TEACHERS' ATTITUDE AND TEACHING PRACTICES TOWARDS ENTREPRENEURIAL SKILLS: AN EXPLORATORY STUDY ON MIDDLE SCHOOL SCIENCE TEACHERS OF SINDH PROVINCE, PAKISTAN

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by

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LIST OF ABBREVIATIONS

SESP	Sindh education sector plan
B.Ed.	Bachelors in education
M.Ed.	Master in education
BBA	Bachelor in business administration
MBA	Master in business administration

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SIKAP DAN AMALAN PENGAJARAN GURU TERHADAP KEMAHIRAN KEUSAHAWANAN: KAJIAN PENEROKAAN DALAM KALANGAN GURU SAINS SEKOLAH MENENGAH DI WILAYAH SINDH, PAKISTAN

ABSTRAK

Terdapat peningkatan permintaan untuk kemahiran keusahawanan. Forum Ekonomi Dunia telah menetapkan bahawa sebahagian besar aktiviti kerja akan diautomasikan menjelang tahun 2055, yang menjangkakan peranan dan cabaran yang lebih kompleks untuk pekerja masa depan. Disebabkan terdapatnya peningkatan dalam bilangan pekerja yang tidak berjaya di Pakistan, keprihatinan ini telah mengusulkan agar kemahiran keusahawanan diperkenalkan di peringkat sekolah. Di Pakistan, kemahiran keusahawanan diberikan penekanan sebagai salah satu aspek penting dalam kurikulum peringkat pertengahan. Walau bagaimanapun, di sekolah, terutamanya di sekolah kerajaan, pelajar kurang berkemahiran dalam keusahawanan. Mata pelajaran Sains dianggap sebagai salah satu mata pelajaran penting untuk membina kemahiran keusahawanan pelajar. Dalam kajian ini, perrhubungan di antara kemahiran keusahawanan dan pendidikan Sains menggambarkan sifat bersepaduan kedua-dua bidang ini. Kajian ini menekankan bahawa pelajar yang mempunyai latar belakang pengetahuan saintifik dan pemahaman yang kukuh tentang kemahiran keusahawanan akan lebih bersedia dalam menghadapi permintaan tenaga kerja moden serta boleh menyarankan idea inovatif. Demi memenuhi kelangsungan tanggungjawab ini, seorang guru harus mempunyai intipati dan kemahiran keusahawanan. Sikap dan amalan pengajaran guru Sains mencerminkan kemahiran keusahawanan mereka. Bagi tujuan menerokai sikap dan amalan pengajaran guru Sains, kajian ini menggunakan pendekatan kajian penerokaan kualitatif. Reka bentuk

penerokaan membolehkan penyertaan aktif para peserta, membolehkan mereka menjana pengetahuan baharu. Pendekatan persampelan bertujuan digunakan untuk memilih 14 peserta yang memenuhi kriteria. Temu bual separa berstruktur telah dijalankan sebagai sumber data utama. Tambahan, pemerhatian bilik darjah difasilitasi sebagai sumber data sekunder. Analisis tematik merangkumi tiga langkah iaitu: suai kenal data; pengekodan dan pengkategorian; dan pembentangan data. Analisis ini telah menghasilkan 11 tema iaitu: Pandangan guru Sains tentang kemahiran keusahawanan; Sikap guru Sains terhadap kemahiran keusahawanan; Bilik darjah Sains: Hab untuk pembangunan kemahiran keusahawanan; Pengaruh amalan individu terhadap sikap guru Sains; Pengaruh persekitaran sekolah terhadap sikap kemahiran keusahawanan guru Sains; Tanggungjawab kerajaan dan pengurusan sekolah; Halangan persekitaran sekolah dalam pembinaan kemahiran keusahawanan pelajar; Faktor persekitaran membentuk sikap guru Sains; Kemahiran keusahawanan guru dan persekitaran rumah; Strategi pengajaran dalam pembinaan kemahiran keusahawanan; dan Kesulitan yang menjejaskan motivasi guru Sains. Analisis ini juga telah menghasilkan 18 subtema iaitu: Kreativiti dan inovasi membawa idea baharu; Penjanaan idea melalui pemikiran kritis; Masalah adalah asas dalam penyelesaian masalah; Kepimpinan merangkumi kualiti pemimpin; Semangat mencerminkan kemahiran proaktif; Kerjasama merangkumi kerja berpasukan; Pemahaman lwn istilah kemahiran keusahawanan; Sikap guru Sains terhadap sesuatu mata pelajaran; Guru dan nilai kemahiran keusahawanan; Kekurangan pembangunan kemahiran keusahawanan; Perjalanan pendidikan pembelajaran kemahiran keusahawanan; Amalan dalam pembinaan kemahiran keusahawanan kanak-kanak di rumah; Pandangan tentang kurikulum Sains kebangsaan; Meningkatkan kerjasama ibu bapa dan guru di sekolah; Persekitaran sekolah mempengaruhi sikap guru Sains; Pengaruh sosialisasi terhadap kemahiran keusahawanan guru; Memupuk kemahiran

keusahawanan di Pakistan; dan Jurang pendidikan: Pakistan dan negara luar. Untuk mengukur kebolehpercayaan kajian, pelbagai kaedah telah digunakan termasuk triangulasi data, kepekaan terhadap konteks, komitmen dan ketegasan, ketelusan dan kesepaduan, kepentingan dan impak, dan kesahihan antara penilai. Dapatan menunjukkan keperluan untuk mendidik guru Sains tentang kepentingan dan pelaksanaan kemahiran keusahawanan dalam bilik darjah Sains. Kajian ini diakhiri dengan memaklumkan bahawa guru Sains sebagai pemegang taruh yang berpotensi untuk diakui oleh sistem pendidikan di Pakistan. Juga untuk mempengaruhi sistem pendidikan dan ekonomi Pakistan, dengan membawa tumpuan guru Sains ke arah kemahiran keusahawanan.

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ABSTRACT

There is an increasing demand for entrepreneurial skills. The World Economic Forum has established that the majority of the work activities will be automated by the year 2055, creating more complex roles and challenges for future employees. As there is a rise in the number of unsuccessful employees in Pakistan, that is a concern about introducing entrepreneurial skills at the school level. In the case of Pakistan, entrepreneurial skills are emphasized as one of the significant aspects of the middle-level curriculum. However, in schools, particularly in government schools, students are lacking entrepreneurial skills. Science is considered one of the pivotal subjects to develop students' entrepreneurial skills. The interrelation of entrepreneurial skills and science education in this study portrays the associative nature of both areas. This study accentuates that students with a strong background of scientific knowledge and a solid grasp of entrepreneurial skills are more well-equipped for the demands of the modern world workforce and can enliven innovative ideas. In fulfilling these responsibilities, a teacher should hence have entrepreneurial essence and skills. The attitude and teaching practices of science teachers reflect their entrepreneurial skills. For the purpose of exploring the attitudes and teaching practices of science teachers, this study adopted a qualitative exploratory research approach. An exploratory design enables active participation of the participants, allowing them to generate new knowledge. A purposive sampling approach was employed in selecting the 14 participants who fulfilled the criteria.

Semi-structured interviews were conducted as the primary source of data. In addition, classroom observations were facilitated as a secondary source of data. The thematic analysis includes three steps: familiarization of data; coding and categorizing; and presentation of data. The analysis has resulted in 11 themes. The themes are: Science teachers' insights into entrepreneurial skills; Science teachers' attitude towards entrepreneurial skills; Science classroom: A hub for entrepreneurial skills development; Influence of individual practices on Science teachers' attitude; School environment influence on science teachers' attitude towards entrepreneurial skills; Responsibilities of the government and school management; School environment hindering students' entrepreneurial skills development; Environmental factors shaping Science teachers' attitudes; Teachers' entrepreneurial skills and home environment; Teaching strategies for developing entrepreneurial skills; and Setbacks undermining Science teachers' motivation. The analysis has also led to 18 subthemes. The subthemes are: Creativity and innovation bring new ideas; Generation of ideas through critical thinking; Problem is the foundation of problem-solving; Leadership includes qualities of leaders; Enthusiasm reflects proactivity skills; Cooperation includes teamwork; Understanding vs. terminology of entrepreneurial skills; Science teachers' attitude towards a subject; Teachers and entrepreneurial skills value; Lack of entrepreneurial skills development; Educational journey of learning entrepreneurial skills; Practices developing entrepreneurial skills of children at home; Views about the national science curriculum; Improving parent-teacher collaboration in schools; School setting influences science teachers' attitude; Influence of socialization on teachers' entrepreneurial skills; Cultivating entrepreneurial skills in Pakistan; and Educational gap: Pakistan and foreign countries. For measuring the trustworthiness of the study, various methods were employed. These include triangulation of the data, sensitivity to the context,

commitment and rigor, transparency and coherence, importance and impact, and inter-rater reliability. The findings foreground the need to educate science teachers on the importance and also the implementation of entrepreneurial skills in science classrooms. This study concludes by presenting science teachers as potential shareholders to be acknowledged by the education system in Pakistan. Also, to influence the education system and economy of Pakistan, by bringing the focus of science teachers towards entrepreneurial skills.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Entrepreneurship education has set its foundation in the education sector apart from business schools for the past few decades (Mbanefo & Eboka, 2017). This rising interest in entrepreneurship education is mainly because of continuous changes in contemporary society. Entrepreneurship education leads to the achievement of entrepreneurial skills. Modern society revolves around a constant transition from a primarily managerial economy to an entrepreneurial economy. The main facets of an entrepreneurial economy are innovation and adaptability (Pepin & St-Jean, 2018). The economic, social, personal, and political challenges faced in the twenty-first century have put pressure on the education system to update the knowledge skills, and values offered to students (Ambusaidi & Al-Farei, 2017). This will help to create skillful people who can cope with the challenges provided by this dynamic society.

Kirkley (2017) asserts that a country's education system would reflect the entrepreneurial culture. The approach of the educational system of the country helps people to develop and nurture the qualities that are regarded as entrepreneurial skills. Entrepreneurial skills are viewed as a quality needed by a person to sustain a quality of life. Entrepreneurial skills build a person to be self-employed, which not only leads a person to enhance the quality of life but also leads to the nation's development.

Both entrepreneurial skills and science education share certain common elements (Mbanefo & Eboka, 2017). Entrepreneurial skills include creativity and innovation proactivity, critical thinking, problem-solving, leadership, and teamwork or collaboration (Barba-Sánchez et al., 2016; Pepin & St-Jean, 2018). Entrepreneurial skills involve an act of daring to initiate a task; the determination to

stand with a change; the capability to create something new and innovative; and the determination to convert an idea into reality. These skills are essential for an individual to lead a successful life in a dynamic society. Similarly, science education also includes the development of creative skills and the application of scientific knowledge that helps students attain a particular occupation in life. Science education provided in schools trains students in several professions including engineering, pharmaceutical science, medicine, business, and home economics (Mbanefo & Eboka, 2017). Scientists also need particular skills to use scientific knowledge properly such as problem-solving, critical thinking, leadership, and proactivity.

Thus, both entrepreneurial skills and science education involve a systematic approach to creativity and innovation, problem-solving, critical thinking, leadership, proactivity, and teamwork. Entrepreneurial activities frequently involve individuals in applying scientific knowledge to solve real-life problems and grasp opportunities efficiently. Moreover, in the entrepreneurial setting, an individual is required to implement scientific knowledge and principles to develop innovative products and address the challenges. For instance, in the fields of engineering, pharmaceutical, or technology an individual needs a highly strong background in scientific concepts that promote the inventions in the respective fields (Mbanefo & Eboka, 2017).

Therefore, the interrelation of entrepreneurial skills and science education portrays the associative nature of both areas. It emphasizes that individuals with a strong background of scientific knowledge and a solid grasp of entrepreneurial skills are well-equipped for the demands of modern world forces and can give life to innovative ideas (Adeyemo, 2009). Moreover, their capability to think critically, solve problems, creativity, proactivity, work in collaboration, and lead a task can greatly contribute to the advancement of society and the nation, as a whole.

Integration of entrepreneurial skills and science education facilitates individuals to contributeefficiently to scientific and technological development.

Teachers are considered professional educators who are engaged in teaching, facilitating, preparing, and assessing students. To fulfill these responsibilities, a teacher should have entrepreneurial essence and skills (Listiningrum et al., 2020). The entrepreneurial skills are related to teachers based on two major concepts. First, the scenarios that teachers encounter are majorly similar to entrepreneurs. For instance, teachers frequently engage in various experiments with teaching practices that include teaching strategies and approaches to enhance the learning experience of students. Second, teachers must be resilient, never give up, proactive, and creative even with limited resources like an entrepreneur who handles the business (Sutantro, 2017). A teacher with entrepreneurial skills sees things froma different perspective. He/she will think productively. He/she will try out new ways and solutions to enhance the quality of education (Listiningrum et al., 2020).

Attitude is a person's disposition to react positively or negatively towards a person, situation, or event (Ajzen, 1989). Attitude shows the willingness of a person to perform some tasks. It reflects a person's behavior towards something (Ahad et al., 2021). In a classroom, the attitude of a teacher plays a crucial role as classroom instructions are centrally controlled by teachers. To successfully implement entrepreneurial skills in the classroom, teachers not only have subject knowledge and skills but also must have positive attitudes and concerns toward its implementation. Subsequently, teachers will be able to implement entrepreneurial skills in the classroom.

The attitude of teachers is also influenced by different associated factors i.e., learning experience, schooling, and training of teachers, available resources, teaching

experience, personality, and social environment (Thibaut et al., 2018; Ehsaan et al., 2020). Out of the various influences on the attitude of science teachers, this study will focus on three major influences that include individual, institutional, and environmental (Fernet et al., 2016; Zhang et al., 2019).

Developing entrepreneurial skills of students at the school level is necessary. However, there is a gap found in the literature. Pepin and St-Jean (2018) highlight this gap that developing the entrepreneurial skills of students at the tertiary level would be a little too late because, at this level, students have already received the education for about 14 years. After such years of learning, these skills would defer. The preferred level for learning entrepreneurial skills is from kindergarten to an intermediate level in which students are exposed to different activities and simultaneously build the mindset of an entrepreneur (Pepin & St-Jean, 2018; Pepin 2018).

From kindergarten to intermediate-level science, teachers' development has been under research for many years around the world (Avraamidou, 2016; Deveci & Seikkula-Lein, 2016). There are different studies including teacher conceptions and beliefs; teacher understanding of the nature of science and scientific inquiry; pedagogical content knowledge and science teaching orientations; and knowledge about goals and curriculum. However, discovering the conceptual understandings and attitudes of teachers regarding entrepreneurial skills has rarely been studied directly (Toding & Venesaar, 2018).

There has been less previous evidence for studying entrepreneurial teachers' attitudes. Beckmann Diegoli et al. (2018) also support this argument that research on entrepreneurial teachers still needs to be studied. Therefore, this research has filled this gap by exploring the understanding and attitudes of government middle school

teachers toward the implementation of entrepreneurial skills. This study has selected the middle school level because this level provides students with the foundation of their educational journey. After passing this level students will have to select their field of specialization at the secondary level. Therefore, the middle level is very necessary for students and they need the proper facilitation of teachers and develop basic skills that will help them throughout their life.

1.2 Background of the Study

In Pakistan, the national curriculum of science education at the elementary level emphasizes the importance of science in the daily lives of people. The Ministry of Education (MoE) (2006) has raised its standards and the suggested teaching strategies in the curriculum focus on student-centered learning. Science has also played a leading role in human and practical activity according to Obe (2018) knowledge generated by science not only plays a central role in our lives but also impacts the lives of future generations. As a developing country, Pakistan needs to focus on its human resources by making its people skillful at sustaining themselves in this competitive world (Turk, 2019). In the context of Pakistan, learning science will not only increase the knowledge of students but will also lead them to be critical and ask questions, do observations and experiments, examine their explanations, and share their ideas by using their findings (Ministry of Education, 2006).

Entrepreneurial skills, which are the focus of this study, are included as the major element in the *Sindh Education Sector Plan* (SESP) to prepare productive students and future independent citizens of the country. According to the *SESP*, till the year 2030, there should be a substantial increase in the number of youths having relevant skills for employment, jobs, and entrepreneurship (Govt. of Sindh, 2019). Nevertheless, a recent study by Khalid and Asad (2019) states that Pakistan is facing a crucial time due to the unemployment rate in the country. One of the causes

of the unemployment rate in the country is attributable to the youth's underdeveloped entrepreneurial skills, which prevent them from becoming self-sufficient citizens and contributing to the country's development.

Entrepreneurial skills are business-oriented, so it is important to incorporate these skills in general education. Deveci (2016), when examining the integration of these skills in general education, proposed science subjects as the most suitable for incorporating entrepreneurial skills. While teaching science, a teacher develops certain skills in students that also share entrepreneurial characteristics. Both entrepreneurial skills and science process skills include creativity and innovation proactivity, critical thinking, problem-solving, leadership, and teamwork. However, the application of these skills differs as science skills are applied in scientific research whereas entrepreneurial skills are applied for innovation or in entrepreneurial endeavors (Mbanefo & Eboka, 2017). Moreover, the teaching strategies employed in science education naturally align with those required to develop the entrepreneurial skills of students, making science subjects a potential instrument for implementing and developing entrepreneurial skills. Hence, science subject is selected for this study along with entrepreneurial skills since they work well together.

1.2.1 Science Education in Pakistan

The objective of science education at the middle level in Pakistan for teachers is to promote creativity among students. Facilitate students to develop skills to explore the issues and make responsible decisions and help them to learn through their hands-on experiences (Ministry of Education, 2006). Likewise, entrepreneurial skills are also developed among students to make them critical thinkers, decision-makers, and problem solvers. Additionally, it led them to be independent citizens who can provide economic benefits to society.

In Pakistan, science is taught as a general science up to grade eight. After that students are given the option of choosing different streams one of which is sciencewhich includes the branches of science that are taught as a separate subject. In the education system of Pakistan, the recent shift has been taken from learning facts to developing skills; the teaching of science is regarded as an experiential and "practical constructivist approach" (Nandwani et al., 2021). Teachers are considered the main agents who promote education; they are responsible for the learning and development of skills among students in the classroom. Therefore, the national science curriculum is made to serve as the foundation for science teachers in their efforts to promote science in schools (Ministry of Education, 2006).

1.2.1 Entrepreneurial Skills

Entrepreneurial skills are considered the characteristics that are important for students and teachers to live in the era of the 21st century. These skills are given importance because they enable them to adapt to the changes of this evolving society (Deveci, 2016). These skills include critical thinking, problem-solving, creativity and innovation, proactivity, leadership, and teamwork (Deveci, 2016; Sanchez et al., 2016; Barba-Sánchez et al., 2016; Pepin& St-Jean, 2018; Floris & Pillitu, 2019).

It is noteworthy that the Ministry of Education in Pakistan has given importance to these skills. The National Curriculum of Science Education (2006) emphasizes developing the skills of students that include critical thinking, problem-solving, creativity, and leadership. Moreover, the *SESP* (2019) also highlights the need to develop such skills among students to make them independent citizens of the nation.

Hence, for this study specific entrepreneurial skills are selected that are important for students at the middle school level and highlighted in the science

curriculum by the Ministry of Education in Pakistan. These entrepreneurial skills include proactivity, innovation and creativity, leadership, problem-solving, critical thinking, and teamwork (Grant & Ashford, 2008; Driskell et al., 2018; Wibowo & Saptono, 2018; Paul & Elder, 2019; Rahman, 2019; Hultén & Tumunbayarovab, 2020).

Proactivity is a sense of initiative and readiness. It is considered the ability of a person to grasp opportunities, take the lead in the task, actively share ideas, adjusting to new environments. It is also defined as acting in advance and implementing ideas (Grant & Ashford, 2008). Creativity is a way of performing a task that leads to the creation of new and appropriate ideas. It involves the ability to manage complex ideas and information, use proper judgment make logical decisions and identify opportunities (Hultén & Tumunbayarovab, 2020). Additionally, leadership is the capability of a person to explore various resources and find opportunities for their team. It makes a person responsible for tackling challenges uniquely and dynamically (Wibowo & Saptono, 2018).

Moreover, Problem-solving is an intellectual process that includes observation and critical thinking to identify the best solution or get the desired outcome for a given problem (Rahman, 2019). Critical thinking "*is self-directed, self-disciplined, self-monitored and self-corrected thinking"* (Paul & Elder, 2019, p.9). It is a process of analyzing and reflecting on the thought process. It facilitates making informed decisions. Lastly, Teamwork involves a process in which a group of people work together to achieve a goal. It deals with the activities through which the effort of the team is converted into the result (Driskell et al., 2018).

1.2.2 The Attitude of Science Teachers

According to Zaitoon (1996), attitude is defined as a "collection of cognitive,

affective, and behavioral components which relate to individual response towards any issue, matter, or an episode, either for (favorable) or against (unfavorable)" (p. 109). Attitudes are multiple collections of things that we usually call personality, beliefs, values, and behaviors. Attitude is also defined as positive or negative feelings toward an idea, object, situation, or event (Koballa & Crawley, 1985). The attitude of teachers toward teaching science can be considered a vehicle for teaching science and developing the entrepreneurial skills of students effectively (Ambusaidi & Al-Farei, 2017). The entrepreneurial attitude of teachers would be reflected in their performance, actions, practices, interactions, and decisions.

Since teachers play an essential role in the education system of Pakistan, so it is crucial to explore the influence of different factors on their attitude toward entrepreneurial skills. A review of the literature shows that the attitude of science teachers plays a key role in the teacher's development process, particularly in the adoption of new approaches, updated techniques, innovative activities, and unique learning styles of students (Mellati et al., 2015).

The attitudes of teachers are derived from multiple factors that influence them toward the implementation of entrepreneurial skills in science classrooms. Exploring these factors that create noteworthy differences in science teachers' attitudes (Thibaut et al., 2019), toward implementing entrepreneurial skills is valuable as it will allow for improving the education system in schools and encourage the implementation of entrepreneurial skills in the science classrooms. Thus, in this study, three major factors are selected that broadly cover the sources that influence the development of the attitude of science teachers i.e., individual, institutional, and environmental (Thibaut et al., 2019).

i) Individual factors

The individual factors include teachers' educational journey, teaching experience, and gender (Thibaut et al., 2019). The educational journey has a great influence on the attitude of a teacher. As students, they spend years observing their teachers, learning through different assignments, and performing various tasks (Collinson, 2015). These all activities become a great source to influence science teachers' attitudes. Likewise, the teaching experience of the teacher along with in-service professional development also influences the attitude of science teachers toward the implementation of entrepreneurial skills (Indoshi Wagah & Agak, 2010). Lastly, the difference between the experiences of male and female teachers plays an important role in the development of their entrepreneurial attitude (Fitzsimmons et al., 2014)

ii) Institutional Factors

The institutional factors include the school administration, staff relations, and professional development (Thibaut et al., 2019). The school administration plays an important role in science teachers' attitudes, it deals with the rules and regulations, available resources, and the leadership of the school (Indoshi et al., 2010). The school environment created by the school administration motivates or demotivates science teachers toward the implementation of entrepreneurial skills in the classroom (San-Martín et al., 2019). Moreover, staff relations including the teacher's cooperation, discussion on the curriculum, teaching pedagogies and plans have a hugeimpact on teachers' attitudes (Boyd et al., 2011). The professional development provided to the teachers facilitates teachers towards the proper implementation of teaching strategies for developing the entrepreneurial skills of students (Fernandes et al., 2020).

iii) Environmental Factors

The last factor that influences the attitude of science teachers is the environmental factor. It highlights the importance of the family background and society of a science teacher (Indoshi et al., 2010; Zhang et al., 2019). The family environment provided in the home has a significant impact on nurturing the science teachers' attitudes toward entrepreneurial skills (Amoako et al., 2020). Environmental factors also include the society of science teachers it surrounds science teachers in the form of norms cultures and values (Cheong, 2000). It also includes friends and online websites from which science teachers learn multiple things that ultimately become one of the factors to shape their attitudes.

1.2.4 Teaching Practices

The entrepreneurial skills and the skills involved in science education share the same background, therefore, there is also a similarity between the teaching strategies of developing entrepreneurial skills and teaching science to students. The teaching strategies include learning by doing, experiential learning, project-based learning, problem-based approach, presentations, role-play, and group or pair work (Agommuoh & Ndirika, 2017; Toding & Venesaar, 2018).

The implementation of these strategies in the classroom can only be acquired through a skillful teacher since the effectiveness of teaching in the classroom lies in the teacher's understanding of teaching strategies. A study by Chaudhary and Rathore (2018) highlights that the knowledge of only subject matter is not enough for teachers to teach the classroom. In a classroom, the main role of the teachers includes planning classroom activities considering students' capabilities, using different resources available assessing their teaching strategies and regularly improving them.

The dynamic nature of the world demands that teachers perform new roles and improve their teaching approaches in school (Adofo, 2017). The entrepreneurial teacher is defined as knowledge of entrepreneurship or entrepreneurial skills a teacher (Listiningrum, Wisetsri & Boussanlegue, 2020) Knowledge and beliefs of the teacher about entrepreneurial skills define the approaches that the teacher implements in the classroom (Diegoli et al., (2018). According to "Listiningrum et al., (2020), "Teacher's entrepreneurial is an idea and an effort to foster entrepreneurial spirit in teachers. So, the idea of Teacher's entrepreneurial is not carried out as an effort to make the teacher an entrepreneur, but rather an attempt to foster an entrepreneurial spirit within the teacher" (p.3). The significant development of entrepreneurial skills and entrepreneurial mindset among students eventually relies on the abilities and perception of teachers and the teaching and learning approaches they follow in their classrooms (Toding & Venesaar, 2018). Teachers' commitment level plays a vital role in implementing entrepreneurial skills in the classroom successfully.

The teacher creates an environment where students develop their skills is considered effective teaching (Chaudhary & Rathore, 2018). The role of an entrepreneurial teacher in a classroom is a guide who allows students to think and perform independently; at the same time, he/she monitors them. An Entrepreneurial teacher is a person who acts as a "coach" who helps students to identify solutions by asking questions, leaving the final decision up to the students, and encouraging students to take calculated risks, take responsibility for their actions, and identify opportunities (Morselli, 2018).

1.3 Problem Statement

Quality education at middle schools is seen as one of the most daunting challenges in the province of Sindh, Pakistan when compared with global education standards (Govt. of Sindh, 2014-18). The national curriculum of Pakistan has given the central role to science education in the development of society, and the major focus of the Ministry of Education (2009) and the Government of Sindh (2014-18) is on enhancing students' skills which are commonly referred to as entrepreneurial skills (such as critical thinking, problem- solving, creativity, and innovation). Whereas in the schools of Pakistan, particularly in government schools, the problem lies with the low student achievement rate in these skills (Aslam et al., 2019). As a result, this hinders the country from achieving the desired learning outcomes, emphasizing the critical link between entrepreneurial skills and overall academic achievement.

The recommendations of the Government of Sindh (2014-18) assert that middle schools should prepare every student with basic knowledge, universal values, critical thinking, and enthusiasm to become a lifelong learner. Lifelong learning is necessary for enabling students to take control of their future by developing an "entrepreneurial self" (Brockling, 2016). This involves having significant entrepreneurial skills such as the capability to creativity and innovation, problem-solving, leadership, critical thinking, proactivity, and teamwork (Sanchez et al., 2016; Deveci, 2016). Despite the acknowledgment of integrating these skills as primary competencies in lifelong learning (Floris & Pillitu, 2019), there is a lack of prominence and application in the present education system, deterring students from becoming self-sufficient and adaptive in this rapidly changing world. Moreover, the literature highlights that childhood and adolescent stages are recognized as the best

stages to inculcate entrepreneurial skills among learners. These stages facilitate fostering a positive attitude among students regarding the development of initiative spirit and determination (Pepin & St- Jean, 2018).

In the case of Pakistan, entrepreneurial skills are emphasized as one of the significant aspects of the middle-level curriculum, which indeed follows the recommendations of the Government of Sindh (2014-18). However, in the schools of Pakistan, *"Almost no opportunity is there for children to gain an insight into entrepreneurship. The icing on the cake is real when our Schools are fantastic at teaching skills to pass the exams, but the focus is taken away from "survival" skills that should benefit our kids in the real world. Without them, consider your child forever crippled, unable to survive in the uncertain future"* (TCS, 2020, p.1). As a result, students lack the entrepreneurial skills essential for navigating an uncertain future. This gap in the education system of Pakistan leaves students ill-prepared to face challenges, highlighting a critical necessity to incorporate entrepreneurial skills into the curriculum to prepare students for future success.

Moreover, the World Economic Forum declares that half of today's work activities could be automated by 2055, which would create completely novel roles and challenges for future employees (Russo, 2020). This increasing demand for entrepreneurial skills emphasizes the necessity for effective integration of these skills at the school level. On the other hand, in Pakistan the number of unsuccessful employees who lack entrepreneurial skills is rising (TCS, 2020), raising a concern about introducing entrepreneurial skills at the school level. Moreover, the 2014 EU Report (cited in TCS, 2020) on Entrepreneurial Skills, states that *"entrepreneurship is an individual's ability to turn ideas into action. It is seen as vital to promoting innovation, competitiveness, and economic growth"* (p.1). Thus, addressing the

deteriorating economic growth and the lack of skills among students needs a focus on teachers. Specifically, it calls for exploring teachers' attitudes and teaching practices toward entrepreneurial skills. How teachers perceive and implement these skills in their classrooms significantly influences the development of students' entrepreneurial skills. By understanding teachers' attitudes and teaching practices, we can prepare students for future challenges and contribute to the economic growth of the country.

The real issue revolves around the quality of entrepreneurial skills that are developed among the students in the classroom, which are fundamentally related to the quality of teaching. This quality can be measured by exploring teachers' competency, attitude, beliefs, and motivation (Aslam et al., 2019). Teachers' thinking, personal theories, values, beliefs, and attitudes become the foundation for the practices they offer in the classroom as teachers are considered the 'pivot of education change' (Ali, 2018). Research by Aslam et al. (2019) appears to support this notion that entrepreneurial skills possessed by students could be related to the quality of teaching and teachers' attitudes. Thus, it is established that the attitude and teaching practices of teachers could be the prime cause of the underdeveloped entrepreneurial skills of students. If teachers lack a positive attitude towards entrepreneurial skills or do not employ effective teaching practices, students are less likely to develop entrepreneurial skills.

A review of the literature highlights that several researchers have conducted studies in different developed countries (for example, Finland, Singapore, Sweden, Nigeria, Turkey, Canada, Italy, Iceland, and England) to enhance students' entrepreneurial skills through science subjects as there is a natural synergy between the entrepreneurial skills and the skills included in science (Agommuoh & Ndirika, 2017; Toding & Venesaar, 2018). Both entrepreneurial skills and skills in science are the same (i.e., problem-solving, critical thinking, leadership, proactivity,

teamwork, and creativity) except for their application as entrepreneurial skills are applied in creating new ventures that enhance the economy whereas science skills are applied in scientific inquiry or research. Therefore, entrepreneurial skills can easily be enhanced through science education because there is an apparent link between real-life and school issues recognized in science education (Ogunleye, 2019). This connection can facilitate students to see the relevance of their learning and promote the development of entrepreneurial skills. However, the problem lies in the application of this approach in the education system of developing countries like Pakistan. Despite the apparent potential, there seems to be a lack of effort in incorporating entrepreneurial skills in science classrooms. Teachers may not have the required training or resources to effectively develop these skills. As a result, students fail to develop these necessary skills that are essential for their future success in an innovation-driven world.

The studies conducted on entrepreneurial skills could be categorized on two bases i.e., an education level (such as university/college/school) and participants sample (such as teachers/students). There are several studies conducted, nationally and internationally, at the university level regarding the entrepreneurial skills of both teachers and students in business schools (Nasrullah et al., 2016; Zulfiqar et al., 2017; Usman & Ahmed, 2018; Hunady et al., 2018; Reyad et al., 2020). Similarly, several studies have been conducted regarding entrepreneurial skills at the school level in developed and underdeveloped countries (Deveci, 2016; Agommuoh & Ndirika, 2017; Jonsdottir & Macdonald, 2018; Pepin & St- Jean, 2018; Toding & Venesaar, 2018; Ogunleye, 2019), however, the focus of these studies have remained students and little attention is paid to teachers' perceptions, attitudes and practices, and the difficulties teachers' face in developing entrepreneurial skills in the classroom (Morselli, 2018; Pathan, Ishak, Nisar & Pathan, 2023). Pepin and St-Jean

(2018), and Pathan et al., (2023) support Morselli as they state entrepreneurial skills of teachers are still an understudied area at the school level. However, in developed and underdeveloped countries researchers have studied the perception and attitudes of pre-service/in-service science teachers (Deveci, 2016; Ogunleye, 2019), in the case of Pakistan, there is a gap found in the local scholarly work. The relationship between teachers' attitudes and their teaching practices is still poorly understood (Ali, 2018), especially in the context of developing entrepreneurial skills in science education.

It is found that researchers are increasingly focusing on entrepreneurial education and skills based on their importance in the overall growth of countries' economic conditions. For example, Turk (2018) has argued that in today's world, only those countries are considered developed countries whose education system is led by innovation, sustainability, scientific expertise, and entrepreneurial expertise. Usman and Ahmed (2018) also highlight the need for research on the growth of entrepreneurship in Pakistan to encourage entrepreneurial activities in the country.

Thus, incorporating the entrepreneurial element in the curriculum of science subjects at the middle school level could play an important role in the long-term economic and industrial growth of Pakistan. In this concern, as previously discussed teachers' entrepreneurial skills and orientation, attitude, classroom activities, and practices hold significant weightage in nurturing the concept of entrepreneurial self among students. Ho et al. (2020) have stated that a teacher's entrepreneurial behavior includes the willingness of the teacher to take a risk and is regarded as a key element of a professional teacher. However, there is a gap found in the research that despite the government policies emphasizing the importance of entrepreneurial skills there is a lack of potential implementation by teachers in the

classroom. Teachers focus more on rote memorization and preparing students for exams. Moreover, the lack of teaching practices that incorporate hands-on learning, to develop the entrepreneurial skills of students, is also highlighted by TCS (2020). Therefore, to bridge this gap effectively, it is critical to focus on the entrepreneurial skills of science teachers. Hence, it could be established that to nurture quality entrepreneurial skills among students of science subjects, it is important to work on the entrepreneurial skills of the science teachers.

Given the deteriorating standards of middle school level education, the importance of imparting entrepreneurial education and skills at the middle school level, particularly in science subjects, and the availability of limited scholarship on teachers' entrepreneurial orientation at the middle school level, this study aimed to explore the attitudes and teaching practices of teachers regarding the implementation of entrepreneurial skills in a science subject at middle school level.

1.4 Research Objectives

The objectives of this research study are as follows:

1.4.1 To explore the understanding of science teachers about entrepreneurial skills.

1.4.2 To explore science teachers' attitudes towards entrepreneurial skills in school.

1.4.3 To explore the influence of individual (educational journey, teaching experience, and gender) factors on teachers' attitudes toward entrepreneurial skills.

1.4.4 To explore the influence of institutional (school administration, staff relation professional development) factors on teachers' attitudes toward entrepreneurial skills.

1.4.5 To explore the influence of environmental (society, and family background)

factors on teachers' attitudes toward entrepreneurial skills.

1.4.6 To explore the teaching practices (through observation) and whether they develop the entrepreneurial skills of students in the science classroom.

1.4.7 To develop guidelines based on emerging themes on the attitude of science teachers.

1.5 Research Questions

1.5.1 How do science teachers describe their understanding of entrepreneurial skills?

1.5.2 How do science teachers' attitudes reflect their views toward entrepreneurial skills in schools?

1.5.3 How do individual factors influence teachers' attitudes toward entrepreneurial skills?

1.5.4 How do institutional factors influence teachers' attitudes toward entrepreneurial skills?

1.5.5 How do environmental factors influence teachers' attitudes toward entrepreneurial skills?

1.5.6 How do teachers implement teaching practices to develop the entrepreneurial skills of the students in the science classroom?

1.5.7 How to develop guidelines based on emerging themes on the attitudeof science teachers.

1.6 Significance of the Study

The contributions made in this study have broad applicability. The significance of this study can be defined at diverse levels. This study has contributed by extending the application of the Theory of reasoned action (TRA) developed by

Ajzen and Fishbein (1980), the stages of concern (SoC) construct of the concern-based adoption model (CBAM) model developed by Hall et al. (1973), and zone of proximal development (ZPD) construct of sociocultural theory given by Lev Vygotsky in 1979, particularly in the education system at the context of Pakistan. Thus, contributing to literature significantly by extending the use of these theories in education. Moreover, theoretically, this research has adopted a qualitative exploratory approach to explore the attitude and teaching practices of science teachers toward entrepreneurial skills. However, previous studies have primarily adopted a phenomenological approach to explore the opinions of teachers regarding entrepreneurial skills (for example, Deveci, 2016; Deveci & Seikkula-Lein, 2016), therefore, this research study has theoretical significance to the literature regarding entrepreneurial skills in school level by adopting thematic analysis approach. This study explored the attitudes and teaching practices of science teachers toward entrepreneurial skills. It provides the different viewpoints of teachers towards the implementation of entrepreneurial skills in the classroom. It also shows the extent to which individual, institutional, and environmental factors affect the attitude of science teachers. This study provides a variety of teaching practices that science teachers implement to develop the entrepreneurial skills of students.

The rich insights of this research on the attitudes and teaching practices of science teachers at the government schools in Sindh province Pakistan led to key actions as practical contributions of this study. The outcomes of the study open the windows of knowledge for other science teachers to realize the importance of entrepreneurial skills and implement different teaching strategies to develop the entrepreneurial skills of students in the classroom. It also helps them to get insight into individual, institutional, and environmental factors that affect their attitude toward the implementation of entrepreneurial skills in the classroom. It also offers an

area of consideration to the schools to incorporate entrepreneurial skills in their schools and provide a flexible environment and resources to the teachers where they can develop these skills of the student. It also facilitates the education system to get an insight into the importance of entrepreneurial skills at the school level and provide training to the teachers accordingly. Lastly, this study offers an opportunity for curriculum developers, it proposes they update their plans which facilitate the development of entrepreneurial skills among students.

1.7 Delimitations of the Study

A qualitative study has several boundaries from different aspects which turns out to be the delimitations of the study. In this study, the foremost delimitation was the generalization of the findings. As Sungtong (2007) suggests the findings of the qualitative study may not be intended to generalize. In the qualitative exploratory study, the researcher selected a few science teachers from the middle school level through purposive sampling, so it was the delimitation to generalize the findings of the study to all science teachers coming from different school levels.

The second delimitation of this study was the reflection of the researcher's voice. As the researcher was the outsider in the context of the study it might affectthe process of data collection and data analysis. To encounter this delimitation, before conducting a formal interview, the researcher builds a rapport with participants. The researcher informally started the conversation with teachers once the participants were comfortable then the researcher got an in-depth account of their perspectives. During the data analysis process, the researcher tried to be unbiased while interpreting the perspectives of participants. To encounter this delimitation researcher also used some methods to validate the data.

1.8 Operational Definition of Terms

1.8.1 Entrepreneurial Skills

Entrepreneurial skills are considered the characteristics that are important for students and teachers to live in the era of the 21st century. These skills enable us to adapt to the changes of this evolving society (Deveci, 2016). This study refers to creativity and innovation, proactivity, leadership, problem-solving, critical thinking, and teamwork or collaboration. These skills should be present among science teachers for them to be able to develop them among students. Students also need these skills to provide economic, social, andenvironmental benefits to society.

1.8.2 Proactivity

Proactivity is a sense of initiative and readiness. It is considered the ability of a person to grasp opportunities, take the lead in the task, actively share ideas, adjusting to new environments. It is also defined as taking action in advance and implementing ideas (Grant & Ashford, 2008). In this study, proactivity refers to the activeness of science teachers towards making decisions, implementing innovative teaching strategies, adapting changes in education, and pre-planning classroom activities.

1.8.3 Creativity

Creativity is a way of performing a task that leads to the creation of new and appropriate ideas. It involves the ability to manage complex ideas and information, use proper judgment make logical decisions and identify opportunities (Hultén & Tumunbayarovab, 2020). In this study, it refers to the creative approach of science teachers. It includes their capabilities to implement innovative teaching strategies in the classroom, engage students in creative activities, and make appropriate decisions to enhance student's learning experience and creativity to

develop the entrepreneurial skills of students with limited resources.

1.8.4 Leadership

Leadership is the capability of a person to explore variousresources and find opportunities for their team. It makes a person responsible for tackling challenges uniquely and dynamically (Wibowo & Saptono, 2018). In this study, it refers to the accountability of a science teacher towards his/her teaching. Teacher's ability to identify opportunities to develop the entrepreneurial skills of students. Taking responsibility for the teaching resources, encouraging attitudes towards students, and giving students equal opportunities to develop entrepreneurial skills.

1.8.5 Problem-Solving

Problem-solving is an intellectual process that includes observation and critical thinking to identify the best solution or get the desired outcome for a given problem (Rahman, 2019). This study refers to the persistent attitude of science teachers wherein instead of giving up science teachers find solutionsto contemporary problems.

1.8.6 Critical Thinking

Critical thinking "*is self-directed, self-disciplined, self-monitored and self-corrected thinking"* (Paul & Elder, 2019, p.9). It is a process of analyzing and reflecting on the thought process. It facilitates making informed decisions. In this study, it refers to the analyzing and reflective nature of science teachers. It includes the teacher's ability to analyze the situation and make informed decisions that promote the development of entrepreneurial skills among students.

1.8.7 Teamwork

Teamwork involves a process in which a group of people work together to achieve a goal. It deals with the activities through which the effort of the team is

converted into the result (Driskell et al., 2018). This study refers to the collaboration among science teachers and school administration to create a conducive learning environment for students that facilitates them to develop the entrepreneurial skills of students.

1.8.8 The Attitude of Teachers

The attitude of a teacher is a psychological tendency of a person that is expressed by estimating a particular object with some degree of favor or disfavor (Haddock & Maio, 2008). In this study, the attitude of teachers refers to their beliefs, feelings, interests, ideas, and opinions about entrepreneurial skills and their implementation in the science classroom.

1.8.9 Individual Factors

The individual factors include teachers' educational journey, teaching experience, and gender (Thibaut et al., 2019). This study refers to science teachers' personal views, educational journey, teaching experience, and gender that are likely to influence their attitudes toward entrepreneurial skills and their implementation in the classroom.

1.8.10 Institutional Factors

It includes the school administration, staff relations, professional development, rules and regulations, available resources, and the leadership of the school (Indoshi et al., 2010; Thibaut et al., 2019). In this study, it refers to the factors related to school (where the teacher is teaching) including the administration of the school, science teacher relation with other teachers and principal, professional development opportunities provided by the school, and teaching resources that are likely to influence the attitude of science teachers towards implementing entrepreneurial skills in the classroom.