INTERRELATIONSHIP OF OPTIMISM, CREATIVITY AND ACADEMIC PERFORMANCE OF STUDENTS AT THE UNDERGRADUATE LEVEL

By

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NATIONAL UNIVERSITY OF MODERN LANGUAGES
ISLAMABAD

October 2022

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M.Phil. (Education), Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, 2015

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

In Education

To

DEPARTMENT OF EDUCATIONAL SCIENCES

FACULTY OF SOCIAL SCIENCES

NATIONAL UNIVERSITY OF MODERN LANGUAGES, ISLAMABAD

October 2022

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NATIONAL UNIVERSITY OF MODERN LANGUAGES SCIENCES

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ABSTRACT

Thesis Title: Interrelationship of Optimism, Creativity and Academic Performance of Students at the Undergraduate Level

This study was aimed to know the interrelationship of optimism, creativity, and academic performance of students at undergraduate level. The objectives of this study included to; explore the optimism level of students at undergraduate level; investigate the creativity level of students at undergraduate level; investigate the interrelationship among optimism, creativity, and academic performance of students at undergraduate level; explore the effect of optimism and creativity on academic performance; identify the difference among students of study programs (BEE, BBA, and BSCS) regarding optimism, creativity, and academic performance. This study was carried out at public and private sector universities of Islamabad Capital Territory (ICT). Proportionate stratified sampling technique was applied. 1929 undergraduates studying in the programs of Electrical Engineering, Business Administration and Computer Sciences in public and private universities formed the population. The desired sample drawn through Yamane formula was 17.16% of the population. The sample size emerged 331. Optimism assessed through, Life Orientation Test- Revised (LOT-R) by Scheier *et al.* (1994). Creativity measured through Kaufman Domains of Creativity Scale (K-DOCS) by Kaufman (2012). For students' academic performance grades of the previous class were taken from Higher Secondary School Certificate. Data were analyzed through mean scores, mediation analysis, Pearson's correlation, regression analysis, t test, one-way ANOVA, and Post-hoc test. Indirect relationship was found between creativity and academic performance through mediating role of optimism. Optimism was found significant predictor of academic performance. A significant difference was found among students of study programs (BEE, BBA, and BSCS) regarding optimism. It is recommended that counsellors and psychologists may provide optimism related sessions to increase students' optimism level and promote encouraging environment for positive life expectancies that may overcome the frustration and pessimistic thoughts in students and in turn promote academic performance.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
AO	Academic Optimism
APT	Amusement Park Theoretical Frame work
BBA	Bachelor in Business Administration
BEE	Bachelor in Electrical Engineering
BSCS	Bachelor in Computer Sciences
CGPA	Cumulative Grade Point Average
EQ	Emotional Intelligence Quotient
HSSC	Higher secondary school certificate
ICT	Islamabad Capital Territory
K-DOCS	Kaufman Domain of Creativity Scale.
LOT-R	Life Orientation Test- Revised.
MANOVA	Multiple Analysis of Variance.
NEP	National Educational Policy.
NRC	National Research Council.
RIBS	Runco Ideational Behavior Scale.
SES	Socio Economic Status.
SPSS	Statistical Package for Social Sciences.
HEC	Higher Education Commission.

ACKNOWLEDGEMENT

My special gratitude goes to my supervisor Dr. Marium Din, Assistant prof. Education Department NUML, Pakistan. Thanks Ma, am for your guidance that enable me to stay focused, structured, and motivated. Because of your patience with reading, over and over, several draft I sent you, I got and learned so much from your comments and that helped me a lot to make it possible. I found my inspiration in your words of encouragement. May God bless you abundantly.

Iam also thankful to Brig. Dr. Allah Bakhsh Malik for enlightening my thoughts to search for the knowledge. I wish to express my appreciation to all members of education department NUML, who made me learnt a lot.

I express my sincere regards to my parents and my siblings for their patience and moral support and encouragement to work hard who appreciated me and prayed for me at every step. All the magnificent opportunities I meet today are just because of their efforts and prayers for me. Words are lacking to express my humble obligation to my loving parents for their love and wish to see me glittering high on the skies of success whose prayers enabled me to achieve my goals.

SHAH BANO

DEDICATION

I dedicate this effort, the fruit of my thoughts and study to my Parents.

CHAPTER 1

INTRODUCTION

With the increasing demand for the greater academic performance there is need to know the factors which may enhance students' performance. Optimism and creativity may be the main reasons that can influence the students' academic performance. The question arises how optimism, creativity and academic performance have relationship with each other. Academic performance is the key element which predicts the general success of students in their real life. To become competent at the national and international level students' performance plays a vital role. Therefore, it is need of the day to know the factors which may increase academic performance. According to Zhang et al. (2019) due to tough competitions, an emphasis on students' performance has influenced all the nations. To fulfil this need, it is necessary to give importance to psychological aspects particularly relating to educational field.

The importance of optimism is to develop an understanding of the behavior of human beings and was given importance by psychologists at the start of the twentieth century while dealing with motivation (Tolman, 1938). In the middle of 20th century, the concept of optimism appears again in mental approaches to the theoretical framework of learning and social psychology and was extensively undertaken the point of view of the expectancy value model (Rotter, 1954; Brewin, 1988; Forsterling, 1988; Synder & Forsyth, 1991). This model emphasizes there are two basic cognitive factors from which people motivate to implement and regulate specific behavior. These two factors are perception about values of goals that could be attained by adopting that

behavior and optimistic thoughts related to achievement. The expectancy-value model was medium for the base of many theories about the positive behavior of human beings related to goals. From the views of Wigfield and Eccles (2000), the main theme of the model was developed by many theories this was based on ability and concepts related to expectancies. These expectancy beliefs were researched at the end of the twentieth century especially positive expectancies or optimism in the area of positive psychology which has a main role in the field of psychology (Seligman & Csikszentmihalyi, 2000). Positive psychology is considered widely by the researchers at the beginning of twentieth century till the recent era. Positive psychological concepts are used in learning in the field of education.

Many researchers considers the overall optimism as basically dispositional. They suggest that general optimism is personality characteristic which is stable which acts as a buffering agent against physical and psychological stress situation. Positive thinking brings positive events in life. It is observed that optimists have decision-making abilities such people have immunity against diseases as well. Optimistic people are found much positive about upcoming events of their life. Their positive mindset brings good health and wellbeing. Expectants put their plans into action even though there are likely to be many hurdles and obstacles to overcome. When optimistic people fail, they take it as their first step towards success. They believe in their efforts and do work to change their failure in to success through their optimistic attitude. Optimists have belief that a difficult time is a temporary and more bright future is ahead. This is the way of their thought process through which they keep themselves warm and energetic. (Nes & Segerstrom, 2006). Optimism is the affinity about expecting positive results regarding persons present and expectancies about the future. Overall optimism is considered as a broad dispositional attribute.

Optimism is a quality that influences every field of life including job place, home, and society at large. Optimism is the belief that positive events are persistent and everlasting. These positive events can overcome the negative ones and influence the career learning even these events influence the surroundings. Focus on goal and energetic efforts performed by the optimists may lead them to the goal achievement.

Another variable of study is creativity. The term creativity is an individual characteristic. Its distinction lies in originality or imagination. It is thinking innovatively or producing ideas that are different from others. According to Runco (2007) it is hard to define creativity because it is a complex term creativity is used in many fields. In the field of arts as we say that creative arts, in a sense of producing a new product is a creative product, in the field of psychology it is creative psychology, if we think creativity in the field of history it is expressed in creative eras.

Creativity is new and original behavior that can yields an appropriate and productive results. According to Flaherty (2005) the creative idea must be useful and novel or even has some influence in the era in which these ideas are introduced. Creative ideas must be useful in the cultural context at the time of firstly proposed it may or may not have usefulness in the modern era but the thing is that creative ideas must have its usefulness. According to Andreasen (2005) there are three components of creativity. These components are uniqueness, utility, and product. According to these components creative idea must be original it has usefulness, or it must be practical and lead to a product. According to Bean (1992) Creativity is the process that starts from feelings and thoughts these feelings and thoughts should not remain inside the person. They must appear in the concrete form or they should appear in product form by looking at that product one can know about the feelings and inner thoughts of

that person. So, it must be required for the creative inner self to be expressed in the form of a product.

According to Bailin (1988) for the expression of creativity, there must some valuable product. A valuable product means the idea must have utility it has some value it can be used in other suitable situations. Some practical value is required for creativity. According to artists the term creativity only belongs to artistic work or artistic talent. Scientists relate it to scientific creativity. We can say that this term varies from discipline to discipline. Creativity is seeking the path through which new thoughts are produced and shaped into the worth able product (Kao, 1997). Creativity is the procedure of generating ideas that are innovative and have worth (Robinson, 2001). Creativity is field specific and belongs to new and original ideas that not introduced before it.

Creativity is the potential to do novel things to initiate the new task. It may be to solve the problem through adopting a new procedure, the formation of the artistic device which was not known before. The immediate surroundings of the individual can be responsible for the blockage or fostering of creative abilities. Whether an individual may have born or have inherited capabilities about creativity still stakeholders must promote creativity in children. Creativity is such a trait if appreciated it flourishes if not appreciated it suppresses. To flourish, nourish and encourage creativity is the responsibility of the institution (Nwazuoke *et al.*, 2002). Surroundings including both physical and psychological environment has important role in fostering creativity.

Siddiqui (2008) discussed the role of creativity at higher academics its requirements in Pakistan. According to her creativity has importance in higher education. Most of the institutions take it as an important graduate product. Now the question remains that does our education system is promoting or hindering creativity of

students? It is concluded from Siddiqui's research that except for creative arts, creativity at any level is not an element of the curriculum. Teachers are unaware of how to promote creativity in their students. Our education system is not flexible enough to present creative ideas. It has traditional course boundaries which compels teacher to complete it in a year. So, it is the need of the time to support teachers and students with developing resources to promote creativity.

By the Framework of National Education Policy of Pakistan (2018), education has a fundamental role to improve the financial condition of the country. The education system can promote creativity and innovation among Pakistan's human capital which is more than two hundred million. It is, therefore, the responsibility of the government to provide its young generation with knowledge, creativity, critical thinking, and leadership qualities. So, to enabling them for right choices at right time for themselves, for their country, and as a global citizen to perform their duties. It is required to get perception and knowledge of quality learning to find all those methods to fulfill these gaps. This shows that our National Education Policy (NEP) emphasizes the importance of creativity. Now it is need to implement the educational policy through curriculum document, its translation into textbooks, and to give more weightage to those topics which can promote creativity among students.

Khawaja (2019) wrote an article in "The Nation" about the rigid education system as a killer of creativity. According to her creativity is not just creative expressions related to the term creativity it must need to be given importance as other fields of academics and educational structure. Unfortunately, this phenomenon in the education system of Pakistan is always not given much importance and is neglected one. Teachers try to complete the rigid course outline in given time of year. They just focused to complete the course in given time limits and ignore the creative side of the

learners and do not appreciate the creativity of students. Mostly those students are appreciated who learn everything from books and their creative qualities suppress due to system of memorization.

The third variable of study is academic performance. It is required to motivate students to strive for better academic performance. Universities need to design such programs that have the ability to identify the influential factors for gaining high undergraduates' performance. There are a lot of factors which are responsible for the better performance. In Pakistan old ways of education are also in practice across the country. To identify those factors which are crucial for better outcome and to involve them in education system is necessary. The purpose of research was to highlight the academic performance literature, exploring the relationship among optimism, creativity, and academic performance.

Education has a great role in the progress of nations. Undergraduates avail opportunities at institutions that provide valuable prospects of education. They have the role to change the mind and imagination of the society by imparting quality education. So, it is the need to strengthen those attributes which are most useful to renovate students in to successful members of society in all aspects whether they are social or psychological. All this is possible only when educational institutions are providing quality education. That is the reason the researcher has emphasized to adopt useful attributes and to discourage weak ones; old ways of education that have less or no role in a better outcome.

Different studies distinguished the term optimism and creativity as a personality factor. According to Fugate, Kinicki, and Ashforth (2004) academic performance is the fundamental issue mainly at the tertiary level. It is concerned with receiving information and its applicability in different situations. Excellence in the

academic performance leads to better economic growth and development. Better academic performance benefits the individuals' career as well as employability. For this reason, it forms the top priority of the educationists to make better the situation related to academic performance.

Academic performance is a goal that is not easily attained or guaranteed. Ways to achieve academic success vary (Alig-Mielcarek & Hoy, 2005; Lezotte & Pepperl, 1999; O'Donnell & White, 2005). Research on what is making institution effective and helps students to become successful is need of the day. According to the researchers, academic performance is the achievement of the goals set by an institution over the academic year through assessment of knowledge gained by students in the form of obtained grades, marks and other assessment outcomes set by the academic institution (Narad & Abdullah, 2016).

Oyelade *et al.* (2010) mostly performance of students is measured through Grade Point Average (GPA) or other similar measures. Higher education authorities set a minimum criterion to seek admission in the degree program. Many universities set the highest criteria at 4 GPA. For many higher education programs GPA of 3 or above is considered sufficient to continue the higher study program and is considered as better academic achievement. This is the reason that educational planners use to set criteria for the evaluation process. There are lot of factors at educational institutions which has role to promote performance. Students' performance factors are satisfied through faculty involvement, making approaches, learning methods, and evaluation techniques.

Students are always the focus of attention in any education system. The purpose of schools, colleges and higher education are to convert the raw material the students into finished product the civilized citizen and without students this all is

meaningless. The progress of any country depends on the better and up-to-date academic performance of students. Getting knowledge about determinants of student's academic achievement is essential for the aim of excellence in education (Muhdin, 2016). Academic performance distinguishes the learning capabilities of students. Most of the time students categorized based on the pace of learning. Marks obtained or grade are measuring tools of academic performance.

According to Gajghat (2017) few personal attributes such as learning habits, previous study background and influence of the environment of college are perceived as influential factors for the university level performance of students. All these factors are found to correlate with the performance of students. There are a variety of views about the effect of these factors. Few researchers have the opinion that personal attributes, the habit of learning are beneficial while others have the opinion that student's previous educational background and environment of college are necessary factors of students' performance. It is adequate evidence that all the participants have not consistent views regarding influential factors of academic performance.

With the increasing demand for greater academic performance so is the need to know the factor which can promote students' performance optimism and creativity may be the main reason that may effect on students' academic performance. Researcher involved the three important variables optimism, creativity and academic performance may have a relationship with each other. As academic performance is the key element which predicts the general success of students in their life. Students are products of the education system. Raising the students performance is the priority of every education system. Students with the low academic performance are considered inadequately prepared and always yearn for better future. If students have better performance as compared to their fellows, then such students have more chance to get

admission in the institute of their interest in Pakistan. Especially due to lack of opportunities students face challenges while taking admission to universities and other professional institutions and to become competent at the international level. Performance plays a vital role. So, it is need of the day to know the elements that may increase students' academic performance. This study was performed to know how optimism creativity and academic performance are interrelated.

1.1 Rationale of the Study

First importantly, there are many factors associated with the academic performance of students, this forms the prime goal of every education system. Many stakeholders put their efforts to attain the predetermined goals. Universities play a crucial role to enlighten the personality of students and accelerate their performance. Some of the studies in Pakistani cultural context have researches on creativity at primary level (Shaheen, 2011). Further, there exists a paucity of studies which have sought to explore the variable at undergraduate level. Another study found involving the variable optimism, emotional intelligence, and academic performance at private schools of Pakistan (Sahar & Tariq, 2011). However, their studies have not taken creativity perspective and both the private and public sector together into consideration. Second importantly this study is unique in nature as it attempts to merge three important variables optimism, creativity, and academic performance as a first set of ingredients as a rationale of the study. These variables are taken together in the field of education at undergraduate level in both sectors and diverse study programs.

Third, a huge number of studies on creativity alone have been executed in the past. Torrance got popularity in researches about creativity. Guilford in the eighties worked on creativity. Most research have been performed in western countries about creativity and its relationship with academic achievement, very few have commenced

in Pakistan. Whilst there had been a substantial research on optimism and its relationship with mental, physical health coping strategies, death, survival heart diseases about the function of the immune system, in medical field across the world (Scheier & Carver1992; Rasmussen *et al*., 2009) and education (Pisanu & Menapace, 2014). likewise many researches of creativity; have been done in the business settings (Zubair *et al*. 2015; Malik *et al*., 2015); While some previous studies performed at primary level but very few are at higher education level.

However, interrelationship of optimism, creativity and academic performance is a distinct topic. It is new and its novelty lies in combination of the three variables. Educational institutions at the undergraduate level have a great role to provide education and as a result cause the change in social thought. They attempt to provide quality education to all students and make them able to enter in to successful practical life after seeking qualification. In fact, undergraduate level forms the backbone of educational ladder, the young students as an asset to the nation. The researcher took both private and public sector universities. Rare studies have been done in both sectors (public and private) together. They have their important role to transform students into well-aware citizens of society.

Fourth the interrelationship among optimism, creativity, and academic performance at the undergraduate level will add a fresh knowledge in the field of education essentially in local context. Fifth this study focuses on prime programs of job market offered at university level including both the sectors public as well as private. The prime programs and contribution of both the sectors public as well as private makes further reason to conduct this study. In this perspective the researcher found it necessary to research the interrelationship of optimism, creativity, and academic performance of students at the undergraduate level.

1.2 Statement of the Problem

This study explores the interrelationship among optimism, creativity, and academic performance of students at the undergraduate level. Optimism and creativity constitute essential human traits, recognition of their benefits to academic performance at undergraduate level needs to be investigated. The primary purpose was to examine the interrelationship of optimism, creativity, and academic performance of the participants (undergraduates/freshmen) in the study programs of Electrical Engineering, Business Administration and Computer Sciences in both public and private sector universities. Students at undergraduate level (freshmen) encounter several psychological problems associated with academic demands in an institutional environment. A lot of factors interplay in this endeavor. It is thus important to explore such factors and take necessary steps to address them to attain the determined goals achieving better academic performance and to become more successful member of the society.

Optimism and creativity are two distinct attributes they may play an effective role in the success of undergraduates and may help in coping the stressful situation that is usually found in the surroundings of institutes. Although optimism and creativity are important human qualities that may increase student capabilities, further may improves academic success (Carver *et al.*, 2010; Scheier, 2014; Snyder, 2002; Solberg Nes *et al.*, 2009), knowledge of its benefits related to academic performance was essential to be investigated. Current study is aimed at exploring interrelationship of optimism, creativity, and academic performance of students at undergraduate level.

1.3 Objectives of the Study

Objectives of this study were to:

1. Explore the optimism level of students at undergraduate level.
2. Investigate the creativity level of students at undergraduate level.
3. Investigate the interrelationship among optimism creativity and academic performance of students at undergraduate level

3.a Determine the relationship between optimism and creativity.

3.b Examine the relationship between optimism and academic performance.

3.c Determine the relationship between creativity and academic performance.

4. Explore the effect of optimism and creativity on the academic performance.
5. Identify the difference of optimism creativity and academic performance of students between public and private sector universities.
6. Identify the difference among the students of study programs (BEE, BBA, and BSCS) regarding optimism, creativity, and academic performance.

1.4 Research Questions of the Study

Following were the research questions of the Study;

Q.1 What is the optimism level of students at undergraduate level?

Q.2 What is the creativity level of students at undergraduate level?

1.5 Null hypotheses of the Study

Following hypotheses of the study were formulated:

Ho1: There is no significant interrelationship among optimism, creativity, and academic performance of students at undergraduate level.

Ho2: There is no significant relationship between optimism and creativity of the students.

Ho3: There is no significant relationship between optimism and subscales of creativity.

Ho4: There is no significant relationship between optimism and the academic performance of students.

Ho5: There is no significant relationship between creativity and the academic performance of students.

Ho6: There is no significant relationship between subscales of creativity and academic performance.

Ho7: There is no significant effect of optimism on academic performance.

Ho8: There is no significant effect of creativity on academic performance.

Ho9: There is no significant difference of optimism between public and private sector university students at undergraduate level.

Ho10: There is no significant difference of creativity between public and private sector university students at undergraduate level.

Ho11: There is no significant difference of academic performance between public and private sector university students at undergraduate level.

Ho12: There is no significant difference among students of study programs (BEE, BSCS and BBA) regarding optimism.

Ho13: There is no significant difference among students of study programs (BEE, BSCS and BBA) regarding creativity.

Ho14: There is no significant difference among students of study programs (BEE, BSCS and BBA) regarding academic performance.

1.6 Conceptual Framework of the Study

1.6.1 Optimism Theory

Dispositional optimism theory was developed by Carver and Scheier (1985). Dispositional optimism is the tendency of positive outcome. It is expected that people who held positive attribute increases the likelihood of positive returns. Dispositional optimism theory tells that outcome of optimism are also fruitful and pessimism leads to an unwanted outcome in the form of stress. Optimism is expectancies about the future Scheier and colleagues mentioned that their study about optimistic and pessimistic attitudes begins with research on the effect of the expectancies that are specific to the situation. For many years, the center of their investigation has gradually changed to a deliberation of expectancy which is universal, rather than more fluid, in essence, they had taken these universal expectancies comparatively stable regarding time and background which were responsible for making the foundation of the fundamental attribute of human personality. They called this fundamental attribute dispositional optimism and officially define it for the affinity to think that they will usually experience good opposite to bad results in life.

The well-known optimism model for dispositional optimism was related to regulation of the goals by self. According to this model human activity is based on the

direction to achieve those goals. To achieve the goals, according to this model two things are important that is the value set for the goal and expectancy that one can achieve the goal. Optimism in the same way is the people's affinity for the positive outcome. It provides a general sense of confidence which leads them to goal achievement even they are challenged with difficulties. Pessimism leads to discouragement for the goal achievement through making sense of doubt about the goals achievement (Carver & Scheier 1985).

1.6.2 Creativity Theory

The Amusement Park Theoretical model (APT; Kaufman & Baer, 2005) proposes four levels of a creative hierarchy from very general to domains specific. The APT model uses the metaphor of amusement park to explore creativity It is a hierarchical theory which explains domain general to domain specific outcomes for creativity. In this model, the first level indicates the initial requirements for any creative act: intelligence, motivation, and a suitable environment. The second level includes general thematic areas (i.e., Math/Science and Artistic creativity). The third level indicates more narrowly defined creativity domains such as poetry, sculpture, painting, or music. In the last level of "micro-domains," all activities are combined. This model demonstrates that it is possible to structure an understanding of one's creativity, progressing from a general perception to very detailed domain levels.

1.6.3 Concept of Academic Performance at HSSC level.

Academic performance is achievement set by institution over the academic year through assessment of knowledge gained by students in the form of obtained grades, marks and other assessment outcomes set by academic institution (Narad & Abdullah, 2016). In the current study students' grades earned in the Higher Secondary School

Certificate (HSSC) were considered. Academic performance was considered by self-reported grades, obtained in their board examination. In Pakistan academic performance criteria at HSSC level is categorized in to Outstanding (A+ grade), Excellent (A grade), very good (B grade), good (C grade), Fair (D grade) and satisfactory (E grade).

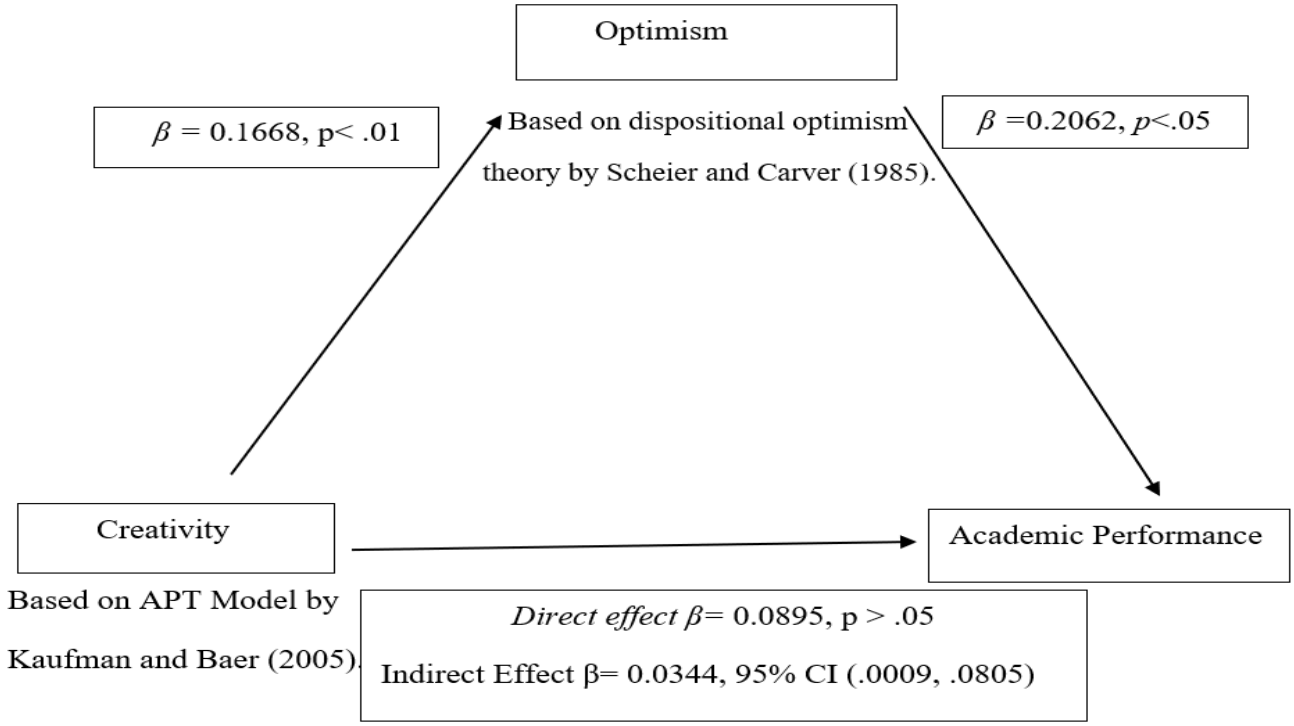

Fig.1: Conceptual Framework of the Study.

The figure 1 is about conceptual framework of the study the Interrelationship among optimism creativity and academic performance of students at undergraduate level. Above figure also shows the mediation analysis process and is based upon the paths followed during the mediation analysis process. Figure showing beta values and level of significance the p values.

1.7 Significance of the Study

Students, teachers, faculty members and researchers constitute the main groups to seek benefits of this study. The students may be sensitized about the importance of optimism and creativity for increased academic performance, leading to success in life. The students may explore the divergent ways for better understanding and improving their optimism and creativity. Optimism would require open-mindedness, positive attitudes, and foresightedness, whereas creativity is gained through knowledge, originality, and wisdom. Combination of these elements can lead to high academic performance.

The teachers through well-organized knowledge earned through their life experience and wisdom, use different techniques and strategies in teaching, assign tough and graded problems causing student learning and generating originality, as a gateway to creativity. This would lead to increased academic performance. In subject matter of this study senior faculty members of universities are not only beneficiaries but also expected to play a professional role of providing genuine education to the prospective teachers and orientation to young faculty members. It can be attained through integrating emerging technologies for online teaching interventions and testing technology. The fourth beneficiary group constitute researchers on many counts; one, build up connectivity of the constructs of optimism, creativity, and their relationship with academic performance, with more data and substance trace a wide range of trends of these and new dimensions in this field; three this piece of research would equally add a new chapter in research literature. The other beneficiaries concurrently include; curriculum planners (incorporate appropriate concepts, constructs, and contents in graded form generating creativity), textbook writers (enrich textual and instructional materials with exemplification and creative exercises), paper setters (measuring

criterion- referenced abilities). Some total of these challenges would produce graduates of higher academic performance. The impact could be actualized in better employment, offering wider opportunities as well as seeking places in higher education in the universities of repute in country and abroad.

1.8 Ethical and Legal Consideration

To maintain neutrality and demonstrate standards of research, adherence to ethical issues and professional obligations is essential. It runs through the whole spectrum of research, from the statement of problem to draw conclusions. The standard of American Educational Research Association ethical standards given in Creswell (2014) research design were followed. Development of statement of problem, questions and hypotheses carried impartial enunciation. All the relevant literature review was duly acknowledged with a fair degree of objectivity, sensitivity, with reference to original exponents, theorists, authors and research ages, organizational and geographical distributions as a group and individual scholarship.

This study used international instruments relating to optimism and creativity. Formal permission of the test constructs was sought and annexed together with local experts' opinions related to validity. Permission of the Director Academics and Head of Departments of both public and private sector universities was sought to collect the data. More importantly, the prime contributors and beneficiaries (students) were assured to maintain their confidentiality as the analysis of data would be reflected in groups. Thus, code of ethics was observed in all fairness of this undertaking.

1.9 Methodology

Methodology of study is explained as under.

1.9.1 Design of the Study

The current research is quantitative. The study employs a correlational research design. For the purpose survey was done to gather the data by employing two instruments one for creativity and other for optimism. Students' grades were obtained from previous class results.

1.9.2 Population of the Study

In this study undergraduate student at Islamabad Capital Territory (ICT) formed the population. List of HEC recognized public and private sector universities operating in ICT were taken from HEC website (HEC,2018). For pilot test one public and private university and for the main study 3 Public and 3 private sector universities were chosen based on similar study programs offered by these universities. The study was delimited to three study programs Bachelor in Electrical Engineering (BEE), Bachelor in Computer Sciences (BSCS) and Bachelor in Business Administration (BBA). These study programs were equally available in universities of both sectors (Public and Private) of ICT. Target Population of spring session 2018 first semester was 1929 of three study programs of six universities. Verbal permission was sought from universities administration to collect relevant data. Further questionnaire distributed among sampled students. The sampling method employed was proportionate stratified sampling method prescribed by Gay et al., (2012).

1.9.3 Sample of the Study

Researcher drawn a sample of 331 through Yamane (1967) formula. Further proportionate sampling technique was applied along the strata. Questionnaires were randomly distributed among those students. Response rate was hundred percent as researcher administered questionnaire personally.

1.9.4 Instruments of the Study

Two instruments one related to optimism was life orientation test revised (LOT-R) proposed by Scheier et al., (1994) and other instrument related to creativity was Kaufman's domain of creativity scale (K- DOCS) developed by Kaufman (2012) was used. Kaufman domains of creativity scale has fifty items and five domains. Researcher adapted the scale and reduced the items up to twenty items after taking permission of the author. Life orientation test revised has total ten items three items are related to optimism and three items are related to pessimism and four filler items. According to Scheier et al., (1994) filler items are not scored. Three items of pessimism are also reverse scored.

1.9.5 Statistical Procedure

For determining the relationship between variables, Pearson correlation was used. For the objective three to know the interrelationship among the variables: optimism, creativity, and academic performance of students' mediation analysis was performed. For measuring differences between private and public sector university undergraduates regarding optimism, creativity, and academic performance t- test was applied. For optimism and creativity as a predictor of academic performance regression analysis was performed. To know the difference among students of three study programs Bachelor in Electrical Engineering, Bachelor in Computer Sciences and

Bachelor in Business Administration, ANOVA was applied further post-hoc test was applied to know the actual difference exists regarding the optimism.

1.10 Delimitations of the Study

This study was delimited to:

- Eight universities of Islamabad Capital Territory (ICT).
- Four public sector and four private sector universities.
- Three comparable study programs are offered in these universities were chosen. These were Bachelor of Electrical Engineering, Bachelor of Computer Sciences and Bachelor of Business Administration. One university each from public and private sector was selected for pilot test. The rest six universities were included in the main study.
- Closed ended questionnaires were used in this study these were standardized questionnaires, optimism was measured through LOT-R and creativity scale was adapted and measured through Kaufman domains of creativity scale while, academic performance was measured through simple grades/marks obtained in public examination.

1.11 Operational Definitions

1.11.1 Optimism

Optimism is related to encouraging expectations about the future. It is set of belief which people hold about upcoming events of their life (Carver & Scheier 1985). In the present study, optimism is operationalized by Life Orientation Test-Revised (1994). It measures the positive life expectancy of the undergraduates.

1.11.2 Creativity

Creativity is the highest form of human expression. Creativity is complex that consists of certain traits or attributes and includes expressive skills this complex includes attributes vital to all creativity (Runco, 2007). In this study creativity investigated through Kaufman domain of creativity scale (2012).

1.11.3 Academic Performance

Academic performance is achievement set by institution over the academic year through assessment of knowledge gained by students in the form of obtained grades, marks and other assessment outcomes set by academic institution (Narad & Abdullah, 2016). In this study students' grades earned in the Higher Secondary School Certificate (HSSC) were taken. Academic performance measured by self-reported marks/grades, obtained in the board examination.

CHAPTER 2

LITERATURE REVIEW

This chapter contained study material related to optimism, creativity, and academic performance of students. This review provides insight in this area. It guides what has been done before and what is the status position to do next. This work defines, explains, and provides in-depth knowledge about the variables under study.

2.1 Optimism

2.1.1 Concept of optimism

In a general thought optimism is the ability of the individual to have faith in the positive outcome in any uncertain condition (Peale, 1952). This statement shows that optimism is individual's attribute that positive things will happen in any worst circumstances through which they are passing by. Optimism is also related to one's thoughts regarding future. Although the situation may be uncertain yet people do efforts to alter the circumstances in their favor.

Individual's way of dealing and their perception about life events leads them to judge their personality as optimistic or pessimistic. Optimism is related to the positive attitude of people regarding their feelings how they feel about the events they are experiencing, determination to face the challenges, their ways of solving the problems faced by them, their success related to academic and professional fields, to become humble if they are popular and well known. Acceptance of positive attitude and positive coping style related to events leads them to the healthy ways of life (Peterson,

2000). Perception of the upcoming events guides one's behavior to face challenges faced by them.

Thompson *et al.*, (2000) identified that ideas which put the person on the path to face the world in effective manners are called optimism. Optimistic peoples are proactive they do their effort in the right direction at right time. This is the main reason that optimists find out the solution to their problems faced by them. So, we can say that these people are proactive in the performance of their tasks. They can go through their studies especially academically with more ease due to their proactive approaches. Optimistic people know that there is only way out from the difficult situation is persistence and work with whole heartedly. They adopt motivational approaches to keep their efforts lively and in the right direction.

According to Yates (1999) optimism is a healthy and gifted attribute of someone's personality. The understanding that there are more chances for the occurrences of a positive outcome than to negative outcomes and optimistic people have sound psychological, physical, emotional, and social growth due to their optimistic thoughts. The reason is that every time they think about positive events. optimistic people do not give space to negative events in their mind all these qualities of them are responsible for their sound growth in all aspects and the achievements.

According to Williams and Reils, (2001) optimism takes to the overall growth of personality in all dimensions including psychosocial, based on emotions and physical health which in turn makes individual academically sound because personality growth in all dimensions makes a person fit for the better performance also. Optimists are those who learn to get positive results in any given situation. Stable and well-balanced personality develops due to healthy state of mind. Only healthy thoughts and hope puts people on the path of emotional stability and overall balanced personality.

According to Radebe, (2004) When conditions are unfavorable positive thinkers do efforts to achieve their goals. Positive thinkers take the opportunities as forever and in their control. Optimists have belief in their efforts they know that with efforts they can change the circumstances in their favor. Positive thinkers put their plans into action optimists at first determine their goals then they do efforts to achieve those goals. Characteristics of optimists are that they are energetic they do the efforts in the right direction, enough motivated, mentally sound, charming, self-made, with high aims in life and are obedient enough to follow rules and regulations.

It is the opinion of most of the researchers who worked on optimism related issues they suggested that positive expectations about the upcoming events are most of the time adopted. It remains worth discussing the subject of whether always optimism is adaptable (Taylor & Brown,1988; Carver *et al*., 2009). The drawbacks of too much-giving importance to benefits of optimism, while research on defensive pessimism is limited which may be adaptive in few situations (Norem & Chang, 2003; Segrestrom, 2006). Immediate environment may affect the thoughts to adapt the positive attitude. So, both environment and family influence the ways to deal with the situation.

There are few studies that discusses the appearance of the maladaptive outcomes Carver *et al.,* (2009), they have not pointed out such circumstances in which optimism may not be supported for adaptation. To know the association of optimism with better psychological functioning it is need for the extensive research. Most of the researches about knowing the benefits of optimism associated with general physical health and psychological health has been performed in the context of developed nations, but it is the gap in knowledge whether optimism is adaptive in those countries which are socially deprived and have future economic progress very low as well as they have fewer life expectancies about the future outcomes. (Gallagher *et al*., 2013).

Optimistic behavior varies due to future economic progress in those countries which are socially deprived.

According to Balcı and Yılmaz (2002) positive expectations relate to optimism when especially the negative situation prevails and only to consider the optimistic side of those events. According to Fellman (2000) optimistic people can handle the challenging situation more easily. Optimists have belief that problematic situation is temporary. They have trust in their abilities to change the situation. They do not take failure as personal and always have a positive exit for the worst situation. The question rise that is optimism adaptive? This is the question that remained in debate for many years (Peterson, 2000) for example the past work of Art of (Voltaire, 1759). According to Freud (1928) optimism is widely spread but few have ideas that optimism is a misunderstanding. According to Psychologist Martin Luther hope in this world is essential for things to be done. Related with the study of psychology base of new theory is always the old one (Taylor & Brown,1988). Many models in the field of psychology discusses how positive thoughts have future benefits is the theory of optimism given by (Scheier & Carver 1985). According to the theory global views of the people, that the positive outcomes about the future are more and negative outcomes about the future are infrequent. The theory anticipated by (Scheier & Carver 1985) is different from other theories in that way it discusses the globalized positive and negative expectations and not focuses on the personal views as the rudimentary determinants of positive results as like self-efficacy theory of Bandura (1997) and hope theory by Synder (2002). The latest theories regarding optimism were the same as that of theories related to hope and self-efficacy are only the way that both discusses that positive outcomes for the future are more than the current or the past situation.

One more issue that needs to be resolved is that whether positive thinking about the future is taken as a universal resource of humans which is found worldwide or only reflects the western scenario, which has benefits in well-developed countries. To know the universality of the concept of optimism it was asked the people whether they expect the coming year will be better than the current year? this question posed in 31 countries and the question posed was single (Michalos, 1988). Those who replied yes, the coming year will bring positive outcomes than the current year were called as optimistic. It was found from the study that the majority of the people from the different countries were not optimistic about upcoming events. Opposite to its investigation of the strength of the character among the different cultures in 54 countries shows about the ranking sequence of positive expectations out of these characters strength 24 examined were generally similar among those countries (Park *et al*., 2006). Positive attitude reflects the individuals' stable psychological conditions.

Many researchers have given importance to individual characteristics which makes them better cope with different life situations. (Miller & Janis, 1973). One of the most important characteristics is positive thinking about the future which is commonly known as optimism (Kassinove & Sukhodolsky,1995), or the ability to see the enlightened face of events (Silva *et al.*, 2004). The main characteristic of the coping style is better adaptation to life events through being optimistic. To cope with the situation by handling the issues in a better way is the crucial individual difference that is too much close to adaptation (Nes & Segerstrom, 2006). When people understand the situation, they adapt themselves accordingly.

Positive thinking about the upcoming events is related to the coping style it is the fact that when people expect positive outcome this will lead them to do efforts and engagement with their task and they accept the challenges. Opposite is the situation

when people have expectations about the negative outcome this situation will lead them to do less effort and disengagement of the task. So, optimism makes people do more effort and less escape, it is well known that people who are more optimistic bitterly cope any stress situation (Forsythe & Compass, 1987; Vitaliano *et al.,* 1990; Conway & Terry, 1992). Optimism leads to do more efforts and handle the circumstances in a better way and involvement in situation.

Researchers consider optimism in the diversity of manners within the realm of research. There seems no single definition of optimism that could be generally agreed by researchers (Chang *et al.,* 1994). According to Koizumi (1995) optimism is expectancy about the future of an individual's life achievement. According to Schweizer *et al*. (1999) they have faith that optimism is not confined to a person's situation they take it as global expectations of a positive outcome and given the style of dispatching information. According to Rabiega & Cannon (2001) it is a positive expectation but having an expansion in the criteria of optimism with the upcoming actions. Carver & Scheier (2003) said that optimism is comprehensive and is a mixture of courage. According to Seligman (1991; 1995) & Vaughan (2000) state of mind which relates to positive imagination which is far from reality is called optimism. Bryant & Cvengros (2004) differentiated hope and optimism and told that hope is related to particular goal achievement while optimism is a broader term than hope its focus is on general future achievements. Hope is specific to goal attainment while optimism is part of human personality. Being optimistic or pessimistic is related to general future achievements. Based on being as a personality factor people are called as optimists or pessimists.

2.1.2 Classification of Optimism

Beside dispositional optimism and explanatory optimism, there is also reported additional classification of optimism (Schweizer *et al.*,1999) have described more two types of optimism that is personal and social optimism both types of optimism have separate entity. The presence of a different type of optimism shows that human beings are not bound to optimistic and pessimistic beliefs rather they act upon the situation which varies according to circumstances people behave differently in different situations. They may be optimistic regarding their matrimonial relations and they can be negative thinkers about their job. Optimism and pessimism are on a continuum which shows the level of pessimism and optimism vary according to the situation. Two views are known regarding the optimistic and pessimistic continuum the bipolar view and separate dimensional view. Regarding the bipolar view optimism and pessimism are located on the distinct pole of the continuum which is one with the two poles. The perspective which argues that one person can have beliefs as optimistic and pessimistic at a time is called a separate dimensional view (Burke *et al.*, 2000). Almost all researchers are agreed about the two-dimensional view regarding pessimism and optimism (Schewitzer *et al.*,1992; Hummer *et al.*,1992; Hajell *et al.*,1996; Chang *et al.*, 1994). People may be pessimistic or optimistic at a time it depends on the situation faced by them. They can be optimistic regarding their family matters and at the same time they can be pessimistic regarding their job environment.

2.1.3 Constructs of Optimism

According to researchers' optimism has two styles one is dispositional style the other one is explanatory style. In most of the studies, a coherent concept of optimism is discussed, and they do not give specification to anyone construct of optimism (Rabiega & Cannon 2001) say that deficiency of specification is the result of incomplete and

rising areas related to positive psychology. According to (Chang *et al.*,1994) provided the idea that assessment of optimism varies due to the dependency of the instruments because they differ in their characteristics and aspects for which they were constructed. Ey *et al.* (2005) searched that due to lack in the same opinion related to the definition of optimism and assessment of optimism and pessimism and variety of constructs of it is not easy to compare the results and to develop more understanding in this field.

Opposite to the concept of one dimension of optimism and pessimism. It was found from the factor analysis that both optimism and pessimism are related constructs but practically different from each other. Both constructs are related to the basic dimensions of personality and mood. Pessimism is related to the dark side of personality and negative effects as well as optimism has a link with the bright side or extraversion of personality in the form of positive effects (Marshall *et al.*,1992). Individuals' personality has important role in the ways one can be called as optimistic or pessimistic. Ways of thinking also effects overall personality if we think positive, it makes our personality pleasant and charming on the other side negative thoughts makes pessimistic personality.

Research was performed aim of the research was to check and adjust the appropriateness of life orientation test is one- or two-dimension scale? Two studies were performed. In one study sequential sample was used in another study convenience sampling was done. In the first study, females who participated were 71 percent and, in another study, female participation was 51 percent. It is the theory that construct is one dimensional, so confirmatory factor analysis was performed to study the assumption of one or two-factor solution. Both the samples were better adjusted through the two-dimension solution. It was also found from other psychometric properties investigated revealed suitable outcomes for the Portuguese sample, which

was close to the original. So, it showed that its appropriateness to be used in the cross-cultural context. Based on these results, it was explored that whether the instrument was one dimensional or two-dimensional. It was accepted from the recommendation of its original author it can be used as a one-dimensional instrument but when required it can be used as two dimensional (Ribeiro *et al.*, 2012). Most of the researches shows that life orientation test revised can be used as one dimensional after reverse coding of the items related to pessimism.

Schewizer & Koch (2001) have made many-dimensional instruments for the assessment of social and personal optimism. Many authors do not believe that optimism is exclusively overall positive expectations about outcomes. They have the view that its construction must take in to account for persons own expectations (whatever become the situation one's expectation that there will be a positive outcome), self-efficacy optimism (there are expectations that individual is capable to solve the difficult situation), social optimism (optimism related to surroundings and social issues) so, it is the multidimensional construct which operates through the interaction of all these three types of optimism according to the researcher this framework is more comprehensive.

The dual concept of optimism and pessimism was generalized expectations about events that occur in human life and is called steady dispositions. The scale of optimism has one dimension and two poles; in other words, it is only one attribute that has two extreme points named as optimism and pessimism. That was assessed via Life Orientation Test (LOT-R) revised. There are many studies which called it having one dimensionality. The research carried out to investigate the factor structure. The participants of the study were students from primary and secondary education and these were adolescents, between the age group 13-19 years. LOT-R applied in the

classroom. Instruments confirmatory analysis of factor showed that the two-factor model was found satisfactory among adolescents, this showed that LOT-R held two components. It was also found from the literature that to get insight into term optimism cultural differences play an important role (Ottati & Noronha 2017). Dispositional optimism is generalized expectancy about the situation faced by human beings.

According to Kaufman (2012) The five domains of creativity are Self/everyday creativity measures the creative activities like art and crafts and other performance work. It shows engaging in everyday activities like art and craft. Scholarly domain involves engaging in analysis and quest that involve gaining knowledge. Scholarly creativity is the domain which involves scholarly behavior. Performance creativity another domain of creativity is related to the level of people who think of themselves to be creative in acting, music, and writing. The science factor emphasizes whether people perceive themselves to have creative attitudes related to science, engineering, and mathematics. Science factor also reports involving in creative activities like programming of computer, web development and is related to mathematics and science. Science based domain such as inventions and discoveries. One of the domains of the creativity scale is mechanical/scientific creativity of students. Here, this domain measures the Mechanical/Scientific creativity. Artistic creativity shows the perception of people about themselves whether they are creative in activities that are related to art. Artistic creativity is one of the important domains of creativity scale.

2.1.4 Explanatory/ Attributional Style

This type of optimism uses past actions for the predictions of the future. According to Seligman (1991) the explanatory style has three dimensions (i) permanence (ii) pervasiveness (iii) personalization. According to Higgins & Hay

(2003) the explanatory style has facets of locus of causality, stability, view about events that these events are temporary or permanent and globality means events are specific to the situation or they are global. According to Vaughan (2000) internal sense of autonomy coherent personality and self-resilience are important for optimism. Factor permanent or stability is thought that elaborate the reasons due to negative events are forever the people who have this element they use the term always and never while thinking about the chances of bad events. When people use the words, I am always ignored by you, or I never have good luck. These situations indicate the everlasting pessimistic thought. The people use definite terms while narrating the bad events such as, it looks that you are not giving me importance or it looks that it is not a good day for me, leads to disappointment. And those people who keep views about these negative situations as temporary are more chances to coping the situation through developing resilience. Those thinkers who are pessimistic say good events are temporary and on the other hand, optimistic people consider the good events as permanent (Seligman,1991). They ways of narrating the events reflects the thoughts either optimistic or pessimistic.

Personalization or locus of causality is the factor of explanatory style. For the events to be explained there are external or the internal cause. The situation of the internal cause occurs when people blame themselves for the bad events. For the bad events giving attribute to the circumstances or the people called external cause. According to Seligman (1991) personalization is related to personal feelings that how you control them while pervasiveness and permanence is related with that you do, it depends on the frequency of situations and duration of those situations.

2.1.5 Dispositional Optimism

Other than the explanatory style of optimism the main construct of optimism is dispositional optimism. This construct was proposed by the Scheier & Carver (1985). This is a set of belief which people have about upcoming events of their life. Past bad event are not considered here only new situation is considered possible in the near future. There is difference in attributional style from the dispositional views. In the attributional or explanatory style, people decide about upcoming life events based on past negative events which once they had faced. The previous situation related to issues is given importance in the explanatory style. While narrating the past holder of these belief states the past events in pessimistic way. While some of the people use positive and hopeful words in their past events in their statements. If they had learned positive from past negative events and they remain stood fast with their optimistic views regarding future events they are called optimistic on the other hand if they remained hopeless due to past situation then they are known as pessimistic. The optimistic trait is more accurately studied from dispositional measures than the attributional measure because dispositional measure considers the present state of positive or negative thinking about the future events through ignoring the past experiences (Rabiega & cannon, 2001). Pessimists see the upcoming events of life with negative expectations then these people leads hopeless life.

2.1.6 Theoretical Background

The introduction of the terms optimism and pessimism explains that these are the expectancies about the upcoming events. These thoughts are related to the model of motivation which is known as the expectancy value model. According to it goals are approached based on interests, that are responsible for the actions. Goals are always given importance by those who have some value related to it. Most of the researchers

have researched the value of goal achievement (Higgins,2006; Carver &Scheier, 1998 and Austin &Vancouver,1996). Expectancy is the attribute that is integral part of this model gives boldness to attain goals. Doubt is the discouraging factor of the potential to attain goals instead it hinders to start the efforts and even seize efforts at a premature situation. So, it is the reason that people who are persistent to achieve goals even in the adverse situation are the one who wins. Construct for expectancy has more value and usability. Confidence and doubt are opposite terms in a narrow context, moderate context and even in the broader context. The same is the case with optimism and pessimism like that of confidence and doubt but these are broader in context than confidence and doubt (Scheier & Carver, 1992). So, optimists need to remain persistent and confident even in adverse conditions so they may succeed. Pessimists remain in all circumstances doubtful which leads them to a sorry state. All these are the goal-directed behaviors and the ways to cope with the stress which in short leads to individual differences and adds up to overall personality.

2.1.7 Expectancy value theory

Expectancy value has been further developed by Eccles *et al.* (1983). According to this theory people are motivated through the value of the task and positive expectations of success they have from the task. So, both value and positive expectations lead to specific performance. People do that activity which they have an interest and they value it according to that. According to the model, task value has four components and these components based on value to attain (how much the goal is important), inner value (personal pleasure), value of useability (a perception that goal is valuable for the future) and cost value. According to this model hope for achievement and values related to task belong to many factors. These factors include both environmental factors as well personal factors. Personal factors include past

experiences, abilities, and self-concepts, future expectations, and beliefs the person holds. Environmental factors include beliefs and behaviors related to society or surroundings of persons which includes culture also. Task values and expectations for success are correlated. People give importance to that task in which they feel they get success so they do efforts to attain goals. If they feel pessimistic regarding the goal attainment there will be no motivation and value to do efforts. The same is the situation with children gives importance to the domain in which they understand what they are capable of (Wigfield & Eccles, 2001; Eccles & Wigfield, 2002). These together factors are responsible for the achievement-related outcomes. Expectations for success are optimistic attitude it is related to the performance outcome. Value to the task has a strong relation with choices related to achievement. The students who give importance to the subject of interest try to do specialization in that subject than the others who have no interest (Leaper, 2011). Goals are important to be motivated in life. Strength of the goals makes them valued and motivate accordingly.

2.1.8 Expectations Model

Positive belief about the upcoming events is useful to be optimistic about future events if people have optimistic belief, then the beneficiary will be the holders of these beliefs. These are pleasant for the psychological health of the person holding an optimistic belief. Those who have an optimistic attitude are sound in looks, they take less stress and are more contented as compared to those who do not hold these beliefs (Scheier, Carver & Bridges, 2001). So, these are the benefits of holding such beliefs. Another reason is that if someone has expectations for success it will increase the chances of success due to holding expectations for success. This is the simple phenomenon that with high expectations for success leads to the path of doing more efforts which increases the likelihood of success. Optimistic beliefs are highly helpful

for the adjustment in a new place like college, university (Scheier *et al*., 2001) and as well as beneficial for health problems relating to serious diseases like heart problem. Optimistic beliefs keep us psychologically and physically fit for the environment (Peterson & Bossio 2001). Optimistic beliefs make the beholder enough brave to face the situation.

2.1.9 Perspectives of optimism

Optimism is a general term which is used in many fields related to genetics, positive psychology, and education. Its scope is vast. Few perspectives are discussed where optimism is mainly related.

2.1.9.1 Psychological perspective of optimism

Positive psychology helps people groups and organizations to work optimally to get positive benefits from the attitude and behaviors. Positive psychology is as ancient as historical to William James literature to Maslow's advocacy. William James in 1902 wrote about healthy mindedness, Allport in 1958 wrote about those characteristics which are desired and positive of human beings, Maslow worked in 1971 about healthy people as compared to sick people, in 2000 Cowan worked about resilience in children and adolescents. To overcome imbalances and wish to uplift the areas which have not given importance in the past is replaced recently by positive psychology movement. Positive psychology is the study of circumstances, ways that take part in the maximum performance of human beings. (Gable & Haidt, 2005). Positive psychology deals with the behaviors of human beings which leads them to fruitful outcomes.

The people who are optimistic hold belief about positive expectations in near future. Expectations have two extremes; one is positive that is known as optimism and

people with positive beliefs are called optimistic; the beliefs which are negative about the future are usually held by the people called pessimistic. Higher level of optimism is related to higher-order wellbeing even in unfavorable or adverse conditions. Optimism leads to deal with the circumstances rather than avoiding them. Optimism is related to proactive measures towards better health conditions as well. While pessimism leads to adverse health conditions. Optimism is also related to the persistence of relationships. Optimists have long-lasting relations than the pessimists. Few instances are found which shows the disadvantages of optimism, but these are few ones. Overall, optimism is a positive psychological trait (Carver *et al.*, 2010). Optimism is the psychological trait that alters from person to person as it is personality factor too. It is associated with expectations about upcoming events.

According to Scheier & Carver (1993) situation, specific expectancies are beginning of their research first they introduced that how positive thinking is beneficial and have given the sense of optimistic orientation of life and it has benefits. And the way optimism is related to individual differences. Optimism influences physical well-being, psychological well-being. Optimism is the tool to cope with stressful situations and diseases. What is the status of positive psychology? Many studies were performed to answer those questions which makes a difference in meta psychological level. According to Linley *et al*., (2006). Purpose of the positive psychology is to overcome flaws in research and practical application of psychology. The pragmatic level is related to what experts in positive psychology perform in this field. All these are the ways from which one can learn about the field. Many issues that are related to this field as it progresses need to study through history, analysis, the involvement of influential stakeholders.

Tan and Tan (2014) optimism is the positive thinking about the future outcome and it belongs to the positive psychology it helps people to handle the worrying and unmanageable situation. Optimism is such an attribute that makes an unfavorable situation better through the positive behavior of individuals. This study was done to know the relationship among the variables. Students of high school were the participants of the study. The questionnaire was self-reported. From the study it came to know that negative relationship reported between stress awareness of students and optimism. Also, significant variation was found among different study variables like academic expectation stress, gender, optimism, and self-esteem among better ability youngsters.

The research has been done to have a spark in efforts to know optimism and its relationship with mental, physical health coping strategies life quality and striving for purpose, healthy ways of living and perception about taking a risk. Expectations have the main role in the formulation of thought either positive or negative about upcoming events of life are valuable to get a perception about mental disorder related to one's mood or feeling anxiety also for general health issues. The relationship between optimism and strategies for coping was found to be the significantly positive purpose of these strategies is to support the social situation and keeping an emphasis on better outcome related to stressful situations. Quality of life is ensured by the coping strategies because of optimism. It was found that people with optimistic attitudes spend quality life than those people who are less optimistic or pessimistic. Optimism provides a healthy lifestyle so it influences physical health through making life easy and healthy. Optimists have adaptive attitude and mental response which has a relation with flexibility and ability to solve the problem (Conversano *et al*., 2010). There are a lot of studies carried out about the usefulness of optimism as a term used in

psychology that used in theory development concepts such as dispositional optimism, attributional style.

According to Bailis and Chipperfield (2012) optimism is the level up to which people look forward to what they desire will be fulfilled in the future, and they expect that undesired will not happen. Hope is to be positive and is state of motivation which one has the belief that to have elements through which they can act upon to achieve their goals. To put it concisely both positive beliefs, hope and optimism are the positive conditions of motivation and desirability of positive outcomes in the future. In one article researcher reviewed definitions, leading assessments, adaptive outcomes, risk of hope and optimism. Two major findings were important expectations about the future and little differences in thought can leads to big differences in outcomes. Related to adaptation the persons who think positive they also do efforts to save their future and at first they do efforts to make their present better.

According to Nes *et al.*, (2009) higher education leads to good health, high income, and more expectancy about life. The research was about student's college retention and their positive thinking about upcoming events. The reason behind is that most of the freshmen who expected to take admission in college never graduate. This study observes whether there is an association between optimism and college retention. The survey was done for this purpose. The survey was executed at the time when the student enters college, and their results were taken when they completed their 1st year of a college education. Results showed that optimism had an association that less chance of college drop-out, more adjustment and motivation. The association of optimism found with higher academic results of students. It was found that dispositional optimism affects student retention because it is a predictor of student retention through motivating and making better fitness of students, which has

ultimately effect on retention. Furthermore, academic optimism affects students' academic results via retention, motivation, and better fitness to the environment.

Scheier and Carver (1992) reviewed that research which investigated the useful outcome of optimism on general health including physical and psychological wellbeing. In their work, all those researches focused which are longitudinal in design. The beneficial effects of optimism and its mechanism is recognized. The focus was to know the ways optimism brings to the path in handling stress in a better way. In this paper, the researcher has considered the differences and similarities among theoretical researches and many other researches that executed by others.

Shaheen (2015) examined the relationship of psychological distress with optimism and self-esteem. The role played by variables is to overcome the psychological sorrow among youngsters. An equal number of students from professional and non-professional students from Aligarh Muslim University were sampled. Optimism assessed through a life orientation scale revised. Self-esteem was assessed through self-esteem scale. Questionnaire for health was used to measure psychological sorrow. Results indicated that the relationship between optimism and self-esteem was found negative. There was found negative correlation between psychological suffering and self-esteem. On the scale of optimism and self-esteem, professional students scored higher than nonprofessional students. The score of non-professionals was high on psychological distress than the professional group.

Khoshouei (2009) carried out correlational research. The variable of the research was optimism, mental pressure, and coping style. This research was done at Isfahan (Iran). The outcome of the study showed that the relation of optimism and its component with mental pressure and inefficient coping style was negative. There was a significantly positive relationship of optimism and its components with the efficient

style of coping. Stress sometimes leads to inefficiency to deal with the situation. People who feel that they can not deal with the situation they prefer to quit the situation. Due to not dealing with the situation in reasonable way this sorry state of their mind leads them to the path of frustration and unhealthy life style.

Schweizer *et al.* (1999) investigated the relationship of optimism with anxiety and found that if the optimism level was high then anxiety level would be low. So, they found an inverse relationship between optimism and anxiety. The statement of the researcher indicated that if the people were less positive about their upcoming events so their anxiety would be at a higher level. Anxiety is such a factor that decreases performance and hence lowers the chances of success and well-being. Highly optimistic people have a lower level of anxiety hence they can perform well in the day-to-day situations of their life. If someone wants to enhance the chances of their success, one must find to take training and clinical sessions to overcome anxiety.

Bagana *et al.* (2011) executed a study regarding optimism and anxiety about exams and self-esteem in students enrolled at high school and found a significant difference in students regarding the variables score of the girls was higher than boys on optimism differences between girls and boys were also found regarding anxiety of exam and self-esteem. It is observed that students who think they will pass the examination with excellence they do efforts due to this optimistic attitude. On the other hand, those who do not practice well for preparation they become frustrated due to their pessimistic attitude. Their such attitude weakens efforts for goal achievement.

Optimism is related to positive outcomes which in turn enhances and maintains wellbeing. The relationship between optimism and psychological well-being investigated in one study. Comparison was also made between Hindu and Muslim community based on optimism and psychological well beings. Both male and female

students were part of the research belongs to Aligarh Muslim University. Sample of this study comprised 120 participants out of which an equal number of participants from both communities. Sampling of these participants done through a simple random sampling method. A statistical procedure used to assess the relationship. For comparison between gender and students of both community, t-test was used. The result of the study revealed the correlation between psychological well-being and optimism found positive. The same results found regarding the gender of students (Parveen *et al.,* 2016). Positive thinking leads to well-being. Study from Aligarh Muslim University revealed that both are correlated.

According to Wrosch and Scheier (2003) who researched the value of optimism and adjustment to goals they resulted that optimistic people handle difficult circumstances more easily than the pessimistic individual. Optimistic people can use coping methods which are regarding focusing on the situation which is related to the problem they can use more ways of positive reframing. Researchers agreed that depression is responsible for obtaining a low score on the optimism assessment test. (Nolen-Hoeksema *et al*., 1986; Jaycox *et al.,* 1994; Schweizer *et al.,* 1999; Dubow *et al.,* 2001). According to O'Connor *et al.* (2000) it is still not clear that which factor is responsible for the impaired optimism and leads to depression. Here is a need-to-know mental dysfunction is the reason or these are because of depression if negative thoughts remain for a long-time cause depression or that are depressive thoughts which are responsible for long term negative views? Seligman (1991) found that everlasting views of loss can cause the promotion of depressive thoughts ultimately all these affect the mental as well as general physical health.

2.1.9.2 Social perspective of optimism

According to Seligman's (1991) traumatic life events are responsible for the beliefs found in people. Those who get loss of their parents in early developmental stages of life it is sufficient chance for them to become pessimistic. Other traumatic life events are also responsible for molding attributional style if circumstances are not controlled. The children who remained economically deprived in adulthood seem more pessimistic than the children who have improved economic condition in their early childhood. The style of optimism and pessimism which have been developed at an early age is important for calculating about future expectancies throughout life. According to Higgins and Hay (2003) optimistic and pessimistic style is not cognitive but it depends on the situation. According to Seligman (1991) & Vaughan (2000) pessimistic thoughts can be changed, depends on the ways of dealing with the situation.

According to Seligman (1991) to develop optimism and pessimism three important factors are responsible primary factor is all those explanations and ways of narrating the events in which children listen from their mother as they influence from them. According to Seligman and colleagues (1984) this influence is cyclical, children are affected by mothers and mothers are influenced by optimism found in children this process works like a cycle. According to Hjelle *et al*. (1996) optimistic influence from the father on the children is much more as compared to their mothers. Children try to follow the pattern of their parents while explaining the negative or the positive events. So, children are highly influenced by their immediate environment in which they live regarding optimism. This shows that the environment is also one of the factors to reshaping the optimism of the children (Seligman, 1991). Ways of parenting to raise their children have a crucial role in imparting them with beliefs rather optimistic or

pessimistic. If parents are authoritative with their children, they ultimately develop in them a pessimistic thinking style. Optimistic individuals have parents who gives their children freehand for the choice of activities (Hjelle *et al*., 1996).

2.1.10 Optimism as a personality factor

Hamidi and Memari (2017) have investigated among teachers the correlation of academic optimism, personality traits and mindfulness. The population of this study was student teachers, studying in the teacher training university in Iran. The population of the study was nine hundred student teachers. The technique to draw sample was purposeful sampling. One hundred forty-eight participants were selected. To measure academic optimism school academic optimism scale was used. To measure the mindfulness Toronto mindfulness scale was employed. To measure personality traits, Neo personality inventory was administered. The statistical procedure used to analyze the data consists of mean score simple Percentage, frequency regression and correlation analysis. Findings showed that the relationship between optimism, mindfulness and personality trait seemed significant among student teachers. It was also found that teacher's academic optimism influenced the student's academic performance. while for the teacher's recruitment and selection, personality of the teacher must be kept in mind because they indirectly affect the student's performance. Psychological tests would be relevant because optimism has a crucial role to impart this ability through different teaching methods.

The research was aimed to examine the relation between optimism and Emotional intelligence (EI) the way of how they perceive. The sample drawn was 300 participants from the faculty of education. These students were from the academic year 2010-2011. To assess the level of optimism the scale for optimism was applied. For the measurement of intelligence, an emotional intelligence evaluation scale was used. For

the statistical procedure correlation, linear regression was applied. It was concluded from this study that correlates of emotional intelligence (EI) and optimism level of participants was positive (Kumcagiz *et al.,* 2011). The results of the study shows that emotional intelligence and optimism are the positive personality traits that are related to each other these are the factors that bring positive changes in personality in daily life also. The optimistic people see the bright side of the events and act according to that with positive emotions and solve the problem with intelligence in this way they get success in every field of life. So, both the attributes, optimism and emotional intelligence are positively linked with each other.

A study was carried out for the correlation between optimism-pessimism and traits of personality of students at the university of Hashemite. 534 students were taken as a sample. They were undergraduate students enrolled at university time duration was 2010-2011 semester of summer. The relationship between optimism and one of personality factor introspection was found positive. The relationship between pessimism (emotional balance) and pessimism (emotional thinking) was found significantly positive. A significantly negative correlation was found between pessimism and personality factor extraversion and that of pessimism and the personality factor introspection of undergraduate students (Mahasneh *et al*., 2013). With the increase of pessimism personality factor extraversion decreases and with the increase of pessimism and introspection decreases.

The purpose of the research was to investigate the correlation of dispositional optimism and big five factors of personality. In this correlational study sample was 432 from a total five sample. Three scale of optimism was used and 5 different scale of big five personality was used. It was found that the relationship between four out of the big five personality factors and optimism was strongly positive. To think positive is a

personality attribute So, most of the big five personality factors found strongly and positively correlated with dispositional optimism. These four personality attributes were the stability of emotions, extraversion, conscientiousness, and agreeableness (Sharpe *et al.*, 2011). It was found that with the increase of dispositional optimism personality attributes also get stability.

2.2 Creativity

2.2.1 Concept of creativity

Different fields of study have different concept of creativity. It is frequently used in all fields of study according to researchers Treffinger, Young, Selby and Shepardson (2001) creativity means exploring deeper ideas, it is the ability to generate ideas, openness and can dig out ideas and giving importance to one's inner thoughts. It is the search for ideas and to generate more ideas it is called fluency in thinking different ideas and new viewpoint called flexibility and new and useful ideas called originality. Creative people are the one who can think variety of ideas or divergent thinkers (Guilford, 1959). Guilford has done a lot of work in the field of creativity, has also distinguished the divergent and convergent thinking ideas. convergent products deal with the aim of only one right solution to the problematic situation, on the other hand, divergent thinking leads to the pool of solutions to the problem. Mostly in the literature of psychology divergent thinking is used as an alternative term to creativity. Divergent thinking to be taken as the brain to produce ideas (Treffinger, 2002). However, divergent thinking is a pathway to creativity.

According to Mumford (2003) the product of creativity should be novel and useful. Bandura (1997) explained creativity as something that is first introduced, and innovation is the follower of creativity only when someone is persistent to work on it.

According to him, creativity is the expression of the ideas of human beings which are expressed in concrete form through which one can judge those ideas. When the knowledge is perceived by human beings, expressed in a new way or even is newly synthesized then it is called innovation. So, innovation required some cognitive skills to convert knowledge into a new product.

Creativity is distinct from intelligence. If it was a type of intelligence, then there would be less need to read about creativity all the knowledge which is known so far about intelligence would be considered as creativity. If intelligence and creativity were the same thing there would be no need for the managers to hire such employees who are creative, they just hire intelligent employee creativity would come in tagged with them. However, it is not so there is the distinction between creative talent and intelligence these are little similar but at the lower level only. In fact, intelligence is a prerequisite of creativity (Runco,2007).

Diamond et al. (1985) view that creativity can be learned through the study of outstanding cases especially persons of worth reputation. This way of investigation provides several hypotheses particularly applying these results based on few cases to many more people. They took research on the brain of famous personality.

The behavioral genetic technique is the method that provides the genetic basis of creativity this technique was improved from the inquiry of inheritance of intelligence. The base was the genetic make-up or phenotypical characteristics that can be studied from the comparison between monozygotic and dizygotic twins or with those brothers and sisters who are 50 percent similar but are not a twin. In another study comparison was made between parents and their children with their substitute parents or adoptive children's postulation is that the children's their genetic appearance are more similar to their parents if they raised by them but it is not the same if they

raised in the environment which is other than their home environment. Studies using these methods to assess IQ find that eighty percent of intelligence is inherited (Jensen, 1980). Monozygotic twins have been found similar IQ even if they do not share the same environment. Identical twins who do not share the same environment their personality traits and test scores were correlated used as an index of inheritance (Waller et al., 1993).

Creativity is the use of imagination and original thoughts into the novel situation or to create something new which is not known before creative people have some attributes which make them different from others. Creative people are confident and are not discouraged through criticism. They know that other people take time to appreciate new ideas. Creatives have the patience to let their ideas be appreciated by others. Creativity is also known as a social phenomenon because it prevails in the social perspective, including work surroundings, which may or may not be helpful for the maximum output. Creativity is not individualistic activity at all, it can take place at a group level in investigative working areas. Where people learn creativity through imitating others in their workplace. This type of creativity is called acquired because it is taken from the immediate environment (Amabile, 1996). However, Amabile has changed her connotation in her later work.

When there is no method to reach the right solution so necessary actions are executed to solve the problem in a new way. These necessary actions for the solution of the problem are called creativity. Creativity is the knowledge about new ideas (Moran *et al*., 1998) creativity is the process in which problems related to issues are solved because the creative problem-solving leads to the solution which are useful and original. The solution to the problem not introduced before is the attribute of creativity and varies from field-to field. Educationists solve the problem through educational

creativity and firms try to search solution creatively through enhancing employees' creativity. Creative ideas are applicable according to the field of study.

It is not easy to make a distinction between creativity and originality because both are two sides of a coin. It is found that creative products are always original. Originality may take the form of novel things which has no match or they may appear different from the usual form. Although creativity and originality are related it is not enough for creativity to be original. Innovation defines utility also. In the practical world, innovation has more importance. The reason for it is that usefulness of the creative product is called innovation. Creativity may or may not lead to innovations but innovation always leads to a useful product Runco (2007). More precisely, originality is the baseline of creativity.

Most people think that high achievement means to be creative, according to many researchers (Guilford, 1950; Cropley,1972; Harrington, Block, & Block,1983) found the distribution of creativity is normal throughout the population children's creativity depends upon creativity flourishing climate provided by parents to their children. So, all the children's can think creatively regardless of their intelligence quotient. (Fisher, 2005). Environment flourishes or hinder the creativity to develop. Those teachers who provide enough chance to their students to talk and express their thoughts promotes their creativity in them. Same is the way when parents provide their kids feedback and encouragement about their performance become confident enough to express the original behavior in given situation.

Gluck *et al.* (2002) explored that how creatives define creativity? Definitions reflect different types of creativity. The study explores the concept of creativity regarding the artistic point of view. The artists who face constraints in their creative work different from those artists who are free in their choices. Sixty-four artists

participated from different domains of arts have defined creativity. As a control group, forty-seven students from the psychology department were taken. Content analyzed and differences were found between artists who were free in choices, and artists in more constraint jobs and students of psychology. The factor on which all the three groups agreed was that creative people must have many ideas. the researcher found differences regarding the function of the creative product as well for a creative person to solve a difficult problem. Both artist's group maintain creativity work have always a tough job while students of psychology have positive feelings regarding the creativity practices are being considered one of the important elements for the informed society of the 21st century. They contribute to economic prosperity at the individual level as well as at the country level. Creative tasks ensure the wellbeing of individuals and is considered an important factor for competitive countries. Education is accepted as a baseline for promoting innovation and creativity (Ferrari *et al.*, 2009).

For the process of creativity focus of the attention is necessary. Wallach (1970) have found that organized and focused thought helps for the finding of distant and original ideas. Matindale and Greenough (1973) found the loss of focused attention many associations occur when it happens during the time of low cortical arousal. Opposite to this situation evidence is also found that when there is no problem with the focused attention there is also loss of the creative insight. Smith *et al.* (1990), have found that pressure and assessment can cause anxiety and attention loss and this leads to weakening creative thoughts because attention diverts to stressors not to task.

Knowledge has an important role in creative thinking two types of knowledge both declarative and knowledge based on facts provides different ways to solve problems but at the moment can stop creativity if individuals rely only on the existing knowledge. Experts also do the same they do not consider much the originality they

give attention to the already set pattern of knowledge (Simon & Chase 1973, Hayes 1989). Knowledge has another important role that needs tactics, which gives attention to the practical knowledge. important problems can be easily solved by applying tactics (Root-Bernstein 1989; Runco 1999). There are some factors of innovation. innovation in the organization is the result of environmental factors that have taken the attention of many researchers who were interested to specify the factors involved in the novelty (Damanpour, 1991; Wolfe 1994; Gopalakrishna & Damanpour,1997). Novelty leads to competitive products that are valuable in the market.

Divergent thinking tests promote flexibility based on open-ended answers in which person has a chance to express his original thought while the test based on a typical set pattern does not give chance to express the original thinking because people are bound to choose the answer already given in the test, they often choose one of the conventional options among them. The open-ended assessment also provides a chance to score based on fluency how many ideas or solutions of the problem given, originality in a way that how much the idea is unique, flexibility (various ideas). Sometimes these tests face criticism but these tests were found side by side to IQ test and other reliable measures used frequently. These tests need to be taken as an estimate the aptitude for creativity, but these are used as a predictor only (Runco, 2004).

For a while stress needs treatment through clinical psychology factors. Some researchers take the term flexible thinking which is also called fluid intelligence which is similar but not synonymous to creativity. Few people take typical school system biased for creativity and do efforts to provide an environment which is creativity favorable and creativity promoting for children of early school years. General creativity is linked with some measurable characteristics such as metaphoric thinking, flexibility, elaboration, and fluency (Guilford, 1959, Torrence, 1974). According to

Runco (2007) flexibility is the capacity for divergent thinking. One thinks of many ways about the solution of the problem and do not converge their thoughts. Flexibility provides potential to think broadly about the given situation. Interpretive capacity of human is also necessary for creativity. Creativity is just expressive problem-solving skill. Motivation is also necessary for the creative performance. Discouragement weakens the performance. Intrinsic motivation plays important role to enhance creative behavior in students. Extrinsic motivation has also its value to produce creativity in students.

Not only refined imagination and hard work but the ability to put together a lot of ideas, skills, and concepts than usual are bases of scientific creativity. According to Freeman (1971) creativity can be developed and promoted by using the discovery method. According to Sommers (1961) superior performance in content matter and to attain creative output in industrial art training can be promoted through the discovery method. There are three basic elements of creativity these are the ability to solve the problem, the orientation of the future, appropriateness, and originality of the ideas (Marke *et al.*, 2008; Fernando *et al.,* 2013; David *et al.*,2013) right and useful ideas are always appreciated those ideas which can solve the problem and which are original and have useability for the future are considered creative ideas and the people who have these four elements in the personality are considered creative. In short, creativity provides the ability to solve problems and provides alternatives to solve new problems uniquely and helps in the production of ideas. (Adams *et al.*, 2009; Elaheh & Barjoyai, 2012; Abraham *et al.,* 2013). The uniqueness of the ideas is also one characteristic these are ideas which related to the person who is introducing and are always unique in their practicality.

According to Amabile (1998) creativity work is performed based on three main components expertise, skills of creative thoughts and individual motivation. Expertise refers to knowledge related to any field, it is based on mental capabilities and knowledge related to technical expertise. Creative thinking skill relates to how people think innovatively, imaginary to solve the problem. Motivation relates to intrinsic motivation that works based on inner passion not the extrinsic motivation which works on the external factor reward etc. but the inner passion to solve the problem is more valuable. Intrinsic motivation is more influenced by the immediate work environment. In an intrinsic motivational environment, people do not feel that they are being used because they get money in the form of reward. Organizational support is necessary to perform creative task supervisors play an important role to foster creativity if they encourage creativity then it will flourish and if they discourage it will suppress. It is the responsibility of every organization that puts an appropriate system that ensures the promotion of creativity.

Most of the time old ways of education stop the creative ability of students. Creativity needs unusual thoughts. To possess creative abilities in students sometimes makes it tough for the teacher especially when the teacher is old fashioned it is hard for them to assess and adjust the students with unusual thoughts that is the reason such students do not get a place in the ideal students' profile. Traditional teachers like those students who are traditional, obeying, polite, not unusual (Torrance 1963; Raina 1989). They most of time like those students who follow the instruction given to them. They want to see uniformity in students' thoughts and any new idea is opposed by them.

According to the researchers, creativity development is affected by the factors supported by family, pressure exerted by society and availability of the learning material. From the result of a study supported the social environment, teaching and

assessment of the creative thinking and inborn qualities of the learner to learn creatively. An important element of creativity is reliant on the self this quality further supports the standard of student's life completely at the society level. Creativity makes people get more benefits through experiences of life. Creativity generates workable ideas, new outlay, and new chances to perform while innovation makes the product of creativity more refined Dingledine (2003). Creative people have confidence in their abilities. Creative people propose worth able ideas.

Akinboye (2003) described that creativity makes the people get the true knowledge and get benefits from the available resources without creativity it is not possible. A person without creativity spends his life on old patterns, old concepts as well perceive things in an old manner. Creativity produces well-structured concepts and knowledge perception and innovation should provide the base for sustainable education. Creativity generates new ideas the ideas which are not known before if a person has old ideas, then they are not creative. Noncreative people spend their life on the old pattern so we can say that ideas are building blocks of creativity if no new idea there will be no creativity.

This is a key point creativity is an individual attribute that propels to produce novel things that are new in the creation and no one has produced these things or ideas before it (Perry-Smith & Shelly, 2003; Wai, Lubinski, & Bewbow, 2005). It is critical and human mysterious characteristics important for the progress of humanity (Kerr & Gagliardi, 2003) which is called human mysterious trait because ideas produce suddenly in the mind which first seems like a mystery but as time passes these new ideas becomes popular, gradually they remain no more mysterious. This mysterious human trait is involved to produce new ideas which are different from others. so, we can say that the essence of creative thinking is problem-solving it can also be taken as

a primary component of creative thinking. When someone faces problems and ultimately thinks of new ways to solve problems and uses their skills to cope with new situations. At a time, one stop thinking more this is a stage of incubation in psychology then instantly ideas emerge. As soon as person finds the solution to their problem if the problem is solved by thinking new ideas, then this novel thought is called creative thought. Here we have some characteristics of creative individuals these people are open to new experiences, self-confident they have confidence in their abilities eager to co-operate they are fond of co-operation, like to help others, are autonomous in their decision, have high self-esteem and have belief in their abilities with the positive concept they do efforts to get success in life Dollinger, *et al.* (2004). Creatives are open to the new experience they welcome the challenges they have no fear to be criticized they like criticism they believe that through their abilities they can convince people about their ideas. They know to get their ideas accepted, it needs time and patience. The belief about the acceptance of the creative ideas is the essence of creativity.

2.2.2 Theories of Creativity

The propulsion theory of creativity proposed by Sternberg and Kaufman (2012). Some salient features of propulsion theory are basic type of creativity is (a) conceptual bifurcation is the presentation of the already existing idea in a new way or such creative work which has been done before presenting it with little changes. For example, a painting that is done with watercolors that painting may be done with oil paints. (b) redefinition is using of already known in such a way that an idea given for one concept can be utilized for another same purpose. A concept in other situations a reconceptualization of a creative idea. In a way that an idea given for one situation may be applied in other similar situations for example aspirin which is a painkiller nowadays being used to prevent the risk of a heart attack. (c) Forward incrementation

is adding something new in the already existing long chain of ideas for example adding a new scientific experiment in a series of experiments. In our society forward incrementation is appreciated such ideas do not harm any member of society as compared to other kind of creative contribution. (d) Advance forward incrimination is the next level in ideas long chain or concepts that are away from the last idea or concept. People at first do not understand this kind of creative contribution that's why at first this face resistance by stakeholders of society so we can say that advance forward incrementations is not appreciated by the people until unless it became understandable by them (e) Redirection is a creative contribution which takes the field in a direction which is other than from that in which it has been going on. This Kinds of creative contributions adopt a new direction from the work which is done before it means taking the direction which is away from previous work. Redirections has also been taken as a risk to the interest of people the reason is that they take a different direction than that of the previous one and thus risk making people's work in the original line unrelated to the former one. There for this is inclined to overcome hard kinds of resistance. An example of the redirection is the neuroscience revolution, which is taken to be brain phenomena that before it was taken to be in other terms. (f) Regressive redirection is a creative contribution that provides the field a new direction which is adapted earlier but later on maybe left or discarded due to some reasons. For example, adapting old discarded fashion once again. (g) Reinitiation is a creative contribution that initiates and takes the field in a new direction. Reinitiation is contributions that are also not appreciated at first. (h) Synthesis means to make something new it is an invention that brings together previous lines of thought for example invention of the seaplane.

Runco and Bahleda (1987) applied the method to know artistic implicit creativity theories. They found artistic and scientific creativity differences and these differences were significant also. According to artists, artistic creativity involves expressiveness, imagination, and emotions while scientific creativity involves completeness and patience. The artistic point of view is interesting but it has low generalizability. Implicit theories of creativity vary from group to group. Parents implicit theories (Johnson *et al.,* 2003, Runco 1989) Teachers (Runco 1984, Runco *et al*.,1992), children's implicit theories (Miller & Sawyers 1989; Sternberg 1981) for the general population were examined completely. The basis of these differences were parents focus on intellectual and motivational attributes, and teachers focused on behavior between the persons.

The base of evolutionary theory is variation these variations are as a result of mutation. Mutation indicates the process takes place through chance components. Evolutionary theories explain creativity based on chance rather than intentions. This leads to the path of evolution. These are also maintained as proactive creativity (Runco, 2007). Sudden changes in gene sequence leads to mutation which provides the raw material for evolution in turn evolution leads to genetically modified species that are always tolerant of environmental conditions. As evolution leads to changes for adaptability to the environment same is the role of creativity the spontaneous idea leads to the creation of new theories when these theories are justified, they become law Darwin theories of evolution are the example of it. According to this theory, only the fittest to the environment can survive so similar to it only those ideas can survive which are creative, novel, and useful.According to Gould (2002) these evolutionary theories vary little. Darwin's theory has changed and protracted explains about the evolution its initiation and stop according to him evolution has punctuated equilibrium

this is an idea that sometimes changes take place very fast and sometimes they reach a state of equilibrium. But Darwin's theory is debatable.

2.2.3 Models of Creativity

Rhodes (1961) formed a model of creativity known as the 4ps model. This was a very effective model of creativity. It consists of four components of creativity (4ps) person, process, product, and press symbolize traits. The first p is the attributes of person to be involved in the creative process. The second p is the creativity process as a result of which a creative product is introduced, and the third p refers to the outcome of any product which is novel as well as it has usefulness. Forth p is the press and this p tells that whether that product has appreciation to encouraging or stops the creativity press refers to the external environment and all those factors like value of the originality.

The model of creativity was proposed by Amabile (1997) the componential theory of organizational creativity and innovation. This model was an extension of the model before it which was proposed by Amabile (1996) known as the componential theory of individual creativity. This applied to the function in an organization according to her three main components were organizational motivation, resources, and practices of management. These are responsible for a person's creativity which in turn has three important elements related to expertise, intrinsic motivation, and creative thinking skills. These individual tasks when performed at an organizational level they enhance organizational creativity. According to her support from the higher authorities at the management, these levels are must for creativity if creativity is appreciated it will flourish. Another beneficial factor regarding fostering creativity is reward and appreciation. To perform creative task sufficient resources in the form of time and funding is important for the creativity enhancement.

Another model proposed by Woodman, Saweyer and Griffin (1993) was called as interaction model for organizational creativity this model explains three main level of creative behavior known as individual, group, and organization. At the individual level creativity outcome are measured through factors related to biography, mental capabilities. These factors include divergent thoughts self-esteem, reward, and immediate environment. At group level includes group related tasks interpersonal relations of group members, group task, factors related to group culture. These group further makes the creative environment of an organization that is known as organizational creativity. Every unit works together and leads to the creative product.

Ford (1996) developed a model of creativity. Creative action theory operates in numerous social domains. Csikszentmihalyi (1988) also goes after this Model. According to this model, there are three components of a creative task, individual, field and domain. Field and domain are about the scenario in which an individual performs. The mutual relation of people, field and domain operates in a cycle hence, known as a cyclical process. The thought of this creativity model is affected by the social domain and field. In an organization, this phenomenon is applied. There are four parts of the domain; market, the surroundings of institutions, groups, and organization. same as domains, the field also comprised of four parts consumers, specialists, actors of the organization and members. According to this model particular field is the mediator between creativity and domains. According to one study getting knowledge about creativity is important for economic progress and development. It means that creativity adds to economic growth.

According to Getzels (1975) Creativity is the rather urge, attitude, or potential to generate new ideas propose alternation and indicate potential that could be beneficial for the solution of problem, sharing of ideas with one another, discovering

new things, thinking of highest of the mental capabilities and is the summit of human accomplishment.

Kaufman and Baer (2005) projected the model for creativity and model was named as Amusement Park Theoretical Model (APT). This model is the first approach towards the theory of creativity to efficiently overcome gap in the concept of creativity due to contradictory ideas regarding creativity. This model applies the term amusement park as a symbol to investigate creativity. This model has four steps (i) initial requirements(ii) general thematic area (iii) domains (iv)micro domains. The first step that named as initial requirements is broad as the level proceeds next it shifts towards domain-specific.

At the very first step this model has initial requirements. These are related to intelligence, motivation, and environment which is necessarily found at some level for all creative tasks. This is like when you go to an amusement park you need transportation and ticket. Next to it, there are some general thematic areas these are arts, science in which someone can be creative, the same is here at this level just like you decide about the amusement park to visit. You want to visit a water park or prefer to go to the zoo. Furthermore, general thematic area traits related to K-DOCS includes everyday factor, scholarly factor, performance factor, scientific factor and artistic factor. Next to it is the level of specific domains. If the general thematic area is the art there may be such types of different domains as art, music, dance, and many more. This is just like once you need to select the amusement park, you like the most then choose a particular park likewise at one step you have chosen the park of your interest. The same is the case regarding domain which is followed by the microdomains these microdomains are about particular tasks related to each domain.

2.2.4 Perspectives of creativity

Creativity is found in every field of study that includes history, genetics, teaching, science, organization, culture, psychology and information technology and many others.

2.2.5.1 Historical perspective of Creativity

According to Runco's (2007) analysis through history itself a process based on creativity. Historians try to connect the knowledge about facts through the study of records(events) and every kind of remains of past as they start their investigation. They have chunks of knowledge but through study and reconnection of knowledge they reach the climax of reality. This calls for creative process which investigators get step by step as they progress through history. This procedure is not just the substance of reading the truth. Understanding the truth needs to be investigated which most historians do. This process needs thorough investigation about facts some time there is biasness from the previous record. So, accuration in records is necessary for the researchers who research the matter from a different viewpoint. The people who record the history not only provides the picture of that era but also give a forecast of the future. Historian reorganizes the events from the past and reconstructs it in a new image.

2.2.5.2 psychological perspective of creativity

In the field of psychology, creativity has importance because psychology deals with an individual's behavior and individuality and discusses individual differences. These individual differences define a particular behavior related to academic achievement (Naderi *et al*., 2009: Otto, 1998).

According to Rojas (2015), creativity is under progress part of educational psychology and Investigated about the role of perseverance as a mediator between the creativity of students and their academic achievement. The students who participated in the study were undergraduates. The survey done to know the creativity and perseverance. In this study psychometric properties of the creativity scale known as RIBS (Runco Ideational Behavior Scale) and scale for perseverance called the Grit scale used to find out the relationship among creativity of students their perseverance, academic motivation, and achievement. RIBS has two subscale Grit has also two subscales. The motivation found as predictor of grades, grit scale was a predictor of grades in one of the two sample and creativity seemed to have relationship with grades. The same results were creativity and academic achievement as it was assessed by grades. Grit was found as a mediator between motivation and grades it happened in one sample only.

From psychological point, creativity is the potential to generate thoughts that are unique and can be applied in another situation. These thoughts or ideas need to be novel and have usability or applicability. This is the reason creative people can adjust to the new situation and creativity enables them to cope with the situation which arises unusually. Perceptibly, creative person's abilities have worth especially in everyday life performances. Creativity adds up to the evolutionary changes in human life through its role as creative assistance. The study of creativity related to psychology is not ancient as the other field has Greek origins most of the eminent philosophers Plato, Aristotle have not mentioned any worth able debate about this trend. At that time experimental and logical studies and studies about nature were on top priority. Creativity was not debate able at that time even no traces were found at that time (Simonton, 2001).

The research was carried out on the psychological well-being and creativity of sixty participants of secondary level schools and higher secondary schools in Isfahan, Iran. Students were selected aged between fourteen to seventeen years. Correlation among honesty of emotional creativity and intellectual creativity with psychological wellbeing was significant there was no significant correlation between psychological wellbeing and emotional creativity. A significant relationship was found between wellbeing and intellectual creativity. There was a positive significant correlation between honesty and intellectual creativity amongst components of intellectual creativity, fluency has the strong correlation with the psychological well-being of students Ghorbani & Zahrani (2015). Creative thinking and wellbeing found positively correlated. As the creativity increases wellbeing also increases.

To know the correlation among variables anxiety and creative thinking a study was conducted with adolescents at the center of Iran, Tehran by (Tabrizi, *et al.*, 2011). Participants of this study were boys and girls from Tehran. From this study, it was found that difference based on gender was non-significant among adolescents regarding anxiety level and also the same result found between the correlation of birth order and age regarding anxiety. The correlation between anxiety and creative thinking style was found at a high level. At the same time, the creative thinking style may reduce the level of anxiety in students so it can help the adolescents of Iran to use creative thinking abilities for the reduction of anxiety level in them.

Advantage of creativity is that it reduces stress. Creativity also has benefits in many ways at cognitive level stress is a distractor and can stop creative thinking (Smith *et al.* 1990). Some steps can be taken about stress, and are beneficial for physical health and particularly for creativity. Stress can be reduced through assessing, and changing one's behavior (Runco & Seyle, 1988). Stress can reduce the creativity

level of the individual by hindering the free-thinking ability for a while as the positive thoughts take the place of stress in mind. Ultimately individuals regain the ability of positive thinking.

The basic purpose of this research was that optimistic thinking from one's wellbeing and contentment from the job promote inspirational skills. The sample drawn from two design associations, and these were one hundred and eighty designers all these were from google search and were top fifteen design associations. From the study, it was found that an individual's well-being and contentment from the job correlate with creativity. Moreover, inner contentment from the job is correlated with inspirational experiences on the other hand psychological soundness has a positive correlation with inspirational creativity. Results show that both creativity and inspiration have an intact relationship. Our psychological responses indicate that if the employees are happy and feel well-being there is a greater chance that such employees generate more creative ideas (Yuan, 2015). Job satisfaction leads employees on the path of creative thinking and wellbeing.

2.2.5.3 Cultural perspective of creativity

According to Obialo, (2018) creativity is the ability which is operationalized when human beings are required to solve a problematic situation. The meaning of the term creativity varies according to the cultural values of the society. Western culture is rich in creativity related literature than the eastern culture. This research is related to Nigerian culture three cultures Yoruba, Igbo and Hausa to know the creativity relation with the culture. It reflects that the concept of the culture related to society shows the point of view of people living in that society. Religious explanations of creativity are conventionally Nigerian, but the modern concept of creativity is western in appearance. The social and cultural society of Nigeria is the combination of traditional

Nigerian and western concepts of creativity. The fusion of this conception of creativity from Nigerian and Western cultural concepts of creativity the permanent qualities that other cultures take to be creative. The result is that if the cultural conception of creativity has given chance to grow and develop in the different cultural settings, which benefits many shareholders living in a society of Nigeria. The benefited stakeholders are those who keep the responsibility of sponsoring the conceptions of creativity that prevails from that cultural background for the promotion of the experience of Nigerians.

Johanson *et al.* (2003) compared the thoughts of parents and teachers in respect of the creativity of students and parents in India and the United States. They collected information about socially acceptable characteristics of creativity. These are related to creativity and about an ideal creative student. Opposite to what is desirable based on previous research about ideal student-teacher and parents can make difference. The students who are creative and who are non-creative for attitudinal and rational traits showed the difference between India and the United States seemed significant, but parents and teachers were found convinced for the creative potential of student.

McLean (2005) reviewed literature about creativity and innovation and its influence on organizational culture and most of the literature is relevant to the individual. Also, the social environment of the individual can influence the occurrence of creative performance. This article refers more about factors related to the culture and climate of an organization. It plays a vital role in the creativity and innovation of the organization. To get an insight into the top work of eminent researchers like Amabile, Van de Van, Kanter, Angle and many more is discussed in this article. Further, this article provides learning material about how the organizational

environment influences creativity and innovation, the correlation of culture of an organization and its environment as well as correlation between novelty and creativity.

According to research performed by Zhou and Luo (2012) regarding concepts of creativity, most of the studies were about group creativity in the socio-cultural background but the creation of knowledge and group creativity relationship was not emphasized. Their research was aimed to structure in the scenario of learning and group creativity which consists of perception about theory and of empirical study. For the reason review was done in social and cultural perspectives about creativity theory development from person to group-level. How the relationship of group creativity, formation of knowledge and understanding the relationship. The methods used for creativity study and points were emphasized in the group creativity. Study first was the in context of group creativity second was group level creative interaction third was to know methods for developing creativity at a group level. Individuals' creativity adds up to the group creativity and in return helps in the creation of knowledge.

According to Rowland (2011), creativity as the production of novel ideas is a very important issue in education. In the article central idea was that creativity revolves around academic discipline rather than in terms of novel ideas. Here two paradoxes were debated about the transformation of discipline in the background of creativity. One was the creative act not to benefit solely one person but has the ability to benefit the humanity. Another paradox was that to think both within the boundaries of discipline and challenging those boundaries. This indicated that involving the students in the history of subject material taught and needs to involve them in discourse analysis. Creativity leads to adaptation with the changing needs of education related issues which human face in their daily life. As the human civilization progress educational needs of the students also changes.to solve problems faced by students'

insight required at institutional level. This enlightens the thoughts and puts the civilization to the pathway of success. This success is not confined at individual level but they benefits the humanity at broader spectrum.

According to Shriki (2013) in the technological era, creativity has much more importance because it is the part of economic and social growth of society. The education system plays an important role to enhance creativity but most of the time it has not given importance at school. Many reasons are in practice to excuse the situation. The reason is posed that teacher has external pressure to complete the curriculum within given time limits and to get success in the standardized test which needs rote learning also teacher teach the students in the way when they were students, relates that creativity is for gifted children, ignoring all students creativity, teacher feel difficulty to justify creativity of students due to lack of availability of measuring tool for creativity. The purpose of this paper is to suggest an appropriate tool to assess the creativity of students and creativity development in the background of problem posing. The model has four aspects of reality that are fluency, originality, flexibility and organization and total scoring is done based on each aspect of the creativity. Score on the four aspects of creativity shows the students achievement as compared to reference groups. The model has two components one is related to teachers to interpret originality and the other relates to weightage to describe each aspect of the creativity. Learners were suggested to display their score in a graphical form to refine their products in gradual repetition an example was coded from mathematics. This model can be altered discipline to discipline other than mathematics.

2.2.5 Creativity and Information technology

This research was carried out to know the impact of computer-based learning on knowledge of the content of chemistry and creativity on students' academic

achievement at the University of Iran. The research method used was pre and post-test. Out of two classes, 100 students of pure chemistry were taken. Two tests were developed one from the course and to measure the creativity of students Abedi Inventory for measuring student's creativity. Results showed that statistically significant score was obtained for the experimental group regarding knowledge and creativity. It was found that e-learning has a positive impact on the knowledge and creativity of chemistry students (Zare *et al.*, 2016). This is technological era and computer-based learning is involved in every field of life. Science subjects are also being taught using internet which enhance the creativity of students.

Information technology has a great impact on educational opportunities, as they increase knowledge and provides the environment for partnership, novelty and creativity for people and associations. (Ala-Mutka, Punie & Redecker, 2008). ICT provides new ways for things to be done. It enhances other teaching methods hence it develops creativity in students learning. It provides a creative and novel schooling environment through public policy for educational change (Cachia, Ferrari & Punie, 2011). Widely use of internet revolutionized every field. Education is such field which is equally benefited due to the use of technology.

Pimental and Diniz (2014) performed the research. Aim of the research was use of the language in the social network as a source of creative self-expression. Internet increased close relationships among the persons before this it was not the same, computer was the medium for communication among the people. Gradually mobile and computer changed the ways of life of the people. Languages are used in the form of videos, sounds, and images. The source of communication makes the people interact for praise affection and acceptance. Use of the language is a medium of creativity and to express one's thoughts effectively. This is all due to the internet which

revolutionized the mutual relationship of people, which is not as before, use of the internet increased the interpersonal relations. With time both computer and the internet caused huge changes in the daily life activities. Technologies provide opportunities in education and enhance the student's skills. According to many researches it is found that computer-based learning has a positive effect on student's creativity, attitude, and learning (Magnosoon *et al.,* 2010).

Many researches shows that e-learning is much more effective for enhancing student's creativity (wheeler *et al.,* 2002) stated that a computer-based environment increases students learning dramatically. Delavar and Ghorbani (2001) found that virtual learning increases student's level of creativity. Zanganeh et al, (2013) found the effectiveness of the ICT in the expansion of creativity. Results of research showed the importance of computer-based learning which benefits student's creativity.

The education system has importance in learning methods that involve learners in active learning and enhance creativity. Many scholars have suggested that the relationship between learning and creativity is stronger. According to Guilford (1950) creativity is considered as next to learning and knowledge (Truman,2011). Higher educational institutes function according to the need of the society. These produces individuals who are creative with the high academic capability. For the reason to nourish creativity instead of old teaching methods in the current context e-learning in education can be a better way to actualize the situation (Zare, 2016). Tertiary education system provides knowledge to students that has long-lasting effect on their life.

The introduction of technology is a source and need of the time for fostering creativity in students and makes students enlightened who can compete at the international level because technology in learning provides a global learning system

which provides uniform knowledge to all students all over the world universities need to equip with technology-based creative learning strategies.

2.2.6 Creativity in organization

According to Malecki (2013) creativity found at the individual as well as at the collective level. The competition is increasing on symbols, brands, and signs so the need for creativity to manage all these gets importance. Many research institutions and organizations are trying to increase the collective creativity of their employee to compete in a better way organizational creativity located in the cities, people have more interaction to generate creative places. According to study, creativity cannot be completely planned and managed.

Dackert (2016) performed a study purpose was to observe how the affective well-being of team members affects their creativity. Moreover, the effect of variation in education, their age group and their gender about team creativity and their affective well-being was explored. A course of project management was conducted for twenty weeks consisting of one hundred and seventy-three team members drawn from twenty-nine teams. It was found regarding the dimension of diversity both age and qualification has a non-significant effect either on the creativity of team members or their affective well-being. While diversity in the case of team members has a significant effect on their affective well-being. Enthusiasm and contentment both have some effects. Contentment found to have an indirect effect while enthusiasm found to have a direct effect on the creativity of team members. These results support the theory of creativity. From results, it was also suggested that to promote creativity and well-being managers must consider the feelings of workers and managers should have direct interaction with all the members of the team.

Zubair *et al*. (2015) performed research to know the relationship of different variables in an organization and these variables were managers encouragement of creativity task its relation with overall creativity of employees if the employees participate to decide on the organization. Mediator among all these relationships was climate which plays its role for the creativity of any organization. Participants of this study were employees and their managers. For this purpose, two hundred and six employees were selected and also their managers were part of this research. The result of this study shows that employee's creativity has been positively affected by the encouragement of the managers and in the process of decision making to involve the employee also. Climate for change and creativity was found partially mediator. The findings of this research suggested that to enhance creativity the climate of creativity including the participation of employees at the time of making important decisions and encouragement of them by the managers is crucial for the benefits of the organization and is in favor of the creative environment.

The research performed was about creativity in an organization. Aim was the co-operative style of negotiation affects the creativity, efficiency, promise and social behavior in an organization. The survey done to collect data from colleges of Saudi Arabia. Results indicated that negotiation affects creativity while other variables age and experience have no relationship with co-operative negotiation style. Moreover, experience has a relation with productivity (Altalhi & Alshammri, 2018).

2.2.7 Everyday creativity

According to Kaufman and Beghetto (2009), everyday creativity is known as little c creativity and Big C creativity is called eminent creativity many creativity investigations take one of these two types. Little c creativity can exist in almost all people while eminent creativity is found in great people only. The study deals with the

four-C creativity model that increases these two directions of creativity. The researcher expands the idea by introducing mini c and pro c creativity. Mini c creativity is inborn in process of learning while pro-C is about the progress that can be attained with efforts, little- c which required specialization in creativity level. Researchers include many changes and stages of these aspects of creativity as well as include benefits with examples of these four types of creativity.

2.2.8 Creativity in thinking

Many problems faced by the individuals in daily life generally are solved through a process of reasoning. The process of reasoning needs mental capabilities in thought, learning through experiences and making decisions. While collecting the information and generalizing results through mental processing is termed as cognitive style. There are two thinking styles through which human gives a reason of the events that happen one is intuitive and other is analytical thinking style. The intuitive thinking style is spontaneous. In this style people do not put efforts to get knowledge. Whereas in analytical thinking style, conscious, reasoning, and self-controlled way are processed. Sometimes people face the unknown situations in which they use their mental capabilities to overcome that novel problematic situation and they use new ideas to solve the problem. Those who solve the problems with new ideas are called creatives and the process is called the creativity process. Through the process of creativity, the base can be provided to students to make their performance better. It was found that through the use of analytical reasoning students can get more success in their exams. They can improve their overall achievement through this process (Wulundari *et al*., 2016).

Prasad *et al.* (2018) conducted a study on the topic whether technical student's innovative skills are affected by the factors of creativity, personal traits, and trust of the

organization. According to the researchers to solve the problems in a new way students of technical courses use rational strategies as their curriculum is based on analytical thinking skills. There are some personal traits which tell about person's innovative skills. These personal traits are self-confidence, determination to take a risk, tolerance to uncertainty, motivation for achievement, creativity and trust factor in work environment correlation between innovative skills of the individual, and trust in organization was determined. A survey was performed to know the response from students of technical courses of the private sector university of India. It was found that personality traits have a significant effect on innovative skills and lack of trust in an organization has no significant effect on innovative skills.

The work of Xanthacou (2013) provides insight into novel-creativity thinking and tolerance towards unknown circumstances. The study background was university and situation about the future was a professional career that students adopt after completion of university education. The research performed in the Greek university at the undergraduate level. The research was performed with a sample of eight hundred and thirty-six students. Data were collected through a questionnaire. The study examines how physical sciences and social sciences differ in novel creative thinking and forbearance toward the uncertainty of subject. Results indicated that students took traditional choices while in their studies as well as for the choices of professional background mostly students of social sciences do so.

Amran *et al.,* (2019) explored the topic of creative problem-solving skills among university students. According to the researcher, Malaysia introduced the educational policy to improve higher education. A blueprint was prepared six learners' qualities were introduced to achieve excellence in education. The purpose of the blueprint was to transform students according to the need of the 21st century. Among

the learner's attributes, one was to develop problem-solving skills in them. To make students able to solve problems through the development of brilliant innovative and creative ideas.

To become more successful within the academics field beside other skills creative problem-solving skill has much importance and it is crucial for students to get excellence (Hu *et al.,* 2017; Leisian Sa & Tatiana, 2015). Creative problem solving is one's ability to solve problems through creative ideas (Halizah & Ishak, 2008; Saeidah, & Nooreen, 2013). New and creative ideas provide new ways to think and to solve the problem to think out of the box is such ability which always leads to creative thoughts which are novel and not known before these provides confidence to accept the criticism. Ultimately creative products are futuristic and are worthable for the appreciation.

Abraham *et al.,* (2013) examined creative problem-solving skills. It has a focus that everyone is creative it depends on the inheritance. Creativity can be expressed at any level and age as well as it depends on the choice of individuals and their interests. Creativity can also be nurtured at any level of a person's development. According to the researcher's creativity is both based on nature and can be nurtured through learning. People who inherit this quality can express it at any stage of their life. In case they do not inherit it because their parents where less creative than immediate environment can be responsible for nourishing the creative skill. After all, it can be acquired from the surroundings one example of this is the idea of the law of gravitational force. Newton was out of school because he was not good at studies when an apple fell on his head, he thought why this apple came down to earth so the idea of gravitational force came to his mind, and he developed the law of gravitational force.

Torrance (1993) creative thinking is the ability to analyze and reshape information in a new way. Environmental stimuli force an individual to think critically to solve the problems. Creativity can be enhanced through problem solving in daily life. It is the ability of human beings when they face problems ultimately, they search for the solution and learn the ability to solve the problem using their creative thinking skills (Kanabay *et al*., 2013; Kuo-Hing Tsemg *et al.,* 2013; Mumford *et al.,* 2000). Creativity is the way to generate new thoughts and ideas which is a continuous process related to one's ability.

Amhag (2013) explored the blend of two ways of assessment one was self and the other one collaborative peer assessment. Both the processes promote critical and creative skills. It also provides meta -cognitive learning. The research was accomplished through using social and cultural theories, given methods and computer-based mutual learning process. Collection of information was done from twenty-two student teachers. Peer feedback taken as peer assessment processes and self-assessment was done during 2 successive web-based courses. Results showed insight into the collaborative peer assessment process, differentiating, recognizing, defining the content material in self-assessment, student peer feedback and also shows the relationship among these. Creativity was turned out to be a higher-order thinking skill based on the excellence of subject material and creativity when arranging the responses. Peer assessment process can work as creative practices on which higher-order thinking is based.

2.2.9 Scientific creativity

The purpose of this study was to find out the academic achievements and to know the scientific creativity of students in the subject of chemistry. The selection of the sample was carried out through a simple random sampling method. The research

was conducted in Kenya two tests, chemistry scientific creativity test and achievement test of chemistry were used. Results indicated that the relationship between academic achievement and scientific creativity in chemistry was positive and significant (Florence *et al.*, 2015). In the field of chemistry students usually do an experiment to make products these practices boost their creativity level, in turn, it affects the student's academic achievement. That is the way the students who are a better performer at their tasks are also at high creativity level.

Another research aimed to find out the scientific procedure in teaching to enhance scientific creativity, scientific attitude, and academic achievement in science. A controlled group with the model of research related to pre and post-test used for 7^{th}-grade students who were from the district of Turkey. Achievement scale scientific creativity scale and scientific attitude scale used. The result indicated that scientific education increases scientific creativity and student achievement (Aktamis & Ergin, 2008). According to the findings of this study education of science puts emphasis to increase independent thinking in students which in turn promotes creativity thinking abilities in students. The students who can think creatively usually show better performance in their studies. Scientific studies are necessary for students at one or the other event of the academic life of students so, they become able to think creatively and become better learners and in turn, add up to the economic capital of the country.

Scientists when doing scientific research use creativity at every step of investigation (Abd-el khalick & Lederman, 2000). Creativity is the essential ingredient in scientific research. Creativity in science is used in the selection of research problem and formulating hypotheses and even designing experiments. Science is that field that has creativity components, influences at every stage of life also leads to the new outcomes. To develop a basic scientific understanding the individuals needs to have

creative thinking and use their scientific skills. To deal with the daily life problems creative scientist needs to search for the useful and new solution. Creative scientists are more sensitive to dealing with the problems. Each educated person can take the start of their educational life through operationalizing creative thinking skills. The people who have learned scientific creativity can use this skill in dealing with any other problematic situation. (Meador, 2003). Creativity is considered as a problem-solving skill but there is a need for thinking differently, recognizing the problem, creative performance and finding the solution.

The creative process needs to pinpoint the problem which plays an important role. (Erdener, 2003). Torrance has done the best definition of science-related creativity. According to this definition the creativity is knowledge and identifying the gaps in the problem or the information related to it, creative process generates new ideas or formulates hypothesis and its testing, and communicating the data (Torrance, 1995; Dass, 2004). Creativity is an essential component of expertise in the field of science to solve the problem, to create a hypothesis, to design experiments and technical novelty needs a particular kind of scientific creativity. People are creative in particular fields. Those who are creative in the field of chemistry, are not necessarily good at painting (Liang, 2002). The essential thing is that creativity in science or creativity in general (Lin *et al.,* 2003). Creative ideas are always appreciated either they belong to science or any field of study.

According to Koray (2003) creativity has a vital role in making a new products and in search for solutions to the problems faced in daily life. According to scientific research, creativity has a vital role in several scientific procedures. Creativity is the functional side of science education this is the reason that scientific information is the

base of valuable products. Developing creative thinking skills in elementary school is the most important purpose of science education.

According to Michalopoulou (2012) There are a lot of skills which are the base of inquiry-based learning and especially for the children they need many experiences for the development and use these skills from basic education level. Inquiry-based skills need not to be taught independently but may be integrated with allied topics in which children have an interest. Children may be offered opportunities to create and discuss ideas for the solution of the problem through brainstorm, they reflect the plans and reasons for choices. The research took place in Kindergarten at Volvos. The purpose of this research was to investigate feelings, perceptions responses to external stimuli and their way of thinking through the reflection of pictorial arts. This study focuses on students' reflection, responses about the paintings and provides them environment in which they express their perception of art pictures. These creative expressions make them able to become a finder of creative solutions.

According to Lovat & Fleming (2015) the review of neuroscientific research is to get the knowledge to give reasons for critical thinking about creativity. Moral education in promoting the creativity linked with the promotion of critical thinking which suggests the deep knowledge of neurosciences. This article reviews the literature consisting of past evidence about the role of moral education to take part in promoting, creativity imagination and curiosity.

According to Barrow (2010) scientists face a new situation and investigate it. They take help from creativity to cope with this situation and solve the problem with a new direction. Scientific education of k-12 does not support the role of creativity. When scientists try to solve new problem then scientific technology provides a pathway in doing scientific inquiry.

According to Tsurusaki *et al* (2017) creativity has importance both in the field of science and arts, but it is a common view that arts is more related to creativity than the field of science. There are many approaches in education that creativity is common to both fields out of these approaches STEAM is one of the approaches in education. This paper discusses views about creativity in the subject of science and arts. The students were from summer academy studying in class 5^{th} and 7^{th} all students were female. The concept that students have about creativity, by focusing on four P agenda planned by (Rhodes,1961). It explains similarities and differences found in the views of students about creativity in the field of arts and science. Female students have views regarding creativity, in the field of arts it is linked with the person while they have views about creativity in science, is related to practical knowledge or processes. The STEAM approach was found authentic for the development of creativity for both art and science, which promotes interest in both fields.

According to Armentano (2012) it is the concept that secondary school students have not good skills regarding mathematics and sciences. They need to graduate such products that are useful and able to satisfy the customers in this rapidly progressing market. Creativity can stimulate our imagination it provides confidence, to inquire and discover new things from the new situation. Creativity may concurrently be incorporated in other fields. Many countries are revising their curricula for scientific education and introducing pedagogical pattern and also in the field of engineering if creativity is promoted in this field in turn, it will stimulate critical thinking.

According to Hadzigeorgiou *et al.,* (2012) There are many ideas in school about science education. School's scientific creativity consists of investigation about science and combining arts and science. This formed the reason researchers used the word scientific creativity and its applicability in school-based scientific education.

Besides these, a lot of activities that promote creativity and creative thoughts through teaching science programs at school.

According to Schmidt, (2011) most of the nations have reviewed about science education and promoting new ways of teaching. Purpose was to check the reasons for a smaller number of enrolments. The main factor was that people have perception that science is not a creative study field. It is an effort to change public views required to improve schooling at the primary and secondary level but little effort done. Loss of excellence and originality of outcome of mental capabilities such as mental math is away from the environment of secondary level. To reduce the systematic decline of science study needs of encouragement for interrelationship of culture's and society norms, factors related to psychology and intellectual that promote the creativity of students. There is need of balance between perception and practices of creativity that should not be confused so it might not bind the opportunities at all the level of education. There is a need to integrate efforts to promote creativity to get field related knowledge. This knowledge must be practical to sort out the solution of the difficult problems. There is a need to amalgamate the knowledge of science systematically to make the student creative enough to solve the problem by themselves.

2.2.10 Artistic creativity

According to Roman and Caudeli (2019) In recent times it is required that people must be able to solve their problems but also able to identify the new situation. It is important to produce people who have aesthetic sense and capable to express it. Opposite to it in the education system of Spain, study about art and creativity vary from region to region. In the future studies author showed interest to review creativity, the position of education about music. To increase the mental capabilities of students

the relation between creativity with musical education was analyzed in the school of Spain at primary level.

2.3 Academic Performance

Richardson *et al.* (2012) reviewed thirteen-year past research literature of grade point average scores got by the students of the university and concluded: complete mapping based on the concept of those correlates of university students grade point average and measures the methods of average known correlates with grade point average and all those tests which assess multivariate models of grade point averages with the same domains and across it. The researcher completed a systematic review. This was from many resources from the year 1997 to 2010 and involves many articles. These articles were approximately seven thousand. Most of these articles were from the English language context which shows results of up to fifty correlates of grade point average giving weightage to three demographic factors and five old-style measures related to cognitive capability or previous academic performance. Besides these correlates forty-two correlates of non-intellectual constructs were found from five other domains these non-intellectual constructs were (i) traits related to personality (ii) factors of motivation (iii) self-regulatory learning tactics(iv)approaches adopted by students for learning (v) psychosocial contextual influence. Researchers have done a meta-analysis by using one thousand hundred and five independent correlates. A significant correlation was found for forty-one of fifty measures. The univariate analysis shows that psychosocial contextual factors and demographic variables have little correlation with the grade point average of students.

According to Narad and Abdullah (2016) academic performance predicts the economic development of the country based on educated individuals. It makes possible for students and parents to assess the recent progress of pupils, as well as academic

performance, decide the progress of academic institutions as well. According to the researcher, academic performance is the achievement of the goals set by an institution over the academic year through assessment of knowledge gained by students in the form of obtained GPA, marks and other assessment outcomes set by the academic institution.

Santhi and Suthanthiradevi (2019) academic performance is knowledge outcome through which parents, students, teachers achieve goals through the gain of knowledge. The factors including student's and teacher's relation, home school environment and teacher's qualities are influential for students studying in government schools. Most of the secondary school students show the middle level of performance. Other factors home school environment, student teachers' relationship and quality teachering positively correlated with the student's performance at the secondary level. To get better results it is required that government should take such steps to make better infrastructure and need to maintain friendly environment between students and teacher's relationship at schools governed by the state.

The research was done by Kotzé and Niemann (2013) about psychological resources as a predictor of academic performance of students of 1st year at higher education level. Purpose of the article was to know hope, optimism, and resilience as a predictor of academic performance students of the first year from psychology department were sampled it came to know that optimism was not a significant predictor of academic performance.

Edmonds in (1979) identified strong administrative leadership, effective instructional practices using those instructions through which effectiveness can be increased dedicated to basic life skills, well-disciplined well-ordered surroundings, and evaluation of student's performance is done frequently. His work yields the factors

which are also called correlates of school effectiveness. This is the environment where children feel safe and learn more in such an environment which is physically as well as psychologically sound. Students can only perform better when satisfied with their immediate environment. This is the environment in which the teacher develops confidence in students to perform better that is demanding task.

2.4 Relationship of Optimism with Academic Performance

A study was undertaken by Luthans *et al*. (2007) to know the way optimism, hope, resilience, and self-efficacy find out satisfaction and performance at work both individually and as a complex higher-order factors. The study introduced the psychometric properties for the assessment tool made to assess optimism, hope, resilience, and self-efficacy as well for composite factors. The result showed that a combination of optimism, hope, resilience, and self-efficacy has a significant relationship with performance and satisfaction. It also came to know that rather than the individual facets composite factor found to be a better predictor for satisfaction and performance.

Chemers and Garcia (2001) performed study two times in a year about the adjustment of students in their first year at university. They examined the influence of optimism and student's self-efficacy on their performance in academics, stress, health, and obligation not to leave the school. Some variables were predictors, and some variables were moderators both evaluated at the starting quarter of the academic year and other than these are measured in the last of the educational year. As it was longitudinal study its data collected two times in a year. Predictor variables included GPA, optimism and self-efficacy and moderator variables include expectations about studies, perception about coping strategy. Other variables that assessed at the end of the year were performance in the classroom, personal adjustment, stress and health-

related. Strong relationship found of self-efficacy regarding academics and optimism with academic performance and surroundings adjustment. All the variables were under the influence of moderator variable indirectly and were influential on classroom performance, stress, related to health and at a large on satisfaction and commitment not to leave the school.

Ghanbarlou *et al.* (2015) performed research to know the relationship of two variables one was optimism and other was emotional intelligence relating to the academic achievements of students in Iran. The population of this study was 613 teachers. Three hundred and two teachers chosen through a stratified sampling method. The questionnaire about emotional intelligence scale in the Farsi version used and another questionnaire used was the Teachers Academic Optimism questionnaire. Data analyzed through regression analysis and correlation. It was found that relationship among the variables exists. From the results it came to know that teacher's optimism turned out as a predictor of achievements of students. In this study trust of the teacher on parents as well as on students formed a crucial role to determine the academic achievement of students. The teachers trust gives confidence to both students and parents for better performance. Students who gain confidence from their teachers tend to be more optimistic to make decisions about their study as well as in every field of life so, trust has a positive effect on overall better achievements.

A study was accomplished by Akhavan *et al.* (2011) with three variables these were efficacy of teacher student's achievement and academic optimism affected by coaching. The focus was on the sustained professional progress of teachers. Coaching has its importance either it is teacher's coaching or pupil's through academy, teacher's coaching adds professional development it enhances the teacher's capacity. Three variables academic optimism, efficacy, the trust of teacher and focus to academic

coaching. It was found that teachers who receive coaching are significantly related to teacher's efficacy, student's achievement and teachers say that coaching increases their capacity and it has a positive significant relationship with overall teacher's and student's performance as well as it influences student's optimism level and teacher's optimism level.

Temidayo (2013) did a study to know the relative and composite associations of academic optimism, motivation, and mental capability. The study was focused on academic optimism out come at secondary level. The study was conducted in Nigeria. Descriptive research was done multistage stratified random sampling was chosen for the sample of the study comprising of 588 participants. Four instruments were used for the collection of data and these instruments included almost perfect scale revised, general achievement goal orientation scale. For the independent variable, mental capability test was used and for the dependent variable results of maths, science and english subjects were taken from the junior school certificate exam. Multiple Regression was done to analyze the data. It was found from the research that both optimism and motivation related to predict academic performance. Out of these three variables mental capability is the one that can predict academic performance with more strength.

According to Sahar and Tariq (2011) relationship between three variables one emotional intelligence second optimism and third was the academic performance of students. The study performed at the high school level. The sample of this study was fifty students with an equal number of girls and boys. The sampled students aged between the range of 16-20. These students sampled from three private schools in Rawalpindi Pakistan. For the measurement of optimism, the revised scale of optimism by scheier and carver used for the measurement of emotional intelligence test used was

self-reported test for emotional intelligence. Student's academic record from the last semester was used to measure academic achievement. The results show a considerably positive association found between Emotional Intelligence (EI) and optimism level of students. It also revealed that emotional intelligence and optimism related positively to the academic performance of the learners. Those students who are emotionally sound and intelligent are found to be a better performer than those students who are not emotionally intelligent and pessimistic. Results showed that positive thinking about future or optimistic attitudes in students increases the likely hood of better performance in the exam and brings success due to positive belief and confidence about future performance.

McCulloch (2006) performed research to know the relationship of optimism, hope, gender differences, and achievement of the learner at university-level students from both genders were participants of the research. The instrument for data collection was questionnaire, performance assessed through the total score achieved by the students. For data analysis techniques regression analysis done. It was found that hope, optimism, and gender have no significant variance, but motivation has a significant change in academic performance. According to this study, there is no difference in achievement of the students regarding three variables which include optimism, gender differences and hope at the university level. Another factor that turns out to be causing change is motivation; both inner and environmental.

The assumption made by Stoecker (1999) that if student's optimism level correlated with what they belief that how they will perform in future academic sessions, for the reason research aimed to know about the relationship of level of student's optimism at college and their expected performance in assumed university classes. All the sample students belong to psychology department. To measure the

optimism of students LOT-R was used. Student's grades were taken for their academic performance and instructed to write their predicted score if they get in their future study course. From the results, it was found that there is no relationship between optimism and expected grades.

Purpose of study was to know the relationship among optimism, self-esteem, and anxiety with academic achievement sample of study belongs to education class. It was found that the relationship of optimism and self-esteem was significantly positive with academic achievement. It was observed that correlation of anxiety and pessimism to academic achievement was not significant (El-Anzi, 2005). The findings of this research showed that optimism and self-esteem have a positive effect on the academic achievements of students. Those students who are optimistic and have high self-esteem shows better performance and the relationship between anxiety and pessimism was found nonsignificant with academic achievement. The reason behind these results is simple that optimism and self-esteem are pleasant attributes that brings pleasant attitude regarding goal achievement. While anxiety and pessimism are related to the psychological disorder which brings goal distortion in students so those students who have anxiety and negative thoughts, they also think that there will be no success for them in upcoming events are called pessimists. Most of the time pessimists do not show better performance in the test or exam.

According to Prola and Stern (1984) to know the association of college student's optimism with academic performance. For this purpose, information gathered from male and female learners who had freshly taken admission in the college. For the academic performance student's previous exam scores which were two years back were taken and optimism scores were correlated with these grades. It was found that student's GPA and their optimism at the college level has association. It was found

from the outcomes who are good at studies were also positive thinkers about college as well they perform better at college.

A study was related to students of the first year of university. The variables of research were dispositional optimism, academic performance, well-being, and symptoms of psychopathology. This research aimed to find out the correlation among the variables. The population of study was students from tertiary level. Three hundred and sixteen students form the sample were the freshmen. Data of the study collected through questionnaire. From the results negative relationship between psychological indication and optimism was found. A significantly positive correlation between success and optimism was found. Relationship between well-being and optimism was found positive. It inferred that four variables were investigated among the university student's dispositional optimism and well-being was taken from positive psychology. Monteiro *et al.* (2008) psychopathological symptoms related to the psychological disorder and another variable students' success was taken. The result of the research indicated that there was positive correlation found among dispositional optimism and well-being in both these variables related to positive psychology. Relationship of dispositional optimism and psychopathological symptom found significantly negative. Correlation among dispositional optimism with academic success was also found positive. students who think positively about their performance also have more chance of success.

Inuusah *et al*. (2019) carried out a study to find out the relationship of learners' performance and their creative thoughts. Student's performance was checked in the subjects of English spoken and mathematics. Purpose was to know how much they were creative thinkers. The population of the study was students from junior high school. A correlational study was done. An instrument to gather the information was a

questionnaire with tests in the subject area that were developed by experts in the field. The results of the study showed that the correlation between students' academic performance with their creative thinking was significant. Gender turned as a significant moderator between academic performance and creative thinking. Female participants were found less creative thinkers in both the subject English and mathematics as compared to male counterparts.

Singh and Jha (2013) carried out a comparative study among students of engineering and medical colleges of the private sector. The variable of the study were anxiety, optimism, and academic performance. The researcher mentioned that these two fields engineering and medical were quite tough and students often felt stress and anxiety during study these subjects. The role of optimism is considered as a buffer of anxiety and plays an important role to reduce stress. Purpose of research was to measure student's anxiety associated with academic performance and optimism. Participants of the research were engineering and medical students of Uttar Pradesh, India. The second purpose of the research was about the differences related to three variables; anxiety, optimism and academic performance including gender in both fields. Sample of the research was drawn from three medical and four engineering colleges. The academic performance results of the newest two semesters were taken. The results of the study showed a negative relationship between the variables optimism and anxiety. Same results were found between academic performance and anxiety. Optimism found to have a positive relationship with academic performance. The gender differences seemed; insignificant while the difference between engineering and medical students on the three variables was found significant. Further added by the researcher that results of this research will add up to the better performance of students by capturing the attention of faculty members and higher authorities.

Luthans *et al.* (2008) performed research to know the relation between nurses self-reported optimism and their performance reported by their supervisor. The study was conducted in the United States and the sample was seventy-eight nurses from health care hospitals of the Midwest. A survey was done for this purpose. To assess, performance information from the supervisor was taken. The result of correlation indicated that the relationship between nurses optimism level and their performance at work was positive.

Siddique *et al.* (2006) carried out study to know the effect of positive thinking to worry about performance and expectation about the future. The factors are directly or indirectly related to student's performance and self-efficacy expectations. Students were evaluated while in the first year of their schooling. Results showed that the correlation between anxiety and self-efficacy was significant. It was found that when anxiety kept under control then solely worry leads to the higher academic performance of students. The relationship of expectations was positive to ranking in the class as well on final assessment performance. The relationship between optimism and anxiety was found inverse but had no relation with the performance.

Bevel and Mitchell (2012) in a study determined the correlation between optimism and reading attainment of students at the elementary level. The researcher performed regression analysis and correlation. Students of fifth grade from twenty-nine schools were taken as a sample. Results of the study showed that the relationship of academic optimism with reading achievement was positively correlated. The relationship of reading achievement with components of academic optimism was also positively correlated. Socioeconomic status was negatively correlated with the academic optimism and reading achievement of fifth-grade students. It was inferred

that if students think positively about their achievements, then this optimistic behavior will add up to their performance.

Cenk and Demir (2016) conducted research to know the correlation of optimism with academic performance, style of parenting and gender. People of interest in the study were Turkish Youngsters. The variable examined was the optimism level of students between the age group fourteen to eighteen. Students were selected from both the genders studying in three secondary level schools of Ankara. The tool for the data collection was the life orientation test through which optimism was assessed and to assess parental attitude scale was used. It was concluded that students with the higher academic achievement also have high optimism level and those students with lower the level of optimism also show lower academic achievement. It was also found that student's optimism level also depended on the type of parenting. The students who perceived that they have authoritative parents showed higher level of optimism than the students who feel that their parents are authoritarian.

Wagner and Dipaola (2011) performed research to know the correlation of optimism with academic achievement of students of 9-12 grade, and school's organizational citizenship behavior. The participants of this study were full-time teachers, instructional faculty, and school counselors. Teachers who participated in the research were from Virginia and were taken from Virginia city. It was found that optimism has a correlation with the achievement of students. A strong correlation found between school's organizational citizenship behavior and academic optimism. Teacher's self-efficacy, concepts about teaching methods and ways of learning and performance of students accordingly promote vision and helps the administrators to enhance quality in teaching and learning contexts.

Shaun *et al.* (2009) executed research about the attributional style of student's performance. The research carried out at the University level and students of the first year participated in the research. Aim of the investigation was to know the students' performance due to their optimistic or pessimistic attitude about the events. Student's positive attitude about the upcoming events examined. It came to know from the dry run out correlation between students' performance and their positive attitude towards upcoming events has no relationship. Based on marginal evidence, it was suggested that past unrealistic optimistic attitude would be responsible for their future poor performance. Results from the other study also collaborated that there was no relationship between student's marks and optimistic attributional style.

Duffy-Friedman (2007) executed a study to know the relationship of academic optimism with components of optimism, academic emphasis, the trust of faculty in students and their parents, collective efficacy. To identify the relationship between student's academic achievement, the standard of annual progress with academic optimism, and to point out practices that show academic emphasis, the belief of faculty in parents and students and collective efficacy as these are components of academic optimism. Data was collected through survey method and qualitative data was collected through interviews. Data collected from principals and teachers from one low performing and one high performing high school. This study is beneficial for high classes because it gives chance to determine the way the test of optimism is related to performance of students.

According to McGuigan and Hoy (2006) educational researchers always tries to know the factor that increases the characteristics which enhances the student's abilities to become a better performer and to overcome all those factors that hurdle the student's achievement including socio-economic factors. The researcher theorized that academic

optimism was a hidden concept that promotes the academic achievement that provides the school with an organized method to attain academic optimism. Data collected from the elementary school of Ohio state. This data collected from the faculty member's hypothesis and the model of the study was checked using correlation and regression analysis.

Zhi-jun (2007) performed research to know the correlation of optimism with academic performance related to the positive coping tactics as a mediator and to know the relationship of dispositional optimism with positive self-explanation style about events of student's life. Outcomes of this research showed that academic achievement of students affected by different optimism level. It was found that positive coping tactics was nonsignificant mediator. It was found that optimism held a positive impact to promote student's academic achievement. Two kinds of optimistic ways of thought have a direct and different effect on learner's academic performance. With the increase of optimism, academic achievement of learners also increases.

Sepehrianazar *et al.* (2017) performed study about the psychological factors that have a great part in academic performance. It has been stated that many factors comprise the process of education. Scholars stressed it to give importance to psychological contribution in the educational field by giving importance to the students' academic performance. This research is about the way used for correlation by using the structural equation model, among the factors related to psychology for example optimism, loci of control keeping the satisfaction of school as a mediator and academic performance. The sampling technique used was cluster sampling male students selected from high school. Information gathered via questionnaire. To assess the optimism level of students revised scale made by scheier and carver used. For the measure of satisfaction, a subscale for school satisfaction applied and for loci of

control scale developed by Rotter (1966) was applied. Results showed that there existed dual correlation among optimism and locus of control. Correlation among academic performance and optimism was mediated by school satisfaction. The student's academic performance was directly affected by school satisfaction.

Khalilnejad and Islami (2015) studied about the relationship of optimism, competence with academic performance. The research executed on the students enrolled in high school during the year 2014. The study conducted in a high school of Iran. For the correlational research multistep cluster random sampling method conducted. As a result of this sampling technique, two hundred and eighty-nine students from one and two regions of Yazd taken for the study. Participants of the study were from both gender tools to gather the information was Harter perceived scale for competence (1982) and to assess optimism level of student's optimism scale made by Scheier and Carver (1985) was applied. To assess the student's performance at secondary level academic results were taken. Data processed by using the software. Results indicated that the relationship of academic performance with optimism and perceived competence was significantly positive. Results also showed that the relationship between competence and optimism was significantly positive in high school students. From the result, it was found that competence in all dimensions of growth makes a person more optimistic about upcoming events which leads to better academic performance.

Vizoso *et al.* (2019) carried out correlational research. The variable of this study was dispositional optimism, academic performance, academic burnout, and coping tactics. This work was done in Spain and the level of participants was undergraduate students. To check the optimism level of students LOT-R was applied. To measure coping strategy CSI was used. Three components of academic burnout

were assessed through MBI-SS. GPA was used for the assessment of academic performance. Outcomes of the research indicated the relationship between academic burnout has a positive direct relation with maladaptive coping. The relationship between academic burnout with adaptive coping was found direct and negative. Emotional fatigue does not predict optimism as emotional exhaustion was negatively non-significant predictor of it. Academic burn out significantly predicted academic performance. At last, it was observed that academic burnout was prevented by optimism and adaptive coping in return this adds up to better academic performance.

Yates (2002) correlation among optimism, achievement in mathematics and pessimism was investigated in this paper as well as an effect on the gender and level of class on the correlation of pessimism and academic achievement and optimism was checked. Data were collected from two primary schools of Australia participants of the study were students at these schools from grade 3 to grade 7. To assess the achievement of students in mathematics progressive achievement test used in Australia was taken. Student's explanatory style either they are optimistic or pessimistic was assessed through children's attributional style questionnaire developed by Seligman et al. (1984). The outcome of the study indicated a significant correlation between mathematics achievement with grade level, optimism, and pessimism. Students who held a pessimistic attitude about the future earned low score on mathematics achievement test over time. Gender had no consequence on the relationship of other variables of research.

Icekson *et al.* (2019) performed research on the correlation between optimism and academic achievements and the function of gender and consciousness as moderator. One hundred and twenty-three female students and fifty-two male students formed the sample of the study. The academic performance of students assessed

through the academic score of successive semesters. Results from the study confirmed that conscientiousness and gender are the moderator between the relationship of optimism and academic performance of students. Post hoc test applied indicated that due to high conscientiousness in female students, a high level of optimism increases academic performance contrary to male students with less conscientiousness.

Rand (2008) an amalgamate model for hope and optimism was found fit to observe data when applied to three hundred and forty-five students of the psychology department and was then used to know the influence of optimism and student's hope on their expectations regarding their grade and performance related to academics. The result of the study indicated that hope affects grade expectancy while optimism does not influence grade expectancy. In return grade expectancy affects the performance of students. It was discovered that academic performance was not affected by optimism and hope opposite to this the mutual aspect of both has a direct effect on academic performance.

Cankaya (2016) performed quantitative research at the graduate level in this study three hundred and fifty-eight students participated. The method of this study was survey and the response of those students who participated voluntarily through an online survey was the sample of this study. It was found that to some extent optimism and hope are in favor of academic performance and the health of students. It found that hope was more influential variable than optimism related to the academic performance of students. If the level of hope is high then there will be high level of self-belief regarding the completion of academic responsibilities, in return, it affects the higher GPA. The high degree of hope is related to predict individuals perceived graduation. It was found that optimism is such a variable that is related to individual differences that predict an individual's perceived physical health

Dulloo *et al.* (2016) investigated the relationship of LOT-R (life -orientation test – Revised) made by Schier and Carver (1984) and academic performance of medical students including three study programs. Gender differences also assessed. A questionnaire for optimism (LOT-R) provided to students of medicine, Dental and physiotherapy. All these three hundred and fifty students were from batch 2015-16. For the purpose to distribute these questionnaires having written their role number. Anatomy lecture hall was selected so to make it easy to compare the academic scores of these students. For the analysis of data correlation, ANOVA including post-hoc, T-test independent was done. The outcome of the study indicates that correlation among life orientation test revised and academic performance was non-significant. Gender difference on the LOT-R score was found non-significant within the groups.

Schumacher (2006) performed correlational research. Variables of study were optimism and school achievement. Optimism measured through the self-efficacy optimism scale. Student's academic performance assessed through the results of the student taken at the end of the semester. The questionnaire was distributed before one month of the end semester. So, there may not be any contradiction to compare score of students related to optimism level as well as academic success. It came to know that a nonsignificant correlation found between academic success and optimism.

Moradi *et al.* (2014) performed correlational study between student's performance and their optimism. The research done in Tehran. The sample of the study was male students studying at high school. It came to know that correlation of optimism and academic achievement was significantly positive. Three components of academic optimism discussed out of these three components students' academic emphasis was found the main contributor towards the prediction of academic achievement.

Sourani *et al.* (2016) performed research to investigate the relationship of mental pressure taken by students with optimism and motivation to achieve academically. Sample comprised of male participants from city sooran at secondary level. The sample of the study was male students from the high school of Sooran. For this purpose, sample of two hundred students from high school was drawn. Mental pressure assessed through inventory, optimism scale used for measurement of optimism of participants, and a questionnaire to assess the academic achievement. It was found that a negative correlation existed between mental pressure and optimism. Same results obtained from the relationship of mental pressure and academic achievements. In other words, by the increase of mental pressure there is decrease of optimism. Also, from the results it came to know that the high mental pressure leads to lower academic achievement.

Nelson (2012) researched the correlation between optimism and achievement academically in a middle-grade educational institute in the state of Mississippi. Participants of this study were teachers and management staff of elementary and middle school recruited from four central Mississippi school districts during the 2010-2011 result indicated that correlation between academic optimism of teachers and academic gain of students were positive. The correlation among management staff especially administrators and achievements of students were found to be non-significant. Regarding the difference which was found to be in the optimism of teachers academically at the middle and elementary level. From this research levels of academic optimism of administrators are found higher than teachers.

Research had been done on academic optimism as an agent for student's achievement at school. Purpose was to find out the characteristics that make differences in student's achievement. In this study researcher took academic optimism

to explain student's achievement as the main predictor while controlling other predictors such as previous performance of students and urbanicity. Teachers from ninety-six schools taken as a sample. It was found that academic optimism has a significant role for student performance when a demographic variable and previous performance were kept controlled (Hoye *et al*., 2006).

A study was carried out by Hough (2020) to find out the surroundings of ethics trust of organizational optimism related to the workplace on individual performance. The sample of this study was two hundred and fifty participants employed in the private sector. It was found that there was a positive impact of workplace optimism on the ethical environment and organizational trust. Out of these three variables, only optimism has a direct effect on individual performance. The other two variables effect on individual performance indirectly through optimism. Ethical environment and organizational trust increases optimism level at the workplace and it in turn increase individual performance.

According to Puskar and colleagues (1999) the students who study in the rural areas found less optimistic than those who study in the urban areas. According to Cassidy (2000) adolescents found to be realistic as compared to adults who were more optimistic than adolescents. According to Mtt *et al.,* (2002) who took part in their study out of these one fourth were adolescents used optimistic strategy for achievement. These students have no depressive attitude they have cheerful student-teacher relations, high achievements and not found any norm-breaking attitude. These students were with high self-esteem as compared to those students who have a pessimistic achievement strategy.

Harju and Bolen (1998) had found there is a slight relationship between GPA and optimism. According to Chang *et al.,* (1994) correlation between dispositional

optimism and academic attainment found non-significant. They completed research on four hundred college students the average age was 19.2 years of these students.

Sturm *et al.* (2012) performed a study, aimed to investigate the correlation among optimism, performance related to teaching and gender of novice english spoken and other language teachers' student. Sample was taken from study program of two graduate schools of teaching english language. Sample consists of forty-seven participants. It was found that perceived teaching performance relation on the behalf of gender is minor. Moreover, it was found that the mean rating of teaching performance difference was found based on gender. In short, it was found from the result that both gender and optimism are the elements in the understanding of teacher efficacy in novice english language and other languages teachers these findings will provide experimental data and base for further research regarding an exceptional population.

Research was performed by Bozkurt and Ercane (2017) purpose of the research was to find out the correlation among optimism of academicians and their performance. The sample of the study was two hundred and thirty academicians. This sample was selected from one main campus of Duzce University. Analysis of the given information was performed which indicated that the relationship between optimism and performance of academicians existed. It was also found from the results that with the increase in working hours per week performance of academicians also increases. From the gender perspective, it was found that the academic performance of male participants was less than the female participants. The level of self-sufficiency of female academicians was more than the male academicians.

Gibbons *et al.* (2000) performed a study to measure long-term effects regarding low academic performance of students who study at college. The study investigates the level in which optimism has moderating effects between performance and academic

comparison level. It came to know that academic performance at low level leads to lowering of the academic comparison level it happens with those students who are already less optimistic. This is the opposite of the students who have a high level of dispositional optimism. Change in academic comparison level (ACL) has an indirect effect on the depression level of those students who have a low level of dispositional optimism. Through raising academic comparison lower optimists can show better academic results and subsequently less depression level.

Shahbaziyan (2018) academic vitality is important for students which leads them to high achievements. The aim of the research was individual differences have high academic vitality and low academic vitality based on dimensions of academic optimism and goal direction. For this purpose, a causal-comparative study done. The population consists of 4300 enrolled at the high school of Sanandaj City. These were the students who enrolled in the study year 2015-2016. Both male and female students were the participants of this study. To draw a sample of three hundred and seventy students cluster sampling was done. Data collected through a questionnaire. Three instruments were used to collect the data. To measure academic optimism of student's academic optimism (AO) questionnaire (2013) used, goal achievement questionnaire (2001) academic vitality questionnaire used. Results prepared through discriminant function analysis. Results show that to differentiate between two groups of students trust in teacher and mastery trend component related to academic optimism and goal orientation.

To get understanding the creativity of organization especially academic institutions is a crucial element to prepare better future citizens. Personal efforts and a conducive environment for nurturing creativity are important to practice it. Creativity is important for advancement, new opportunities in job and progress in university. New

thoughts always take time to get appreciation. When accepted they get the competitive benefits. Particularly in disordered surroundings when there is no differentiation among competitors, creativity provides progress and growth. At the organization level through creativity university department can compete for funding, university status and finally to produce a valuable product for the graduates (Heaton, 2005). People generally hinder the new thoughts or ideas when they see its benefits they accept and appreciate the new products.

Shemaili (2013) has accomplished research at the college level. The purpose of this research was to examine the relationship between learning through experience and optimism at the college level. The research was performed in Saudi Arabia. One hundred and sixty-two participants taken from one college of female for the study. The sample was quite sufficient for the correlational research. An instrument to collect the information was a questionnaire and interview of students. The mixed-method approach gives sufficient information for the impact of optimism and experiential learning on college students. The result of the study indicates that the experiential education process has a pleasant impact on the optimism level of students.

Moghtadie and Hovida (2015) accomplished research on the relationship between academic optimism and classroom management styles. The researcher took three styles of management these were the autocratic, authoritarian, and authoritative population of this study were taken primary school teachers of the academic year 2014-2015 in Isfahan. Tool for this study was a questionnaire which was about classroom management. A significant correlation among ways of management and academic optimism of teachers found. It also found that classroom management is a variable that has a significant positive relationship with academic opportunities of the school.

According to Boman and Yates (2001) students face challenges when they shift toward school and face adjustment problems to the new environment most of the students make them better fit to the environment through developing a desirable attitude while some face problem and may become hostile to the surroundings of the school. The purpose of this research was to find out the role played by the level of pessimism and optimism to find out the hostility level which students reveal about the environment. The sample of this study was 102 students. These were freshmen enrolled in school. They responded to the questionnaire one time at the beginning of the year and then once more at the end of the year. The questionnaire was about students' level of (i) optimism and pessimism (ii) students' expectations about the occurrence of the negative event (iii) depression and anxiety. At the ending of the year, more data collected from the teacher as the teacher report and self-reported from students regarding student adjustment, hostility to school and perception about involvement in the classroom. Based on gender, it was found that girls were better in adjustment than boys. There was a significant relationship of optimism with involvement in the classroom and adjustment. The teacher reported adjustment based on gender. Out of 102 students, 15 percent was found hostile to the school environment. It concluded that youngsters were more likely to face problems of adjustment when they are not optimistic about the future.

Hossein *et al.* (2014) A study carried out to know psychological well-being through resilience, optimism taken as mediator among resilience and well-being. For this purpose, a sample of four hundred and fourteen students was taken. These students belong to the medicine department. Both male and female students formed sample of the research which comprised of two hundred and thirteen male and one hundred and ninety-one female students. The sample of study selected through the multistage

sampling technique. Three scales used in this research instruction was given to fill the questionnaire. These three-scale used in this study were the Resilience scale of (Connor & Davidson, 2003) to measure the optimism level of students LOT was used which was developed by Scheier and Carver (1984).

According to Khademi and Kadkhodaie (2015) a study aimed to know the effects of learned optimism on achievement motivation and resilience. In this study participants were only female adolescents. The experimental research was based on Pre-test and Post-test groups. This research was carried out in Isfahan. Participants of the study were chosen randomly and two groups were made one was called the controlled group the other group was called the experimental group. participants were twenty, ranging between 13-15 years. Optimism training received by the experimental group in seven sessions. Data were collected through a questionnaire. A Hermance achievement motivation questionnaire was used and Samuels academic resilience questionnaire. Multivariate analysis for covariance used for the analysis of the data. It was found that learned optimism influenced achievement motivation and it has no effect on academic resilience. From the results, it was inferred that optimism increases motivation which leads to success and avoids failure and drop out.

Zare (2015) have carried out the study aim of this research was to find out the correlation between cognitive exhaustion and solving the cognitive problem through keeping the role of dispositional optimism as moderator. This research conducted at the university level. LOT-R (Scheier *et al.,* 1994) was applied by three hundred participants. Those students who scored above or below the mean score selected for further study these were forty students and were assigned to four groups with an equal number of participants in each group. In the first phase of the study, the experimental group and controlled group were assigned different tasks. In the second phase, all the

group performed anagram task. Group overall effect found significant with dispositional optimism while group between mutual action found non-significant with dispositional optimism. Interaction between the group and dispositional optimism found nonsignificant. Dispositional optimism not found moderator in the relationship of cognitive exhaustion and solving cognitive problems.

Ghiasi *et al.* (2016) positive thoughts are the ability to cope with the situation and to bring a positive outcome from the unfavorable situation. This study was carried out to find out the effect of optimism training on psychological well-being and regulation of emotions. The study performed at the undergraduate level. For this purpose, semiexperimental study was done. The sample taken from the University of Birjand. To choose the sample of this research simple random sample drawn which was comprised of three hundred students. For the design of the study, one controlled group and pre and Posttest were done. A study session of positive thinking was done for the experimental group after it post-test was conducted. Data collected through two instruments. A questionnaire about emotional regulation by Gross and John (2003) and to measure the psychological wellbeing questionnaire used was Ryff scale (Ryff, 1995). Analysis of the data carried out through SAS which is software. The outcome of the study indicated that optimism training has a significant effect on emotional regulation and psychological well-being at the undergraduate-level.

2.5 Relationship of Optimism with Creativity

According to one study optimism was used as a predictor of creativity positive affect and positive ratio played the role of mediator sample of the study was 595 workers who have given response about their optimism level, positive relation, and positive response. The supervisors were asked to report about the creativity of the employees. Results showed that optimism was the predictor of employee's creativity

and was also a mediator of positive effect and ratio. Results stress that optimism is related to benefit of the organization as well on an individual basis Rego *et al.*, (2012). From this study, it was found that if the employees have optimistic thoughts about their performance, then they will perform better. Positive thoughts about the future bring a positive outcome. Creative performance is also related to the level of optimism among employees. So, from this research, it was found that optimism was the predictor of employee's creative performance.

Malik *et al.* (2013) have performed research to examine the salesperson's creativity related to performance and their level of optimism and its perception. A survey done for the purpose and questionnaires were distributed among the eminent salespersons and managers from the pharmaceutical company. From the result it was found that optimism has a role in nurturing the creative performance of salesmen this was not the same for sales managers. So, it means that salesperson's creativity and better performance increase with their high level of positive thinking. Pharmaceutical companies can make their marketing better by promoting optimistic behavior in their salespersons and at industry level as well.

Le *et al.* (2015) examined the relationship among creative thoughts, mental health, and optimism. Sixty-six adults were the sample of this research these adults ranged between the age group 18-30. Creativity measured through the Torrance test of creativity (TCT-DP) dispositional optimism of the adults were measured through LOT-R negative emotions and mental health was assessed through (DASS-21). It was found from the results that relationship among mental health, creativity was found moderately positive. Moreover, it was found that relationship between optimism and negative emotions was negative, but it was not so as with stress. The relationship between creativity and negative emotions found non-significant. Results shows that

those individuals who have good mental health it is easy for them to cope with stress and have a positive look at life. To maintain a healthy life, it is necessary to be remained flexible and creative in all situations. So, it is necessary to spend healthy life by balancing creativity optimism and mental health.

The research carried out by Sánchez *et al*. (2010) to find out the creativity and dispositional optimism for their safety effects relating to measuring the psychological distress. One hundred and three students enrolled in university were the sample of the research these students taken from different study programs. To assess the creativity of students, the scale used was CREA, to assess optimism LOT-R used psychopathological symptoms were measured through (SCL-90). For data analysis of this study statistical method correlation and regression done to check that optimism and creativity as a predictor of psychopathological symptoms. Three groups were made based on creativity for those who are less, medium, and high creativity. To check the difference among these ANOVA was applied. Correlation among dispositional optimism and psychopathological symptoms found significantly strong and negative. Two dimensions of psychopathological symptoms, depression and interpersonal difficulties described through dispositional optimism. Creativity and psychopathological symptoms showed non-significant relation. Results of ANOVA regarding the three groups of students at the medium level shows a lower level of psychopathological symptoms on the behalf of creativity. It was found that dispositional optimism has a protective role regarding psychological distress. It will add up to the wellbeing program regarding psycho pathological treatments.

The research performed by Yu *et al.* (2019) to know the role played by the psychological factor in enhancing the creativity of employees. Four factors of psychology optimism, hope, self-efficacy, and resilience were taken from positive psychology. They

are collectively known as psychological capital. From the literature of creativity and optimism, it was found that both optimism and hope promote the self-efficacy and resilience of employees which in turn enhances creativity. It hypothesized that self-efficacy and resilience perform the role of mediator which affects the creativity of employees. For this study data taken from many manufacturing firms about employee's creativity and psychological capital. The sample of this study was four hundred and eighty-six employees. For data analysis structural equation model was used. It was found that resilience is the mediator among optimism, creativity and hope of employees. Overall, it was found that psychological capital increases the creativity level of employees. These findings support that organization needs to enhance psychological capital to get the creative product from the employee.

Michael *et al*. (2011) researched about creativity and its approach personality have given importance to the relationship between personality traits and innovative behavior. It was also found from few studies that an organizational trait related to positive psychology affects the innovative behavior of employees. This study examines the correlation among optimism, innovative behavior and creative self-efficacy. The role played by optimism was seen as a moderator for this research. Because of longitudinal research data from the employee taken two times from employees in Taiwan. Period of job and personality factors kept controlled results shows that the employees with creative self-efficacy shows higher innovative behavior optimism found as a moderator, but it has no direct relationship with the employee's creative behavior. When the employee is optimistic and has high creative self-efficacy shows innovative behavior.

2.6 Relationship of Creativity with Academic performance

Research was performed by Zhang *et al*. (2019) purpose of the research was to examine differences regarding gender and the relationship between creativity and academic performance. This study was conducted in Beijing. The sample of the research was 1082. The range of age was 8-15 years. Torrance test for measurement of creative thoughts was applied to know that how much the students are creative. The test was in figural form A was in the Chinese version. To measure the academic attainment of participants self-reported grades used and these grades were from the last semester of their school studies. It came to know that correlation among academic achievement and creativity of students was positive. Regarding these two variables both creativity and academic achievements, gender differences found significant.

A study performed by Arya *et al.* (2017) this study relates to children who go to school in Uttar Pardesh India variable of this study were creativity and academic achievement. The purpose of this study was to find out the correlation between academic achievement and creativity. In this study, Participants taken from class 7, 9 and 11 grades. Sampling was done using a random sample method. The age of the participants was 12 to 16 years. Three hundred students were sampled from these three classes. The survey was done to collect the data. Data collected through self-made questionnaire that was based on the questions about their study behavior and family income. To assess the creativity of students creative thinking assessed using a test by Baquer Mehdi (1985). The statistical procedure done through frequency and simple percentages. The result of the study indicates that the correlation between creativity and academic achievement was non-significant.

Moradnezhad *et al.* (2014) rather than the indigent method of instruction new methods of instruction explored to examine the creativity and academic performance

of 6th class students affected by computer-assisted instruction. One boy's school at Kerman was selected by using sample method. Out of seventeen hundred and sixty-one population random sampling technique applied to select the students from two classes. Students from these classes divided into two groups of fifteen students each. A pre-test conducted by using a creativity questionnaire and cognition questionnaire traditional method assigned to one group and the other group was assigned with computer-based instruction for two months. After two months of teaching, the test again conducted which is called a post-test. Academic performance measured through the score obtained at the mathematics exam. To know the differences among the academic performance of students t-test applied. It was found that computer-assisted technique has a nonsignificant effect on academic performance while creativity and cognition of students were significantly influenced by it.

Mishra and Garge (2015) performed correlational study related to traits of creativity and academic performance of student. The study was performed with higher education students. Results of descriptive statistics shows that most of the higher education students of Management Sciences, Engineering and Biotechnology have low level of creativity and few students have high level of creativity. The results also reveals that there is inverse relationship between creativity traits and academic performance of Management Sciences, Engineering and Biotechnology students.

According to Lucas (2019) throughout the world educational departments give more importance to analytical knowledge and creative thinking. This effort was done in one state of Australia. People trained to think creatively and the methods to assess it. The review done which provides evidence about the relationship between student's achievement and principals proposed by ministries of curriculum and assessment of the state of Victoria. It suggested by the authorities that if the teacher taught students

critical and creative thinking abilities it has encouraging effects on students' achievements.

A study by Ghayas and Malik (2013) investigated student's achievement and sociability as a predictor of creativity. Students who were enrolled at university were the population for this study. Undergraduates sampled for this study. Both girls and boys were participants in the study. Three departments were taken for the research these were pure sciences, arts, and social sciences. The sample consists of three hundred students from these three departments. The age of these sampled students was ranging 18-24 years. Creativity was measured through the Abedi creativity test and California psychological inventory translated version. Academic results from semesters 3 and 5 were taken to assess the academic achievement. From the result, it was found that creativity has a relationship with academic achievement and sociability. Academic achievement has a non-significant correlation with the sociability of students. Both academic achievement and sociability are a predictor of creativity. It was found that girls had good academic achievements than boys. Student of arts and social sciences departments were found more sociable than the pure sciences department.

Baligiu and Adir (2014) researched to know the student's performance while dealing with task-related with academic achievement and creativity. Students from the technical field participated in this study. Regarding the measurement of the figural and verbal creativity, three tasks were developed. In one task visual support was provided about verbal creativity in the task it was instructed students to make logo text about 3 images. The second task was about verbal creativity in which visual support was not provided in this task it was asked that students should produce a logo text without images. The third task was about creativity in figures students were asked to produce a

logo in a graph. All the results examined through applying inter subjective technique. The academic performance of students assessed through grade taken from technical knowledge tests. It came to know from the results that the correlation between creativity itself and its parameters with academic performance was non-significant. On the root level relationship of verbal elaboration and verbal originality with achievement was found positive.

Hansenne and Legrand (2014) executed research about emotional intelligence, creativity, and children's performance at school his work was related to nine to twelve-year old students. Torrence test was used to assess verbal and figural creativity and the trait was measured through an emotional intelligence test. Results indicated that creativity was a predictor of academic performance (AP) on the other hand emotional intelligence (EI) has no influence on academic performance. Results from the main studies find out the correlation between emotional intelligence (EI) and academic performance (AP). The result shows that despite the weak correlation between Intelligence quotient and emotional intelligence play a role as a moderator between IQ and academic performance (Chamorropremuzic & Furnham, 2006) instead to have a direct effect.

According to O'Connor and Paunonen (2007) the experiential research about the correlation among post-secondary achievement and big five personality factors and reliable outcomes has been found. A meta-analysis found that knowledge is most strongly and reliably correlated with academic achievement. In addition to this educational achievement has been affected by openness to experience which has a positive effect on educational achievements, instead of it, extraversion is often connected with the same criterion negatively, although there is some conflicting empirical proof for these final two dimensions. The study suggested, critically, that the

specific personality characteristics or aspects underlie wide personality factors are usually strong predictors as compared to the big five personality factors. Cognitive ability tests may not show variance in educational performance as much the big five personality factor causes. research provides the foundation for future research that will be suggested to enhance scholastic achievement estimation by addressing obvious and easily correctable shortcomings of previous studies.

Pishghadam *et al*. (2011) performed research on the topic of Learner's creativity in foreign language achievement. Purpose of this study was to investigate the correlation of creativity with achievement in a foreign language. To measure creativity Arjomand creativity scale was used and to measure language performance CGPA scores were taken. Results of pearson correlation indicated a significant correlation among the creativity of learners and achievement in a foreign language.

Onu (2001) the process of generation of novel ideas, investigation of the ideas and experimenting with the ideas for their acceptance or their rejection leads to the completion of creativity. It was analyzed that the primary science curriculum was applied for rote memorization rather than its practical implementations.

Ajeyalemi (2008) science is the field which answers the various question through experimental study and reaches to the conclusion of such basic question How? When? Why? all such answers are satisfied through experimental studies only so rote learning is not the only solution to satisfy the questions related to experimental studies. Study of science increases the creativity of students. The curriculum of science is made in such a way that creativity has a top priority in scientific studies.

The research aimed to find out the correlation between academic achievement and creativity to know this relationship is based on gender differences. The research

questions were two, one was about gender difference, academic performance, and various dimensions of creativity. Another question was about the correlation of different dimensions of creativity and academic achievements. It came to know that there was no significant correlation of aspects of creativity with academic achievements based on gender (Candrasekaran, 2013). According to the findings of this study creativity and academic performance of students are not bound to the gender they may have same level of creativity and academic performance or it may be different.

Rohde and Thompson (2007) the question is that creativity has a relation to academic achievement. Throughout history, researchers are addressing this. It remained important for researchers to know the correlation of creativity with academic performance if the correlation among these two variables is strong in that case, it is inferred that tests of creativity have an important part with other variables related to it like curriculum program of study, teachers, the school attributes (Naglieri & Bornstein, 2003) and too much for scholarly performance. Recent researches found more relevant to the relationship between creativity and academic performance. The researcher cited experimental evidence for strong relation of general intelligence in academic achievements this is also important for practice and as well as for theory.

Academic achievement of students at the secondary level has a strong correlation with scores of creativity (Jenson, 1998). In another research it was found that mental capabilities are the reason behind the association of creativity and academic achievements at the start variance between creativity and academic performance was low (Luo, et al., 2003) students' mental capabilities strongly correlated with academic achievements along with grade level. (Lidra, Pullmann & Allik, 2007) Mental capabilities include intelligence and critical thinking which

increases the abilities of students to be a better performer as well as creative in every field of life. So mental capabilities plays an important role in the achievement of students.

Blake *et al*. (2014) performed a study to know creativity relation with ACT/SAT scores of American students to measure the creativity of students Epstein creativity scale (ECC-I) used. On this scale, total competency score for creativity measured also areas for different skill examined. A comparison between the creativity competency scale and their scores on ACT/SAT was made. It was found that students with the lower score at ACT scored higher on the creativity inventory than the students with high ACT scores. The relationship between creativity score and SAT score found negative. It shows that students with high scores at SAT rated themselves have lower attention for having novelty. All this shows that still in American society there are traditional measures for predicting success but society needs innovative and creative thinkers.

Webb and Rule (2012) in today's rapidly progressing world creativity has much more importance. A study was conducted main purpose was to demonstrate student's knowledge of the subject matter in an interesting way when they have creative ability. A study was performed with twenty-two second-grade students. Projects assigned about crafts items to combine vocabulary words and pictures related to life cycle organisms. These projects were analyzed and checked for creative ability and for the concept of science integration. Creative ability proof in student's work consists of amplification breaking boundaries, originality, storytelling, self-expression among others. The researcher made recommendations teachers should involve creative task similar to it for the assessment of learning material.

Aizan (2009) performed a study to know creativity, gender, and age to predict academic performance. In this research sample was 153 participants out of which male participants were 105 and 48 were female participants. To examine the academic achievement cumulative grade point was used. The technique is used for data analysis through multiple regression. Results reveal that age, creativity and gender have a low predicting capability for academic performance. It was found that the correlation between the independent variable and CGPA was low. Gender differences based on CGPA was also found non-significant.

According to Elisondo *et al*. (2013) an unexpected content can be adopted as a strategy to enhance the creative process for the sake of education. The researcher who took consideration of the suggestion of education by his team that was the promotion of creativity through the role of unexpected presentation of theoretical and practical consideration activities for learning teacher's interference materials are few elements of the context of education. This can be planned in an unusual way to promote creativity in education. Researchers do efforts to promote surprising background as a tool to enhance creativity in the educational field. In the field of education and creativity, they try to analyze educational proposals. Activities related to learning, the context of teaching, learning experiences, and teacher involvement are some of the parts of the educational process that requires to be made in a different way to set up circumstances to promote creativity.

A huge number of studies about creativity and its relationship with academic achievement some researchers say that relationship between the two variables exist while other say there is no relationship between the two. According to Ai (1999) used Torrence test of creativity thinking found a strong correlation among dimension of creativity these dimensions were fluidity, elaboration, and flexibility with academic

achievement for many disciplines like mathematics, social sciences, and natural sciences. Another research carried out by Palaniappan (2008) to know the correlation among intelligence, creativity and academic performance was conducted on Malaysian and American population. Creativity was measured through Torrance test average score was taken during the two recent past academic years to measure academic achievement. Results obtained indicated that strong correlation exists among intelligence, creativity, and academic achievement.

Previous studies on creativity relationship with academic achievement performed (Torrance, 1962; Behroozi, 1997; Naderi *et al.*, 2010). They found that creativity does not correlate with academic achievement. Dowling and Pretz (2012) researched the value of personality and creativity to predict academic achievements. The result of research indicated creativity does not correlate with academic achievement. Moreover, other traits of personality have a strong relation to creativity like openness for experience and the need for knowledge does not correlate with academic achievements.

Sola *et al*. (2017) narrated that target and aims of engineering education at the undergraduate level is to provide students with knowledge and skills which is necessary to solve the problems found in the practical world. Creativity and critical thinking are essential attributes to work effectively in the workplace. It was found that both creativity and critical thinking are decreasing in senior engineering student. The study was done to know if freshly enrolled engineering students have more creativity but have lower critical thinking, than senior students of the engineering program. Both the attributes were tested by creative -thinking drawing production and to check critical thinking Watson-Glaser critical thinking appraisal was used. It was found that freshly enrolled engineering students were significantly more creative than senior engineering

students. The same results were found regarding critical thinking. All these results may suggest that senior students of the engineering program were less creative regarding both creativity and critical thinking as compared to starting of their engineering program. If this concluded result is authentic then it is the need to find the reason behind the deterioration of creativity and critical thinking in engineering undergraduates.

According to Kaboodi and Jiar (2012) purpose of the research was the comparison of cognitive creativity trait and its relationship with academic performance. The growth associated with creativity has a link with cognitive creativity but the current result have given importance to personality creativity in the field of education and even to get success in every field of life. These clarifications are based on the various researches found in these fields of study. Despite this trend, it was found that cognitive creative skills are significantly involved in the academic achievement comparatively other cognitive capabilities. Personality traits and creativity traits both need concentration to get success academically through enhancing creativity and novel ideas. This tendency also will be helpful for creative insight not only in higher education but also in all the grades of education.

Nami *et al*. (2014) performed research about the relationship of creativity with the academic achievements of students. The sample of the study was seventy-two students. The tool for the data collection was a creativity questionnaire and an average score of students as academic achievements were used. Correlation among components of creativity and academic performance was found significant.

Anwar *et al.* (2012) creative thinking is one of the most important abilities of the human beings. Some students get good marks at school they are known as high achievers and some students get fewer marks at school as compared to the class

fellows they are known as low achievers. Study is comparative which finds out the difference between low achievers and high academic achievers based on creative thinking abilities. The sample of the study was two hundred and eight secondary school students two groups were made both groups have an equal number of students ratio of high to low achiever was equal in both groups. The test used for the creative ability was self-developed. This was a comparative study for statistical analysis t-test was used. Result revealed that the difference between the group was nonsignificant based on creative thinking ability.

Gras *et al.* (2010) aim of this research paper was to investigate the creative capabilities of students from those school which has students from a different culture, and they speak different languages, through giving importance to their mental capabilities, style of response and academic performance. Participants were seventy-five students of school funded by the European Commission. The age of students ranged between 14-17 years. Fifty-six percent were boys and forty-four percent were girls' students. For the measurement of creativity, the CREA test was used. In this test creative IQ measured. The test was made based on five basic abilities memory, verbal, reasoning numerical and spatial abilities. This test assesses the overall intelligence, style of response, verbal fluency. Academic performance was measured through the results of the first semester. Results showed correlation among all the three variables' creative capabilities, intelligence and academic performance was significantly positive.

Niaz *et al.* (2000) mental capabilities are an important element of human performance to know how creativity and mental ability variables can affect the high school student's academic performance research was conducted. Mental capabilities consists of the mobility fixing dimension, mental capacity, and cognitive style. Students were taken from the school of Venezuela at the high school level. Creativity

was tested through the Torrence test. Results were analyzed through multiple regression analysis indicates that the mobility fixing dimension was a constant predictor of academic performance, which explained the variance in different subjects and mean scores. The creativity score explained the variance in different subjects and the mean score. Results show that both the factors mobility, flexibility dimensions and creativity are related but show the different features of academic performance.

Albert and Kormos (2004) conducted study aimed to investigate the effect of creativity on oral narrative task performance. Hungarian students were the participants of this study. The creativity of students measured via a standardized test for creativity. The researcher investigated the relationship among three characteristics of creativity. These aspects of creativity were creative fluency, flexibility and originality and different measures related to task performance. Results show that all these three aspects of creativity were differently related to measures of task performance. The relationship between the quantity of talk and fluency was positive. The relationship between the quantity of talk and originality was negative. The relationship between originality and complexity of narrative was positive. The strength of correlation shows a moderate relationship between creativity and outcome in narrative tasks.

This research aimed to investigate the correlation between the creativity level of Iranian teachers and their student's academic achievements who were language learners. For this purpose, six english teacher’s female and eighty-one students were at the level of advanced english program. Students from only private language institutes were taken as participants of the study. The creativity of students was measured through the Torrance test of creative thought and the academic performance of students was measured through score from the exam. It was found from the result that there is a correlation between teacher’s creativity level and student's academic achievements. To

increase the student's academic performance language teachers, need to be more creative in their teaching because this is the influential factor. (Baghaei & Riasati, 2015).

A study has been performed by Olatoye *et al.* (2010) about the correlation between academic performance and creativity of students. This research was conducted in Nigeria. The population of this research comprised of students who were studying in the recent final year of study. All the students were taken for this study from the business administration department all these students were taken from three states of Nigeria. The total sample drawn was 235 from four polytechnic colleges. For the collection of studies information one test, Nicolas Holt Creativity test and semester results were taken. It came to know that there was a negative and non-significant correlation among students score and creativity which shows that it is not necessary for students with high score be highly creative or the student with low score cannot be assumed as less creative. So, with the same results, academic progress and creativity are not related or one is not the reason for the other.

Research has been done by Tatlah *et al.* (2012) on the topic role played by intelligence and creativity for the academic performance of students. Four education colleges participated in the study and the sample drawn from these colleges was 235 students. Information gathered from three instruments these were Nicolas Holt creativity test, Scale for emotional intelligence and CGPA. They found a significantly positive relationship of creativity with intelligence and vice versa. It came to know that student achievement was predicted by emotional intelligence and creativity.

A study was conducted by Sharifi *et al.* (2014) on a comparison of the scores of students academic achievement, self-efficacy, Self-regulation and creativity sample of three hundred students. One hundred and forty-six respondents were female and one

hundred and fifty-four respondents were male. Study was conducted on undergraduate students. Regarding the academic achievement of students, the differences found among the students were significant. Boys and girls were found not different based on the mean score related to creativity, self-efficacy, and self-regulation.

Mkpanang (2016) has performed research on the influence of creative style and gender regarding achievements done by students in the subject of physics. It is found that gender and creative style are those elements have their role on the performance of students in the subject of physics. Data shows 52 percent of student' achievement related to the subject of physics were influenced by both factor creative style and gender. So, both the factors gender and creative style considered while predicting about achievement in the subject of physics.

Naderi *et al.* (2010) performed research on the correlation of creativity and academic achievement of students from a gender perspective. This study was based on two objectives, one objective was to examine the correlation between creativity and academic achievement. The other objective was related to gender differences in these variables. Cumulative grade point was taken from students results. Khaterina Torrance creativity perception inventory was used to know the creativity level of students. It was found that gender differences were non-significant regarding academic achievement and creativity and found that academic achievement and creativity are the factors that are positively correlated.

According to Lew *et al.* (2014) It came to know that correlation between academic performance and creativity becomes strong if creativity is measured through standardized test, then the self-reported measures. This study was replicated to know the correlation of academic performance and creativity. Some questions developed in this study these questions revolve around creative attributes of children's creativity in

thoughts, creative product, and school achievement the question posed is there any significant relationship among these variables? Data were analyzed using SPSS version 18. Academic achievement of science subject has a significant relationship with creative thinking of students. On the whole educational success and the creative product had a significant relationship.

A study was performed by Jabeen and Khan (2013) study was about investigation of creative thinking abilities and self-concept between students who are high achievers and low achievers in ninth grade. Students were sampled randomly both low and high achievers were equal in number. High achievers were 300 and low achievers were also 300. Total participants of this study were 600. Creative thinking was measured through Mehdi's (1973) creative thinking abilities test. The self-concept was measured through Sharma's (1972) inventory about the self-concept. It was found that high achievers have high creative abilities than low achievers. It was also found that the students who have high achievement also have a high self-concept and the students who are low achievers have a low self-concept. Results indicated correlation exists between creativity, academic achievement, and self-concept.

Meta-analysis was done by Gajda *et al.* (2017) investigating the relation of creativity with academic performance was carried out. This meta-analysis consists of one hundred and twenty studies done from the time 1960. Academic performance was measured through standardized tests rather than GPA. The test of creativity which was done verbally produces strong relation with academic performance than creativity measured through the figural test.

A correlational study performed in Poland by Gralewski and Karwowski (2012) this research aimed to find out the correlation between grades obtained at the school and the creative abilities of students. This research was conducted at the secondary

level. The sample of the study was five hundred eighty-nine students which were taken from the thirty-four schools of Poland. To assess the creative abilities of students the test used was a Test for creative thinking drawing production. student's academic performance assessed through GPA. It was found no correlation between creative abilities with GPA. In some groups, results were found interesting in some school relationship of creative abilities and GPA was strongly positive and significant while in few there was no relationship of creative abilities with GPA and or in some school, it was negative the school which were located in cities students' creative abilities plays an important role for students GPA.

According to Runco (2007) here are many ways in which education is influential to promote the creativity of students. The main viewpoint to get the education that emphasizes the opportunities creativity is practiced, creative behavior is appreciated, and creative behavior has been given importance through education and educational practices. There is need for educators to put values to appreciate creative thoughts. Educators should be careful to make balance between internal and external motives and put them away from over judgment. The role of student at home and school both be taken as a whole to justify creative things. To nourish a child's creative potential and to promote in them creative thought their creativity must be appreciated at home and school equally.

Shaheen (2010) performed research on creativity in the educational field. According to this study she tried to link creativity and education and the most recent knowledge in both variables. Discussed the importance of creativity in the light of educational policies being practiced around the world and all those efforts being taken to improve the education system in the light of creativity and all those implementations which are necessary to enhance the creativity of students through the different

education system. In this article discussion is done about dissatisfaction level of the current education system and its role is being changed in the scenario of the increasing importance of creativity. Evidence was also provided through referencing policy documents of education that taken from different countries of the world to point out the steps which were adopted to implement creativity in their education system.

The effect of creativity on education is one of the crucial problems for researchers to give attention. Here is a possibility for the researchers that it is expected from the young children to be sitting in manners on desks, just study about their subjects which their teacher guides them (Runco 1999a; Torrence 1968). All these changes can be explained through the biological system because children have a sensitive nervous system, they try to follow the conventions (Gardner, 1982), but in many educational backgrounds may astray from originality. Most of the tests are conventionally taken in school based on convergent thinking which puts them away from divergent thinking in which makes them free to express originality, but this is not possible through the conventional test.

Some researches are related to creativity and education although they are not carried out in the situation of the classroom. Research related to creative problem solving and divergent thinking were investigated by researchers related to testing instructions (Harrington 1975; Reiter-Palmon *et al.,* 1997; Runco 1986; Chand & Runco 1992) most of the time educational fields follow this information.

Dudek *et al.* (1993) examined the divergent thinking of students at the elementary level. Socioeconomic status and schooling differences were found significantly among them. The same results were also found from the study about socio-economic status. The researcher also found differences within schools among the classes and environment of learning also found that the environment of the classroom

affects the divergent thoughts of students. Wallach and Kogan (1965) who have done a study about creative thinking. They have given importance to the classroom environment in which students spend most of the time and have given this credit to traditional instruction done in the class and to traditional conditions of the classroom which were the inhibitor for creativity and this situation was opposite when activities were presented in a game-like way.

Shaheen (2011) performed a study purpose of that was to know the level at which primary education system promoting or hindering the creativity of students. For the measurement of creativity of students Torrence test of creativity was used. Data were collected through survey, observations done in the classroom because observation is seventy-five percent of the knowledge. Information was also collected through the use of the Torrence test this test was given to one hundred and fifty-four students. Curriculum document was included for analysis and the book of science was analyzed to check quality criteria for creativity findings of this study adds that in policy document it is mentioned to promote creativity in the education system as well as curriculum document puts emphasis on the concept in a precise way but this is not translated in books as well as teaching practices to lack the spirit of creativity rather, they discourage it through promoting rote memorization. It was found from the assessment of children's creativity they can express original ideas but these students have many weak areas too. They cannot create abstract titles and they were bound to think ordinarily. The reason behind this was that their teaching was based on knowledge attainment.

Khawaja (2019) wrote an article in newspaper “The Nation” and narrated that Students put much emphasis to cram the material using key books to get ninety-plus marks in their exams. All these are the factors that lead students to become passive

rather than active learners with mind-packed no new ideas they always remain on the old patterns. The education system of Pakistan up to matric is divided into four stages pre-school starts at the age of three and remains up to five years where students learn basic skills how to sit with fellows and learns rudimentary social skills. The primary level starts from grade one and remains up to class five and then the middle level starts from class six to class eighth and then two years of matriculation. These are the basic and initial education level in Pakistan. This type of education system with no critical thinking discourages students to use creativity and feedback for fresh and practical ideas and no improvement in interpersonal skills. Opposite to the current educational system if creativity is introduced in the education system of Pakistan, then there will be flexibility rather than rigidity and students will learn more skills due to new ideas and will learn social skills and become close to each other and will build trust in each other. They will become active learner rather than the passive learner. Now the point to think is how to blend the rigid curriculum to make it add some taste of creativity through involving students in their studies via learning english and Urdu lessons through role-play, the school must have some recreational activities like games period and quiz segments. Different methods of lesson planning which are a mixture of new learning activities and creative critical thinking assignments that can make students unique thinkers who can think convergently and divergently. It is need to make the education system better and classroom teaching more conducive for learning. Creative learning system involves the teacher as well as in creative teaching ideas which are necessary for the creative thoughts to be developed in students.

Research conducted by Boonchan and collegues which was aimed to get knowledge about the construct validity of some variables which affect the creativity of undergraduates. Students were selected from university who responded to creativity

related items results indicated that the creativity of the undergraduates was affected by the personality variables, teaching methods, administration, instructional attitude, and student's motivation. Creativity variables were fluency, originality, flexibility, and elaboration. Factor analysis was done which was acceptable goodness of fit which shows that creativity variables were valid to test the creativity of students (Boonchan *et al.,* 2015).

Kowang *et al*. (2018) for Malaysian institute for higher education has the challenge to attain innovation. It was found from past studies which show that creativity was a vital component of innovative process and is an important component to make students competent. This research was done to investigate the characteristics of creative individuals and their relationship with academic performance in the faculty of management science in a Malaysian university. Quantitative research was done for the purpose data was collected through questionnaires it was suggested that motivation, personality, and knowledge were highly significant creative properties among faculty of management students. It was found that thinking style and personality had a significant negative relationship with academic performance.

Jenaabadi *et al*. (2015) performed research to find out the relationship between creativity, emotional intelligence with the academic performance of students. The population of the research consists of second-period students enrolled at secondary level of academic year 2013-2014. Information related to the study was gathered through Sultani's creativity questionnaire and to measure emotional intelligence Mayer Salovey Caruso EIT (1995) was applied, the GPA from the academic year 2013-2014 were taken to assess academic performance. The information gathered was analyzed by software. From the results, it was found that there was a significant relationship between emotional intelligence and academic achievement of students. Creativity and

academic performance were significantly correlated. The difference among the participants related to gender was found non-significant regarding academic achievement. Time is also one constraint in developing creative thoughts in students. To select a creative task teacher should select that material that is appropriate and task accomplishment can be done within time limits.

According to Kanbay *et al.* (2013) the creative person becomes confident when discovering new things and generate more ideas. The desire for knowledge motivates people to generate creative thinking. Creative problem-solving means the relation of creativity to skill to solve the problem. (Hosseini & Watt 2010; Osborn, 1963). Environment plays an important role in creative problem-solving skills if the environment is favorable in which students are encouraged it enhances skill and if the environment is unfavorable then it has negative effects on skill development (Sternberg & Lubart, 1996). Many other studies indicated a significant relationship of environment to creativity (Yahya & Noor, 2011). The environment plays a vital role in the promotion of creative ideas. The environment is such a condition that surrounds the learner. When the learner is living in such environment in which creativity is not appreciated and new question raising in the mind of students is not satisfied or teacher is not able to fulfill the requirement of the knowledge and strict with students ultimately it will suppress not only creativity but also thinking ability of the student. So, creativity conducive classroom and surrounding encourages the creativity of students.

According to Meinel *et al*. (2018) creativity training has its own benefits in any institution, organizations, educational institutes it is source to enhance individual's creative potentials. There are some matters of creativity training which needs to be solved one issue is about the effect of creativity training and to know how much this

training is long lasting? The other point was that because of training creative performance increases for everyone equally who participated in such training. In most of studies it is found that creative training enhances the creative self-efficacy, but question is that is this true? These are some facts most of the studies do not describe. This is the reason that this study executed to know these some issues. Results shows that student's creative performance increases during training but decreases after four weeks of training program. Contrary to most prior research in this research it was found that person's self-efficacy was not affected by creative training.

Daly *et al*. (2016) performed research about the views of students about instructions about creative processes across the discipline. Creative learning process enhances students' creative activities intra discipline. The study was focused on how students learn through creativity process reported based on-course experiences. In this study, the survey was done four hundred and fifty students from five disciplines were chosen out of these disciplines nineteen different courses were selected student's perceptions about learning experiences, teaching methods and their judgment about courses had influence on their creative ability. Both the researcher did qualitative and quantitative analyses of student's responses. The results of the study were that cohesion about the perception of students about educational experiences found among the disciplines. Teaching components are found with a high impact in engineering and education as compared to arts, social sciences, and humanities.

According to Abdul -Halim *et al.* (2013) researchers are eager to study the concept of creativity in-depth and to expand the knowledge about the term creativity Wehner *et al.*(1991) thoroughly studied one hundred doctoral theses about creativity which were related to many different fields' education, psychology, sociology, history business and many more. It was found that every field has their essence about the term

creativity, focusing on different characteristic about the term. Multiple domains shows the existence of creativity one of the main objectives of the curriculum of Malaysia about english language learning outcome is that students gain the ability to show creative and imaginative expressions.

Pisanu and Menapace (2014) have reviewed literature of ten decades about creativity and innovation in the educational and organizational fields. The purpose was to know what has been done and what needs to do in the field and regarding both the issues publications were searched and the relationship between creativity and innovation explored. Four dimensions focused were the structure of the organization, attributes of an individual, teaching practices and methods and content for training.

According to Giménez (2016), creativity has importance in all fields, especially in education. Creativity is ignored informal educational institutions and lack of creativity research in teacher's training. In this research, the interviews were taken to know about teachers as a promoter or hindering the creativity of students. Teachers were categorized according to their views about creativity. Only teachers and students from the two institutions were considered and teacher trainees of the subject biological sciences were considered. For this purpose, semi-structured interview of students and teachers was carried out and content was analyzed. Results shows that the affectionate teachers have close relations with the students, who admit their mistakes and faults were the teachers who are highly promoter of the creativity in their students. Creativity hindering teachers was opposite to the attributes found in the creativity promoters these were stubborn, distant they think themselves all-wise. An affectionate behavior of students can lead to enhancement of creativity by the teachers who are categorized in the creativity hindering list. An affectionate environment of learning between teacher and students enhances creativity.

Savelyeva (2014) maintained education system based on creativity was one of the main priorities of Russian educational policy and it was also applied to Russian higher education and universities are adopting new curricular models. which were adapted from the western school of education. These western models of education were highly criticized in Russia due to differences in cultural context question is how much different faculties make easy these curricular changes favor the policy of education based on creativity? This research addresses by applying the given model of the curriculum in the faculty of a creative education project in two universities of Russia. This creativity education model consists of backgrounds, contents, and processes for applicability of project for categories of restructuring these categories which were organization relation and environment. Findings were discussed from implemented curriculum model and its two important characteristics of the models were an adaptation of culturally sensitive curriculum of creativity education in an era of after soviet university education and non-linearity about the policy of creativity curriculum in higher education classrooms of Russia.

According to Piske *et al.* (2014) creativity is an important quality to promote a creative attitude. Still, it is not promoted sufficiently at the school level, more importantly for the education of gifted students. the reason behind this gap is that gifted students always need expert services for their special needs but, creativity goes beyond it. Purpose of the study was to take part in the sense that experts in the field of education become attentive about the value of creativity in this field. In the research methods were given the importance relevant to the creativity of highly gifted students at the national and international level. The conclusion is that a good teacher needs to develop and arouse the creativity of students to make them fact finder, independent,

more creative, and to think critically. Moreover, teachers are required to give importance to other opportunities in the methodology of teaching and learning.

According to Pastor and David (2017) the purpose of study was to investigate the correlation between intelligence, creativity, and academic performance. Gender differences were also considered regarding these variables. The total number of students taken was forty. Correlation of creativity and academic performance was found non-significant difference between intelligence and academic performance was found non-significant also gender difference has the same results.

Research carried out by Mitchell *et al. (*2016) to find an effect of the structure of school and optimism at academics and on student's achievements. Information for this research collected from elementary and middle schools of the southeastern district in America. A sample of fifty-eight schools taken. Out of these forty-two, elementary school, sixteen middle schools were included. In this study, 3 predictor variable and one mediator variable checked through the application of structural equation modeling. It was found that three dimensions collective efficacy, faculty trust and academic emphasis Hoye *et al.* (2006) responsible for academic achievement through academic optimism as a mediator. It was also found that school structure has a role in promoting the culture of academic optimism. It was discovered that with enabling school structure academic optimism, the level of the school, socioeconomic status has an influence on academic optimism was found more influential than the socioeconomic status. It is the need to make school rules flexible through collaborative school authority. It was found that enabling school structure not only to promote academic optimism but also increase academic success. The research will increase the perception of parents and teachers about academic optimism.

This study was carried out by Hamedi et al. (2017) to find out the role played by students' academic optimism as a mediator between the relationship of academic optimism of school and students' self-efficacy. This was correlational study sampling technique chosen to carry out this research was stage sampling. The sample was two hundred and ninety students from the University. Data collected by a questionnaire for this purpose and to measure the school optimism questionnaire made by Hoye *et al. (*2006) was used. From the outcome, it was found that academic optimism of school affects self-efficacy through students academic optimism this result shows that student's academic optimism was a mediator between academic optimism of school and the student's self-efficacy.

The aim of research performed by Cikrikci et al. (2019) was to know the role performed by optimism and self-esteem as a mediator between life satisfaction and test anxiety among the students of aged between fourteen years to age nineteen years. A significant correlation found among the variables. Furthermore, Optimism found as a full mediator between life satisfaction and test anxiety.

A study was performed by Yu et al. (2015) they examined the role of dispositional optimism as mediator other two variables were anxiety and rumination. Undergraduates were the participants of the study. Optimism was found as a partial mediator of the effect of rumination on anxiety.

The study performed by Anderson et al. (2018). Purpose was to examine the role of academic optimism as a mediator between enabling structure and students' achievement. It was found that all the variables positively correlated. Role of academic optimism found as a mediator between norm referenced test and enabling structure but not with criterion referenced assessment.

A study was performed by Martinez et al. (2019) mediation analysis was performed. The variables of study were psychological capital (optimism, resilience, hope, self-efficacy) academic engagement and performance. Source of data were undergraduates studying in universities of Spain and Portugal. Questionnaire used were self-reported. Variables of study were correlated in both the samples. Academic performance and academic engagement were mediated by psychological capital. The students who were engaged academically they have higher level at psychological capital in turn they perform better at academics.

Chapter Summary

This chapter presented a fair review of the previous researches executed in global and local context in a different span of time. This chapter provides insight in to the work of other researchers who performed researches. The work done was related to optimism, creativity, and academic performance of students. The literature review focused on definitions, concepts, historical background, theories, fields, levels, across the countries over a period. A brief run down on each domain is summarized here. Optimism is defined in many ways. Some include as an individual attribute, positive perception, forecasting future scenario, through learning and experience, beliefs and perceptions, healthy positive outcomes, opposite to pessimistic (Peterson 2000), proactive actions in right direction (Thompson *et al.*, 2000), sound psychological thoughts, feelings, leading to growth and achievements (Williams & Reils, 2001), positive expectations about the upcoming events (Taylor & Brown,1988; Carver *et al*., 2009), adaptability (Peterson, 2000), exploration in criteria (Carver & Scheier, 2003). It has two-way classification personal and social (Schweizer *et al*., 1999), a continuum scale on separate dimensional poles (Hummer *et al.*, 1992; Chang *et al*., 1994; Hajelle *et al.*, 1996; Scheweitzer *et al*.,1999). As a construct, it carries mixed connotations

done to dependency instruments and lack of specification (Chang *et al*., 1994). Theoretical base line of optimism relates to both theories and models. As one model, it is based on motivation, known expectancy value model. As per theories goals or intent-set enabling actions. Researchers focus on values of good achievement (Austin & Vancouver, 1996; Carver & Scheier, 1998; Higgins, 2006). Explaining through theories, the value of theory leads to specific performance (Eccles *et al*., 1983), values are fore fold: value of personal pleasure, usability and cost, value and expectations for success are correlated (Wigfield & Eccles, 2001; Eccles & Wigfield, 2002). Expectations model is futuristic, having healthy psychological perspective reducing stress and contended (Scheier, Carver & Bridges, 2001). Further optimism has been studied in many fields and perspectives, essentially in positive psychology, teachings, healthy genetics, parental influence. Benefits are manifolds: task adjustment to goals (Wrosch & Scheier, 2003), handling tough tasks (Nolen-Hoeksema *et al*., 1986; Jaycox *et al.*, 1994; Schweizer *et al.*, 1999; Dubow *et al.*, 2001), human behavior (Tolman, 1938), many studies have shown close relationship between optimism (including Hope, resilience and self-efficacy) and academic satisfaction both individually and complex high order level (Luthans *et al*., 2007), sources, creative thinking, gender in English and math courses (Inuusah *et al*., 2019),. Attributional style of student's performance at university level (Shaun *et al.*, 2009), LOT-R (Life orientation scale revised) by (Scheier Carver & Bridges, 1994) and academic performance provide sufficient evidence of their correlation. The next equally important variable of the study relates to creativity. It is defined as novel, original behavior providing appropriate and productive results (Flaherty, 2005). Its three integral components consist of uniqueness, utility and product were also used Bean (1992), its inner and deeper ideas with a high degree of openness, fluency in thinking, divergent pathways (Treffinger,

2002). Its uniqueness lies in individuality in terms of attributes (Perry-Smith & Shelly, 2003; Wai, Lubinski & Bewbow, 2005). Some models of four P, s componential theory of creativity and innovation (Amabile, 1997), interactional model for organizational creativity (Woodman, Saweyer & Griffin 1993). Some theories (Sternberg & Kaufman, 2012) comprising of five salient features (conceptual bifurcation), reconceptualization, incubation advance form and incrementations, and redirection and reinitiation were explained. This was followed by implicit creativity theories (Runco & Bahleda 1987). Creativity was further studied in various field context that is (history, biology, genetics science teaching, psychology, ICT, curriculum, organization, and education). Drawing contents and substance from a wide variety of studies. Its relationship with teaching and psychology and ICT and curriculum formed. Relationship subsequent delt with its relationship with academic performance, drawing examples from over forty studies on a wide range of themes. The ultimate scholastic journey is criterion- referenced goals. It is hard to attained and required many ways to achieve it (Lezotte & Pepperl, 1999; Alig-Mielcarek & Hoy, 2005; O'Donnell &White, 2005).

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The preceding chapter presented both intensive and extensive review of related literature in the areas of optimism, creativity and academic performance which form the parameters of the study. This resume gave an intensive knowledge what has been done in the discreet area, what is the status position, and what needs to be explained in the present study in relation to the objectives set out and hypotheses formulated, as such: The problem under investigation precise it relates to look for the interrelationship of optimism creativity and academic performance of students at the undergraduate level. The chapter before it was about the review of literature in which researcher reviewed literature about optimism, creativity and academic performance from articles journals and books. This chapter is about the type of study, methodology of research design, population, sample, pilot test, reliability, and administration of the instrument.

3.2 Research Design

The methods related to quantitative survey study introduced by Creswell (2014) were followed here. The quantitative methods and procedures, instrument-based questions, tests of verified theories, sharply defined variables in the questions in hypotheses, employing measurable form of statistical procedures. The quantitative method with correlational research design was chosen to suit the objectives of the study. Also, a large body of literature covers the various aspects of the variables (optimism, creativity, and academic performance) of the study in the quantitative

framework. Thus, the survey was done with a quantitative research design. The variables used were optimism, creativity with its five dimensions self/everyday creativity, scholarly creativity, performance creativity mechanical/scientific creativity and artistic creativity and academic performance of students. Grades obtained in previous exam; higher secondary school certificate (HSSC results) were used. Survey is done to know the interrelationship of optimism creativity and academic performance of students' survey provides a general opinion about constructs from the population. The Population was undergraduates. Two instruments were used to know the relationship of optimism creativity and academic performance. The questionnaire used for the creativity of students was Kaufman, domains of creativity scale and to know optimism level of students LOT-R was used to assess the academic performance of students self-reported grades of students were used. It was asked to students about their marks/grades obtained in the HSSC exam. The questionnaire was distributed to undergraduates in universities of both sectors (public and private) of Islamabad capital territory (ICT).

3.3 Philosophy of Research

The base of the present study is entrenched in the positivist research paradigm. Valuable and right decisions are based on philosophical approach the Axiology (Finnis, 1980). Axiology regarding the positivism research paradigm is deep-rooted in the assumption that researcher is independent of the research subject. Reality is universal and highly ordered and can be observed that is the assumption related to the ontology of positivism. Study of nature and validation of the knowledge is called epistemology and is defined by Schwandt (1997). According to positivism the roots of epistemology are found in the assumption that knowledge is measurable, observable and is related to scientific method. According to Cohen, Manion and Morrison (2000)

positivism research paradigm relies for the conclusions on deductive logic, formulation, and testing of hypotheses, presenting operational definitions, calculations of the mathematical equations. According to Kivunja and Kuyini (2017) this research paradigm supports the quantitative research approach as a base for the researcher's ability to be accurate for describing the parameters and coefficients related to data collection interpretation and in order to understand their relationship.

3.4 Population of the Study

Population is the target group, the group of interest to the researcher from which the results of the study are generalized. It has to be a realistic choice and manageable group. In this study undergraduate at Islamabad capital territory (ICT) formed the population. For the main study they were drawn from six universities three from each sector (3 private and 3 public). The study was delimited to three study programs Bachelor in Electrical Engineering (BEE), Bachelor in Computer Sciences (BSCS) and Bachelor in Business Administration (BBA). These were identical programs available in universities of both sectors (Public and Private) of ICT. Target Population of spring session 2018 first semester was 1929 of three study programs. In this study undergraduate student at Islamabad capital territory (ICT) formed the population. List of HEC recognized public and private sector universities operating in ICT were taken from HEC website (HEC, 2018). For the main study 3 Public and 3 private sector universities were chosen. The study was delimited to three study programs Bachelor in Electrical Engineering (BEE), Bachelor in Computer Sciences (BSCS) and Bachelor in Business Administration (BBA). These study programs were equally available in universities of both sectors (Public and Private) of ICT. Verbal permission was sought from universities administration to collect relevant data.

Enrollment section of each these study programs were approached by the researcher to determine population.

Table 3.1: Population of the study

University	Sector	Study Programs			Total
		BEE	BBA	BSCS	
University 1	Public	100	120	100	320
University 2	Public	15	226	143	384
University 3	Public	79	118	153	350
University 4	Private	65	100	150	315
University 5	Private	68	120	150	338
University 6	Private	78	49	95	222
Total		405	733	791	1929

3.5 Sampling Technique and Sample Size

A proportionate stratified sampling method was followed in the present study. It was required to guarantee proportional representation of students in sample of undergraduates. It is a mini randomization of the population. It is divided into characteristics, then randomly sampled in each category or stratum with this rationale, a proportionate stratified sampling technique was chosen for this study. Random sample was drawn from each stratum of the target population from three study programs which were comparably offered in (3 Public and 3 Private) sector universities of ICT. Strata were Bachelor in Electrical Engineering (BEE), Bachelor in Computer Sciences (BSCS) and Bachelor in Business Administration (BBA). Stratified samples are regarded as better samples, meetings the requirements advanced

knowledge of population, characteristics they allow generalizability within the framework of probability sampling.

3.6 Sample Size

For the main study six universities were chosen. Total number of students enrolled in the similar study program (BEE, BBA, BSCS) offered by the six universities were 1929 undergraduates. Yamane (1967) Formula was applied to draw a sample. The sample size drawn at 17.16% percent of 1929. The emerged sample size (17.16% or 331) allocated proportionally on the target population (1929) along the stratum. The variable of interest was optimism, creativity, and academic performance of undergraduates with three groups Bachelor in Electrical Engineering (BEE), Bachelor in Computer Sciences (BSCS) and Bachelor in Business Administration (BBA). Out of 1929 undergraduates 405 were Electrical Engineering students 733 were Bachelor of Business Administration students and 791 were enrolled in bachelor's in computer sciences (BSCS). As the desired sample was 331, researcher took this along the strata. For proportional representation 17.16% of the sample (69) be undergraduates from Bachelor of Electrical Engineering, 17.16% (126) should be BBA 17.16% (136) be Bachelor in Computer Sciences. Then researcher took these students randomly (Gay et al., 2012) from six universities as given in the table 3.2.

Table 3.2: Sample for the study

University	Sector	Study Programs			Total
		BEE	BBA	BSCS	
University 1	Public	17	21	17	55
University 2	Public	3	39	24	66
University 3	Public	13	20	26	59
University 4	Private	11	17	26	54
University 5	Private	12	21	26	59
University 6	Private	13	8	17	38
Total		69	126	136	331

3.7 Instrument used in the Study

Two instruments were used for the study. Standardized tools that fulfil the objectives of the study were already developed and available to be used. With the permission of the author tools were adopted/adapted for the study. For exploring the optimism Life Orientation Test Revised (LOT-R) was adopted which was revised by Scheier *et al* (1994) (Annex. Appendix I). The Life Orientation Test-revised (LOT-R) is a standard psychological instrument that assesses one's dispositional level of optimism, that establishes sufficient understanding into thinkable interventions. The instrument is frequently used to conduct dispositional optimism related researches (e.g., Stoecker,1999; Dulloo *et al*., 2016; Zare, 2015)

For measuring Creativity of students Kaufman domains of creativity scale (K-DOCS) developed by Kaufman (2012) was adapted (Annex. Appendix J). The original scale consists of fifty items and five domains. Out of these fifty items twenty

items were adapted. Four items from each domain were taken. These items were most suitable in the context of this study.

Rationale to use K-DOCS as a tool in this study was to see how people perceive their own creativity to simply asking them in one basic item (Kaufman, 2012). One of the common ways however, to measure ones creativity is self-reported assessment (Batey & Hughes, 2017;Forgeard & Kaufman,2016). Kaufman domain of creativity scale is the most frequently used measure to report self-creativity (Kaufman, 2012).Out of series of developed instruments of creativity regarding general thematic area (Kaufman,2006; Kaufman &Baer,2004;Kaufman et al., 2009) however, the Kaufman domain of creativity scale (K-DOCS) is most popular and most recent creativity assessment tool. It is reported that the instrument is frequently used to conduct creativity researches related to domain specific approach (e.g., Lee & Russ,2018; Dostal et al., 2017; Jonason et al.,2015).

To know about academic performance results of the Higher Secondary School Certificate (HSSC) were used. HSSC is the public examination taken at the end of 12-year examination held by the Board of Intermediate and Secondary Education in Pakistan. Regarding academic performance previous class grades were taken. According to Rand (2009) when the students are freshmen it is quite suitable source to take their previous class grades. As the students were freshmen so researcher here find it suitable to take previous class grades (HSSC) results.

3.7.1 Instrument Used for Measuring Optimism

For measuring the optimism of students Life Orientation Test-Revised (LOT-R) developed by Scheier *et al* (1994) was applied. This test consisted of total ten items that measure dispositional optimism. Out of these all, four items were filler items three

items were for each optimism and pessimism. Through reverse, the order of three items of pessimism all the six items excluding filler items were used as optimism measure. Responses were measured on a five-point items scale from strongly disagree, disagree, neutral, agree, strongly agree.

LOT-R scale has total ten items 4 items (two, five, six and eight) are not scored as these are filler items and scoring is not done for filler ones. Items (three, seven and nine were scored in reverse order. According to Scheier and Carver (1985) the items three phrased optimistically and three items phrased pessimistically are a measure of general expectations about the favorability of future events. After reversing items 3,7 and 9 all items are summed into one scale higher score indicates a greater level of optimism.

3.7.2 Instrument Used for Measuring creativity

Creativity of the undergraduates was measured through Kaufman domains of creativity scale (K-DOCS). This scale is self-report and domain specific approach. For assessment of creativity, the five domains are self/everyday creativity, scholarly creativity, performance creativity mechanical/scientific creativity and artistic creativity (Kaufman, 2012). The creativity scale consists of fifty items. It measures the level to which an individual is creative in each of the five domains which are self/everyday creativity (to choose the best solution to a problem) scholarly creativity (gathering of the best article to support a specific point of view) performance creativity (writing a poem) mechanical/ scientific creativity (figure out the problem of an inactive computer) and artistic creativity (appreciate a beautiful painting). Five-point Likert scale was used to score the items. The score of the five domains can be computed by averaging the items belonging to the domain with a high score indicating more creativity in a particular domain (Tan *et al.,* 2016). Student's creativity may fall in any

one of the domains or they may have more than one type of the creativity. For this study, fifty items of K-DOCS were reduced to twenty items. Four items from each of five domains were taken. Permission to adapt the scale according to the cultural context was sought from the author. This however, did not affect the study objectives.

3.7.3 Criteria for Academic performance

Academic performance measured through self-reported marks/grades, earned in public examination. As the target population was freshmen so grade of previous exam (HSSC) was quite reliable source.

Table 3.3: Student's academic performance criteria at HSSC level

S.No.	% of Marks	Grade	Remarks
1.	80% or above	A1/A+	Outstanding
2.	70-79%	A	Excellent
3.	60-69%	B	Very Good
4.	50-59%	C	Good
5.	40-49%	D	Fair
6.	33-39%	E	Satisfactory

In Pakistan academic performance criteria at HSSC level is categorized in to Outstanding (A+ grade), Excellent (A grade), very good (B grade), good (C grade), Fair (D grade) and satisfactory (E grade).

3.8 Reliability of the Instrument

Reliability, as a form measures the consistency or stability of item-based scale. Here, six items of life orientation test-revised (LOT-R) and 20 items of creativity scale were administered on the sample of (n=70), Bachelor of Computer Science (n=23)

Bachelor of Business administration (n=27) and Bachelor of Electrical Engineering(n=20) from Public and Private sector university of Islamabad.

3.8.1 Cronbach's Alpha Coefficient

Cronbach's alpha coefficient was applied to measure reliability as the items were based on five point-Likert scale. according to it if Alpha coefficient value is higher than 0.7 the items indicate high reliability when its value obtained is below 0.35 shows that items carry low-reliability (Nunnally & Bernstein, 1994)

3.8.2 Reliability of the Optimism scale (Life –Orientation Test-R)

Table 3.4: Cronbach's alpha for LOT-R

Items	Cronbach's Alpha Coefficient
6	.664

3.8.3 Reliability of Creativity scale (K-DOCS)

Table 3.5: Cronbach's alpha for creativity scale

Items	Cronbach's Alpha Coefficient
20	.800

Table 3.6: Cronbach's alpha reliability of creativity subscale

Sub scale	Items	Alpha coefficient
Self/everyday creativity	4	.691
Scholarly creativity	4	.705
Performance creativity	4	.664
Mech/scientific creativity	4	.746
Artistic creativity	4	.629

3.9 Validity of the instrument

This is a quantitative study. Reliability and validity form an essential requirement of the instruments. Reliability determine stability of the tests, validity form a parallel component of a good test. It measures worthwhileness or truthfulness in its own condition. In this study validity was examined first. Optimism, creativity, and academic performance were well defined drawing research-based ingredients. Further, expert opinion of three judge's researcher's supervisor's intensive appraisal and two HOD's of Education Departments from two universities was taken

3.10 Instrument Direction and Collection of Data

Following determining reliability and establishing of validity of the creativity test and optimism scale process of collection of the data commenced. Both scales were practically applied to universities of Islamabad Capital Territory. Data was gathered for main study from 3 public sector universities 3 private sector universities. These universities were selected on a rationale of common offerings of the courses and study program Bachelor of Electrical Engineering (BEE), Bachelor of Computer

Sciences (BSCS), Bachelor of Business Administration (BBA). Formal permission of the institution, Director academics of each selected university was approached, were informed about the purpose and students were informed about confidentiality prior to data collection. Response rate was hundred percent as questionnaire was administered by researcher herself.

3.11 Statistical Analysis

Analysis of the data was performed with the help of SPSS version 20 calculating mean score, frequency, percentage, mediation analysis, Pearson correlation, regression analysis, t-test, ANOVA and post-hoc test were used for the data and testing of the hypotheses. To achieve objectives 1 and 2 descriptive statistics was used. To achieve objective three mediation analysis was performed. Baron and Kenny (1986) steps followed, contends that four steps are critical for successful mediation. The first step demonstrates that the total effect between X and Y which demands direct effect between both the variable but later proved controversial by Haye's (2009) that without association between X and Y mediation can exists step 1 may not need, one can move forward to step two (Shrout & Bolger, 2002). Step 2: estimate the direct effect between X and M, Step 3a estimate the direct effect between X and Y with X and M as a predictor and Y as dependent variable. Step 3b estimated the direct effect between M and Y with X and M as a predictor and Y as dependent variable. For the sub objective 3a,3b and 3c Pearson correlation was used, to fulfill objective 4 regression analysis was performed and t- test was applied for objective 5. ANOVA was applied for the fulfillment of objective 6. Students learning is not independent there is wholesome influence of teachers' co-learners and material development (Assignments, presentations, and a typical analysis). To reduce the biases in results a set of the major statistical measures applied.

Chapter Summary

Detailed procedure and methods have been explained in this chapter. A quantitative survey study with correlational research design was chosen in this investigation interrelationship among optimism creativity and academic performance. For this study philosophy was based in positivist approach. According to Finnis (1980) for this approach axiology belongs to making valuable decisions. Researcher in positivist research paradigm follows the axiological assumption and is independent of research subject. Ontology according to positivism is related to the supposition that reality is observable, ordered, and universal. Epistemology is related with nature and justification of knowledge (Schwandt,1997). Base of the positivism epistemology is in statement that knowledge is related to quantifiable scientific methods. Positivism research paradigm relies on deductive logic, formulation and testing of hypothesis presenting operational definitions, calculations and concluding results. Positivist use the quantitative research approach (Kivunja and Kuyini, 2017). It was rationalized that a large body of literature was available in quantitative studies and psychological standardized tests, Population is the target group the group of interest to the researcher population related and undergraduate studies, as the freshmen are more included to innovative and positive thinking in a new institutional environment at tertiary level proportionate stratified sampling technique was need to stratify the target population to guarantee proportional representation of students from three compare able study programs (BEE, BBA, BSCS) representing combination of public and private sector of Islamabad Capital Territory Universities (ICT). Sampling procedure suggested by Gay *et al.,* (2012) employed to six sample sizes. For measuring the optimism Life Orientation Test Revised (LOT-R) was used which was revised by Scheier *et al* (1994). This test has total ten items three items are related to optimism, three items are

related to pessimism and four items are filler items. According to authors of the LOT-R three items of pessimism are reverse scored and taken as optimism statements after reversing. Further four filler items are not scored. To measure creativity of students Kaufman domains of creativity scale (K-DOCS) developed by Kaufman (2012) was adapted. The original scale consists of fifty items and five domains. Out of these fifty items twenty items were adapted. Four most relevant items from each domain were taken, Considering the cultural context, time, and cost. These items were regarded most suitably in the context of this study. Kaufman domains of creativity scale consists of five domains including self/everyday creativity, performance creativity, scientific /mechanical creativity, scholarly creativity, and Artistic creativity. To measure academic performance self-reported higher secondary school certificate (HSSC) grades were used. HSSC is the public examination taken at the end of 12-year examination held by the board of intermediate and secondary education in Pakistan. Cronbach's alpha co-efficient was applied for determining reliability of the instrument which ranged from 6.29 to .746. Content based validity was essentially employed to establish validity of the tool certified by the three judges including two head of Education departments. Rigorous statistical treatment (descriptive and inferential) was applied. Analysis of the data was done with the help of SPSS version 20 calculating mean score, frequency, percentage, mediation analysis, Pearson correlation, regression analysis, t-test and ANOVA were used for the data and testing of the hypotheses. To achieve objectives 1 and 2 descriptive statistics was used. To achieve objective three mediation analysis performed. For the sub objective 3a,3b and 3c Pearson correlation was used, to fulfill objective 4 regression analysis was performed and t- test was applied for objective 5. ANOVA was applied for the fulfillment of objective 6. Thus, all possible methods were adopted to build up the methodological chapter.

CHAPTER 4

DATA ANALYSIS

4.1 Introduction

This chapter elaborates the statistical procedures that was applied on the data (n=331) accomplish the findings related to objectives and test hypotheses both descriptive and inferential were employed. Software SPSS version 20 was employed data collected was put to statistical analysis. Demographic characteristics of the sample were analyzed using descriptive statistics. Inferential analysis was carried out through mediation analysis, Pearson correlation, regression analysis, t- test, one-way ANOVA, post-Hoc test. Statistical analysis of the data yielded the following results.

4.2 Descriptive Statistics

Descriptive statistics are transitory descriptive coefficients that summarize a data set. In descriptive statistics data is described, presented, organized, and summarized using numerical calculations. Descriptive statistics was applied on demographic variables regarding students' academic performance at HSSC level. as well as on objective one; to explore the optimism level of students at undergraduate level and objective two of the study which was to Investigate the creativity level of students at undergraduate level. Frequency and simple percentage were applied to analyze demographic variables. To fulfill objective 1 and objective 2 mean score and frequency applied.

4.2.1 Demographic Characteristics of Respondents

Table No 4.1: Student's academic performance at HSSC level

Grade	Frequency	Percent
A+	35	10.6
A	134	40.5
B	132	39.9
C	30	9
Total	331	100

Table 4.1 shows the academic performance (Grades) of students at undergraduate level. It was found that out of 331, 35 students have outstanding performance (A+ grade).134 students have excellent performance (A grade), 132 students have very good performance (B grade). 30 students have good performance (C grade) at HSSC board examination.

Objective.1: Explore the optimism level of students at undergraduate level.

Q1. What is the optimism level of students at undergraduate level?

Table No 4.2: Optimism level Mean score and Frequencies.

Low Optimism		**High optimism**	
Mean score	**Frequencies**	**Mean score**	**Frequencies**
2.08	1	3.67	27
2.42	3	3.75	24
2.67	2	3.83	27
2.75	1	3.92	24
2.83	5	4.00	15
2.92	6	4.08	14
3.00	9	4.17	10
3.08	9	4.25	10
3.17	8	4.33	9
3.25	18	4.42	8
3.33	15	4.50	7
3.42	19	4.58	2
3.50	29		
3.58	29		
Total	**154**	**+**	**177 = 331**

Table no 4.2 shows that out of 331 students 154 students got less score on LOT-R and 177 students earned high score on the scale as the cut-off point is over all mean value 3.66. The mean score obtained by students were analyzed and compared with overall mean score. If students mean score were above the overall mean score (3.66), then they were categorized to have high optimism level and if mean score obtained by the students were below overall mean score were categorized to have low level of optimism.

Objective.2: Investigate the creativity level of students at undergraduate level.

Q2. What is the creativity level of students at undergraduate level?

Table No 4.3: Creativity level Mean score and Frequencies.

Low Creativity			**High Creativity**
Mean score	**Frequencies**	**Mean score**	**Frequencies**
1.55	1	3.65	20
2.00	1	3.70	15
2.25	2	3.75	20
2.30	1	3.80	18
2.40	2	3.85	12
2.50	2	3.90	15
2.70	5	3.95	7
2.75	3	4.00	17
2.80	3	4.05	6
2.85	1	4.10	6
2.90	5	4.15	10
3.00	5	4.20	7
3.05	8	4.25	5
3.10	6	4.30	4
3.15	4	4.35	5
3.20	8	4.40	8
3.25	6	4.45	2
3.30	11	4.50	4
3.35	11	4.55	2
3.40	7	4.60	1
3.45	14	4.80	2
3.50	15		
3.55	12		
3.60	12		
Total	**145**	**+**	**186 = 331**

Table 4.3 shows the mean score and frequencies of low and high scorers on the creativity scale. Out of 331 students 145 got low mean score and 186 students got high mean score on creativity scale as the cutoff point value was overall mean score 3.64. Value of mean score as a cut-off point was taken as reference value to describe the information as a result of descriptive statistics applied. The mean score obtained by students were analyzed and compared with overall mean score. If students mean score was above the overall mean score, then they were categorized to have high creativity level and if mean score obtained by students were below overall mean score categorized to have low level of creativity.

4.3 Inferential Statistics

Inferential analysis was carried out through mediation analysis, Pearson correlation t- test, one-way ANOVA, post-Hoc test. Statistical analysis of the data yielded the following results.

Objective.3: Investigate the interrelationship of optimism, creativity, and academic performance of students at undergraduate level.

Ho1: There is no significant interrelationship of optimism, creativity, and academic performance of students at undergraduate level.

Table No 4.4: Mediation of optimism between creativity and academic performance (n=331)

Academic Performance				
Predictors			**95% CI**	
	Model 1 *B*	**Model 2 *B***	**LL**	
Constant	2.023***	1.394***	0.490	2.30
Creativity	0.124	0.090	-.090	0.27
Optimism		0.21*	.0005	0.41
R^2	.0055	.0172		
ΔR_2		.0117		
F	1.834	2.8694		

Note. *CI* =Confidence interval, *UL*=upper limit, *LL*=lower limit. ***p<.001.

Table 4.4 shows that optimism mediates the relationship between creativity and academic performance. Direct effect of creativity on academic performance is

positively non-significant β = 0.09, 95% CI = (-0.0929, 0.272), which means creativity does not predict the academic performance. However, there is a significant indirect effect of creativity on academic performance through optimism, β = 0.0344, CI = (0.0009, 0.0805) and explained 1% variance in academic performance. Optimism mediates the relationship between creativity and academic performance of undergraduates. Furthermore, according to 4 steps by Barron and Kenny the first step is the estimation of total effect between X and Y Bivariate regression is applied value obtained β= 0.0895 which is greater than level of significance .05 so there is non-significant effect between creativity and academic performance. According to Haye's (2009) if significant total effect is absent still mediation can exist step 1 may not be needed. Shrout and Bolger (2002) added if the result of first step is non-significant its appropriate to move on to step 2. Step 2 was to estimate the direct effect between X and M Bivariate regression was applied the value of β = 0.1668, p< .01 which shows there is significant effect of creativity and optimism. Step 3 direct effect between X and Y(3a) and step 3b is the direct effect between M and Y. For path b value of β =0.2062, p<.05 and path C is direct *effect* β= 0.0895 p > .05. For the indirect effect estimation of value obtained is a* b=0.0344 through simple calculator which is less than 0.05. Further for significance Sobel test was also applied value of Z=1.7089 and standard error was 0.020 p value obtained was less than .001. Results showed that creativity is not directly effect the academic performance, however through optimism it has effect on academic performance. It means when the creativity level of students is high it makes them optimistic and in turn it enhances their academic performance. As optimism is positively correlated with creativity and academic performance. Optimism remained as a mediating variable between creativity and academic performance.

Objective.3a: Determine the relationship between optimism and creativity.

Ho2: There is no significant relationship between optimism and the creativity of students.

Table No 4.5: Mean, Standard Deviation and Correlation Co-efficient between the optimism and creativity of students (n=331).

Variables	**Mean**	**SD**	**r**	**p-value**
optimism	3.66	.428	.188**	.001
creativity	3.64	.482		

The table 4.5 shows a positive significant relationship between optimism and creativity. The figure also shows that a significant relationship between creativity and optimism exists. As the correlation coefficient is .188 and the value of p is .001 which is less than .01 so the null hypothesis is rejected and alternate hypothesis is accepted. Both variables creativity and optimism increase in the same direction. With the increase of optimism, creativity also increases.

Ho3: There is no significant relationship between optimism and subscale of creativity.

Table No 4.6: Mean, Standard Deviation and Correlation Co-efficient between the optimism and sub scale of Creativity of students (n=331)

Variables	**Mean**	**SD**	**r**	**p-value**
Self/Everyday Creativity	3.85	.570	.207**	.000
Scholarly Creativity	3.47	.694	.080	.148
Performance Creativity	3.24	.791	.083	.133
Scientific Creativity	3.77	.777	.069	.209
Artistic Creativity	3.85	.802	.200**	.000

The table 4.6 shows that self-everyday creativity has value of correlation coefficient r=.207** and level of significance p value at .000 which is less than .01 indicates a positive correlation with optimism. Scholarly creativity has value of correlation coefficient r=.080 and level of significance p value .148 which is greater than .05 indicates a non-significant correlation with optimism. Performance creativity has value of correlation coefficient r=.083 and value of p=.133 which is greater than .05 indicates non-significant relationship with optimism. Scientific creativity has value of correlation coefficient r=.069 and p value .209 which is greater than .05 indicates a non-significant correlation with optimism. Artistic creativity has value of r=.200** and value of p=.000 which is less than .01 indicates significantly positive correlation with optimism. Self/everyday creativity and artistic creativity has significant positive correlation with optimism. so, those students who possess self-everyday creativity and artistic creativity are optimistic.

Objective.3b: Examine the relationship between optimism and academic performance.

Ho4: There is no significant relationship between optimism and the academic performance of students.

Table No 4.7: Mean, Standard Deviation and Correlation Co-efficient between the optimism and academic performance of students (n=331).

Variables	**Mean**	**SD**	**r**	**p-value**
Optimism	3.66	.428	.120*	.029
Academic performance	2.47	.802		

Table 4.7 shows that the relationship between optimism and academic performance is positively significant. Correlation is significant at .05 level. The correlation coefficient is .120 and the p-value is .029. Optimism and academic performance are positively increasing in the same direction. As the optimism increases the academic performance concurrently increases.

Objective.3c: Find out the relationship between creativity and academic performance.

Ho5: There is no significant relationship between creativity and the academic performance of students.

Table No 4.8: Mean, Standard Deviation and Correlation Co-efficient between creativity and academic performance of students (n=331).

Variables	**Mean**	**SD**	**r**	**p-value**
Creativity	3.64	.482	.074	.177
Academic performance	2.47	.802		

Table 4.8 shows that there is non-significant positive correlation between creativity and academic performance of students. Value of correlation coefficient is .074 and p value is .177 which is greater than level of significance .05. So, the null hypothesis is failed to reject. Above table shows non-significant relationship of creativity with academic performance.

Ho6: There is no significant relationship between creativity sub scale and academic performance of students.

Table No 4.9: Mean, Standard Deviation and Correlation Co-efficient between sub scale of Creativity and Academic performance of students (n=331).

Variables	**Mean**	**SD**	**r**	**p-value**
Self/Everyday Creativity	3.86	.570	.081	.143
Scholarly Creativity	3.47	.694	.022	.693
Performance Creativity	3.24	.791	.049	.374
Scientific Creativity	3.77	.776	.045	.410
Artistic Creativity	3.85	.802	.055	.315

Table 4.9 shows that there is non-significant positive relationship of academic performance and subscale of creativity. Above table shows that there is non-significant positive correlation of self-everyday creativity and academic performance. As the value of correlation coefficient is .081 and p value is .143 which is greater than level of significance .05 Results of correlation shows self-everyday creativity is not related with academic performance so, the null hypothesis is failed to rejected. Above table shows that there is non-significant positive correlation of scholarly creativity and academic performance. As the value of correlation coefficient is .022 and p value is .693 which is greater than level of significance .05 Results of correlation shows scholarly creativity is not related with academic performance so, the null hypothesis is failed to rejected. Above table shows that there is non-significant positive correlation of performance creativity and academic performance. As the value of correlation coefficient is .049 and p value is .374 which is greater than level of significance .05

Results of correlation shows performance creativity is not related with academic performance so, the null hypothesis is failed to rejected. Above table shows that there is non-significant positive correlation of scientific creativity and academic performance. As the value of correlation coefficient is .045 and p value is .410 which is greater than level of significance .05 Results of correlation shows scientific creativity is not related with academic performance so, the null hypothesis is failed to rejected. Above table shows that there is non-significant positive correlation of Artistic creativity and academic performance. As the value of correlation coefficient is .055 and p value is .315 which is greater than level of significance .05. Results of correlation shows artistic creativity is not related with academic performance so, the null hypothesis is failed to reject.

Objective.4: To explore the effect of optimism and creativity on academic performance.

Ho7: There is no significant effect of optimism on academic performance.

Table No 4.10: Simple Linear Regression Analysis of optimism for predicting academic performance (n=331).

Independent Variable						***95% CI***	
	B	**SE**	***β***	***T***	***p***	**LL**	***UL***
Constant	1.65	0.38		4.36	.00	0.91	2.40
Optimism	0.23	0.10	0.12	2.19	.029	0.02	0.43

Criterion = Academic Performance, F= 4.81*; R^2 = .014

The regression analysis in the above table reveals significant predicted relationship between optimism and academic performance of undergraduate university students. As the finding shows that optimism is a significant positive predictor of academic performance and the model is accounting 1.4% variance in academic performance by the predictor optimism (F= 4.81, p<.05).

Ho8: There is no significant effect of creativity on academic performance.

Table No 4.11: Simple Linear Regression Analysis of creativity scale for predicting academic performance (n=331).

						95% CI	
Independent Variable	**B**	**SE**	***β***	***t***	***p***	**LL**	***UL***
Constant	2.02	0.34		6.02	.00	1.36	2.68
Creativity	0.12	0.09	0.74	1.35	.18	- 0.6	0.30

Criterion = Academic Performance, F= 1.18; R^2 = .006

The regression analysis in the above table reveals non-significant predicted relationship between creativity scale and academic performance of undergraduate university students. As the finding shows that creativity is a non-significant positive predictor of academic performance and the model is accounting only 0.6% variance in academic performance by the predictor creativity (F= 1.18, p >.05).

Objective.5: Identify the difference of optimism creativity and academic performance of students between public and private sector universities.

Ho9: There is no significant difference of optimism between public and private sector university students at undergraduate level.

Table No 4.12: Mean, Standard Deviation and independent sample t-test between public and private sector university students on the score of optimism scale (n = 331).

Variables	**Public** (*n*=180)		**Private** (*n*=151)		***t (329)***	***P***	**95% CI**	
	M	*SD*	*M*	*SD*			*LL*	*UL*
Optimism	3.65	0.43	3.66	0.43	0.29	.77	-0.10	0.08

Table 4.12 shows the mean differences between public and private sector university undergraduate students on optimism scale. From the result of t-test applied above table shows Mean score and standard deviation of public sector university regarding optimism was (M=3.65, SD=0.43) Mean score and standard deviation obtained from private sector (M=3.66, SD=0.43). It is found that there is non-significant difference between public and private sector undergraduate university students on the score of optimism scale.

Ho10: There is no significant difference of creativity between public and private sector university students at undergraduate level.

Table No 4.13: Mean, Standard Deviation and independent sample t-test between public and private sector university students on the score of creativity (n = 331).

Variables	**Public** (*n*=180)		**Private** (*n*=151)		***t (329)***	***P***	**95% CI**	
	M	*SD*	*M*	*SD*			*LL*	*UL*
Creativity	3.62	0.49	3.67	0.47	0.902	.36	-0.15	0.06

Table 4.13 shows the mean differences between public and private sector university undergraduate students on creativity scale. Mean score and standard deviation of public sector university regarding creativity was (M=3.62, SD=0.49) Mean score and standard deviation obtained from private sector (M=3.67, SD=0.47). It is found that there is non-significant difference between public and private sector undergraduate university students on the score of creativity scale.

Ho11: There is no significant difference of academic performance between public and private sector university students at undergraduate level.

Table No 4.14: Mean, Standard Deviation and independent sample t-test between public and private sector university students on their academic performance (n = 331).

Variables	**Public** (*n*=180)		**Private** (*n*=151)		***t (329)***	***P***	**95% CI**	
	M	*SD*	*M*	*SD*			*LL*	*UL*
Academic Performance	2.42	0.73	2.54	0.8′	1.43	.15	-0.30	

Objective.6: Identify the difference among the students of study programs (BEE, BBA and BSCS) regarding optimism, creativity and academic performance.

Ho12: There is no significant difference among students of study programs (BEE, BBA and BSCS) regarding optimism.

Table No 4.15: Mean difference among students on the score of optimism(n=331).

Variable	**f**	**Mean**	**SD**	**F**	**sig**
BEE	69	3.53	.466	4.951	.008
BSCS	136	3.66	.421		
BBA	126	3.73	.398		

Table 4.15 shows the mean difference among students of study program on the score of optimism. The figure shows that there is a significant mean difference among the study program as F=4.951 and p<.01. Mean score of bachelors of electrical engineering (BEE) is (M=3.54) with standard deviation (SD=.466). Mean score of bachelors of computer sciences (BSCS) is (M=3.66) with standard deviation (SD=.421). Mean score of bachelors of business administration (BBA) is (M=3.73) with standard deviation (SD=.398). As the mean difference is significant so, post-hoc test was applied to find the pair-wise differences.

Table No 4.16: Post Hoc-test of optimism.

Study Program Offered (I)	**Study Program Offered (J)**	**Mean Difference (I-J)**	**SE**	**sig**
BEE	BBA	-.19896*	.06330	.002
	BSCS	-.13581*	.06247	.030
BBA	BEE	.19896*	.06330	.002
	BSCS	.06315	.05226	.228
BSCS	BEE	.13581*	.06247	.030
	BBA	-.06315	.05226	.228

The table 4.16 shows that mean difference is significant at .05 level. According to mean value students of BBA has higher optimism as compared to BSCS and BEE. Whereas students of Electrical Engineering have the lowest optimism score. Students of bachelor of business administration have highest optimism level as compared to other two groups and students of electrical engineering (BEE) have lowest optimism level as compared to other two groups. BBA study program significantly difference against BSCS and BEE.

Ho13: There is no significant difference among students of study programs (BEE, BSCS, BBA) regarding creativity.

Table No 4.17: Mean difference among students on the score of creativity(n=331).

Variable	Mean	SD	F	p-value
BEE	3.625	.55337		
BSCS	3.656	.47956	.146	.865
BBA	3.628	.44526		

Table 4.17 reveals that there is a non-significant mean difference among the students of undergraduate study programs on the score of creativity scale. The figure shows that there is non-significant mean difference among the study program as F=.146 and p>.01. Mean score of bachelors of electrical engineering (BEE) is (M=3.625) with standard deviation (SD=.55337). Mean score of bachelors of computer sciences (BSCS) is (M=3.656) with standard deviation (SD=.47956). Mean score of bachelors of business administration (BBA) is (M=3.628) with standard deviation (SD=.44526). The students of all the three study programs have almost identical mean score on creativity scale.

Ho14: There is no significant difference among the students of the study programs (BEE, BSCS, BBA) regarding academic performance.

Table No 4.18: Mean difference among students on the score of academic performance (n=331).

Variables	**Mean**	**SD**	**F**	**p-value**
BEE	2.29	.6208		
BSCS	2.51	.8605	2.34	.098
BBA	2.53	.817		

The table 4.18 shows that the value of p is greater than .05. There is non-significant difference among the groups regarding academic performance. The figure shows that there is non-significant mean difference among the study program as F=2.34 and p>.01. Mean score of bachelors of electrical engineering (BEE) is (M=2.29) with standard deviation (SD=.6208). Mean score of bachelors of computer sciences (BSCS) is (M=2.51) with standard deviation (SD=.8605). Mean score of bachelors of business administration (BBA) is (M=2.53) with standard deviation (SD=.817). The difference among the students of study programs regarding academic performance is not differentiable because the mean score is almost equal.

Chapter Summary

This chapter presented results of data analysis of six main objectives; three sub objectives and fourteen null hypotheses formulated for the study. Mean scores, mediation analysis, Pearson correlation, regression analysis, t-test, one-way ANOVA, post hoc-test, using software SPSS version 20. Analysis of the data indicated, regarding objective one to explore the optimism level of students. Related to objective one is the question one that is what is optimism level of students? It was observed that out of 331 students 154 students got low score on LOT-R and 177 students earned high score on the scale as the cut-off point is mean value of 3.66. The mean score obtained by individual students were analyzed. They were higher than cut-off point then categorized to have high optimism level and if mean score obtained by individual students were below cut-off point categorized to have low level of optimism. Objective two and research question two were related; objective two was to investigating the creativity level of students. Research question related to it was what is the creativity level of students at undergraduate level? It was observed that out of 331 students 145 got low mean score and 186 students got high mean score on creativity scale as the cutoff point value was 3.64. This was decided on the basis of mean score obtained by individual student. Overall mean score of creativity scale was taken as cutoff point. The students who got scores above the cut off point value are categorized to have high creativity level and the students who got low mean score below the reference value; the cut-off point is categorized to have low creativity level. Main objective three was to investigate the interrelationship of optimism, creativity, and academic performance of undergraduates. Hypothesis one related to it was there is no significant relationship of optimism, creativity, and academic performance of students at undergraduate level. It was observed that creativity has indirect relationship with academic performance

through mediating role of optimism. Those students who are creative they have better academic performance through mediating role of optimism. Optimism was turn out to be a full mediator. Sub objective 3(a, b, c) was related to correlation. Pearson correlation was applied on sub objective 3(a, b, c). Sub objective 3a attempted to determine the relationship between optimism and creativity. Null hypothesis two related to it was there is no significant relationship between optimism and creativity of students. Null hypothesis was rejected and alternate hypothesis was accepted. It was found that there was significant positive relationship of optimism and creativity. As the optimism level of students increases so the creativity also increases. The data shows significant relationship between the two variables. Null hypothesis three was about relationship of optimism and subscale of creativity and stated as there is no significant relationship between optimism and subscales of creativity. There exists a significant relationship between optimism and subscale self/every day creativity and artistic creativity, rest of three subscales have non-significant relationship with optimism. The sub objective 3b examined the relationship between optimism and academic performance. Null hypothesis four related to it was there is no significant relationship between optimism and the academic performance of students. Null hypothesis was rejected and alternate hypothesis was accepted. There exists a significant correlation between the two variables. As the optimism increases so the academic performance also increases. The sub objective 3c was about the determining relationship between creativity and academic performance. Hypothesis five related to it was there is no significant relationship between creativity and academic performance of students. Null hypothesis was accepted and alternate hypothesis was rejected as non- significant relationship existed between the variables. Null hypothesis six was about relationship between creativity subscales and academic performance of students and was stated as

there is no significant relationship between academic performance and subscales of creativity. Null hypothesis was accepted and alternate hypothesis was rejected. Results showed there is non-significant positive relationship between creativity subscales and academic performance of students. The objective four was to explore the effect of optimism and creativity on academic performance. two null hypotheses were related to objective four. Null hypothesis seven and eight are related to it. Results showed that optimism was a significant positive predictor of academic performance while creativity was a non-significant positive predictor of academic performance. The objective five was about identify the difference of optimism, creativity, and academic performance of students between public and private sector university students. Null hypothesis nine, ten and eleven are related to it. T-test was applied here outcomes showed that null hypothesis was accepted and alternate hypothesis was rejected. It was found that a non-significant difference between public and private sector undergraduates regarding optimism, creativity, and academic performance. The last and sixth objective was related to identify the difference among the study programs bachelor in electrical engineering, bachelor of business administration and bachelor of computer sciences (BEE, BBA, BSCS) in relation to the three variables optimism, creativity, and academic performance. Hypothesis twelve, thirteen and fourteen was related to it. Analysis of variance indicated that difference regarding optimism among the groups existed post-hoc test was applied which shows that students of bachelor of business administration have highest optimism level as compared to other two groups. Students of bachelor of electrical engineering have lowest optimism level as compared to other two groups. while other two variables creativity and academic performance showed no variation among the groups. So, the null hypothesis thirteen and fourteen are accepted and alternate hypotheses rejected.

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary

The research was carried out to find out the interrelationship among optimism, creativity, and academic performance of students at the undergraduate level. The research was conducted at public and private sector universities of Islamabad Capital Territory (ICT). The study consisted of six main objectives three subsidiary objectives 3(a, b, c), two research questions and fourteen null hypotheses. The present study investigated about the interrelationship among optimism, creativity, and academic performance of students at the undergraduate level. It was a descriptive and inferential study with correlational design. The first objective of the study was to explore the optimism level of the student. The second objective was to investigate the creativity level of students. The third main objective of the study was to investigate the interrelationship among optimism creativity and academic performance of students. This further contained three subsidiary objectives 3a,3b and 3c. The sub objective 3a of the study was to determine the relationship between optimism and the creativity; the sub objective 3b was to examine the relationship between optimism and academic performance and the sub objective 3c referred to determining the relationship between creativity and academic performance. The fourth objective intended to explore the effect of optimism, creativity on academic performance. The fifth objective of the study was to find out the difference of optimism creativity and academic performance between public and private sector university students. The sixth objective of the study

was to identify the difference among the students of study programs (BEE, BBA, and BSCS) regarding optimism, creativity, and academic performance.

First, validity and reliability of the optimism scale and creativity scale checked. The dry run was done on a small sample (n=70). The sample was taken from one public and one private sector universities of Islamabad. For this a mini sample from each Bachelor in Computer Sciences (n=23), Bachelor in Business Administration (n= 27) and Bachelor in Electrical Engineering (n=20) was taken. The outcome of this pilot test indicated that these scales (LOT-R for optimism and K-DOCS for creativity) were reliable and equally valid to be used in the main study.

The data collection tools used for optimism life orientation test revised (LOT-R) developed by Scheier *et al* (1994) and creativity (Kaufman domain of creativity scale) developed by Kaufman (2012). For academic performance higher secondary school certificate (HSSC) results were used. Before administering the instruments, verbal permission from the higher authorities of the universities, Director Academics and HOD of the relevant departments were sought. Students were instructed about the purpose of the investigation and assured that their information would be utilized in the study and would not be used for any other purpose. The main study was done to accomplish the objectives of the study and test hypotheses. The data was treated through statistical procedure. This included descriptive statistics, inferential statistics (Mediation analysis, Pearson correlation, Regression analysis, t test, one-way ANOVA, and post-Hoc test) using SPSS version 20.

5.2 Findings

Following were the main findings of the study;

1. Regarding the level of optimism of the students it was found that out of 331 students 154 students held low score on LOT-R and 177 students gained high score on the scale as the cut point was mean value 3.66 So, 154 students held optimism at the low level and optimism level of 177 students was high. (Table 4.2)
2. Related to creativity level of students it was found that out of 331 students 186 students have high creativity level and 145 have low creativity level (Table 4.3).
3. Optimism was found as a mediator between creativity and academic performance. (Table 4.4)
4. Optimism was found significant and positively correlated with creativity ($p=.001$, $p< .01$) (Table 4.5).
5. Optimism was found significant and positively correlated with self/everyday creativity and equally with artistic creativity, while not significantly correlated with the rest of the subscales. (Table 4.6)
6. Optimism was further observed significant and positively correlated with academic performance ($p=.029$, $p<.05$) (Table 4.7).
7. Creativity seemed non-significantly correlated with academic performance ($p=.177$, $p>.05$) (Table 4.8).
8. No correlation was found between academic performance and sub-scales of creativity. (Table 4.9).

9. Optimism was found significantly positive predictor of academic performance (Table 4.10).
10. Creativity was seen non-significant predictor of academic performance (Table 4.11).
11. The difference between undergraduates of public and private sector university was found non-significant regarding optimism (Table 4.12)
12. The difference between undergraduates of public and private sector university was found non-significant regarding creativity (Table 4.13)
13. The difference between undergraduates of public and private sector university was found non-significant regarding academic performance (Table 4.14).
14. A significant difference among students of study programs (BEE, BBA, and BSCS) was observed in terms of optimism. ($p=.008$, $p<.05$), (Table 4.15).
15. Results of post -hoc test further revealed that students of study program of BBA held higher optimism as compared to BSCS; whereas BEE showed the lowest optimism (4.16).
16. There was non- significant difference among study programs (BEE, BBA, and BSCS) in terms of creativity. ($p=.865$, $p>.05$) (Table 4.17).
17. Finally, non- significant difference was found among students of study programs in terms of academic performance. ($p=.098$, $p<.05$) (Table 4.18).

5.3 Discussion

Assembling all outcomes from the table the result of the objective one to explore the optimism level of students mean score on the optimism scale showed that out of 331students 154 students got less score on LOT-R and 177 students gained high score on the scale with the cut-off point was mean value 3.66 and was used as reference value. So, 154 students showed low level of optimism and 177 students held the high level of optimism. The mean score obtained on scale by individual students were analyzed. If the mean scores were higher than cut point (overall mean score of the optimism scale) then categorized to have high optimism level and if mean score obtained by individual students were below the cut off point were categorized to have low level of optimism. so, 154 students have a low level of optimism and 177 students have high level of optimism. These results were consistent with the study performed by Besa-Gutierrez et al, (2019) who researched in the Spanish background with the psychosocial variables and academic performance on first year university students. Results of their study showed that using scale LOT-R it came to know that out of 495 students 247 obtained high level of optimism and 248 students obtained low level of optimism. Different people have different level of optimism some have explanatory style to express their optimism level.

Findings of the second objective of the study showed that out of 331 students less number of students got low mean score and most of the students got high mean score on creativity scale. This was decided based on mean score obtained by individual students. The cutoff point value was overall mean score of creativity scale. The students who got scores above the cut off point value are categorized to have high creativity level and the students who got low mean score than the cut-off point is

categorized to have low creativity level. Inconsistent results were found from the study performed by Mishra and Garge (2015). Results of descriptive statistics shows that most of the higher education students of Management Sciences, Engineering and Biotechnology have low level of creativity and few students have high level of creativity.

The third main objective was to investigate the interrelationship of optimism creativity and academic performance of students at undergraduate level. Related to third main objective was the null hypothesis one which was stated as: there is no significant relationship among optimism, creativity, and academic performance of students at undergraduate level. It was found that optimism mediates the relationship between creativity and academic performance. There is no direct effect of creativity on academic performance which means creativity does not predict the academic performance. However, there is a significant indirect effect of creativity on academic performance through optimism, and explained 1% variance in academic performance. These findings is consistent with the relevant researches. Findings of third main objective were similar with the findings of few studies: Bouzari & Karatepe 2019; Hossein et al., 2014; Hamedi et al., 2017; Hough, (2020). Study performed by Bouzari and Karatepe (2019) found that optimism was mediator between creative performance and life satisfaction. A study was carried out by Hough (2020) to find out the surroundings of ethics trust of organizational optimism related to the workplace on individual performance. The sample of the study was two hundred and fifty participants employed in the private sector. It was found that there was a positive impact of workplace optimism on the ethical environment and organizational trust. Out of these three variables, only optimism has a direct effect on individual performance. The other two variables' effects on individual performance indirectly through

mediating role of optimism. Ethical environment and organizational trust increase optimism level at the workplace and it in turn increase individual performance. Results of current study were consistent with the result of study performed by Hamedi et al., (2017) regarding role of optimism as a mediator. Hamedi and colleagues carried out research to find out the role played by academic optimism as a mediator between academic optimism at school and students' self-efficacy. From the outcome, it was found that student's academic optimism affects self-efficacy. This result shows that academic optimism was a mediator between the student's self-efficacy and academic optimism related to school. Role of optimism as a mediator was also found from the research performed by Cikrikci et al (2019) they investigated to know the role performed by optimism as a mediator between life satisfaction and test anxiety among the students who are teenagers, aged between fourteen to nineteen years. A significant correlation found among the variables. Furthermore, Optimism found as a full mediator between life satisfaction and test anxiety. Study with the similar results was performed by Yu et al (2015) they examined the role of dispositional optimism as mediator other two variables were anxiety and rumination. Undergraduates were the participants of the study. Optimism was found as a partial mediator of the effect of rumination on anxiety. Another study with the consistent results performed by Anderson et al (2018) purpose was to examine the role of academic optimism as a mediator between enabling structure and students' achievement. It was found that all the variables positively correlated. Role of academic optimism found as a mediator between norm referenced test and enabling structure but not with criterion referenced assessment. Another study with similar results were performed by Martinez et al (2019) mediation analysis was performed. The variables of study were psychological capital (optimism, resilience, hope, self-efficacy) academic engagement and

performance. Source of data were undergraduates studying in universities of Spain and Portugal. Questionnaire used were self-reported. Variables of study were correlated in both the samples. Academic performance and academic engagement were mediated by psychological capital. The students who were engaged academically they have higher level at psychological capital in turn they perform better at academics.

While, results of some researches found inconsistent with results of main objective three out of these studies; one was performed by Michael et al, (2017) who examined the correlation among optimism, innovative behavior, and creative self-efficacy. The role played by optimism was seen as a moderator for the research.

The sub objective 3a was to find out the relationship between optimism and creativity of students. Result shows the significant relationship between optimism and creativity of students. Studies have been found with the similar results these were; A study performed by Malik *et al.* (2013) who examined the salesperson creativity related to their performance and level of optimism and its perception. Result of the survey showed that optimism played an important role in nurturing the creative performance of salesmen but this was not the same for sales managers. So, it means that salesperson's creativity and better performance increased with high level of optimism. Results were further supported by the study performed by Yu *et al.,* (2019) to know the role played by the psychological factor in enhancing the creativity of employees. Psychological factors consist of (optimism, resilience, hope, self-efficacy) are collectively known as psychological capital. From the literature on creativity and optimism, it was found that both optimism and hope promote the self-efficacy and resilience of employees which in turn enhances creativity Concurrently, Pisanu and Menapace, (2014) explored ten decades literature review on creativity and innovation in educational and organizational fields bear strong relationship with the characteristics

and findings of this study with in the domains of institutional organization, practices, individuals attributes, teaching practices and methods and content for training.

The sub objective 3b was to examine the relationship between optimism and academic performance. Relationship between optimism and academic performance found significant. Findings is consistent with some previous studies performed by different researches. Some previous studies with consistent results were found. A study performed by Sahar and Tariq (2011). According to this relationship between three variables one was emotional intelligence second was optimism and the other was the academic performance of students. This study was performed at the high school level. The sample of this study was fifty students with an equal number of girls and boys. The sampled students aged between the range of 16-20. These students sampled from three private schools in Rawalpindi Pakistan. For the measurement of optimism, the revised scale of optimism by Scheier and Carver was used and for the measurement of emotional intelligence test used was a self-reported test for emotional intelligence. Students' academic record from the last semester was used to measure academic achievement. The results showed a considerably positive association between Emotional Intelligence (EI) and optimism level of students. It was also discovered that emotional intelligence and optimism related positively to the academic performance of the learner. Those students who were emotionally sound and intelligent were also found to be a better performer than those students who were not emotionally intelligent and pessimistic. Results showed that positive thinking about future or optimistic attitudes in students increases the likelihood of better performance in the examination and brings success due to positive belief and confidence about future performance.

El-Anzi, (2005) Performed study to know the relationship among optimism, self-esteem, and anxiety with academic achievement sample of study belongs to

education class. It was found that the relationship of optimism and self-esteem was significantly positive with academic achievement. It was observed that correlation of anxiety and pessimism to academic achievement was not significant. The findings of this research showed that optimism and self-esteem have a positive effect on the academic achievements of students. Those students who are optimistic and have high self-esteem show better performance and the relationship between anxiety and pessimism was found non-significant with academic achievement. The reason behind these results is simple that optimism and self-esteem are pleasant attributes that bring a pleasant attitude regarding goal achievement. While anxiety and pessimism are related to the psychological disorder which brings goal distortion in students so those students who have anxiety and negative thoughts, they also think that there will be no success for them in upcoming events are called pessimists. Most of the time pessimists do not show better performance in the test or exam. A study by Monteiro *et al.*, (2008) was related to students of the first year of university. The variables of research were dispositional optimism, academic performance, well-being, and symptoms of psychopathology. This research aimed to find out the correlation among the variables. The population of study was students from tertiary level. Three hundred and sixteen students form the sample were the freshmen. Data of the study collected through questionnaire. From the results negative relationship between psychological indication and optimism was found. A significantly positive correlation between success and optimism was found. Relationship between well-being and optimism was found positive. It was inferred that four variables were investigated among the university student's dispositional optimism; well-being was taken from positive psychology. psychopathological symptoms related to the psychological disorder and another variable students' success was taken. The result of the research indicated that there was

a positive correlation found among dispositional optimism and well-being in both these variables related to positive psychology. Relationship of dispositional optimism and psychopathological symptom found significantly negative. Correlation among dispositional optimism with academic success was also found positive. Students who think positively about their performance also have more chance of success.

Research was performed by Bozkurt and Ercane (2017) purpose of the research was to find out the correlation among optimism of academicians and their performance. The sample of the study was two hundred and thirty academicians. This sample was selected from one main campus of Duzce University. Analysis of the given information was done which indicated that the relationship between optimism and performance of academicians exists it was also found from the result that with the increase in working hours per week performance of academicians also increases. From the gender perspective, it was found that the academic performance of male participants was less than the female participants. The level of self-sufficiency of female academicians was more than the male academicians.

A study was undertaken by Luthans *et al*. (2007) to know the way optimism, hope, resilience, and self-efficacy. Find out satisfaction and performance at work both individually and as a complex higher-order factor. The study introduced the psychometric properties for the assessment tool made to assess optimism, hope, resilience, and self-efficacy as well for composite factors. The result showed that a combination of optimism, hope, resilience, and self-efficacy has a significant relationship with performance and satisfaction. It also came to know that rather than the individual facets composite factor found to be a better predictor for satisfaction and performance.

Temidayo (2013) performed a study to know the relative and composite associations of academic optimism, motivation, and mental capability. The study was focused on academic optimism out come at secondary level. The study was conducted in Nigeria. Descriptive research was done multistage stratified random sampling was chosen for the sample of the study comprising of 588 participants. There are four instruments were used for the collection of data and these instruments included scale revised, general achievement goal orientation scale. For the independent variable, mental capability test was used and for the dependent variable results of maths, science and english subjects were taken from the school certificate exam. Multiple regression was done to analyze the data. It was found from the research that both optimism and motivation related to predict academic performance. Out of these three variables mental capability is the one that can predict academic performance with more strength.

Ghanbarlou *et al.,* (2015) performed research to know the relationship of three variables one was optimism and other was emotional intelligence relating to the academic achievements of students in Iran. The population of this study was 613 teachers. Three hundred and two teachers chosen through stratified sampling method. The questionnaire about emotional intelligence scale in the Farsi version was used and another questionnaire used was the teachers' academic optimism questionnaire. Data analyzed through regression analysis and correlation. It was found that relationship among the variables exists. From the results it came to know that teacher's optimism turned out as a predictor of achievements of students. In this study trust of the teacher on parents as well as on students formed a crucial role to determine the academic achievement of students. The trust of teachers gives confidence to both students and parents for better performance. Students who gain confidence from their teachers tend

to be more optimistic to make decisions about their study as well as in every field of life so, trust has a positive effect on overall better achievements.

Singh and Jha (2013) equally performed research that was about comparison among students of engineering and medical colleges of the private sector. The variables of the study were anxiety, optimism, and academic performance. There was a positive correlation between optimism and academic performance. This collaborated with the work of Nes *et al.* (2009) association of optimism with higher academic results of students. In the same direction, Bevel and Mitchell (2012) determined the correlation between optimism and reading attainment of students. Results of the study showed that the relationship between academic optimism with reading achievement was positively correlated. The relationship of reading achievement with components of academic optimism was also positively correlated. Another study done by Cenk and Demir (2016) showed similar results. There seemed a positive correlation of optimism with academic performance, style of parenting and gender. It was concluded that students with the higher academic achievement possessed high optimism level and those students with lower level of optimism relatively show lower academic achievement. In institutional environment Wagner and Dipaola (2011) study showed favorable correlation of optimism with academic achievement, and school's organizational citizenship behavior. It was found from the study that optimism correlates with the achievement of students.

Results of current study were consistent with the work of Zhi-jun (2007). Optimism and academic performance are closely related to the positive coping tactics as a mediator and to know the relationship of dispositional optimism with positive self-explanation style about events of students' life. Outcomes of the research showed that academic achievement of students was affected by different optimism level. It was

found that optimism has a positive impact to promote students' academic achievement. Two kinds of optimistic ways of thought have a direct and different impact on the academic gains of students. If the amount of optimism is high then it is more in favor of student's high academic achievement.

Results similar with objective 3b were found from study conducted in Nigeria. Purpose of this study was to investigate the level up to which optimism and self-efficacy predict academic performance. The result from the study showed that there was a significantly positive correlation between self-efficacy and optimism to the academic performance of special needs learners (Ekeh & Oladayo, 2015).

Moradi *et al*., (2014) researched the relationship of optimism and academic achievement of students in the Iranian context. The result of this study showed that the relationship between optimism and academic achievement was significantly positive. From previous study consistent results were found the study was performed by Prola and Stern (1984) researched to know the association of college student's optimism with academic performance. It was found that student's optimism at the college level was associated with school GPA. These results showed that the students who are good at studies were also positive thinkers about college as well as they perform better at college. Consistent findings were obtained from previous study performed by Khalilnejad and Islami (2015) about the relationship of optimism, competence with academic performance. Results indicated that the relationship of academic performance with optimism and perceived competence was significantly positive. From the result, it was found that competence in all dimensions of growth makes a person more optimistic about upcoming events which leads to better academic performance. Another study with consistent findings were from Icekson *et al.,* (2019) who performed research on the correlation between optimism and academic

achievements and the function of gender and consciousness as moderator. Results from the study showed that a high level of optimism increases academic performance.

Duffy-Friedman (2007) executed a study to know the relationship of academic optimism with components of optimism, academic emphasis, the trust of faculty in students and their parents' collective efficacy. To identify the relationship between student's academic achievement, the standard of annual progress with academic optimism, and to point out practices that show academic emphasis, the belief of faculty in parents and students and collective efficacy as these are components of academic optimism. Data were collected through survey method and qualitative data was collected through interviews. Data collected from principals and teachers from one low performing and one high performing high school. This study was beneficial for students it gives chance to demonstrate the way the test of optimism is related to performance of students.

Results of the few previous studies were inconsistent with the results of current study about the relationship of optimism and academic performance these studied were; a significant study performed by Stoecker (1999) about the relationship of students' optimism level at college and their expected performance. For the academic performance students predicted grades about their future performance used. To measure optimism LOT-R developed by Scheier et al., (1994) was used. From the results, found that there seemed no relationship between optimism and expected grades. Also results of another study performed by Dulloo *et al* (2016) were found inconsistent with the present study. Relationship of life orientation test revised, and academic performance of medical students was investigated. The outcome of the study indicated that correlation among life orientation test revised and academic performance was non-significant. Gender difference on the LOT-R score was found non-significant

within the groups. Another study found with inconsistent results was performed by Schumacher (2006). Correlation between optimism and student's academic achievement was observed. End semester results of students were taken to measure academic performance. The questionnaire was distributed one month ahead of the end semester. So, there may not be any contradiction to compare both, score on the optimism scale and academic score of students. Results indicated that the relationship between optimism and achievement was non-significant. Another study carried out by Siddique *et al.,* (2006) about the effect of positive thinking, worry about performance and self-efficacy expectations. First year students formed the population. Main results indicated the inverse relationship between optimism and anxiety but had no relation with the performance. Harju and Bolen (1998) had found there is a slight relationship between GPA and optimism. According to Chang *et al.,* (1994) they found a non-significant relationship between optimism scale and academic performance of students. Inconsistent results were also found from the study performed by Shaun *et al.,* (2009) about the attributional style of student's performance. The research was carried out at the university level and students of the first year were taken as participants of the study. The purpose of the study was to examine the students' performance due to their optimistic or pessimistic attitude about the events. The results of the pilot study showed that there was no satisfactory relationship between students' performance and their positive attitude towards upcoming events. The past unrealistic optimistic attitude could be responsible for their future poor performance. Results from the other study also collaborated that there was no relationship between student's marks and optimistic attributional style.

The assumption made by Stoecker, (1999) that if student's optimism level must be correlated with what they believe that how they will perform in future academic

sessions, for the reason research was performed which was aimed to know about the relationship students optimism level at college and their expected performance in assumed university classes. All the sampled students belong to psychology department. To measure the optimism of students LOT-R was used. Students' grades were taken for their academic performance and instructed to write their predicted score if they get in their future study course. From the results, it was found that there is no relationship between optimism and expected grades.

According to the findings of sub objective 3c of this study correlation between creativity and academic performance was found non-significant. This result is consistent with some previous study performed by many researchers these studies were; Olatoye *et al*., (2010) who examined the correlation of creativity of students and academic achievement. Results found from the study showed that the relationship between creativity and academic performance was non-significant. Results seemed similar to another study which was about the relationship of creativity and academic achievement at the school level. Arya *et al.,* (2017) assessed the correlation between creativity and academic achievement of children. It was found that the relationship between creativity and academic achievement was non-significant. Result of another study was also similar to the findings. According to this study it was found that there was no correlation of creative abilities with GPA (Gralewski & Karwowski,2012). According to Pastor and David (2017) the purpose of study was to investigate the correlation between intelligence, creativity, and academic performance. Gender differences were also considered regarding these variables. The total number of students taken was forty. Correlation of creativity and academic performance found non-significant difference between intelligence and academic performance found non-significant also gender difference has the same results. Results are consistent with

another study done by Lew *et al*., (2014) according to their study relationship between academic achievement and creative personality was found non-significant. Similar to the above findings a correlational study performed by Mishra and Garg (2015) research was about academic performance and creativity of students at higher education level. Findings of this research was that the relationship between creativity traits and academic performance was non-significant. In another study Yakasai *et al*., (2010) examined the level up to which creativity and emotional intelligence influenced the academic performance. The study was done in south-western Nigeria on students from the business administration department. It came to know from the result that correlation between creativity and CGPA was found non-significant. Similar to it Chamorro and Furnham (2003) also found a negative correlation between characteristics of creativity and the examination grades. The research performed by Candrasekaran (2013) was consistent with the results of present study. The research aimed at finding the correlation between academic achievement and creativity on gender perspective. The two research questions were related , one was about gender differences, academic performance, and various dimensions of creativity Another question was about the correlation of different dimensions of creativity and academic achievements. It came to know that there was no significant correlation of aspects of creativity with academic achievements based on gender.

Results of some previous studies were inconsistent with the results of the current study these studies were; Naderi *et al.,* (2010) performed research on the correlation of creativity and academic achievement of students from a gender perspective. This study was based on two objectives, one objective was to examine the correlation between creativity and academic achievement. The other objective was related to gender differences in these variables. cumulative grade point was taken from

students Khaterina Torrance creativity perception inventory was used to know the creativity level of students. It came to know that that gender differences were non-significant regarding academic achievement and creativity and found that academic achievement and creativity are the factors that are positively correlated. Another study performed by Florence *et al.,* (2015) was to find out the academic achievements and to know the scientific creativity of students in the subject of chemistry. The selection of the sample was carried out through a simple random sample method. The research was conducted in Kenya two tests chemistry scientific creativity test and achievement test of chemistry were used. Results indicated that the relationship between academic achievement and scientific creativity in chemistry was positive and significant. In the field of chemistry students usually do an experiment to make products these practices boost their creativity level, in turn, it affects the student's academic achievement. That is the way the students those are better performer at their tasks are also have high creativity level. Nami *et al*., (2014) performed research about the relationship of creativity with the academic achievements of students. The sample of the study was seventy-two students. The tool for the data collection was a creativity questionnaire and an average score of students as academic achievements were used. Correlation among components of creativity and academic performance was found significant. Ghayas and Malik (2013) investigated students' achievement and sociability as a predictor of creativity. Population of the study formed undergraduates. Three departments were taken for the research. These were pure sciences, arts, and social sciences. From the results, it came to know that creativity has a relationship with academic achievement and sociability. Both academic achievement and sociability predicted creativity. Another study performed by Pishghadam *et al.,* (2011) on the topic of learner's creativity in foreign language achievement. Purpose of this study was

to investigate the relationship of creativity with achievement in a foreign language. To measure creativity Arjomand's creativity scale was used. To measure language performance CGPA scores were taken into consideration. Results of Pearson correlation indicated a significant correlation among the creativity of learners and achievement in a foreign language. Inconsistent results related to current study also found from another study performed by Jenson (1998). Results showed that academic achievement of students at the secondary level had a strong correlation with scores of creativity. Ai (1999) using Torrence test of creativity thinking found a correlation among dimension of creativity. These dimensions were fluidity, elaboration, and flexibility with academic achievement for many disciplines like mathematics, social sciences, and natural sciences. Another research carried out by Palaniappan (2008) about the correlation among intelligence, creativity, and academic performance. Creativity was measured through Torrance test. Average score taken during the two recent past academic years to measure academic achievements of students. Results obtained indicated that strong correlation existed among intelligence, creativity, and academic achievement. Inconsistent results also found from the study performed by Inuusah *et al.*, (2019) objective was to find out the relationship between learner's creative thinking and students' academic performance taking gender as a moderator. Student's performance was checked in the subjects of english spoken and mathematics to know how much they were creative thinkers. The results of the study showed that the correlation between students' academic performance with their creative thinking was significant. Gender turned as a significant moderator between academic performance and creative thinking. Female participants were found rarer creative thinkers in both the subject english and mathematics as compared to male counterparts. Another study was found with varying results with sub objective 3c of this study was

performed by Jenaabadi et al., (2015). It was found from their study that creativity and academic performance were significantly correlated. Multi analysis of one hundred and twenty-six creativity studies carried out during sixties by (Gajda *et al.,* 2017) have a significant relationship with academic performance if standardized tests and utilized in academic assessment. This is a deficient area in tertiary educational system, teaching creativity. Another set of meta-analysis study carried out during 1996 to 2013 reported by (Vedal., 2014) personality inventories strongly predict academic performance in terms of GPA. This criterion variable is consistent in some ways here, yet the creativity remained a concern. The results seem consistent with a study of British university about personality inventory reported by Chamorro-Premuzic and Furnham, (2003) that primary personality traits have positive relationship with academic achievement.

Fourth objective of the study was to explore the effect of optimism and creativity on the academic performance. From the results of this study, it was found that optimism was significant predictor of academic performance. According to one study optimism was used as a predictor of creativity. Positive affect and positive ratio played the role of mediator sample of the study was 595 workers who have given response about their optimism, positive relation, and positive response. The supervisors asked to report about the creativity of the employees. Results showed that optimism was the predictor of employee's creativity and was also a mediator of positive effect and ratio. Results stress that optimism is related to benefit of the organization as well as on individual basis Rego *et al.,* (2012). From this study, it was found that if the employees have optimistic thoughts about their performance, then they will perform better. Positive thoughts about the future bring a positive outcome. Creative performance is also related to the level of optimism among employees. So, from this research, it was found that optimism was the predictor of employee's creative

performance. These results were inconsistent with the research performed by by Kotzé and Niemann (2013) about psychological resources as a predictor of academic performance of students of 1st year at higher education level. Results of another study varying Rand (2008) which indicated that hope affects grade expectancy while optimism does not influence grade expectancy. In return grade expectancy affects the performance of students. It was discovered that academic performance was not affected by optimism and hope opposite to this the mutual aspect of both has a direct effect on academic performance. Current study revealed that creativity was non-significant predictor of academic performance this result was supported by another study performed by Dowling and Pretz (2012). One more study has similar results performed by Aizan (2009) results revealed that age, creativity, and gender have a low predicting capability for academic performance.

Some different results were also found from the study of Hansenne and Legrand (2014) results indicated that creativity was a predictor of academic performance (AP). Research has been done by Tatlah *et al.,* (2012) on the topic role played by intelligence and creativity for the academic performance of students. Four education colleges participated in the study and the sample was drawn from these colleges was 235 students. Information was gathered from three instruments these were Nicolas Holt creativity test, Scale for emotional intelligence and CGPA. It came to know that student's achievement was predicted by emotional intelligence and creativity.

Objective fifth was Identify the difference of optimism creativity and academic performance of students between public and private sector universities. Null-Hypothesis ten related to it was that there is no significant difference of creativity between public and private sector university students at undergraduate level. Null

hypothesis was accepted the similar results were found from another study performed by Anwar *et al.*, (2012) creative thinking is one of the most important abilities of the human being. According to him some students obtains good marks at school they are known as high achievers and some students get fewer marks at school as compared to the class fellows they are known as low achievers' study finds out the difference between low achievers and high academic achievers based on creative thinking abilities. The sample of the study was two hundred and eight secondary school students two groups were made both groups have an equal number of students ratio of high to low achiever was equal in both groups. The test used for the creative ability was self-developed. This was a comparative study for statistical analysis t-test was used. Result revealed that the difference between the group was non-significant based on creative thinking abilities.

It was found that there was non-significant difference among students regarding variables between public and private sector. It was concluded that students were not differentiated regarding optimism, creativity, and academic performance in both sectors. Which shows that students of both sectors were facing the same cultural environment regarding these variables.

Objective sixth of the study was about the differences of optimism, creativity, and academic performance among students of Electrical Engineering, Computer Sciences and Business administration. A series of studies indicated that there was no statistically significant difference among students of Electrical Engineering, Computer Sciences, and Business Administration in terms of creativity and academic performance. But a statistically significant difference was found among the students of Electrical Engineering, Computer Sciences and Business Administration in terms of optimism. Result of the post-hoc test showed that the students of Bachelor of Business

Administration (BBA) had higher optimism as compared to the Bachelor of Computer Sciences (BSCS); whereas Bachelor of Electrical Engineering (BEE) had the lowest optimism score. It is clear from the findings of the study that management sciences students have higher optimism than computer sciences and engineering students were found significantly lower in optimism than that of both two groups. There may be a reason behind this difference is that curriculum of the engineering is much difficult students get frustrated due to difficult projects whereas lighter tasks are assigned in the management sciences course. Results shows that students were not differentiable based on subject taught regarding creativity and academic performance. Inconsistent results were found from the study performed by Mishra and Garge (2015). They performed correlational study related to traits of creativity and academic performance of student. The study was executed with higher education students. A comparison among the higher education students was also performed in this study. The results also reveal that Management students are more creative as compared to Engineering and Biotechnology.

5.4 Conclusions

Following conclusions drawn from the findings of the study.

1. Most of the students gained high score on optimism scale these were fifty three percent and almost forty seven percent students obtained low score on optimism scale.
2. Sampled students were categorized into high and low level of creativity based on mean score obtained by them on the creativity scale forty four percent students obtained low score and fifty-six students obtained high score on creativity scale.

3. When all the components of objective three are put together the resultant position emerged that optimism demonstrated a vital role as a mediator between creativity and academic performance. From the sub objective 3a it was concluded that there was significantly positive correlation between optimism and creativity. The corollary goes increased optimism concurrently results in increased creativity. It was concluded from the sub objective 3b that by the increase of optimism, academic performance also increases. With the increase of optimism self-everyday creativity and artistic creativity also increases. Optimism non-significantly correlated with rest of subscales However, the conclusion drawn from sub objective 3c it was observed that there seemed non-significant correlation between creativity and academic performance. There was no relationship between academic performance and subscales/domains of creativity.

4. The findings further yielded that optimism was significant predictor of academic performance, while creativity found non-significant predictor of academic performance.

5. It was concluded that difference regarding optimism, creativity and academic performance between public and private sector universities students observed non-significant.

6. It was concluded that difference among study program (BEE, BBA and BSCS) regarding optimism creativity and academic performance. Significant differences emerged among students of study programs regarding optimism. It was found that optimism of the Bachelor of Business Administration (BBA) was higher as compared to the Bachelor of Computer Sciences (BSCS). Relatively, students of Bachelor of Electrical Engineering (BEE) seemed the

lowest optimism score and there was non-significant difference with respect to creativity and academic performance.

5.5 Recommendations

Following recommendations are formulated.

1. Counsellors and psychologists may provide optimism related sessions to increase students' optimism level and promote encouraging environment for positive life expectancies that may overcome the frustration and pessimistic thoughts in students and in turn promote academic performance.
2. Students may be involved in creativity enhancing training programs which may improve positive expectations and provide confidence to do more efforts to achieve goals. These training programs may be related to problem solving techniques through divergent thinking practices (open ended questions).
3. Creativity-based assessment system may be introduced to discourage old ways of assessment and memorization of content material.
4. Workshops may be held to promote awareness among students regarding optimism and creativity.

5.5.1 Recommendations for Future Research

The following are the key recommendations for further research.

1. A study may be conducted on the same variables at post-graduate level.
2. A comparative study may be conducted related to optimism, creativity, and academic performance based on gender perspective.

5.5.2 Limitations

The following are the limitations of this study.

1. Self-reported grades for academic performance were taken.

2. An open-ended question may be added to know the originality with closed ended items related to creativity.

5.5.3 Generalizability of the Study

As in everyday life, generalizability is common in research. Generalizability attempts to make the predictions based on recurring experience. Researchers build up rationale or use reasoning while generalizing the findings of the studies. The objectives set out questions raised and hypotheses formulated and the behavior of data collected, through well-defined tasks and sites form a standard environment make it generalizable to similar circumstances. Applying probability technique of sampling makes generalizability more conclusive. Quantitative methods of study make generalizability more possible. All three types of generalizability models, suggested by (Runkle and McGrath,1972) involves generalizing treatment or measurement to population outside of the original study. In the first case, researcher used the standardized scale for producing similar results in different circumstances.

An element of flexibility is adapted to new situations. Higher, adaptability treatments makes generalizability possible to a greater variety of situations. The second form concentrate on measurements rather than treatments, making a standardized scale. A third type of the generalizability concerns the subject of the test situations. In this case larger populations randomly drawn, increases

generalizability (Firestone ,1993). In this study, almost all the three models are represented in one or other ways. In the first case the objectives questions, hypotheses are precisely drawn. The variable of the study relating to optimism creativity and academic performance are precisely defined, research-based evidence on each variable. second, research design is quantitative as a large body of research. Third, the instrument (Kaufman domains of creativity scale (KDOCS), Life Orientation Test Revised (LOT-R) and Higher Secondary School Certificate (HSSC results) are standardized scales widely used in global studies. The population is large (1929) and stratified sampling method was used, from probability domain of methodology. Next three programs are uniform in curriculum design offered by public and private universities. The academic parameters are recognized by Higher Education Commission (HEC) in national scheme of studies. Putting all the characteristics together findings of the study can fairly be generalized to outside the sites, particularly in Pakistan where all programs are alike monitored by Higher Education Commission, HEC.

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

ML.1-4/2017/Edu Dated: 07-11-2017

To: Shah Bano,
652-PHD/EDU/F16

Subject: APPROVAL OF PHD THESIS TOPIC AND SUPERVISOR

1. Reference Academic Branch's Notification No. ML.6-2/17-Syl/Acad dated 31-Oct-2017, the Faculty Board of Studies has approved the following vide its meeting held on 11th & 12th of September 2017.

a. Supervisor's Name & Designation
   i. Dr. Marium Din
   Assistant Professor, Department of Education
   NUML, Islamabad.

b. Topic of Thesis

"INTERRELATIONSHIP OF OPTIMISM, CREATIVITY AND ACADEMIC PERFORMANCE OF STUDENTS AT UNDERGRADUATE LEVEL."

2. You may carry out research on the given topic under the guidance of your Supervisor and submit the thesis for further evaluation within the stipulated time. It is inform you that your thesis should be submit within described period by Jun 2021 positively for further necessary action please.

3. As per policy of NUML, all MPhil/PhD thesis are 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 are to be prepared strictly on NUML's format that can be had from (Coordinator, Department of Education)

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

Dr. Hukam Dad Malik
Head,
Department of Education

Cc to:
Dr. Marium Din (Supervisor)
Dr. Saira Nudrat (Coordinator – PhD)

Gmail shah bano <shebee510@gmail.com>

to seek permission for the use of LOT-R

3 messages

shah bano <shebee510@gmail.com> Thu, Sep 7, 2017 at 8:27 PM
To: ccarver@miami.edu

Respected carver

Iam research scholar and I want to use scale to measure optimism (LOT-R) Please give me permission to use this scale.

thank you
shah bano.

Carver, Charles S. <ccarver@miami.edu> Thu, Sep 7, 2017 at 8:39 PM
To: shah bano <shebee510@gmail.com>

I apologize for this automated reply. All measures I have developed are available for research and teaching applications without charge and without need to request permission; we ask only that you cite their source in any report that results. If you wish to use a measure for a purpose other than that, you must also contact the copyright holder, the publisher of the journal in which the measure was published.

Information concerning the measure you are asking about can be found at the website below. I think most of your questions will be answered there. If questions remain, however, do not hesitate to contact me. Good luck in your work.

Charles S. Carver
Department of Psychology
University of Miami
Coral Gables FL 33124-0751

305-284-2817
ccarver@miami.edu
http://www.psy.miami.edu/faculty/ccarver/

shah bano <shebee510@gmail.com> Thu, Sep 7, 2017 at 9:54 PM
To: "Carver, Charles S." <ccarver@miami.edu>

Thank you so much.

Gmail shah bano <shebee510@gmail.com>

Automatic reply: to seek permission for use of creativity scale

8 messages

Kaufman, James <james.kaufman@uconn.edu> Sun, Aug 13, 2017 at 6:36 PM
To: shah bano <shebee510@gmail.com>

Hello,

I am both traveling and recovering from a rotator cuff injury so I will both have limited e-mail access and may have trouble typing for the next few weeks. I will try my best to respond in a timely fashion, and thank you for your patience!

Best,

James C. Kaufman

---

shah bano <shebee510@gmail.com> Mon, Aug 14, 2017 at 3:43 AM
To: "Kaufman, James" <james.kaufman@uconn.edu>

Respected sir, get well soon. Thankyou.

[Quoted text hidden]

Kaufman, James <james.kaufman@uconn.edu> Mon, Aug 14, 2017 at 7:52 PM
To: shah bano <shebee510@gmail.com>

Hi

Happy to give permission – scale and more info in attached

All best,

James C. Kaufman, Ph.D.

Professor of Educational Psychology

Neag School of Education

University of Connecticut

permission to change items according to cultural context.

4 messages

---

shah bano <shebee510@gmail.com> Tue, Oct 24, 2017 at 10:02 AM
To: "Kaufman, James" <james.kaufman@uconn.edu>

Respected Sir,
Can I make little changes in items of creativity scale developed by you according to my own cultural context.

Thankyou
Shah Bano
Research Scholar
NUML Pakistan.

Kaufman, James <james.kaufman@uconn.edu> Tue, Oct 24, 2017 at 6:26 PM
To: shah bano <shebee510@gmail.com>

Hello,

Of course – just indicate that you did this.

Good luck!
J

James C. Kaufman, Ph.D.

Professor of Educational Psychology

Neag School of Education

University of Connecticut

---

shah bano <shebee510@gmail.com> Wed, Oct 25, 2017 at 9:15 PM
To: "Kaufman, James" <james.kaufman@uconn.edu>

Ok Thank you so much.
[Quoted text hidden]

Kaufman, James <james.kaufman@uconn.edu> Wed, Oct 25, 2017 at 9:34 PM
To: shah bano <shebee510@gmail.com>

You are welcome!

CERTIFICATE OF VALIDITY

Interrelationship of Optimism, Creativity and Academic Performance of Students at undergraduate level.

This is to certify that questionnaire about creativity developed by James Kaufmann to investigate creativity level of students and questionnaire about optimism developed by Charles carver to explore the optimism level of students has been assessed by me and I find them adequate for the above titled research. Instrument is according to the objectives and hypotheses of research and can be used for data collection by researcher with fair amount of confidence.

Name: DR ALLAH BAKHSH MALIK

Signature: Allah Bakhsh

Date: 8/11/17

Designation: Professor Ex-Head Dept of Education

Institute: NUML Islamabad

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

CERTIFICATE OF VALIDITY

Interrelationship of Optimism, Creativity and Academic Performance of Students at under graduate level.

This is to certify that questionnaire about creativity developed by James Kaufmann to investigate creativity level of students and questionnaire about optimism developed by Charles carver to explore the optimism level of students has been assessed by me and I find them adequate for the above titled research. Instrument is according to the objectives and hypotheses of research and can be used for data collection by researcher with fair amount of confidence.

Name: Dr. M. Imran Yousuf

Signature: _____

Date: 6/11/17

Designation: Chairman

Institution: Deptt. of Education

Stamp: CHAIRMAN
Department of Education
PMAS-Arid Agriculture University
Rawalpindi

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

ML.1-5/2018-Edu

Dated: 9-1-2018

WHOM SO EVER IT MAY CONCERN

Shah Bano student of Ph.D (Edu) Department of Education of National University of Modern Languages is engaged in project / Research Work.

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

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

Dr Hukam Dad Malik
Head,
Department of Education.

Serial No: ☐

Dear respondents:

Iam Ph.D research scholar at National University of Modern Languages Islamabad Pakistan. The questionnaire in hand is aimed at finding out Interrelationship of optimism, creativity, and academic performance of students at the undergraduate level. It is requested you to kindly fill the questionnaire attached along with the covering letter. It is ensured that information will be kept confidential.

Shah Bano

Ph.D. scholar (Education)

NUML (Pakistan)

SECTION A: DEMOGRAPHIC INFORMATION

Name of Student : _____

University Name: _____

Sector of University a. Private ☐ b. Public ☐

Department: _____

Marks obtained in F.A/F.Sc: Part I ☐ Part II ☐ Total ☐

Study Programs:

Electrical Engineering ☐

Business Administration ☐

Computer Science ☐

Life Orientation Test-Revised (LOT-R) (Scheier *et al*., 1994)

Sr.#	STATEMENT	1.Strongly Disagree	2.Disagree	3.Neutral	4.Agree	5.Strongly Agree.
1	In uncertain times, I usually expect the best					
2	It's easy for me to relax					
3	If something can go wrong for me, it will.					
4	I'm always optimistic about my future.					
5	I enjoy my friends a lot.					
6	It's important for me to keep busy.					
7	I hardly ever expect things to go my way.					
8	I don't get upset too easily.					
9	I rarely count on good things happening to me.					
10	Overall, I expect more good things to happen to me then bad.					

KAUFMAN DOMAINS OF CREATIVITY SCALE (K-DOCS).

Creativity scale is adapted from Kaufman Domains of creativity scale (K-DOCS) developed by Kaufman (2012).

Sr #	Statements	1.strongly disagree	2.disagree	3.neutral	4.agree	5.strongly agree
1	**Self/everyday creativity.**					
1.	I help other people to come out from a difficult situation.					
2.	I think of new ways to help people					
3.	I choose the best solution to a problem					
4.	I usually Plan a trip or event with friends that meets everyone's needs					
2	**Scholarly creativity**					
5.	I can search a topic using many different types of sources that may not be readily apparent					
6.	I gather the best possible assortment of articles or papers to support a specific point of view					
7.	I analyze the themes in a good book					
8.	I Come up with a new way to think about an old debate					
3.	**Performance creativity**					
9.	I can write a poem					

Sr #	Statements	1.strongly disagree	2.disagree	3.neutral	4.agree	5.strongly agree
10.	I can make up rhymes					
11.	I can play music in public					
12.	I can act in a play					
4.	**Mechanical/scientific creativity.**					
13.	I can figure out how to fix problem of inactive computer.					
14.	I can solve math puzzles.					
15.	I take apart machines and figure out how they work.					
16.	I can Solve an algebraic or geometric proof.					
5.	**Artistic creativity.**					
17.	I can draw random or geometric designs.					
18	I can take a well-composed photograph using an interesting angle or approach.					
19.	I appreciate a beautiful painting.					
20.	I can come up with my own interpretation of a classic work of art.					

Academic Performance Criteria at HSSC Level in Pakistan

S/ NO	% of Marks	Grade	Remarks
1	80% or above	A1/A+	Outstanding
2	70 -79%	A	Excellent
3	60-69%	B	Very Good
4	50-59%	C	Good
5	40-49%	D	Fair
6	33-39%	E	Satisfactory

https://www.ilmstan.com/fbise-grading-scheme/

CERTIFICATE OF PROOF-READING

This is to certify that I have edited and carried out proof reading of the thesis titled "Interrelationship of Optimism, Creativity and Academic performance of students at the Undergraduate Level." This study is undertaken by Ms. Shah Bano under the supervision of Prof. Dr. Mariam Din. The contents of the manuscript, structures of language and other linguistic characteristics have been articulated and refined.

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