-directed-learning was independent variable of the study consisting three dimensions (self-management, self-monitoring and motivation) and research skills was dependent variable of the study consisting three dimensions (research attitude, research activities and research context). The researcher used two adapted questionnaires, questionnaire on self-directed learning by (Fattah, 2010) and questionnaire on research skills of students by (Griffioen, 2020). The questionnaire had three main sections. First section was based on the demographical information, second section was related to SDL and third section related to research skills of students having Likert scale of 1-5 range. The reliability of tools were checked through pilot testing and validity were confirmed by the experts, after that the tools were used for the data collection.

It was a quantitative approach with descriptive research design. The data was collected through survey from the students of higher education. Target population of the study were 319 MS/M.Phil students of three faculties involving four departments of three public sector universities of Islamabad. From the population, 175 students were selected as the sample of the study. The study comprised of three objectives, two research questions, four null hypotheses and the data was analyzed through SPSS to find out the results.

According to the null hypotheses, there exists insignificant effect of SDL on research skills of students in higher education. However, results obtained from the perception of participant students do not support the hypotheses, therefore, null hypotheses stand rejected.

5.2. Findings of Demographics

Demographics included for this study was based on gender, age, qualification, type of university, type of faculty, and department wise. Amid the sample size of 175 (n) students, the total number of males that participated in the study as respondents were 22 (12%) and 153 (87%) were female students. Female students were found in majority with 87% as compared to males

1. Regarding age demography, it was found that respondents that participated in the study were 97 (55%) belonged to 24-30 years of age, 60 (34%) were having less than 24 years of age, 17 (9.7%) were of 30-35 years of age and 1 respondent was of 30-40 years of age majority of the students were of 24-30 years of age group.
2. Regarding type of university, the respondents those participated in the study were 71 (40%) from International Islamic University Islamabad, 59 (33%) from National University of Modern Languages and 45 (25%) from Air university.
3. Respondents those participated in the study were 80 (45%) from faculty of Social Sciences, 52 (29%) from Management Sciences and 43(24%) from faculty of English.
4. On department demography, the respondents from department of Management Sciences were 52 (29%), department of English were 43 (24%), department of education were 40 (22%), and department of psychology were also 40 (22%).
5. Qualification wise, the respondents who had BS qualification were 88 (50%), M.A were 50 (28%), and those who had belonging to others were 37 (21%).

5.2.1. Findings of objectives

Objective # 1 To identify self- directed learning of students at higher education level.

The results elucidated that the motivation presents high mean value 3.83 and self-monitoring gave an output mean value 3.77 while self-Management, presented low mean value 3.60. Overall mean value of self-directed learning is 3.73. That indicates that students' possess abilities of self-directed learning.

Objective # 2 To investigate research skills of students at higher education level.

The results provided evidence that research attitude presented high mean value 3.82, research context gave an output mean value 3.70. Research activities, offered low mean value at 3.566.

Overall mean score of research skills is 3.69. That reflects that students' own moderate research skills.

Objective # 3 ''To find out the effect of self-directed learning on students' research skills at higher education level.''

Results given in Table 4.9 showed that regression coefficient Beta value=.757, t=13.489 with *p* value .000 that reflect the correlation between self-directed learning and research skills, while R^2 value at .513 that indicates 1% variation in self-directed learning brings change in research skills to the extent of 51%.

Table 4.10 showed that regression coefficient value at Beta value= .501, t= 8.530 with *p* value .000 that reflect the correlation between self-directed learning and self-management, while R^2 value at .296 indicates variation in single element of self-management as a result of research skills to the extent of 29%.

Table 4.11 displaying the regression coefficient Beta value=.661, t=11.766 at p value .000 reflects the correlation between self-monitoring and research skills, while R^2 value at .445 indicates variation in single element of self-monitoring as a result of research skills to the extent of 44%.

Table 4.12 displays that regression coefficient value at Beta value=.613, t=12.410 at *p* value .000 that reflect correlation between motivation and research skills, while R^2 value at .471 indicates variation in single element of Motivation as a result of research skills to the extent of 47%.

The results showed that SDL along with its constituent elements such as self-management, self-monitoring and motivation significantly affects research skills of students of higher education hence, the assumed hypotheses Ho1- Ho1c found rejected.

5.3. Discussion

The current research aimed to discover the effects of SDL on students' research skills at higher education level. SDL of students of higher education was selected as independent variable and measured through items such as self-management, self-monitoring, & motivation while students' research skills were selected as dependent variable measured through research attitude, research activities, & research context.

According to the 1st objective, there was to identify self-directed learning of students at higher education level, The results confirm the findings of researchers those believe that SDL aided by personal characteristics self-management, self-monitoring and motivation borne by students of higher education significantly affects their research skills, the results supported the conviction given by earlier research of Cazan & Schiopca, (2014) that SDL and personality traits of students affect their academic achievements.

According to the 2nd objective, there was required to investigate research skills of students at higher education level. The results revealed that student possesses moderate level research skills that supported the 2nd objective and also in line with findings of Rubio et al., (2018) that research found that students get competency in research skills. The current results and the previous studies supported the objective No: 2.

According to the 3rd objective, there was to find the effect of self- directed learning on research skills of students, the results highlighted that a significant effect existed; results indicated variation in SDL as a result of change in research skills. Chou, (2012) found earlier that owing to the presence of a significant association between self-directed learning of engineering students with learning performance, a study tested the effect of students' major curriculum. Data analysis showed a significant relationship was found between SDL abilities of students and learning performance (Chou, 2012). The results supported the objective No: 3 that stresses upon to find out the effect Self-directed learning on students' research skills at higher education. The results are consistently in line of the results presented by Chou, (2012) that SDL positively effects students' abilities and their learning performances.

It is broadly understood that learning is a lifelong process while SDL is a vibrant activity with its essential knowledge base undertakes rapid change that empowers a learner either student or practitioners, to get self-education and keep himself up to date. Research acknowledges self-directed learning as a method that particularly linked with teaching-learning emphasizing upon to generate research skills that contributes to learn new facts and retain these to recollect in the classroom setting (Tekkol, 2018). SDL therefore, refers to a process that enables individuals to take initiative on their own without seeking assistance from others in order to diagnose their needs to learn, to develop learning goals, involvement of human as well as material resources required for learning, devising pertinent strategies to select and implement, and evaluate learning outcomes; in other words, they owe complete responsibility to regulate their indigenous learning (Stewart, 2007).

The results presented by a study revealed that SDL skills does not vary with gender, university, study tenure, level of income, university score, and academic success among university students (Tekkol & Demirel, 2018). Based on these results, results presented by our research confirm the results of Tekkol & Demirel, (2018); moreover, our findings are in line of the results given by Knowles et al., (2005) that considers SDL as an indigenous form of learning based on life experiences not any particular skills thereby it was hypothesized to investigate the effects of SDL on research skills at higher education level, results did not prove this hypothesis hence, stand rejected.

Empirical findings provided evidence that certain skills like self-management, self-monitoring, & motivation promote SDL while specific courses intend to expedite students' research skills.

According to (Rascón-Hernán, 2019), SDL provide a major resource to develop the skills pertinent to advance professional career. In the backdrop of traditional learning, SDL related skills are must to acquire to gain learning. To accomplish this, a design configured with the needs of the time is imperative to transform the conventional process of education. As a nutshell, it can be deduced that, students of higher education may focus to learn research skills that could enhance self-supportive desire of learning.

5.4. Conclusion

According, to the first objective it is was to identify self-directed learning of students at higher education level, the findings lead to conclude that students possess abilities of self-directed learning. The second objective was to investigate research skills of students at higher education level, the findings lead to conclude that students possess moderate research skills. The third objective was to find out the effect of Self-directed learning on students' research skills at higher education level, findings lead to conclude that there exist significant effects of self-directed learning on research skills of students in higher education. Similarly, results signify that there exist significant effects of self-management on research skills of students in higher education, there exist significant effects of self-monitoring on research skills of students in higher education and there exist significant effects of motivation on research skills of students in higher education. It is recommended that a better self-directed learning model provides a useful account to measure the association amid SDL and students' research skills

The higher education students taken as sample for the current study showed high keenness to get self-directed learning. To give training to students in getting more skills to promote their

competency to become self-driven emerges as a key part of the process of teacher-students' learning. This type of training requires reinforcement in universities needs to be reinforced to develop learning autonomy among students, and make them competent for future assignments. Moreover, Self-directed learning as considered a skill that steers the students to go for learning on self-direction basis. Such skills oblige to teach meaningful lifetime learning. An SDL model provides a useful assessment model to measure the linkage of SDL with research skills orientation among students of higher education. This will contribute to enhance the academic performance of learners those may take on self-directed path.

5.5. Recommendations

Drawn from the above deliberations and findings of this study, the following recommendations are suggested to implement:

1. HEC and universities may organize workshops and seminars that could grant student learning autonomy to support their self-directed learning.
2. Universities may conduct counselling sessions to develop self-directed learning behavior among students.
3. Students need to participate in their education program whole-heartedly to learn new research skills.
4. Universities may focus on 'teachers-guided learning programs' to make students responsible and seek professional competences related with their career and other future needs.
5. Higher education institutions may improve their curriculum making it more professional and practical to make students self-directed to attain learning. Here, teachers have their natural role to play and that is, to assess students' willingness to learn. Students those are more motivated and have quest to learn they can become a good self-directed learner.
6. HEC curriculum may be improved steadily enabling students to improve their research skills.

Table 5.1

Objective	Findings	Conclusion	Recommendations
Objective 1 To identify self- directed learning of students at higher education level.	The results gave mean score of SDL at 3.73 as presented in Table 4.7	The present research confirmed that self-directed learning proceeds independent effects on research skills of students at higher education.	HEC and universities may organize workshops and seminars that could grant students learning autonomy to support their SDL.
Objective 2 To investigate research skills of students at higher education level.	The results exhibited the mean score of research skills at 3.69 illustrated in (Table 4.8).	It is required from students of higher education to become self-directed learners to improve their research skills.	Higher education curriculum should be improved steadily enabling students to improve their research skills.
Objective 3 To find out the effect of self-directed learning on students' research skills at higher education level.	The linear regression results highlighted a significant effect as given in Table 4.12. R^2 value at .513 further indicates variation in SDL in research skills to the extent of 51%.	High tendency of learning as self-directed learner tends to effect students' research skills better at higher education activity	Universities may focus on teachers-guided learning programs' to make students responsible and seek professional competences related with their career and other future needs.

5.6. Suggestions for Future Researchers

1. The current research selected self-directed learning (SDL) as independent variable and research skills as dependent variable and sought to examine the association of SDL and research skills, future research may include some more variables like moderating and mediating to determine the causal effects among these variables.
2. Moreover, this research took students of higher education as the unit of analysis, future research may consider type of any particular university, study tenure, level of income, role of gender, area of study, academic achievements and quest to achieve higher education that may create difference of SDL efforts among students.
3. This study selected cross sectional research design (collection of data at one time); future research may consider longitudinal research design (collection of data at different stages).
4. This study adopted quantitative research approach to get tangible numerical evidence; future research may go with qualitative method of research to get more insights of the issue.

5.7. Limitations

The first limitation faced by the researcher was on the selection of research students. The researcher intended to select students engaged in research, but due to access restraints and lack of information, students of MS/M.Phil course work session, 2021 were targeted for this study. This study adopted descriptive research design, further study can be conducted on experimental research design by future researchers. Moreover, another limitation was that the study was limited to only Islamabad based public sector universities.

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Appendices

APPENDIX-A

NATIONAL UNIVERSITY OF MODERN LANGUAGES
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF EDUCATION

M.L.1-3/Edu/2021 Dated: 02-07-2021

To: Ifra Ishtiaq,
1790/MPhil/Edu/F-19

Subject: **APPROVAL OF M.PHIL THESIS TOPIC, AND SUPERVISOR**

1. Reference to Letter No, M.L.1-3/Edu/2021/, dated 16-02-2021, the Higher Authority has approved the topic and supervisor on the recommendation of Faculty Board of Studies vide its meeting held on 11 February 2021 & Board of Advanced Studies and Research dated 02-06-2021

   a. **Supervisor's Name & Designation**
   Dr. Farkhanda Tabassum,
   Assistant Professor,
   Department of Education NUML, Islamabad.

   b. **Topic of Thesis**
   Effect of Self-Directed Learning on Students' Research Skills at Higher Education Level

2. You may carry out research on the given topic under the guidance of your Supervisor and Submitted the thesis for further evaluation within the stipulated time. It is to inform you that your thesis should be submitted within described period by **31st July 2022** positively for further necessary action please.

3. As per policy of NUML, all MPhil/PhD Thesis is to be run on turnitin by QEC of NUML before being sent for evaluation. The university shall not take any responsibility for high similarity resulting due to thesis run from own sources.

4. Thesis is to be prepared strictly on NUML's format that can be taken from Coordinator, Department of Education

Telephone No: 051-9265100-110 Ext: 2090
E-mail: hod-edu@numl.edu.pk

Dr. Wajeeha Shahid
Head,
Department of Education

CC:

Dr. Farkhanda Tabassum

Ms. Ifra Ishtiaq

APPENDIX-B

DEPARTMENT OF EDUCATION
FACULTY OF SOCIAL SCIENCES
National University of Modern Languages
Sector H-9, Islamabad
Tel.No: 051-9265100 Ext: 2090

ML.1-3/2021-Edu/813

Dated: 26-08-2021

WHOM SO EVER IT MAY CONCERN

Mr. Ifra Ishtiaq D/O Ishtiaq Ahmed, students of M.Phil (Edu) Department of Education National University of Modern Languages Islamabad is engaged in project of Research Work.

She may please be allowed to visit your Institution to obtain the required information for her Research Work.

This information shall not be divulged to any unauthorized person or agency. It shall be kept confidential.

26/8/21

Dr Wajeeha Shahid
Head,
Department of Education.

National University of Modern Languages Education Deptt H-9, Islamabad

APPENDIX-C

Letter of Request for Tool Validation

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

Subject: <u>Request for Validity</u>

Respected Ma'am,

I Ifra Ishtiaq MPhil scholar from education department is currently working on my research entitled: (Effect of Self-Directed learning on Students' Research Skills at Higher Education Level). Questionnaire as instrument will be used in the said research. In view with this, the researcher requests you to please use your expertise to validate the attached adapted questionnaire to qualify for condition. Knowing your experience in the field of research and education, I request you to please help me in validating the said instrument before administrating it to the participants of the study.

I have attached validation sheet along with the questionnaire. I will be thankful to hear your suggestions and comments for the improvement of the instrument.

I am looking forward that my request would merit your positive response. Your positive response is highly appreciated.

Thank you.

Very Truly Yours,

Ifra Ishtiaq

MPhil scholar, Department of Education

National University of Modern Languages,

Islamabad.

APPENDIX- D

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences
National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Marium Din
Designation: Assistant Professor
Institution: NUML
Signature: Marium Din
Date: 27/09/2021

APPENDIX -E

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Shazia Zameer

Designation: Assistant professor

Institution: NumL

Signature:

Date: 3-11-21

APPENDIX -F

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Amjad Rehman

Designation: Assistant Professor

Institution: IER

Signature:

Date: 6/10/2021

APPENDIX -G

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Prof. Dr. Arshad Ali

Designation: Professor

Institution: IER, UOP.

Signature:

Date: 05/10/2021

APPENDIX -H

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Sadaf Zamir Ahmed
Designation: Assistant Professor
Institution: Air University, I&D.
Signature: Sadaf-Zamir
Date: 22-9-2021

APPENDIX –I

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Qurat-ul-ain

Designation: Assistant Professor

Institution: NUML

Signature: _____

Date: 26-8-2021

APPRNDIX -J

CERTIFICATE OF VALIDITY

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

It is hereby certified that the tool adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate face and content validity according to the purpose of the research, and it may be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Azhar Mahmood

Designation: Associate Professor

Institution: IIUI

Signature: _____

Date: _____

Dr. Azhar Mahmood
Chairman, Department of Education
International Islamic University
Islamabad

APPENDIX -K

CERTIFICATE OF VALIDITY

Topic: Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

By: Ifra Ishtiaq

M.Phil. scholar, Department of Education, Faculty of Social Sciences

National University of Modern Languages, H-9, Islamabad, Pakistan.

This is certify that the inventory adapted by the scholar towards her thesis has been assessed by me and I find it to have been designed adequately for data collection for students at higher education level.

It is considered that the research instrument, adapted for the above mentioned title, is according to objectives of the research, assured adequate construct and content validity according to the purpose of the research, and can be used for data collection by the researcher with fair amount of confidence.

Name: Dr. Tameela Ashraf

Designation: Lecturer

Institution: NUML

Signature:

Date: 11-08-2021

APPENDIX -L

List of public sector universities of Islamabad

Sr.No.	Name of universities
1	Air University
2	Allama Iqbal Open University
3	Bahria University
4	Comsats University
5	Federal Urdu University of Arts, Sciences and Technology
6	Institute of Space and Technology
7	International Islamic University
8	National Defence University
9	National University of Modern Languages
10	National University of Science and Technology
11	Pakistan Institute of Development Ecnomics
12	Pakistan Institute of Engineering and Applied Sciences
13	Quaid-e-Azam University
14	National Skills University
15	National University of Technology (NUTECH)
16	Health Services Acadmey,Islamabad
17	Shaheed Zulfiqar Ali Bhutto Medical University

Source: https://hec.gov.pk/

APPENDIX -M

Krejce and Morgan Table

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Appendix N

Cover Letter for Questionnaire

Effect of Self-Directed learning on Students' Research Skills at Higher Education Level

Dear Respondent,

I am MPhil scholar from Department of Education, National University of modern languages Islamabad, working on my research thesis on the above topic. The questionnaire in hand is developed to collect data for my MPhil research work. You are requested to give your response against the opinions ranging from SD, D, N, A, SA indicating your preferences of responses. Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree.

You are requested to fill in the questionnaire attached. It is assured that your responses will be kept confidential and will not be disclosed to any person or authority, the information will be used for the purpose of research work only.

Thank you.

Ifra Ishtiaq

MPhil scholar, Department of Education

National University of Modern Languages

Islamabad

Appendix -O

Section 1

Demographic variables:

1. Gender: 1.Male ☐ 2.Female ☐

2. Age (Years):

1. Less than 24	2. 24-30	3. 30-35	4. 35-40	5. More than 40

3. University:

4. Faculty:

1.Faulty of English	2.Faculty of social sciences	3. Faculty of management sciences

5. Department:

1.English	2.Education	3.Psychology	4. Management sciences

6. Qualification:

1.BS	2. M.A	3.Others

Section 2

Questionnaire about self-directed learning (QSDL)

Please tick any one of the following options for each statement.

5= Strongly Agree 4= Agree 3=Neutral

2= Disagree 1= Strongly Disagree

Self-directed learning

Self- directed learning is a process of learning in which learners undertake the control to implement, plan and examine their learning activities.

Self-management: Self-management is known as self-control .Having control on your emotions, thoughts and behaviour in multiple conditions refers to self-management.							
S.no	**Code**	**Statements**	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	SM1	I am well-organized in my learning.	**1**	**2**	**3**	**4**	**5**
2	SM2	I set up strict time frames to learn something new.	**1**	**2**	**3**	**4**	**5**
3	SM3	I have good management skills.	**1**	**2**	**3**	**4**	**5**
4	SM4	I set up planned solutions to solve my problems.	**1**	**2**	**3**	**4**	**5**
5	SM5	I can decide about the priority of my learning.	**1**	**2**	**3**	**4**	**5**
6	SM6	I can manage pursuing my own learning.	**1**	**2**	**3**	**4**	**5**
7	SM7	I prefer to plan my own learning.	**1**	**2**	**3**	**4**	**5**
8	SM8	I am efficient in managing my time for learning.	**1**	**2**	**3**	**4**	**5**

Self-monitoring: Self- monitoring is a habit that evaluates someone's thoughts and behaviour to control the performance in different areas**.**							
9	SMO1	I am aware of my own weaknesses in learning.	**1**	**2**	**3**	**4**	**5**
10	SMO2	I can link pieces of information when I am learning.	**1**	**2**	**3**	**4**	**5**
11	SMO3	I pay attention to all details before taking a decision.	**1**	**2**	**3**	**4**	**5**
12	SMO4	I would like to evaluate the level of my learning process.	**1**	**2**	**3**	**4**	**5**
13	SMO5	I correct myself when I make mistakes.	**1**	**2**	**3**	**4**	**5**
14	SMO6	I take responsibilities of my learning.	**1**	**2**	**3**	**4**	**5**
15	SMO7	I judge my abilities fairly.	**1**	**2**	**3**	**4**	**5**
16	SMO8	I think deeply when solving a problem.	**1**	**2**	**3**	**4**	**5**
17	SMO9	I prefer to set up my criteria to evaluate my performance.	**1**	**2**	**3**	**4**	**5**

Motivation: It encourages individuals to bring changes in their performance and energy output that satisfies their needs.							
18	M1	I trust my abilities to learn new things.	**1**	**2**	**3**	**4**	**5**
19	M2	I am a 'why' person to understand what I have learnt.	**1**	**2**	**3**	**4**	**5**
20	M3	I critically evaluate new ideas and knowledge.	**1**	**2**	**3**	**4**	**5**
21	M4	I like to evaluate the level of my learning progress.	**1**	**2**	**3**	**4**	**5**
22	M5	I like to learn from my mistakes.	**1**	**2**	**3**	**4**	**5**
23	M6	I believe in effort to improve my performance.	**1**	**2**	**3**	**4**	**5**

Section 3

Questionnaire about Research Skills of students (QRSS)

Please tick any one of the following options for each statement.

5= Strongly Agree 4= Agree 3=Neutral
2= Disagree 1= Strongly Disagree

Research skills: It means to find the solution to the problems and collecting information related to the topic and analyzing and interpreting the information to get the solution.

Research attitude: It contains elements such as beliefs, knowledge related to negative and positive behaviour of the people.

S. no	Code	Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	RAT1	I am aware of relevant results of research.	**1**	**2**	**3**	**4**	**5**
2	RAT2	I have to learn how to do research.	**1**	**2**	**3**	**4**	**5**
3	RAT3	I need to be able to address a problem through research.	**1**	**2**	**3**	**4**	**5**
4	RAT4	I develop useful knowledge through research.	**1**	**2**	**3**	**4**	**5**
5	RAT5	I remain critical about my own research practices.	**1**	**2**	**3**	**4**	**5**
6	RAT6	I consider cognitive attitude is important towards my research work.	**1**	**2**	**3**	**4**	**5**
7	RAT7	I learn to improve my knowledge through research.	**1**	**2**	**3**	**4**	**5**
8	RAT8	I consider research an effective way to learn something new.	**1**	**2**	**3**	**4**	**5**
9	RAT9	I am fascinated to learn new research skills.	**1**	**2**	**3**	**4**	**5**

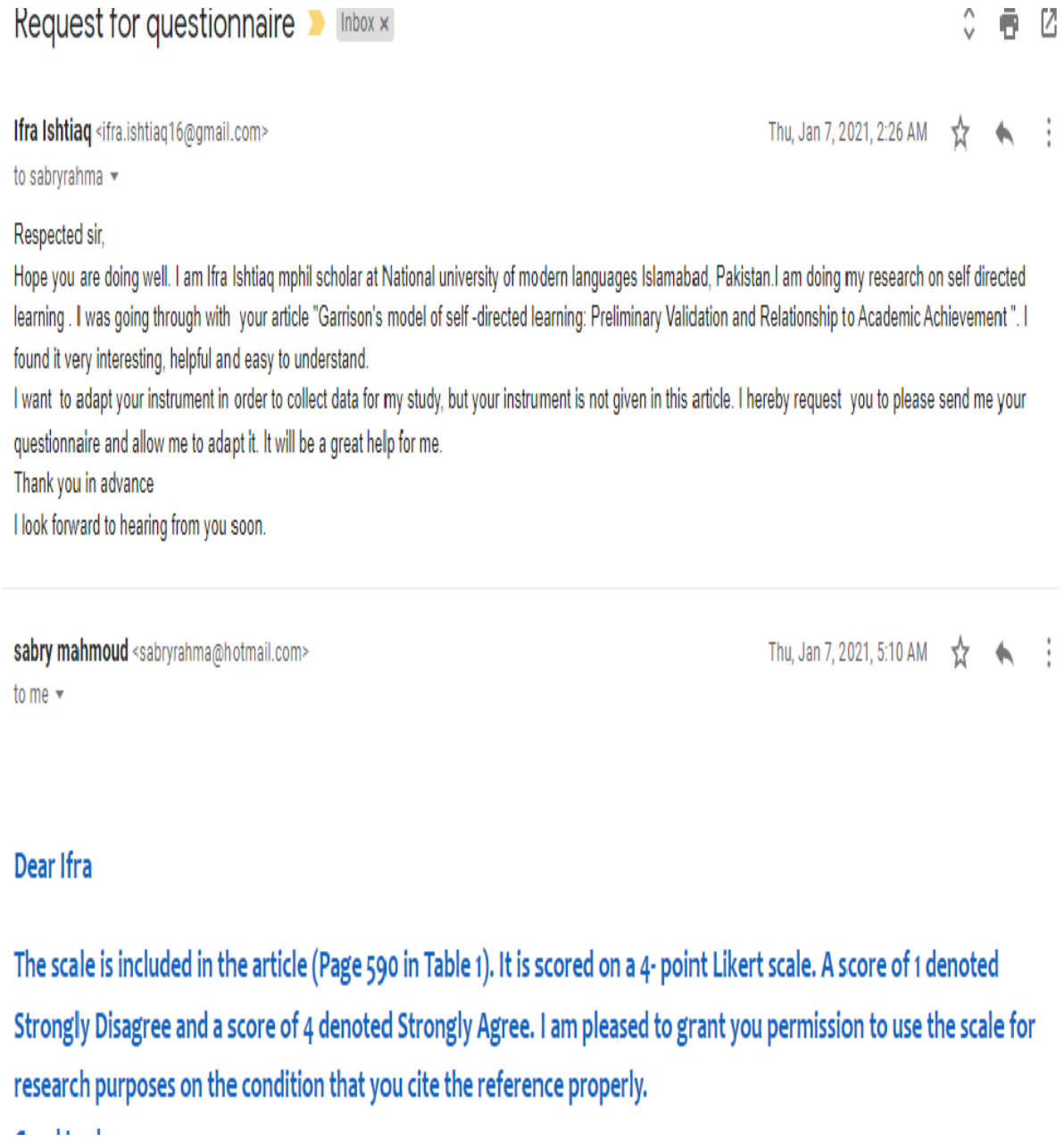
10	RAT10	I find research effective for my professional life in future.	**1**	**2**	**3**	**4**	**5**

Research activities: Research activities refer to those activities which ensure the formation of new knowledge or utilize the existing knowledge in fresh, innovative and artistic way, in order to produce new concepts, understanding and methodologies.							
11	RA1	I read articles of researchers for learning research skills.	**1**	**2**	**3**	**4**	**5**
12	RA2	I utilize library facilities for research activities.	**1**	**2**	**3**	**4**	**5**
13	RA3	I attend conferences where research is presented	**1**	**2**	**3**	**4**	**5**
14	RA4	I participate in research as a learner.	**1**	**2**	**3**	**4**	**5**
15	RA5	I find it helpful to learn research techniques for my upcoming research work.	**1**	**2**	**3**	**4**	**5**
16	RA6	I write articles to improve my academic writing.	**1**	**2**	**3**	**4**	**5**
17	RA7	I find it important to foster research activities to make graduate students able to take responsibility of their research work competently.	**1**	**2**	**3**	**4**	**5**
18	RA8	I engage myself in research activities.	**1**	**2**	**3**	**4**	**5**
19	RA9	Research activities are fruitful for me.	**1**	**2**	**3**	**4**	**5**
20	RA10	Research activities enhance my research skills.	**1**	**2**	**3**	**4**	**5**

Research context: The research context is credited as a lens through which, the findings, arguments, methodological approach along with conclusion and recommendations of the ongoing study can be viewed.							
21	RC1	In my educational program I learn to do proper research.	**1**	**2**	**3**	**4**	**5**
22	RC2	I know when to get help from my teachers in research work.	**1**	**2**	**3**	**4**	**5**
23	RC3	I am satisfied with the quality of research in my educational program.	**1**	**2**	**3**	**4**	**5**
24	RC4	My teachers base their lecture on knowledge from research.	**1**	**2**	**3**	**4**	**5**
25	RC5	I get help from the research work of my teachers which they discuss with me.	**1**	**2**	**3**	**4**	**5**
26	RC6	I can independently work on research project assigned by my teachers.	**1**	**2**	**3**	**4**	**5**
27	RC7	I meet expectations of my research teacher.	**1**	**2**	**3**	**4**	**5**
28	RC8	The research reputation of my university plays a role in my choice of education.	**1**	**2**	**3**	**4**	**5**
29	RC9	My research skills are enhanced by the presence of research culture at my university.	**1**	**2**	**3**	**4**	**5**
30	RC10	I get benefits from the facilities of research provided by university.	**1**	**2**	**3**	**4**	**5**

Thank you

APPENDIX -P



Request for questionnaire Inbox ×

Ifra Ishtiaq <ifra.ishtiaq16@gmail.com> Thu, Jan 7, 2021, 2:26 AM

to sabryrahma

Respected sir,

Hope you are doing well. I am Ifra Ishtiaq mphil scholar at National university of modern languages Islamabad, Pakistan.I am doing my research on self directed learning . I was going through with your article "Garrison's model of self -directed learning: Preliminary Validation and Relationship to Academic Achievement ". I found it very interesting, helpful and easy to understand.

I want to adapt your instrument in order to collect data for my study, but your instrument is not given in this article. I hereby request you to please send me your questionnaire and allow me to adapt it. It will be a great help for me.

Thank you in advance

I look forward to hearing from you soon.

sabry mahmoud <sabryrahma@hotmail.com> Thu, Jan 7, 2021, 5:10 AM

to me

Dear Ifra

The scale is included in the article (Page 590 in Table 1). It is scored on a 4- point Likert scale. A score of 1 denoted Strongly Disagree and a score of 4 denoted Strongly Agree. I am pleased to grant you permission to use the scale for research purposes on the condition that you cite the reference properly.

APPENDIX -Q

Request for questionnaire Inbox ×

Ifra Ishtiaq <ifra.ishtiaq16@gmail.com> Sun, Jan 31, 2021, 2:24 AM

to D.M.E.Griffioen

Respected sir/Madam

Hope you are doing well. I am Ifra Ishtiaq mphil scholar at National university of modern languages Islamabad, Pakistan. I was going through with your article " **A Questionnaire to Compare Lecturers' and Students' Higher Education Research Integration Experiences** ." It is related to my study. I found it very helpful and easy to understand.

I hereby request you to please permit me to adapt your questionnaire you have used in this study and please send me the complete questionnaire. It will be a great help for me.

Thank you in advance.

Looking forward to hear from you soon

Didi Griffioen <d.m.e.griffioen@hva.nl> Mon, Feb 1, 2021, 1:35 AM

to me

Dear Ifra,

Thank you for your nice question! Certainly you can use/adapt the questionnaires, al long as you cite the original articles in which they were published, as is common.

APPENDIX-R

CERTIFICATE OF PROOFREADING

Effect of Self-Directed Learning on Students' Research Skills at higher Education Level

By

Ifra Ishtiaq

National University of Modern Languages, Islamabad

It is certified that the research work with the title "Effect of Self-Directed Learning on Students' Research Skills at higher Education Level" submitted by Ifra Ishtiaq has been proofread for the Language and grammatical mistakes.

Name Dr. Asim Ijaz

Designation Assistant professor

Institute The University of Agriculture Peshawar

Signature _____ Date July 7, 2022

Dr. Asim Ijaz
Assistant Professor LM,B&G
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