

**SELF-RELIANCE IN THE WRITINGS OF  
DR. A.P.J ABDUL KALAM**

*Dissertation*  
*Submitted to the University of Calicut*  
*in Partial Fulfilment of the Requirements for the Degree of*  
**MASTER OF EDUCATION**

*Submitted by*  
**MADHU P.**



**FAROOK TRAINING COLLEGE  
UNIVERSITY OF CALICUT**

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## **DECLARATION**

I, MADHU P , do hereby declare that this dissertation entitled “SELF-RELIANCE IN THE WRITINGS OF DR. APJ ABDUL KALAM” is a record of original work done by me under the supervision of Dr.Rekha P has not been submitted for the award of any Degree, Diploma, Title or Recognition before.

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## **CERTIFICATE**

I, Dr.Rekha P., do hereby certify that this dissertation entitled  
**“SELF-RELIANCE IN THE WRITINGS OF DR. APJ ABDUL KALAM”** is a  
record of bonafide study and research carried out by Madhu P, under my supervision  
and guidance.

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# CHAPTER 1

## INTRODUCTION

- *Need and Significance of the Study*
- *Statement of the Problem*
- *Definition of Key Terms*
- *Research Questions*
- *Objectives of the Study*
- *Methodology*
- *Scope and Limitations of the Study*
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Education is the first step to gain the knowledge, critical thinking, empowerment and skills they need to make this world a better place.

The characteristics of the 21st century classroom is very different from those in the classroom of the past because the focus is on producing students who are highly productive, effective communicators, inventive thinkers and masters of technology. In the modern era of science and technology the industrial sector is increasing day by day. As demand increases the education sector also needs to change and adapt to the new environment. Hence it is to be given to the students the skills with which they can find a way through the sea of knowledge that created and continue with lifelong learning. Today students have ample opportunity to learn through technology really and truly teach themselves to become lifelong learners which is an important skill required for sustained economic development.

Educators must develop a new vision of educational environment in which students can grow more autonomous through the process of learning. The education system instead of going by textbook teaching will be promoted by creative and interactive self learning with focus on values, merit and quality. The workers instead of being skilled will be knowledgeable, self empowered and flexibility skilled. The entire education system has to be based on capacity building comprising five components as Research and

enquiry, creativity and innovation, capacity to use high end technology, entrepreneurship and moral leadership. A good educational model is the need of the hour to ensure that students grow to contribute towards the economic growth of nation.

Today's young students want the education system to feed and challenge their innovative and creative minds. They are the creators of tomorrow and they want to think about it today. A good system of education should be able to satisfy their insatiable hunger for knowledge. Educational institutions have to gear up to evolve a curriculum that is sensitive to the special and technological needs of a developed India.

In the knowledge of economy the objective of society changes from fulfilling the basic needs of all round development to empowerment. With the advances in information technology, the world has shrunk and become a global village and networking of experts is necessary to solve the complex real world problems. The well known writings towards this end are to be accepted and open to the public. Then only the nation can achieve the aim easily.

### **Need and Significance of the Study**

Education is an endless journey through knowledge and enlightenment. Such a journey opens up new vistas of development of humanism where there is neither scope nor room for pettiness, disharmony, jealousy, hatred or



enmity. Real education approach enhances the dignity of a human being and increases his or her self-respect and universal brotherhood in its true sense becomes the sheet anchor for such education. A child must become an active participant in the process of learning through observation, field studies, experiments and discussion. To achieve this, school must live from being educational centers to becoming knowledge and skill centers.

During the ancient and medieval periods of education, students were trained by teachers in such a manner that they can survive and live in that era. In ancient education, children live away from their parents, and they were shaped in a way that they can live in any condition. Medieval education also followed the same protocol as ancient education in spite that their education mostly focuses on religion. The ancient education focused on imparting ethics like humility, truthfulness, discipline, self-reliance, and respecting all creations to the students. The main objective of education was to equip the students with a good quality of education. The education mostly focused on the enrichment of culture, character, personality development, and cultivation of noble ideals.

In the colonial history of education in India it is found that education is denied to most and a dependency is created among Indians. From that experience the vision of democratic India became 'Education for All'. The various commissions and committees and educational policies aimed at

creation of a new society with a strong sense of independence. From the policy of Basic education in 1937 till today the education aims at self-sufficiency. Self-reliance is an important value. It is the capacity to rely on one's own capabilities, and to manage one's own affairs. It is to be taught to the children to be self-reliant from the young age onwards. By teaching a child to be independent, as they grow, it will develop personal skills beneficial to their growth and for a creation of new society. Actually it is to be taught from home itself. Self-reliance demands decision making, courage, sense of independence, etc.. Self-reliance is mastery over the environment which emphasis on the social environment.

Indians are with not only great learning capabilities but most of them also have an entrepreneurial and competitive spirit. It is clear that the major technological and industrial achievements of our country have come about through the endeavours of thousands of young women and men who have studied in ordinary school and colleges in different parts of India. There are doctors, engineers, technicians, nurses, artists, writers, journalists, accountants, clerks, teachers, and various kinds of professional and other in work force.

Since India became independent the vision of India is to become a developed nation. Many hindrances are there in its path towards development. All policies and programmes of India plan to overcome these hurdles and in

21<sup>st</sup> century there is a spurt in this way and 2020 project is an example. Developed India by 2020 this vision has five missions, namely agriculture and food processing; education and health care; information and communication technology; infrastructure development including power and self-reliance in critical technologies. India can be developed only if it has all-round economic prosperity and self reliance in all the above areas of critical technologies. Therefore it is essential that the national vision and missions must be interlinked with technology development and scientific achievements.

India have faced a lot of problems throughout history. Since India is not a developed nation, its future lies in the hands of the youth. They are the most important and dynamic segment of the population of our country as they contribute to the growth of our nation. It is very essential to install confidence among Indian students for undertaking such tasks which could contribute to development of our nation. The writings of many educationists bring the people into this way. Students get motivated when they imbibe the words of eminent personalities. Dr APJ Abdul Kalam , the Missile Man of India and the 11<sup>th</sup> President of India whose works are contributing to this aim.

During the last five years of A.P.J Abdul Kalam, he met over one million students from all parts of the country, particularly in the age group 10 to17 years, and he makes it a point to answer at least 10 to15 of their

questions. In addition to this through his website he answered thousands of questions of students from India and abroad. The works of APJ Abdul Kalam attempts to create dignity, sovereignty and awareness among Indian citizens creating progress in various fields like education, economics, science and technology. It enables people to be an ideal citizen of our nation and thereby leading to the country's development. So Kalam's works can be considered as a reflection of all these things.

*Indomitable Spirit, Ignited Minds, The scientific Indian* are some of the works which talk on his vision of a developed India. He wanted an India which must stand up to the world being a model for the other nations to emulate. It was this dream which made him capable to write works that poignantly depicted his dream of a developed India. The present study attempts to analyse how Kalam's works have contributed to the development of our country in various spheres like socio political, cultural field education, science, technology, space etc.

Being a literature student the investigator is motivated to take some works of Dr. APJ Abdul kalam to explore self- reliance in the writings. The purpose of self reliance is to create nation building capabilities in the students. The capabilities are derived knowledge from education, own experience and value system through civilization heritage. After completing their education the students should have in them the overall development on their life towards

world. Self reliance is the most important value for growth and prosperity of nation. Sarukkai (2020) revealed that the self of a nation is one that is self-reliant in the true sense of the term, one that is truly independent. As self-reliance is also one of the major aims in the present Indian context in the form of Atmanirbharatha to march towards development of India, the study will be useful to all stakeholders towards this end.

### **Statement of the problem**

The present study is entitled as “**SELF- RELIANCE IN THE WRITINGS OF DR. A.P.J ABDUL KALAM**”.

### **Definition of key terms**

The key terms of the study are defined below

#### **Self- reliance**

Self- Reliance is reliance on one's own efforts and abilities.

(<https://www.merriam-webster.com/dictionary/self-reliance>)

For the present study the value self- reliance means reliance on one's own power and resources rather than those of others. The investigator analyzed the writings of Dr .A.P.J Abdul Kalam to find out self-reliance in his books. The books analysed were “**Indomitable spirit**”, “**Ignited minds**”, and “**The Scientific Indian**”.

### **Research questions**

The investigator aims at answering certain research questions in the present study which are as follows;

1. How does self- reliance reflect in the writings of Dr APJ Abdul Kalam?
2. What are the new thoughts, ideas, educational vision related with self-reliance in the writings of Dr. A. P.J Abdul Kalam?

### **Objectives of the study**

The objectives of the present study are as follows

1. To analyze self-reliance in the writings of Dr. A.P.J Abdul Kalam
2. To find out new thoughts, ideas, educational vision related with self-reliance in the writings of Dr. A. P.J Abdul Kalam .

### **Methodology**

The study was intended to find out self-reliance in the writings of Dr. A P J Abdul Kalam. The investigator adopted book analysis as the method of analysis. The investigator is expected that the method is highly useful to explore the concept inherent in the books written by Dr APJ Abdul Kalam.

### **Scope and Limitations of the study**

From very early itself the concept self-reliance is considered as an important aim in education. As development of the individual is very essential in the development of nation, self-reliance must be one of the prime aims of education. Self-reliance will surely give confidence to the people. Hence the efforts of the educationists to bring the concept of self-reliance through their writings are worthy. To achieve this aim the investigator adopted the method of analysis of books written by Dr A P J Abdul Kalam. Thus the scope of the study is the analysis of the writings of Dr APJ will be highly useful to the educationists, teachers and students to set the aim and to achieve it.

The study has been carried out by adopting the method of analysis of books in original written by Dr. A P J Abdul Kalam. Even though every attempt has taken by the investigator to conduct the study free from limitations a few may crept into it. Due to the time constraints the investigator has taken only three books of Dr. A P J Abdul Kalam. Also because of the pandemic situation the investigator couldn't visit libraries to collect more views about the concept in the writings of the author. But utmost care has been taken to conduct the study perfect.

## **Organization of the report**

The report has been presented in five chapters

**Chapter I** presents a brief introduction to the problem, need and significance, statement of the problem, definition of key terms, research questions, objectives of the study, methodology, scope and limitations of the study.

**Chapter II** includes an overview of the concept self-reliance, life history of APJ Abdul Kalam, and review of related studies.

**Chapter III** gives an account of the methodology adopted in the study. It includes sources of data, collection of source book, procedure of analysis of data, internal and external criticism.

**Chapter IV** includes objectives, analysis of data and conclusion

**Chapter V** presents a summary of the study, major findings, educational implications of the study, and suggestions for further research in the area.



## **CHAPTER 2**

### **REVIEW OF RELATED LITERATURE**

- *Theoretical overview*
- *Review of Related Studies*

## **Theoretical overview**

The review of related literature gives clarity to the theoretical rationale of the problem and provides what research has and has not been done before in the area. This also shows how the present research is contributing to the existing body of research on the subject.

The present study is a qualitative study. The investigator is analysing the writings of APJ Abdul Kalam to find out self-reliance in the books. Definition of self-reliance, key concepts of self-reliance, how to develop self-reliance, its synonyms and its importance is coming under the concept of self-reliance. This is followed by studies related to self-reliance. A brief history of Dr APJ Abdul Kalam and some of the reviews related to works of APJ Abdul Kalam is also presented in this chapter.

### **Life History of Dr. APJ Abdul Kalam**

Dr APJ Abdul Kalam was an Indian aerospace scientist who served as the 11th President of India from 2002 to 2007. Abdul Kalam was born on 15 October 1931 to a Tamil Muslim family in the pilgrimage centre of Rameswaram, Tamil Nadu. His father Jainulabdeen Marakayar was a boat owner and imam of a local mosque; his mother Ashiamma was a housewife.

Kalam was the youngest of four brothers and one sister in his family. In his school years, Kalam had average grades but was described as a bright and hardworking student who had a strong desire to learn. He spent hours on his studies, especially mathematics. Abdul Kalam graduated in physics from St. Joseph's College Tiruchirappalli. In the mid 1950's he did graduation with a diploma in aeronautical engineering from the Madras Institute of technology. Abdul Kalam credits to the many great visionaries who prepared him for life, especially professors Dr.Vikram Sarabhai, Prof.Satheesh Dhawan and Dr.Brahm Prakash.

He was responsible for the development of India's first satellite launch vehicle the SLV-3 and the development and operationalization of strategic missiles. Kalam was responsible for the development of the five missiles Prithvi, Trishul, Akash, Nag and the most awaited one agni. Kalam managed and inspiring large scale developmental projects on rocket technology. This was an adventure, not without struggle and frequent failure, but culminating in the pioneering success of the satellite launching capability. He is seen as engineer and innovator, inspires and mentor of courageous colloquies, and builder of teams and institutions. He was popularly known as the Missile man of India of his work on development of ballistic missile and space rocket technology.

Kalam held various positions in the Indian Space Research Organisation and the Defence Research and Development Organization and became principal scientific adviser to the Government of India, holding the rank of a cabinet minister.

He was also deeply involved in the development of India's first indigenous satellite launch vehicle (SLV-II). Kalam played chief (Pivotal) organizational technical and political role in India's Pokhran-II nuclear test in 1998.

Kalam was the chancellor of Indian institute of space science and technology and professor at Anna University, a visiting Professor at Indian Institute of Management Ahmedabad, JSS University in Mysore and visiting faculty at many other Academic and Research Institutions across India offered as Missile man of India.

The President of India between 2002 and 2007 Kalam was awarded honorary doctorates from thirty eight universities and the country's three highest civilian honours Padma Bhushan (1981), Padma Vibhushan (1990) and Bharat Ratna (1997). APJ Abdul Kalam is a man of vision, who is always charged of ideas aimed at the development of the country.

Kalam authored fifteen books on a variety of topics that have been translated into many languages across the world. His most significant works

are wings of fire, India 2020 a vision for the new millennium, Target 3 Billion and beyond 2020, A vision of Tomorrow's India.

### **The concept of 'Self- Reliance'**

Self-reliance is the highest expression of self-respect. According to Baumeister(1987) *Self-reliance is "a reliance on internal resources to provide life with coherence (meaning) and fulfillment"*.

Merriam Webster defines self-reliance as '*reliance on one's own efforts and abilities*'. It was Ralph Waldo Emerson, US philosopher, who brought this concept to the general public with his 1841 essay *Self-Reliance*. He argues strongly that self-reliance, self-trust, and individualism, amongst other things, are ways that we can avoid the conformity imposed upon us. Or, he also argues, that we quite frequently impose upon ourselves.

Some key concepts of *Self-Reliance* that explained by Emerson are as follows.

#### **1. Thinking Independently**

The ability to think autonomously goes hand in hand with trusting our own instinct. Lots of Emerson's work centered on how people tend to 'hide behind' what they've learned from society, or significant others within society. He believed this was mere imitation and was linked with a lack of confidence in one's own intuition and rational capabilities. Basically, if

anyone believe in something, and consider that it holds merit after thinking it through, there should be nothing holding us back from voicing it with confidence. Not to do so is to conform to societal expectations for no good reason.

## **2. Embracing Your Individuality**

According to Emerson Individuality is supreme. He explained that one's greatest happiness lies in the activities in association with his or her natural interest. He cites an example here. We can imagine that Bella has parents who are both lawyers. They want nothing more than for Bella to follow in their footsteps and are encouraged by her excellent grades at school.

At home, however, Bella finds that she's spending every spare minute for writing poetry. She wants to make a difference to the world and touch people's lives through verse. This is where she finds her greatest happiness and decides instead to pursue a career as a poet instead.

## **3. Striving Towards Your Own Goals, Bravely**

In an extension of the above, Bella seeks to take steps toward achieving her own goals of becoming a poet. She's aware that she'll receive a lot more emotional and financial support by following her parents' dreams, but she's willing to take her chances. Because Bella believes in 'cause and effect' (Emerson, 1967), and that purposeful action will get her there. She

isn't overly concerned about rejection by her parents, because she just wants to be herself.

These three examples are based on the key arguments in Emerson's original paper on self-reliance, and represent the three concepts most closely related to individualism. It's important to remember that self-reliance is not about cutting yourself off from everybody. That is, being true to yourself, being capable of independent thought, knowing our own loves and being able to pursue them independently of others' judgments is not the same as isolating yourself from society.

While Emerson does expand considerably on the value of solitude, the idea of social networks—of having friends—features strongly in his work.

Self-reliance is also important because;:

- With this we can *solve problems and make decisions by our own*. This is critical as we grow older and learn to live independently;
- Allows you to *feel happy by yourself, in yourself, and about yourself*—without needing to rely on others;
- Involves developing *self-acceptance*, a very powerful thing to have;
- Involves acquiring *self-knowledge* and practicing *self-compassion*;
- Gives you perspective, which in turn...
- Gives you direction.

## **How to Develop Self-Reliance**

**Kloppers** (2019), a mental health counselor suggest several practical steps for developing self-reliance.

### **1. Accepting yourself, and being your own best friend.**

Learning and appreciating your own character strengths is very important in being able to support yourself as you go through life. What are your **character strengths**? Are you kind? Curious? Brave? Don't forget to reflect on your achievements and the things you accomplish that make you feel proud. It's important not to put yourself down or sabotage your own efforts.

### **2. Inner confidence.**

In society, we're conditioned to feel happy when we receive compliments, praise, and reassurance from others. If that's not forthcoming, we can feel insecure or vulnerable, sometimes even helpless. Being self-reliant involves the ability to feel confident in yourself when these aren't around—because they may not always be. Not sure what to be confident about? Try to increase your sense of **self-worth**.



### **3. Making our own decisions.**

Kloppers advises against looking consistently outside for security and relying on others to accept us for who we are. When we can accept ourselves as unique and practice non-judgment, we can find security from inner sources.

This rational, independent thinking is something we've already touched on. As children, we learn to look to others for guidance when solving problems or making decisions. The tendency becomes ingrained within us, and as adults, we aren't always capable of handling adversity in a way that we feel sure about. Have confidence in our own capabilities and it becomes a lot easier to find security within.

### **4. Recognize and manage dependence.**

Becoming aware of when you tend to turn to others is a part of self-knowledge. We may know that we turn to others for certain things, but sometimes this means we're missing out on a chance to build up our own confidence. If we are setting goals and achieving them our own way not only gives us a sense of accomplishment and reward but greater belief in our own judgment.

### **5. Accept yourself for who you are.**

Self-acceptance is a huge thing according to Klopper . Instead of looking to others for approval, it's alright to give that approval yourself.

Seeking others' acceptance is yet another way that we practice dependence on others, and it can be a pervasive, hard-to-shake habit. To develop self-reliance, we need to notice these tendencies before we can change them. But it's worth it.

Some other ways to develop self-reliance are,

- **Having our own values.**

Society's values may not be aligned with our own deep-rooted beliefs. This can be at such a subconscious level that we don't always pick up on it. If society values one thing, and it's not congruent with our own, we can feel as though it's hard to gain acceptance.

- **Not relying on 'things' to feel happiness.**

Emerson also argued strongly about the negative potential influences of material possessions; he was of the belief that we live in materialistic times. Life is constantly changing if we tie our happiness to external objects, what happens when they're gone?

- **Decide who you want to be, and how you want to get there.**

Pretty much, this is almost the same as having our own values. Except that once we know our own values, we can understand what makes us happy and

how we would like to live our lives. Then, we exercise our own judgment about how we want to get there.

It's also true that children will often need much simpler approaches to learning that can often start at a more practical level. Learning to tie one's own shoelaces, take on little jobs, and so forth.

### **Synonyms of Self-Reliance**

Some similar words of self-reliance are Autonomy, Self-determination, Self-sufficiency, Sovereignty, Self-government, Self-rule, etc.

Learning to be self-reliant is important and to be taught when a child is at a young age so it can develop, as they grow older. Being self-reliant means the ability to take care of a person. When a child is young it is important to not do everything for them. Gradually let them do tasks completely, making it known that they have the power to be independent; as they grow older it will develop personal skills beneficial to their growth. The life of some great personalities is good examples showing the importance of self-reliance. Abraham Lincoln the former American President who was a self-made man and he reached the top upholding self-reliance. According to Lincoln the three concepts of Self-reliance are, Being responsible, Being disciplined and Being confident.

## **Review of related studies**

### **Studies related to Self-Reliance**

Desai (2021) examined the effect of class room environment on pupils self-reliance and their self-concept. The nature of many of the problems associated with the complexities of school, many school people have defined the situation as hopeless and helpless. Racial segregation, unemployment, high crime rates, high population density, substandard housing, communication problems with home, school and society characterize the culture of poverty in with many schools are embedded. Schools are social agencies; they are established administered and financed by society.

At present many youngster are being crushed and damaged possibly beyond repair and the schools themselves are being strained to their limits. But today's society, with its dynamic nature and rapidly changing economic, political, social and cultural constrains places much responsibility on educational institutions.

Demands for educational excellence are voiced at the local state and national level. These demands call for the preparation of students to include not only the basic skills, but also the abilities to think to understand to reproduce, to analyze, to synthesize and cope with rapid technological and environment changes as well as the complexities of our scientific era.

Tripathi (2018) studied on the impact of intrinsic motivation on academic performance of management Teachers. The doctoral study was initiated with the objective of exploring the relative importance of intrinsic factors of motivation in performance improvement of individuals. The research is based on several empirical studies performed within the context of educational services of various private institutions of National capital region running of MBA courses affiliated with Dr. APJ Abdul Kalam technical university, Lucknow with special reference to management teachers.

The overall design for the research study is explanatory causal research. Part is qualitative approach for building frame work for carrying the study.

As per the results among six factors of intrinsic motivation self efficacy, creativity, achievement, motivation optimism and personal vision are good indicators of performance in terms of teaching learning activities. A model of intrinsic motivation factors and performance has been developed which can be utilized in further research in this area.

The main contribution of the research is to increase the understanding of the influence of intrinsic factors of motivation by empirically showing that they are very significant for individuals and organizations to significantly enhance performance of teachers as well as improve the quality of education.

**Joshi, Y (2017)** carried out a historical and theoretical study on "India's self-reliance in defence production – Myth or reality" for comprehending the importance of self-reliance of India in defence production. India is committed to a policy of peace and international co-operation. The implementation of this policy calls for a strong base of defence production co-ordinated with indigenous development. An increasing participation of the civil sector industry is an integral part of this national endeavour. This research is an attempt to describe India's effort in achieving self reliance in defence production.

**Sharma (2016)** is studied on Employment through micro finance – A road to self reliance in India. This research can examine that how can help the country, through micro finance basis on self reliance in the employment sector. Micro finance is the provision of financial services such as loans, savings, insurance, and training to people living in poverty.

Micro finance organizations focus is on all those sections of our society that needs a financial helping hand to bring themselves out of poverty, it so becomes a priority to serve the particular needs of women, since a staggering 70 percent of all those living in extreme poverty are female.

The Indian economy at present at a crucial juncture, on one hand, the optimists are talking of India being among the top 5 economics of the world by 2050 and on the other is the presence of 260 million poor forming 26% of

the total population. Above date emphasis on what are the different attitude of micro finance an how it's effect employment in India.

Any way India is always depending on rural area development. Suppose the rural area well develop automatically nation will grow faster way, many economist to find out the what types of rural plans Indian village need, with the help of scientific establishment of micro finance only to remove the village poverty and improve the employment level.

Micro finance has emerged as powerful instrument for the poverty alleviation in the new economy. In the Indian context terms like small and marginal farmers, rural artisans, and economical weaker sections have been used to broadly define micro finance customers.

Access to credit allowed poor people to take advantage of economic opportunities. While increased earnings are by no means automatic, clients have over whelmingly demonstrated that reliable sources of credit provide a fundamental basis for planning and expanding business activities. It is seen that clients, suggesting that programs contribute to these improvements. We have even observed that over a long period of time many clients to actually graduate out of poverty.

**Kumar (2021)** conducted A comparative study of emotional intelligence, spiritual intelligence and attitude towards self-reliance among higher secondary students in relation to achievement. In the proposed study

the major objectives were to find out relationship between emotional intelligence, spiritual intelligence and attitude towards self-reliance with Academic achievement to compare quantitatively significant differences between high and low achievers.

Every individual has got the potential to perform an assigned Job Attitude towards self-reliance helps and motivates a person to perform his insatisfactory manner. He just takes instructions from others and on the basis of these instructions he proceeds in his work at a rapid pace. This attitude acts as a motivational factor for an individual.

**Mishra (2014)** researched in the topic Indias quest for technological self-reliance: A study of nuclear energy and space programmes. This research analyzing that the India's technological self reliance basis on nuclear energy and space programmes.

The Indian space and missile scientists have a commendable Job in the hostile environment in pursuing a self-reliant path in developing indigenous technology. But the Indian political leadership has failed miserably to given ample support to the scientific community.

They have buckled down under the American pressure time and again. The problem today is there is no visible, publicly articulated Indian policy which the Indian diplomats are called upon to defend. There is no bottom line to Indian nuclear and missile strategic posture.



The Indian space programme has made spectacular strides in a very short period. India is a technology leader in the field of designing and operating communication as well as remote sensing satellites. But it is in the field of launch vehicle programme that India couldn't keep pace with satellite programme. The lack of independent satellite launch vehicle prevented India from pursuing a truly independent space programme as it has to turn to other countries to loft its satellites.

**Anusha (2016)** conducted an analytical study on Educational thoughts and ideas of APJ Abdul Kalam. This research is centered on the thoughts and ideas of Dr. APJ Abdul kalam with regards to meaning of education, aims and objectives of education, different levels of education, discipline, teaching methodology and role of teacher and students. This research examine that how Dr.Kalam is trying to awaken mankind towards the practical education especially in science and technology and has drawn attention to include higher spiritual values, so as to lead the would be generation on the path of permanent peace and progress. By this study of a philosophical nature attempts to consolidate his views on education and as well as in Philosophy have also been made.

Eudwin (2015) carried out a study on auto biographical aspects of Kalam's life and the history of his life journey. Dr. APJ Abdul Kalam success in the various level in his life as a president of India, Director of DRDO,

writer, inspirational and motivational teacher, eminent person moreover Humanitarian in the world. This study/research gives some clear cut picture of APJ thoughts, vision, life styles and of his collaborative team work as a director of DRDO and along various position in his official life.

**Jaybhaya (2019)** conducted a study on Journey towards the success: A comparative study of the Autobiographies of Nelson Mandela, Barack Obama, APJ Abdul Kalam and Fidel Castro.

An autobiography is one of the writers, who used to illustrate the form of the literatures which spinning around the life of the writer who used to illustrate the inspirational and conspicuous events from the life which could be the forerunners for the imminent generations. On the strenuous journey, for reaching to the aspirations of their lives; they were empirical throughout the expedition. Fabulously, they knew that, the path to their destination has always passed newline through the hazardous and thorny province of the life. They were realized that, the sufferings and pains were the indispensable elements of the genuine hunt of the success. The victory of the Auto biographers is outcome of the classless efforts and endeavours of many struggles and sacrifices.

**Chauhan, (2017)** conducted a study of thinking on education of APJ Abdul Kalam. As a result of APJ thinking and by his educational work is

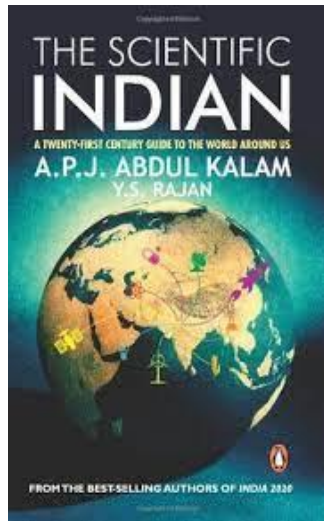
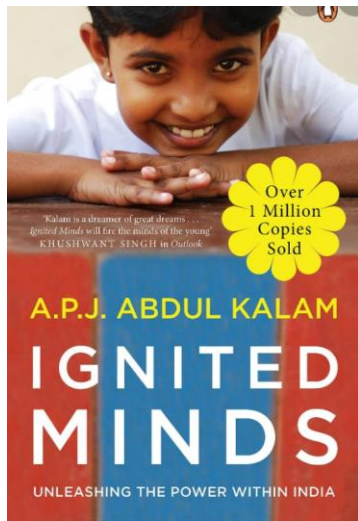
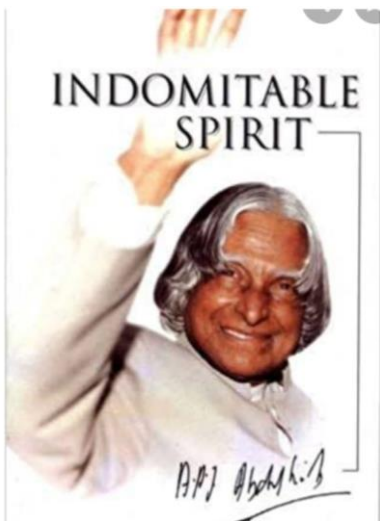
prominent one. So the learning of the educational thinking is very important and due to this reason, this kind of study is necessary.

Dr. APJ Abdul Kalam has made a pathway to social, national, spiritual and technological development by establishing educational and social thinking. During his journey of the thinking on education in the country India, he met thousands of children, teachers, scientists, saints and visionaries and focussed on their questions and problems that aroused new enthusiasm in education and patriotism. In his thinking, he has covered subjects like vision of the developed nation, science and technology, agriculture and health services, value education, leadership, women empowerment, children, youth education etc. Abdul Kalam has broad view points of thought, creativity and thinking. To hear the researcher tried to study the thinking of APJ Abdul Kalam on these subjects in the present study. APJ Abdul Kalam, premier scientists of India gives out a detailed account of development of integrated missile system and nuclear development in his book wings of fire. It is autobiography in which he writes functioning of DRDO and various development projects undertaken by them. Researcher examines a vision for the new millennium in his book titled as India 2020. "Can India become developed country?" is the first chapter of the book in which he systematically advanced a case for India becoming a developed country. Different aspects of development like food, agriculture, industries, health, strategies, and industries are included in different chapters. Dr.APJ Abdul

Kalam recognized the strength and achievements of India and wanted the Indians to acknowledge its amazing success.

### **Conclusion**

Self-reliance is a very important concept and it is to be understood by the people. The investigator reviewed only few studies related to self-reliance because of the present pandemic situation. Studies on the works of APJ Abdul Kalam are a tribute to the educational world. The researcher became motivated by the review of the work of such a great educator especially in the scientific field. The vision of developed nation brought the investigator into the present study. Thus, this research will be useful to both the researcher and the readers.



## CHAPTER 3

### METHODOLOGY

- *Sources of data*
- *Collection of source materials*
- *The procedure of analysis of data*
- *Historical criticism*

Methodology occupies a very important place in any research. According to McMillian and Schumacher (2001) “ Methodology refers to the way one collects and analyses the data for acquiring knowledge by reliable trustworthy procedures”. The present study was intended to finding out self-reliance in the writings of Dr APJ Abdul Kalam. With this objective the investigator analysed the content of selected works of Dr APJ Abdul Kalam. Document analysis was used by the investigator in the study.

Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009). Content or document analysis should serve a useful purpose in yielding information that is helpful in evaluating or explaining educational practices. Documents are an important source of data in many areas of an investigation, and the methods of analysis are similar to those used by historians. Historical research often uses document analysis, it deals solely with past events.

The investigator identifies relevant records for investigation, judging authenticity of documents, doing content analysis of evidences, codifying and organizing contents, reviewing the content, making interpretations etc. Here

the investigator analysed the original text of the author and ideas or comments of others about the author with significance.

### **Sources of data**

The content analysis depends on availability of original documents. The different sources of data are classified into both primary and secondary.

A primary source is an original repository of a historical datum, like an original record kept of an important occasion, an eyewitness description of an event, a photograph, minutes of organization meetings and so on. The investigator used the primary sources in the form of the original books written by APJ Abdul Kalam- “Indomitable spirit”, “Ignited minds”, and “The Scientific Indian” to find out the self-reliance and new ideas, thoughts and educational vision related to self-reliance.

A secondary source is an account or record of a historical event or circumstance one or more steps removed from an original repository. Instead of studying and citing the original report of a research, one studies and cites someone else’s account and digest of it. Along with the primary sources the investigator used secondary sources in the form of the views reported by authors about the selected books of APJ Abdul Kalam to explore the objectives.



### **Collection of sources materials**

The primary source of data in the form of books written by APJ Abdul Kalam was collected from library. Some of the books were with the investigator as own. Secondary sources include the books, some journal articles and online sources and review reports.

### **The procedure of analysis of data**

Content analysis is the study of documents and communication artefacts, which might be texts of various formats, pictures, audio or video.

One of the key advantages of using content analysis to analyse social phenomena is its non-invasive nature, in contrast to simulating social experiences or collecting survey answers. Practices and philosophies of content analysis vary between academic disciplines. They all involve systematic reading or observation of texts or artefacts which are assigned labels to indicate the presence of interesting, meaningful pieces of content.

By systematically labelling the content of a set of texts, researchers can analyse patterns of content quantitatively using statistical methods, or use qualitative methods to analyse meaning of content within texts.

In this method, the researcher did not observe, measure or experiment directly in relation to present situation, but the researcher found inferences logically by analyzing the collected references qualitatively.

Three books of APJ Abdul Kalam were selected by the investigator and they are “Indomitable spirit”, “Ignited minds”, and “The Scientific Indian”. The present study is qualitative in nature, so the objective analysis was used for content analysis of the available data. Here the investigator analysed the present events from the available sources, codifying and organizing contents, reviewing the content, making interpretations etc.

**Indomitable Spirit:** The book *Indomitable Spirit* written by Dr APJ includes 14 chapters starting with ‘Inspiring Lives’ and ends with ‘Indomitable Spirit’.

**Ignited minds :** The *Ignited minds* is a small book of 205 pages contains dynamic and original ideas, examines attitudes afflicting the Indians, and presents prescriptions for rapid growth of India to enable the country to emerge as a developed country.

**The Scientific Indian:** *The Scientific Indian* includes the chapters on Space, The Earth, and Life.

### **Historical criticism**

Documents used in the research are subjected to the same type of criticism employed by the historian. Not only is the authenticity of the document important but the validity of its content is crucial. It is the researchers obligation to establish the trustworthiness of all data which draws from documentary sources. The process judging validity, reliability and

relevance of data is carried out through external criticism and internal criticism.

External criticism is concerned with establishing the authenticity or genuineness of data. It is otherwise known as lower criticism. Is the document or source a true one rather than a forgery? Various tests of genuineness may be employed. The general criteria followed for external criticism depend on contemporary reputation of the source and consistent reputation of the source over the years.

Internal criticism is the attempt of the researcher to restore the meaning of the text. Here the researcher engages with the true meaning of the text rather than the external elements of the document. This is otherwise known as higher criticism because it deals with more important matter than external form. Internal criticism looks at the reliability of an authenticated source after it has been subjected to external criticism. Whether the writers are competent, honest, unbiased, and acquainted with the facts, or were they too antagonistic or too sympathetic to give a true picture?

Such questions are often difficult to answer but the it is sure that the data are authentic and accurate because the original books were collected and analysed by the investigator. The investigator found the meaning of content by analysis and interpreted accordingly with the assumption that may have some difference from person to person.

## CHAPTER 4

### ANALYSIS AND INTERPRETATIONS

- *Objectives of the study*
- *Indomitable Spirit*
- *Ignited Minds*
- *The Scientific Indian*
- *Conclusion*

The data collected from relevant sources were analysed and presented in this chapter. The present study is qualitative in nature. Content analysis was adopted as the method of research. The analysis was done based on the objectives of the study.

### **Objectives of the study**

1. To analyze self -reliance in the writings of Dr. A.P.J Abdul Kalam
2. To find out new thoughts, ideas, educational vision related with self-reliance in the writings of Dr. A. P.J Abdul Kalam .

In the present study, for the interpretation of data, the investigator read and reread all the chapters of the selected books. First the investigator searched the concept self-reliance in all the chapters of the three books written by APJ. Secondly the investigator searched for the new thoughts, ideas and concepts related to self-reliance. This interpretation, analysis, synthesis and presentation are done according to the content analysis research method as discussed earlier.

### **Indomitable Spirit**

The book Indomitable Spirit written by Dr APJ includes 14 chapters starting with 'Inspiring Lives' and ends with 'Indomitable Spirit'. Almost all

the title of the chapters inhere the concept self-reliance and it is found that there is a shade of strong self-reliance throughout the content of the book. The book takes one into a fascinating journey of the certain Inspiring Lives of people, like Bharat Ratna, MS Subbulakshmi, Prof.Vikram Sarabhai, Prof.Brahm Prakash, Prof. MGK Menon, Dr. Raja Ramanna, and talks about the great visionaries who have crafted the nation.

Some of the chapters include the concept **Self-reliance** directly in the content. One example is shown in the page no. 45 of Indomitable Spirit which explains the mission of education. “ Creativity in the education system can be promoted by reducing the theoretical burden at the primary level, progressively increasing it at the secondary level, and finally leading to higher level teaching and creation of *self-reliance* among students to undertake entrepreneurship and be employment generators rather than employment seekers.”

The first chapter gives a picture of the inspiring teachers in his life. The parents, teachers, and some great persons who excelled in their life are true inspiration to him. He used some words as motivation, inspiration, mighty souls, and youth as powerful human resources. These words are used as signs of Self-respect, and self-reliance. He used these words as growth for developing nation. By citing the example of UAE, Kalam inspires all for dreams and put it into practice the vision to Mission.

Some of the highlights of the chapters are provided here.

### **An education model for the 21<sup>st</sup> century**

According to Dr Kalam a good educational model is the need of the hour to ensure that students grow to contribute towards the economic growth of the nation. The entire education system has to be based on capacity building comprising five components: **research and enquiry, creativity and Innovation, capacity to use high-end technology, entrepreneurship and moral leadership.**

The 21<sup>st</sup> century is about the management of all the knowledge and information we have generated and the value addition that we can bring to it. We must give our students the skills with which they can find a way through the sea of knowledge that we have created and continue with lifelong learning. Today we have the ability, through technology, to really and truly teach ourselves to become lifelong learners which is an important skill required for sustained economic development.

### **Entrepreneurship**

The aptitude for entrepreneurship should be cultivated right from the beginning and continue all the way up to the university level. We must teach our students to take calculated risks for the sake of larger gain but within the

ethos of good Business. They should also cultivate a disposition to do things right. This capacity will enable them to take up challenging tasks later in life.

While literacy and numeracy are essential for a citizen, these alone are insufficient to acquire gainful employment. Having the right and economically relevant skills becomes especially critical for those who have education only up to high school, and a large percentage of our young people belong to this category. They need to be trained to get into employment or become self-employed. They can be taught skills required in construction, repair work, hotel, healthcare industries or in retailing or a electricians, carpenters, etc.

The modern competitive economy demands having the required quality skills and it is our duty to empower our citizens with such skills.

There has been substantial growth in our higher educational system and we are generating around three million graduates every year. However, our employment generation system is not in position to absorb these graduates passing out from the universities, leading to an increase in the number of educated unemployed. This is also because of a large mismatch between the skills required for the modern economy and the education imparted to most of these students. This situation is bound to lead to instability in the social structure. We need higher education focused on an orientation towards employment opportunities.



The educational system should highlight the importance of entrepreneurship and prepare students right from college to be oriented towards setting up of small enterprises and ventures either individually or jointly, which will provide them creativity, freedom and ability to generate wealth. Diversity of skills and perseverance in work make an entrepreneur. These should be taught to all the students.

### **What Students Want**

Today's young students want the education system to feed and challenge their innovative and creative minds. They are the creators of tomorrow and they want to think about it today. A good system of education should be able to satisfy their insatiable hunger for knowledge. Educational institutions have to gear up to evolve a curriculum that is sensitive to the special and technological needs of a developed India.

Education is an endless journey through knowledge and enlightenment. Such a journey opens up new vistas of development of humanism where there is neither scope nor room for pettiness, disharmony, jealousy, hatred or enmity. It transforms a human being into a wholesome whole, a noble soul and an asset to the universe. Real education enhances the dignity of a human being and increases his or her self-respect and universal brotherhood in its true sense becomes the sheet anchor for such education.

Creativity is the ability to imagine or invent something new by combining, changing or reapplying existing ideas. It is an attitude to accept change and newness, a willingness to play with ideas and possibilities, a flexibility of outlook, the habit of enjoying the good while looking for ways to improve it.

Creativity is a process to work hard and continually improve ideas and solutions by making gradual alterations and refinements. The important aspect of creativity is seeing the same thing as everybody else but thinking of something different.

The human mind is unique gift. Thinking should become our capital asset, no matter whatever ups and downs we come across in our lives. Thinking is progress. Non-thinking is destruction to the Individual, organisation and the country. Thinking leads to action. Knowledge without action is useless and irrelevant. Knowledge with action brings prosperity.

### **Creative Indians**

In India many innovations and creative thinking took place at various phases of our development. In the 1960s, none of us dreamt that nuclear energy can lead to electric power generation or that nuclear medicine would one day be used for the treatment of thyroid disorder and cancer.

In the 1980s India had a very low base in Information Technology (IT). Some young entrepreneurs, with their innovative and creative thoughts, within the difficult boundary conditions of India's rules and regulations, showed how IT – enabled services can fetch export revenue seeing this success the government introduced Innovative and liberalised IT policies. Now, our young IT entrepreneurs are earning an export revenue of billions of dollars. Similarly, the pharma industry is making a positive impact on the Indian economy.

### **Science is the Best boon**

In whatever field we work, be it science, technology, medicine, politics, policing, theology, religion or judiciary we have to remain in the service of the common man whose wellbeing is central to all human knowledge and endeavour.

With the advances in information technology, the world has shrunk and become a global village and networking of scientists is necessary to solve the complex real world problems. In ancient times, India was a preferred destination for learning and research in science and philosophy.

Technology has various dimensions. One leads to economic prosperity and another creates the capability for national security. For example, developments in chemical engineering which created fertilisers also led to creation of chemical weapons. Likewise rocket technology, developed for

atmospheric research, lead to launching – satellites for remote-sensing and communication application also lead to the development of missiles with specific defence needs that provide security for the nation.

Computer Science and Mathematics, coupled with communication technology led to the birth of information technology using the same technology, various fields of administration, commerce, health and education have been transformed into e-governance, e-commerce, telemedicine and tele-education.

Technology is the non-linear tool available to humanity which can effect fundamental changes in the ground rules of economic competitiveness. Science is linked to technology through application. Technology is linked to economy and environment through manufacture.

### **Critical Technologies**

Developed India by 2020 this vision has five missions, namely agriculture and food processing; education and health care; information and communication technology; infrastructure development including power and **self-reliance** in critical technologies. India can be developed only if it has all-round economic prosperity and **self reliance** in critical technologies. Therefore it is essential that the national vision and missions must be interlinked with technology development and scientific achievements.

## **Dream – Thought - Action**

The challenge in the mission of developed India calls for an important, and cohesive and focused effort of the young. A nation is great because of the way its people think. Particularly the young population of India must have a big aim; small aim is a crime. Though the present academic system may give students a lot of workload, It should not prevent them from dreaming. It doesn't prevent them from working hard to acquire knowledge.

In the 1960s Prof.Vikram Sarabhai, the visionary of our space programme, put forth the vision that India should design and develop its own communication satellites, remote-sensing satellites and launch them in polar orbits from the Indian soil for mapping Indian natural resources. The nation is capable of developing any type of space system. It is only through sweat and toil that we will be able to make India stand proudly among the comity of developed nations. If India is to become developed by 2020, it will do so only by riding on the shoulders of the young.

## **Role of Students**

A developed India is no more a vision. The largest beneficiary of this dream when realised will be the young. Hence it is important that you contribute in the initial stages of realisation and shape it to the best of your abilities within your academic and family confines without worrying about

minor variations in the subjects of your pursuit, your opportunities and future will be brighter if you excel in whatever subject you under take to study.

The employment opportunities are many, but when a person becomes very selective and wants only a government Job, there are tremendous constraints. If you open up your thoughts – to entrepreneurship, design, industry, direct participation in agriculture with innovative ideas, making IT products, etc. the opportunities are unlimited. The most important thing for the young generation is to make up its mind to contribute in all sectors through the tools of knowledge and physical contribution.

One of the important Indicators of a developed nation is the literacy level. Educating a nation of a billion people is not a small task. It requires the participation of all the stakeholders starting from the young.

It is important to recognise that India has a population of 540 million young people. This is a big force. Creating a powerful vision for the nation will bring the force and energy of the young into action.

### **Empowered Women**

In our country women constitute 48 percent of the total population. If this 48 percent contributes to the national development, then the national vision of transforming India into a developed nation by 2020 will be that much nearer.

## **Birth of a Knowledge Society**

In the 21<sup>st</sup> century, a new society is emerging where knowledge is the primary production resource instead of capital and labour. Efficient utilisation of knowledge can create comprehensive wealth for a nation and also improve the quality of life in the form of better health, education, infrastructure and other social indicators.

The ability to create and maintain a knowledge infrastructure, develop knowledge workers and enhance their productivity through creation, growth and exploitation of new knowledge will be the key factors in deciding the prosperity of this knowledge society.

India is now in the process of creating virtual universities and institutions for knowledge re-use. While it is known that the virtual universities provide us with technologies of the future and the most economical way of achieving high quality education in the country, they are no substitute to the campus – based education. The challenge before the virtual universities is to provide the best of both the worlds.

India has the potential to become a knowledge society electronic and knowledge connectivity is the key to realise this goal. Connecting a billion people throws up multiple challenges. We have to be ready to meet these challenges and make India a developed nation.

## **Profile of a Developed India**

Kalam's visualisation of a competitive developed India has the following attributes.

1. A nation where the rural and urban divide has been reduced to a thin line.
2. A nation where there is an equitable distribution of energy and quality water.
3. A nation where agriculture, industry and service sector work together in symphony, absorbing technology, thereby resulting in sustained wealth generation leading to higher employment potential.
4. A nation where education is not denied to any meritorious candidate because of societal or economic discrimination.
5. A nation which is the best destination for the most talented scholars and scientists from all over the world.

## **Ignited Minds**

The ignited minds is a small book of 205 pages contains dynamic and original ideas, examines attitudes afflicting the Indians, and presents prescriptions for rapid growth of India to enable the country to emerge as a developed country.



## **The Knowledge Society**

Ancient India was an advanced knowledge society. Invasions and colonial rule destroyed its institutions robbed it of its core competence. Its people have been systematically degraded to lower levels of existence. By the time British left, our youth had lowered their aims and were satisfied earning an ordinary livelihood. India is essentially a land of knowledge. It is acquired through education, Information, intelligence and experience.

Knowledge though closely linked to education, comes equally from learning skills such as those possessed by our artists, craftsmen, hakims, vidyas, philosophers and saints as also our house wives.

Our heritage and history, the rituals, epics and traditions that form part of our consciousness are also vast resources of knowledge as are our libraries and universities. There is an abundance of unorthodox, earthy wisdom in our villages. There are hidden treasures of knowledge in our environment, in the oceans, bio reserves and deserts in the plant and animal life. Every state in our country has a unique core competence for a knowledge society.

In the twenty first century, a new society is emerging where knowledge is the primary production resource instead of capital and labour. Efficient utilization of this existing knowledge base can create wealth for us in the form of better health, education and other indicators of progress. The ability to create and maintain the knowledge infrastructure, to **enhance skill**

**and increase productivity** through the exploitation of advances in various fields will be the key factors in deciding the prosperity of this society.

### **The Dream and The Message**

The developed India will not be a nation of cities. It will be a network of prosperous villages empowered by telemedicine, tele-education and e-commerce. The new India will emerge out of the combination of biotechnology, biosciences and agriculture sciences and industrial development. The political would be working with the zeal born of knowledge that the nation is bigger than individual interests and political parties. This attitude will lead to minimizing the rural – urban divide as progress takes place in the country side and urbanites move to rural areas to absorb the best of what nature can give in the form of product and wealth.

When I took over as principal scientific adviser to the Government of India, in November 1999, the task was to do detailing and evolve a working plan for 1 MM 2020. Certain experimental work on education, agriculture and also development of a number of villages in an integrated way is currently progressing.

The creation of technology vision 2020 based on the work of task teams consisting of 500 experts in all who had available to them inputs from 5,000 scientists and technologies from different fields. Later, the technology

vision document and the national security aspects got integrated and the India millennium missions (1 MM 2020) emerged.

When children ask me "What has given you happiness in your life in the last forty years ? I say I get happiness when heart patients carry K R coronary stent in their arteries and when the physically handicapped children fitted with the light-weight Floor Reaction Orthosis (FRO) callipers find their difficulties eased somewhat. Both of these came as spin-offs from missile technologies.

The most important and urgent task before our leadership is to get all the forces for constructive change together and deploy them in a mission mode. India is a country of one billion people with numerous religions and communities. It offers a wide spectrum of ideologies, besides its geographic diversity. This is our greatest strength.

Compartmentalized planning and isolated efforts are not yielding results. The people have to come together to create a harmonious India.

The knowledge society has two very important components driven by societal transformation and wealth generation. Information technology, biotechnology, space technology, weather forecasting, disaster management, telemedicine and tele-education, technologies utilizing traditional knowledge, service sector and information which is the emerging area resulting from convergence of information and entertainment.

In 1960, the agriculture sector employed in part or in full 74 percent of population. This came down to 62 percent in 1992 and is expected to further fall to 50 percent by 2010, though the demand of agricultural products will double by then. Higher productivity and better post harvest management will have no compensate for the manpower reduction in the farming and agricultural product sector.

In the case of industry, in 1960, 11 percent of the population was engaged in small scale industries. The trend continued with 11 percent in 1992. However, it has to increase to 25 percent in 2010, bearing in mind the envisaged GDP growth and increased competition as trade restrictions are lifted under the WTO. The pattern of employment will take a new shape. Employment in the service of knowledge industry has increased from 15 percent in 1960 to 27 percent in 1992 and it will further increase to in view of infrastructure maintenance areas and IT sector and entertainment demands.

Ideally both rural and urban areas should be equally attractive with no net migration either way. Near zero net rural – urban migration is a mask of development. Rural Development is only solution. This would generate employment on the same scale, and at the same level, as in the cities in the rural areas too.

Experience in India has demonstrated that the true handicap suffered by rural areas is poor connectivity and little else. Linking together a loop of

villages by a ring road and high quality transport may rectify that lacuna. The ring road and the transport service together can convert the linked villages immediately into a virtual town with a market of tens of thousands of people.

Such an era, which would also possess state-of-the-art telecommunication, connectivity, will have a high probability of attaining rapid growth by setting up a virtuous cycle – More connected people attracting more investment, and more investment attracting even more people and so on.

Basically it involves selecting a ring of villages; connecting the villages on the ring by establishing a high-quality transport and telecommunication system; encouraging reputed specialists to locate schools, hospitals and other social services around the ring; marketing this well-serviced space to attract industry and commerce; and internet connectivity. Rural development is an essential need for transforming India into a knowledge super power and high bandwidth rural connectivity is the minimum requirement to take education and health care to the rural areas.

Development is a security – centric phenomenon – from poverty to food security, social security and thereafter national security. India 2020 we have identified five areas where India has a core competence for integrated action.

1. Agriculture and food processing.
2. Electricity
3. Education and healthcare
4. Information technology
5. Strategic sector

A strong partnership between the research and development institutions, universities, industry and community as a whole with the government departments and agencies will be essential to accomplish the vision. Improvements in the agriculture sector, including that of food processing, would lead to food security, employment opportunities and rapid economic growth. For balanced development, all the five areas are of importance.

The purpose of REACH (Relevance and Excellence in Achieving new Heights in Education Institutions) is to establish 80 to 100 centres that follow common academic programmes and share the commitment to achieve excellence.

In this endeavour, they work together by interchange of faculty and joint research as need be. As part of this centres of Relevance and Excellence (CORE) have been established in Patiala, Dibrugarh, Mumbai, Thanjavur and Surat in the areas of agro and industrial biotechnology, advanced computing

and information processing, petroleum reservoir engineering, industrial safety, environmental engineering and herbal drugs REACH programme is that industries are willing to participate in specialized areas of their interest and they are also willing to invest about 40 percent of the total expenditure in establishing CORE. In return, they will benefit in terms of skilled manpower and access to the results of research.

For the rural development programme called PURA, we have introduced the concept of dynamic connectivity of four types called PEEK : Physics, Electronics, Economics and Knowledge connectivities. One more important need is IT – driven telemedicine.

Telemedicine could take advanced medical technology to the rural villages and help link up primary health centres, area hospitals, district hospitals and speciality hospitals in the state capitals. Full of doctors, communication engineers, computer Scientist and software experts, the doctors and the patients interacted via satellite. It looked like a very promising way to offer health care services in places that did not have the medical facilities of a large city.

JamshedjiNusserWanji Tata brought the steel industry to India eventhough the British rulers were not favourably disposed to the Idea. Acharya P.C. Ray nurtured the chemical and pharmaceutical Industries. We saw the birth of many great institutions like the Indian Institute of Science –

Bangalore, started by J. M. Tata, the Banaras Hindu University established by Pandit Madanmohan Malaviya, and Aligarh muslim university set up by Sir Sayed Ahmad Khan. Some of the progressive Maharajas too set up universities, as in Baroda. There are many examples. In all these case, the motivation was to see India come up in the world, to demonstrate that "India can do it."

No ideology is above the security and prosperity of our country. No agenda is more important than harmony among the people. The administrators have a great opportunity to link the people and political leaders. They should always take decisions that are good for the people. It is only executives like empowered district collectors who can assist transformation. The state central integrated fund has to be deployed in mission mode programmes.

The IT community, by its innovativeness has given India stature in the world. India is a competitive nation in IT Today. IT must be used for health care, telemedicine, to remove illiteracy, generate skills and for e-governance and tele-education. Transform the nation into a knowledge society with IT as the linking tool.

The farmers have given this country surplus food with their sweat. Time has come for two events to take place in agriculture sector.

1. The value addition of all agriculture products.



2. Improve the quality of agriculture products and complete in the world market. Above all marketing itself is a great business tool; we have to create a new cadre for this purpose. These steps will bring relief to the farmers.

### **The scientific Indian**

The Scientific Indian includes the chapters on Space, The Earth, and Life.

### **Evolving Space Technologies**

As you might expect, all major funding by the government or by private sources depend upon the benefits of the application that is being funded. The aim of private sector is the eventual profit that is likely to be made from the present investment more often, its goal is the overall growth of the economy, the generation of new employment or the enhancement of the public good such as national security or national prestige.

The knowledge centre will provide to the villagers real time information about market details on their products from the agriculture, cottage industry, fisheries and other rural industries in their locality as well as national markets. This will provide direct quality employment to over one million people who will be instrumental in promoting a higher level of wealth generation in our rural sector.

The satellite communication network has helped India in providing education and health care in the form of tele-education and tele-medicine. The prime objective of the EDUSAT programme is to provide support to education through low cost ground segments and to reach the unreached people of India in every nook and corner. EDUSAT is specially configured to have multiple beams covering different regions of India.

EDUSAT provides communication coverage through five regional beams and a national beam. This system will be primarily for school college and higher level of education, However, it will also support non formal education. EDUSAT is expected to provide 150,000 ground terminals in its fully capacity.

Like the tele education, tele medicine can help in a big way in bringing modern healthcare treatment within the reach of remote villages. These links would be the window to the world of knowledge for our villages and also reap the benefits of our e-governance, tele education, tele medicine, e-commerce and e-judiciary initiatives.

Satellite communication has also generated many downstream industries like direct-to-home television (DTH), position location, creating new business and employment, and therefore new taxes and more economic growth. Civilian remote sensing applications are another example of a profitable and growth-oriented sector.

EDUSAT, a satellite dedicated to providing a wide range of educational delivery modes like one-way TV broad cast, interactive TV, Video conferencing, computer conferencing, web-based instructions etc. About 34,000 classrooms utilizing EDUSAT covering twenty three states have been set up across the country. These network connections have been set up at different schools, colleges training institutes and other departments.

In order to reach space based services directly to the rural population, village resource centres (VRCs) were launched in 2004. VRCs provide a variety of space-based products and services including tele education, tele medicine and information on natural resources. So far, nearly 400 VRCs have been set up in association with NGOs /Trusts institutes and government agencies.

### **Biodiversity**

Loss of tropical rain forests, which harbour an extraordinary diversity of species, and loss of deserts, which harbour genetically diverse vegetation, are of particular concern. Consequences of humans of loss of potential medicines have impacts that go beyond economic benefits. Alkaloids from the rosy periwinkle (*Catharanthus roseus*) a tropical plant, for example, are used in the successful treatment of several forms of cancer, including Hodgkin's disease and childhood leukaemia.

With the rapid growth of life sciences and biotechnology, human being will know more about was to maintain biodiversity and enhance it marginally. But let us not fool ourselves into a belief that we may be able to recreate many of the lost ecosystems, species and genes through our biotechnological knowledge. We cannot just talk about natures diversity and be overwhelmed by the number of species there are and new discoveries which our researchers are making.

Technologies do not exist to re-create the vast majority of ecosystems, species, and genes that are being lost and there is little hope that such technologies will be developed in the foreseeable future. Therefore, efforts to maintain diversity must also address the socioeconomic, political and cultural factors involved.

There are a whole set of scientific methodologies and technologies available how to help maintain biodiversity. But none of them will really yield the desired results without the active awareness and participation of all human beings, from little children to the elderly conservation of biodiversity cannot be responsibility that is left any longer at someone else's doorstep, be it the government or the environment department or activists or science laboratories or national parks. All of us have to act.

India is blessed with more than sixteen bio-climates which enable us to produce a variety of herbal plants. A happy combination of modern

biotechnology with the rich natural diversity could produce good results that will extend far beyond the borders of this state.

In bio diversity, only a few countries like India, China, Brazil, Indonesia and Mexico are very rich. One of the core competences of India is biodiversity. Biodiversity and technology combined will yield value added products.

India is rich in herbs, germ plasm and microorganisms. Industrially developed countries import these bio-resources in the raw form from the add value to them for export to developing countries including India as special seeds, medicines and bio materials, fully protecting the patents of these products.

Instead of allowing export of such resources and importing value added products at high cost, India must add its own technology for conversion of such resources to value-added products for use in domestic requirement and also for export.

### **Vision to Mission**

Nuclear power generation technologies, safety technologies and nuclear solid waste management technologies have advanced tremendously over the past three decades. Along with the current climate change concerns nuclear power has found a new respectability. Dr.Kalam has been a strong

Advocate of the idea electricity being generated from nuclear power for civilian use.

### **Power from municipal waste**

In the power generation sector of the energy economy, we need to fully use the technologies now available for generating power from municipal waste. Today, two plants are operational in India, each plant generating 6.5 MW of electric power studies indicate that as much as 5800 MW of power can be generated by setting up 900 electric power plants spread over different parts of the country which can be fuelled by municipal waste. The electric power generation and the creation of a clean environment are the twin advantages.

We need to evolve and develop specific integrated missions sector wise to take the country forward on the path to self sustaining development. These missions will provide the trust for the realization of a developed India in a time bound manner. They will also provide large scale employment opportunity for the youth through creation of various types of industries and enhancement of the national infrastructure.

### **Communicating Science**

Dr.Kalam himself symbolizes the scientific Indian in the minds of many people. At the inauguration of the National conference on vision 2026

– challenges in science communication in New Delhi on 26 November 2006, he spoke about an Indian scientist who has spent much of his life in communicating science to people, especially children. The scientist is Prof. Yashpal and the speech was delivered on the occasion of his eighty first birthday.

When he was director of the space application centre, and later as secretary general for UNISPACE and the chairman of UGC and in whatever task he undertook, his mission was to empower the children and the youth, particularly the rural village folk, with proper education and skills. NCERT has prepared the national curriculum frame work under Prof. Yashpal's leadership and modified the CBSE syllabus for promoting creative education at all levels through the application of the learning by doing concept.

The future challenges of science communication have several dimensions. The value of science has to be propagated to people at large and they should be made to realize the role played by science in their day-to-day life. Youngsters should be motivated to enquire into science.

The innate fear that Science is a difficult subject should be removed from the minds of the children through easy-to-understand, interesting, creative presentations by the science communicators. Research, discoveries and development in one area of science that has to be communicated to other

areas so that valuable products can be generated through convergence of information, communication, bio-technology and nano sciences.

A new science called intelligent bioscience is on the horizon which would lead to a disease free, happy and more intelligent human habitat with longevity and high human capabilities.

Dr. APJ Abdul Kalam's many interactions with school children, parents, teachers and educationists. He has been said that our existing educational process tends to emphasize learning by memory rather than strengthening creativity. The essence of science and technology on the other hand is embedded in two of the most fundamental impulses, the desire to discover, and the desire to invent. It is vital that our education process nurtures and nourishes these two impulses.

### **Discussion**

The three books- Indomitable Spirit, Ignited Minds, The Scientific Indian- authored by Dr APJ Abdul Kalam inhere Self-Reliance throughout the chapters. Almost all the title of the chapters in the books inhere the concept self-reliance and it is found that there is a shade of strong self-reliance throughout the content of the books.

Some of the chapters include the concept **Self-reliance** directly in the content. One example is shown in the page no. 45 of Indomitable Spirit



which explains the mission of education. “ Creativity in the education system can be promoted by reducing the theoretical burden at the primary level, progressively increasing it at the secondary level, and finally leading to higher level teaching and creation of *self-reliance* among students to undertake entrepreneurship and be employment generators rather than employment seekers.”

Some relevant aspects related to self reliance are as follows

1. According to Dr Kalam a good educational model is the need of the hour to ensure that students grow to contribute towards the economic growth of the nation. The entire education system has to be based on capacity building comprising five components: **research and enquiry, creativity and Innovation, capacity to use high-end technology, entrepreneurship and moral leadership.**
2. The educational system should highlight the importance of entrepreneurship.
3. Science is linked to technology through application. Technology is linked to economy and environment through manufacture.
4. One of the important Indicators of a developed nation is the literacy level. It requires the participation of all the stakeholders starting from the young.

5. Dr Kalam visualised a competitive developed India
6. Knowledge though closely linked to education, comes equally from learning skills such as those possessed by our artists, craftsmen, hakims, vidyas, philosophers and saints as also our house wives.
7. The ability to create and maintain the knowledge infrastructure, to enhance skill and increase productivity through the exploitation of advances in various fields will be the key factors in deciding the prosperity of this society.
8. Rural development is an essential need for transforming India into a knowledge super power and high band width rural connectivity is the minimum requirement to take education and health care to the rural areas.
9. Transform the nation into a knowledge society with IT as the linking tool.
10. We need to evolve and develop specific integrated missions sector wise to take the country forward on the path to self sustaining development
11. Youngsters should be motivated to enquire into science.

**New thoughts, ideas, educational vision related with self- reliance  
in the writings of Dr. A. P.J Abdul Kalam**

In the three books Dr APJ Abdul Kalam introduced a number of new ideas, new thoughts and new vision. There is no doubt that all the books aim at a developed Nation which underlines the concept self-reliance among the people of the nation. He has given enough space to teachers, students, women, scientists, farmers, and thus all members of society in the development of the nation.

In the Page 22 of ‘ Indomitable spirit’, Dr Kalam introduced a *new thought* by saying the role of the teacher as ‘*Proverbial Ladder*’. This is used by everyone to climb up in life but the ladder itself stays in its place.

In the page 30 *his vision* is teacher creates self-confidence in the students and helps them inculcate the ‘*I can do it*’ spirit.

Many time Dr Kalam used self-confidence, enterpreunership, self organising networks, gainful employment, self-respect in the writings.

He represents students as lifelong learners through the technological skills which is required for sustained economic development.

He used ‘Autonomous learners’ means self-directed, self-controlled lifelong learners which highlight the concept self-reliance.

His vision for new India will emerge out of the combination of biotechnology, biosciences and agriculture sciences and industrial development. (Ignited minds)

Tele education, tele medicine, e-commerce and e-judiciary initiatives and Satellite communication explained in Ignited minds are new thoughts for spurt of India.

Dr.Kalam has been a strong Advocate of the idea electricity being generated from nuclear power for civilian use.

A new science called intelligent bioscience is on the horizon which would lead to a disease free, happy and more intelligent human habitat with longevity and high human capabilities.

## **Discussion**

Dr Kalam is a man with big vision for development. Hence in these three books Dr Kalam introduced and developed his thoughts and ideas clearly. Here he used a number of words related to Self-Reliance. These are Self-respect, Self-confidence, Self-Sustenance, entrepreneurship etc.

## **Conclusion**

Dr Kalam introduced new thoughts based on self-reliance. He has a deep concern on some vital issues and at the same time suggests strong measures to solve these issues. With some magical words spoken directly from heart and inspiring thoughts he wanted everyone to evolve and shape life towards innovation.

## CHAPTER 5

### SUMMARY

- *Restatement of Problems*
- *Research Questions*
- *Objectives of the Study*
- *Methodology*
- *Major Findings*
- *Educational Implications*
- *Suggestions for further research*

This chapter presents a summary of the work done along with major findings from the analysis, educational implications of the study, and suggestions for further research.

### **Restatement of the problem**

The present study is entitled as “**SELF- RELIANCE IN THE WRITINGS OF DR. A.P.J ABDUL KALAM**”.

### **Research questions**

The investigator aims at answering certain research questions in the present study which are as follows;

1. How does self- reliance reflect in the writings of Dr APJ Abdul Kalam?
2. What are the new thoughts, ideas, educational vision related with self- reliance in the writings of Dr. A. P.J Abdul Kalam?

### **Objectives of the study**

The objectives of the present study are as follows

3. To analyze self reliance in the writings of Dr. A.P.J Abdul Kalam

4. To find out new thoughts, ideas, educational vision related with self-reliance in the writings of Dr. A. P.J Abdul Kalam .

### **Methodology**

The study was intended to find out self-reliance in the writings of Dr. A P J Abdul Kalam. The investigator adopted book analysis as the method of analysis. The investigator is expected that the method is highly useful to explore the concept inherent in the books written by Dr APJ Abdul Kalam.

### **Major Findings**

The three books- Indomitable Spirit, Ignited Minds, The Scientific Indian- authored by Dr APJ Abdul Kalam inhere Self-Reliance throughout the chapters. Almost all the title of the chapters in the books inhere the concept self-reliance and it is found that there is a shade of strong self-reliance throughout the content of the books.

Some of the chapters include the concept **Self-reliance** directly in the content. One example is shown in the page no. 45 of Indomitable Spirit which explains the mission of education. “ Creativity in the education system can be promoted by reducing the theoretical burden at the primary level, progressively increasing it at the secondary level, and finally leading to higher level teaching and creation of *self-reliance* among students to undertake



entrepreneurship and be employment generators rather than employment seekers.”

Some relevant aspects related to self reliance are as follows

- According to Dr Kalam a good educational model is the need of the hour to ensure that students grow to contribute towards the economic growth of the nation. The entire education system has to be based on capacity building comprising five components: **research and enquiry, creativity and Innovation, capacity to use high-end technology, entrepreneurship and moral leadership.**
- The educational system should highlight the importance of entrepreneurship.
- Science is linked to technology through application. Technology is linked to economy and environment through manufacture.
- One of the important Indicators of a developed nation is the literacy level. It requires the participation of all the stakeholders starting from the young.
- Dr Kalam visualised a competitive developed India

- Knowledge though closely linked to education, comes equally from learning skills such as those possessed by our artists, craftsmen, hakims, vidyas, philosophers and saints as also our house wives.
- The ability to create and maintain the knowledge infrastructure, to enhance skill and increase productivity through the exploitation of advances in various fields will be the key factors in deciding the prosperity of this society.
- Rural development is an essential need for transforming India into a knowledge super power and high band width rural connectivity is the minimum requirement to take education and health care to the rural areas.
- Transform the nation into a knowledge society with IT as the linking tool.
- We need to evolve and develop specific integrated missions sector wise to take the country forward on the path to self sustaining development
- Youngsters should be motivated to enquire into science.
- Many time Dr Kalam used self-confidence, enterpreunership, self organising networks, gainful employment, self-respect in the writings

- He represents students as lifelong learners through the technological skills which is required for sustained economic development.
- He used 'Autonomous learners' means self-directed, self-controlled lifelong learners which highlight the concept self-reliance.
- His vision for new India will emerge out of the combination of biotechnology, biosciences and agriculture sciences and industrial development. (Ignited minds)
- Tele education, tele medicine, e-commerce and e-judiciary initiatives and Satellite communication explained in Ignited minds are new thoughts for spurt of India.
- Dr.Kalam has been a strong Advocate of the idea electricity being generated from nuclear power for civilian use.
- A new science called intelligent bioscience is on the horizon which would lead to a disease free, happy and more intelligent human habitat with longevity and high human capabilities.

### **Educational Implications**

The present study was a qualitative one in which the content of the books of Dr APJ Abdul Kalam was analysed to search for self-reliance. Self-Reliance is a very important aim of education for the development of an

individual and thus the development of the nation. The major contributions of the study are as follows.

- It is known that educators contribute immensely to the education. Hence the life of educators and their contributions are to be given to students through lectures of experts.
- Schools need to transform into the centre of knowledge and skills.
- Seminars and projects to be done in the educational institutions in the innovative concepts
- Teachers can motivate students and make them aware of enterpreunerial skills
- Programmes to be conducted to increase self-respect, and independence among students
- Students should be motivated to use the modern technologies like computer and internet in their learning.
- Value education should be given from lower level to higher education.

### **Suggestions for further research**

The following are the suggestions for further research related to the present study.

1. The contributions of Dr APJ Abdul Kalam to society are immense. Hence Contributions of Dr APJ Abdul Kalam is to be studied for the benefit of all.
2. Only three books were analysed in the present study. So a detailed study is to be conducted through all the books written by Dr APJ Abdul Kalam with respect to Self-Reliance
3. Similar study can be conducted with the books of other educational thinkers.

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