WELCOME TO THE WORLD OF AEROSPACE PALACE INTERNATIONAL

Address: Flat 1, Alhaji Biobaku House, Asero, Abeokuta, Ogun State, Nigeria
Postal Address: P.O. Box 6929, Sapon, Abeokuta, Ogun State, Nigeria
Email: ceo@aviationpalace.space. aviationpalace@gmail.com
Website: www.aviationpalace.space
Telephone: +2348052456889, +2347033744413

# AEROVERSITY

## (Formerly Aerospace Palace Academy)


## A NIGERIAN ONLINE TRAINING INSTITUTION DESIGNED WITH A GLOBAL AGENDA

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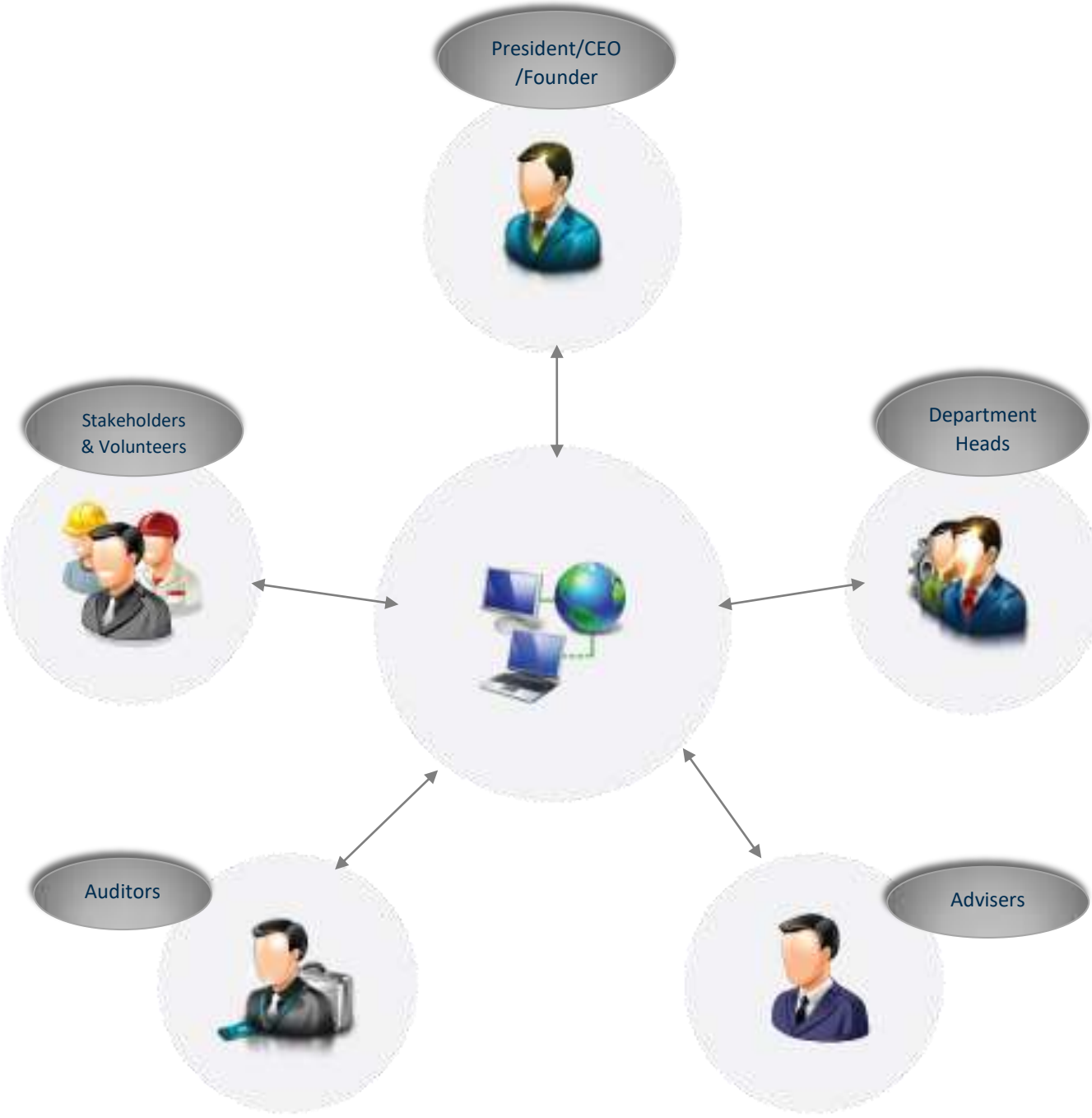
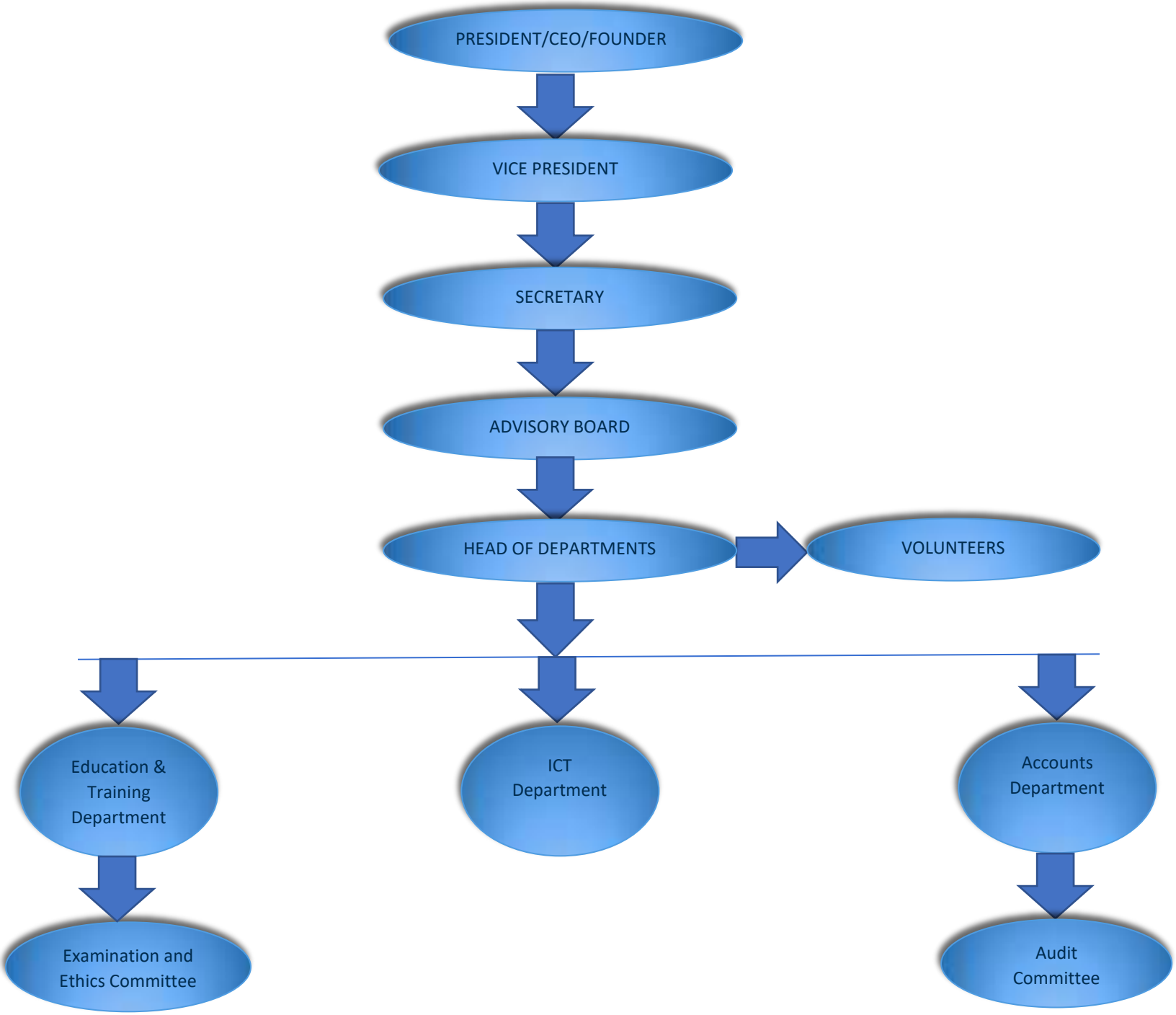


# OUR ORGANOGRAM



# OUR CERTIFICATION

ACCREDIATED ORGANIZATION

IYF®
Empowering youth for better world.

The NGO Accreditation Center

*Hereby certify that*

**Aerospace Palace International, Nigeria**

Meets the IYF accreditation standards certified by the International Youth Federation and is hereby granted "**Accredited Organization**" status with all the privileges of regional and international professional recognition.

Franclin Oliva
Chair, International Releations Commission

Dana Storozuk
Director, NGO Accreditation Center

IYF ACCREDIATED ORGANIZATION

Accreditation date: **15-Jul-2018**
Certificate Number: **AO/00001160**
Valid until: **14-Jul-2023**

CERTIFIED DOCUMENT
**iyfweb.org**

*Empowering youth for better world.*

Legal note: this certificate is valid for five years unless suspended or withdrawn and more information regarding this certification is available at www.iyfweb.org | Contact accreditation@iyfweb.org and upon request from the International Youth Federation.

INSTITUTE FOR WOMEN OF AVIATION WORLDWIDE
WOMEN FRIENDLY
2018
CERTIFIED
AEROSPACE PALACE INTERNATIONAL, NIGERIA

## AEROSPACE PALACE INTERNATIONAL

**Welcome to Aerospace Palace International, Nigeria. Welcome to:**

**(i)** A Palace without walls
**(ii)** A Palace without a king
**(iii)** A Palace without a queen
**(iv)** A Palace without a servant
**(v)** A Palace where nobody is superior
**(vi)** A Palace where nobody is inferior
**(vii)** A Palace where your opinions count
**(viii)** A Palace where everybody is equal
**(ix)** A Palace where we uphold the banner of truth always
**(x)** A Palace where the ONLY key for promotion is your INTEGRITY and not your qualifications.

## WE SUPPORT SDGs 4, 5, 8, 9 & 10






# EXECUTIVE SUMMARY

In Nigeria, an average Nigerian lives on amount less than $2 (N700) per day and hence cannot afford the huge cost of education; especially Aerospace and STEM education. Hence, this is a problem we designed our project to solve by making education accessible, affordable and cheaper for Nigerians. Around the globe, particularly in developing countries, women and youths lack opportunities to obtain the education that they so desperately need and deserve. Cultural stigmas, religious restrictions, and oppressive laws keep women trapped in desperate poverty and ignorance, unable to obtain the education that might give them hope. History has shown time and again that educating girls provides benefits to the economies of nations. In many cases, changes in cultural attitudes and the legal status of women have resulted in economic benefits that break the cycle of centuries of poverty in just a single generation. The fields of Science, Technology, Engineering, and Mathematics (STEM) are critical to any nation seeking to grow in the 21st century global economy. A robust and democratic economy will require citizens thoroughly equipped to compete in the science and technology fields. STEM-focused education responds to the reality that a nation's future will be built its capacity for innovation and invention.

Our feasibility study showed that majority of our target audience spend most of their time on their mobile phones and laptops using various applications on the go than they do inside a conventional classroom, hence we decided to take our virtual classroom to every home where a phone, laptop and internet facilities exist. Hence, we support our innovation by developing an e-learning innovation center and our official education mobile App. We believed that once, not long ago, classroom space was considered an essential component for nearly every school and training institutions. You'd fill it with desks, chairs, telephones, a fax machine and photocopier and then people, who'd arrive each day at 7am and leave by 7pm. Most of us still utilise classroom space to some degree, but increasingly its role is shifting from essential to optional extra because the powerful mobile devices, the cloud and social collaboration tools are enabling staff and teachers/educators to step outside the traditional confines of classroom and chalkboard. If colleagues need us, we can chat, share information and collaborate seamlessly, wherever we happen to be. This freedom gives education greater agility and offers staff a work-life balance that is no longer a nice perk but instead a given. **Hence, the need for our e-learning innovation center and official mobile App for Android, IPhones and Window Users**.

**Our Online programmes were** designed especially for the youths and women; currently we have several projects on-going. Our mission is to stimulate a lasting interest in the STEM disciplines, with the goal of encouraging students to pursue careers in these fields. This is accomplished by actively involving students in the support of authentic research currently being conducted on the International Space Station (ISS) or in a NASA ground-based laboratory. This will inspire young generation in developing nations and underserved group in developed nations around the world to pursue careers in science, technology, engineering, and mathematics (STEM); for the future will be built on people's capacity to innovate, invent, and solve problems creatively. Through collaboration with NASA and NASA sponsored researchers, we create an educational mini-curriculum for the high school or middle school classroom that engages students as research assistants, providing data for the Principal Investigator, (PI).

Aeroversity obtained the Affiliate membership status of the "European Alliance for Innovation" in order to foster excellence in research and innovation on the principles of transparency, objectivity, equality, and openness. Our guiding principle is community cooperation to create better research, provide fair recognition of excellence and transform best ideas into commercial value proposition. Also to create an environment that rewards excellence transparently, and builds recognition objectively regardless of age, economic status or country of origin, where no membership fees or closed door committees stand in the way of your research career. Through these shared values, we lead the way toward advancing the world of research and innovation, empowering individuals and institutions for the good of society to fully benefit from the digital revolution.

Our curriculum was designed taking the following competitive advantages and our unique selling point into consideration:

**(1) Specialised STEM Education:** We have carefully selected our area of specialization by focusing on a unique and specialized STEM aspect of education upon which the pivot on which the 21st century economy of any nation revolves, e.g banks, hospitals, satellite applications, research institutes, institutions, etc

**(2) Networking with world-class researchers and Principal Investigators (PI):** The project has been designed to give our students the opportunity of relating with and being mentored by renowned researchers across the world at no cost. Student work as research assistants and support the work of the PI, while meeting the educational goals of the classroom and final student data is provided to the PI for possible inclusion into research databanks. Some of the researchers (Principal Investigators) already on ground are:

(i) Dr. Abba Zubair of the Mayo Clinic at Jacksonville, FL
(ii) Dr. Joseph Wu of Stanford University
(iii) Dr. Peter Lee of The Ohio State University
(iv) Dr. Cheryl Nickerson of the Biodesign Institute at Arizona State University
(v) Dr. Louis Stodieck of University of Colorado, Boulder
(vi) Stefanie Countryman ofUniversity of Colorado, Boulder
(vii) Dr. Sharmila Bhattacharya, Head of the Biomodel Performance and Behavior Laboratory at NASA
(viii) Mary Ann Hamilton of Butterfly Pavilion, Colorado
(ix) Dr. Julyan Cartwright of Laboratory for the Study of Crystallography in Granada, Spain
(x) Dr. C. Ignacio Sainz Diaz of Laboratory for the Study of Crystallography in Granada, Spain.
(xi) Dr. Catharine Conley, a NASA Scientist
(xii) Dr. Nate Szewczyk, genetic researcher with NASA, USA

**(3) Partnerships:** In terms of partnership, we have been able to establish concrete relationships with the following organisations as a result of which we have access to invaluable educational and instructional materials. Some of the researchers (Principal Investigators) already on ground are:

(i) Space Foundation, USA
(ii) America Institute of Aeronautics and Astronautics (AIAA), USA
(iii) European Space Board, France
(iv) NASA researchers
(v) Amateur Radio on International Space Station, USA
(vi) Experimental Aircraft Association, USA
(vii) Astronomers without boarders, USA
(viii) IIE

**(4) Long-Term goal for Nigeria:** The project's long-term effects aim to contribute to the betterment of the country as a whole, both by engaging and educating youth, generating employment opportunities, and reversing the status of Nigerian Aviation and Aerospace industry.

**(5) Excitement of Aerospace:** Airplanes and rocket, by nature, foster excitement, and are often beyond the reach of many African youth. Thus, this project will naturally attract young people, and provide a unique and valuable platform both for creating individual sustainment, fulfillment, and preventing the perpetuation of corruption and illegal activities by providing a legitimate alternative.

**(6) Youth Engagement:** Aerospace is mesmerizing to young people, and provides avenue for inspiration that they may not have otherwise. There is an excitement associated with the word airplane that creates the spirit of adventure, the project will use the excitement of aviation to educate and inspire the youth in Africa and their counterparts across the world, engage their minds in meaningful and rewarding investment, thereby using it as a veritable tool to address the menaces of corruptions that Africans, especially the youth, get involved in and reduce the chances of being lured into secret cults and other unlawful societies.

**(7) Conflict Management and Resolution:** The project has the capacity to make significant contributions in advancing the understanding of peace and conflict issues, as its monitoring and evaluation component will yield important data from vulnerable populations in Nigeria, particularly those in the Niger Delta region. The project is channeled towards bringing the youths of different background and beliefs together under one umbrella, Managing Crisis and Sustaining Peace among the youths using aviation as a veritable tool for unity, peace, motivation, and social re-engineering of the African youth.

**(8) Quality and Safety Assurance:** The project is designed to fill a much needed and life-saving gap in Aerospace and medical transportation (Aeromedicine) in Nigeria.

**(9) International Civil Aviation Organisation (ICAO) Standard:** Our curriculum was designed **b**ased on ICAO SMS four pillars:

(xiii) Safety Policy;
(xiv) Risk Management;
(xv) Safety Assurance; and
(xvi) Safety Promotion

**(10) Excellent Features**: We have incorporated excellent features into our curriculum to make it user-friendly.

**(11) Low Cost:** A simple yet powerful Enterprise Solution at a small business price.

**(12) Anywhere, Anytime (+Anyone):** Access next generation Web Application from any Internet Browser.

**(13) Worldwide Support**: World class 24/7/365 LIVE support with worldwide experts

**(14) Accreditation**: Our certification and accreditation by International Youth Federation, UK and the International women of Aviation, USA speaks volume about our projects in Nigeria, Uganda and across the world.

**(15) European Alliance for Innovation**: Aeroversity, Nigeria has been inducted by the "European Alliance for Innovation" in order to foster excellence in research and innovation on the principles of transparency, objectivity, equality, and openness. Our guiding principle is community cooperation to create better research, provide fair recognition of excellence and transform best ideas into commercial value proposition. Also to create an environment that rewards excellence transparently, and builds recognition objectively regardless of age, economic status or country of origin, where no membership fees or closed door committees stand in the way of your research career. Through these shared values, we lead the way toward advancing the world of research and innovation, empowering individuals and institutions for the good of society to fully benefit from the digital revolution.

Our main target groups are in the range of 10-45 years and the the CIA World Factbook gives us the figure to be 177,090,462 as shown below:
(41,506,288) + (39,595,720) + (19,094,899) + (18,289,513) + (30,066,196) + (28,537,846) = 177,090,462
Resulting in a percentage of 92.8% of the entire population, out of which we are targeting approximately 60% of the group.
Hence, **OUR MINIMUM TARGET SALES VOLUME** = 106,254,278 (approximately)
**UNIT COST OF THE COURSE PER STUDENT** = $1USD
It has been estimated that we need approximately $93,833.00 (USD) to set up our e-learning innovation center.
With a minimum target of 106,254,278 population @ the rate of $1USD each
Total amount expected = $106,254,278(USD) approximately
If we invest a minimum of $93,833 (USD) with the expected sales volume of 106,254,278, then:
Our break-even point is calculated as ($93,833)/( $106,254,278)=0.0009
This interprets to the fact that in less than a year, we are expected to break even.
Our target is to empower most Nigerian youth and provide cheap and affordable education for all by the year 2025. With our new approach, we intend to work as smart and fast as possible in order to gain our large share of the market. Hence, it is our mandate to break even within a year but at most within the period of 2018 and 2025.

# ABOUT US

From inception, the idea was conceived as Ola-great Multilinks Nigeria Enterprises which later metamorphosed into Aerospace Palace International, Nigeria in the year 2016. In the year 2017, the company gave birth to Aeroversity and in 2018 created Aerospace FM Radio, Nigeria which is an online radio designed to promote STEM education among the youths.

In 2018, we received our accreditation from the International Youth Federation (IYF), UK; this accreditation status clearly reflects our solid commitment and our team dedication to supporting youth empowerment to achieve sustainable, better and empowered youth by 2030. Also, Aeroversity obtained the Affiliate membership status of the "European Alliance for Innovation" in order to foster excellence in research and innovation on the principles of transparency, objectivity, equality, and openness. Prior to this, in 2017 due to our research and developmental projects in Africa; the US government gave his organisation the permission to start transacting businesses with US government, organisations and agencies under the following identities: DUNS Number: 561294431, NCAGE Number: SCLP2, and System Awards Management Registration: SAMAPINProd01.

Aeroversity is a world where intellectual, entrepreneurial, and technical talent can be fostered for the prosperity of all. This prosperity is vital to developing nations' future economic growth and depends on education systems that support economic development while helping all students to become innovators and inventors, self-reliant and logical thinkers, and technologically proficient problem solvers. **Aeroversity** sees that Democracy hinges on the broadest possible dissemination of quality scientific education and has created an interface where STEM students and teachers can improve a failed education system through self-organization.

Aeroversity is an innovative organization dedicated to promoting increased participation in post-secondary Science, Technology, Engineering and Mathematics (STEM) education in developing nations and underserved group in developed nations around the world. Our education programs are a direct response to the reality that our future will be built on innovation and invention and creative problem-solving. To meet this need, we collaborate with schools, governments, organizations, and philanthropists to accomplish its mission. We are committed to nurturing world-class student STEM projects that can contribute to and support technological innovation in developing nations. The STEM fields are critical to any national economy seeking to grow in a 21st century global economy.

Aeroversity was founded by Ogunbiyi Abiodun; a young man who understands firsthand how education can positively impact one's life and how education in STEM can bring about an immense change. Our organization is founded on the fundamental belief that giving a high-quality STEM education to young people in developing nations will bring about immense and powerful changes for the better. We believe that students in developing nations with access to STEM education will be able to obtain meaningful employment and lifelong self-sufficiency as well as foster development in their home countries.

**STEM to Spur Infrastructure and Industrialization in Developing Countries:**
The fields of Science, Technology, Engineering, and Mathematics (STEM) are critical to any nation seeking to grow in the 21st century global economy. A robust economy will require citizens thoroughly equipped to compete in the science and technology fields. STEM-focused education responds to the reality that a nation's future will be built its capacity for innovation and invention.

**Our Response to the Need**
The Aeroversity's STEM Innovation is determined to improve scientific and technological educational opportunities for students in Nigeria and other developing nations. By creating innovative solutions that help women and youths overcome barriers to education, we believe that we can slowly begin to turn the tide that has for so long held back talented, energetic, and intelligent young people who can be incredible assets to their communities, their nations, and their world.

**Gaining Access to STEM Education Opportunities**
The lack of access to science, technology, engineering, and math (STEM) related opportunities affects technological and industrializing a nation: as the world depends more on science and technology, the need for STEM education for all students will be critical in the coming decades. STEM disciplines are critical to any nation seeking to grow in the 21st century global economy. A robust economy requires citizens to be thoroughly equipped to compete in science and technology. STEM-focused education responds to the reality that a nation's future will be built on its capacity for innovation and invention. Engaging education experiences in science and technology incorporate and integrate multiple disciplines, including reading, writing, math, critical thinking, team-building, and technical problem-solving. STEM projects that emphasize hands-on activities with technology integrate learning in ways that connect disciplines and relate them to each other. This effort is important because it provides a way for developing nations to spur meaningful development through STEM projects. It will encourage governments to take the steps necessary for industrialization and development, opening up endless opportunities for their young people. Our approach is a direct response to the realization that our future will be built on capacity for innovation and invention and creating problem solving.

## OUR GOALS & OBJECTIVES

Our primary goal is to encourage STEM education in developing countries, positively impacting young people's education in STEM worldwide. Our STEM Innovation strives to achieve this goal by focusing on four primary objectives.

1. To provide world-class education for Nigerians at the cheapest price ever.

2. To encourage and inspire young people in developing countries to pursue post-secondary education and careers in scientific and technical fields by hosting STEM workshops that foster their interest.
3. To bring students from other developing nations to adopt our mobile application and attend our online and virtual schools to study science, technology, engineering, and mathematics wherever they are in the world.
4. To create supplementary programs and encourage implementation of STEM programs at the schools in Nigeria and other developing countries that support these students and encourage them to view science, technology, engineering, and mathematics as a tool to instill innovative and problem-solving skills.

## OUR PHILOSOPHY

Our philosophy is built around three core values:

**(1) Innovation**
To help developing nations meet the technological demands of the 21st century by providing an innovative way to foster the skills necessary to bring about the necessary changes. We use multidisciplinary STEM learning tools such as rocket kits, aircraft kits and other hands-on tools to provide students with real-world experiences that expose them to technical subjects and creative problem solving.

**(1) International Cooperation**
People and cultures around the world can make valuable contributions to the lives of all people. When individuals from differing cultural and geographical backgrounds meet and cooperate toward common goals, they create a powerful synergy. An international exchange of diverse knowledge, skills, and cultures can cause world-changing things to happen. This exchange starts with the more advanced nations sharing their technology and skills with the developing world. The outcome is a world where all nations have a chance to prosper, benefitting both the haves and the have-nots by reducing dependence.

**(2) Equity and Empowerment in Science, Technology, Engineering, and Mathematics (STEM)**
We seek gender equality in education for females across all parts of society in every part of Nigeria and the world at large. We believe that girls have a right not only to basic education but to advanced education in STEM. To correct this all-too-common inequality, we believe we must provide resources and programs that enable, encourage, and support women's educational opportunities in STEM and that integrate young women and young men into a mutually supportive educational environment.

## OUR VISION

Aerospace Palace Academy, Nigeria STEM Innovation is a world where intellectual, entrepreneurial, and technical talent can be fostered for the prosperity of all. This prosperity is vital to developing nations' future economic growth and depends on education systems that support economic development while helping all students to become innovators and inventors, self-reliant and logical thinkers, and technologically proficient problem solvers.

**Our Core Values**

- Hope
- Persistence
- Passion
- Innovation
- Leadership
- Integrity
- Equality

Each of our core values defines who we are and how we work towards our mission, goal and vision.

**(1) Hope:** We believe that cultural stigmas, religious restrictions, and oppressive laws prevent girls and boys in many developing countries from obtaining the education they deserve. By sharing inspiring hope in these students, we give them hope to achieve their dreams.

**(2) Passion:** Our teachers and educators inspire students and act as their role models: the best solution to students' education crisis. Let's fuel a passion for learning in all the young women and men around the world and see the real change.

**(3) Persistence:** We support young people willing to work hard to achieve their dreams, willing to spend the extra time and energy to succeed and willing to risk the consequences of change. *Persistence* is the key to the continued progress of women in society.

**(4) Integrity:** We demonstrate *integrity* toward our commitment and vision by focusing all of our efforts on creating innovative solutions and projects that address two primary concerns: economic development and gender equality.

**(5) Leadership:** We believe it is important to encourage students in developing nations to take *leadership roles* as a part of their educational journey if they are to become *leaders* in their communities and in their chosen professions.

**(6) Innovation:** We use *innovative* multidisciplinary STEM learning tools such as STEM K-12 resources, the rocket kits, aircraft kits, Raspberry Pi kits, and others to foster student interest in STEM fields. *"Aeroversity is where Innovation happens. The mobile App and the rocket and aircraft kits serve as the "vehicle" to reinforce Science, Technology, Engineering and Mathematics concepts as well as to teach valuable life skills such as teamwork, leadership, and innovative thinking."*

**(7) Equality:** We believe that empowering women through STEM education can *abolish gender inequality*. Our vision is of a world where women receive the same educational access and opportunities as men.

**STEM Education is Critical to Solving Problems in the Developing World**

**Lack of Opportunity for STEM Education in Developing Countries; A Dearth of Infrastructures and Development**

To grow the industrial and technological sectors of an economy, you need skilled, trained workers. UNESCO, the United Nations Educational, Scientific, and Cultural Organization, has stated that "Capacity in science and technology is a key element in economic and social development.

## JUSTIFICATION

The Sustainable Development Goals (SDGs) seek to change the course of the twenty-first century by addressing key challenges such as poverty, inequality and violence against women, lack of qualitative education. Women's empowerment is a precondition, as women have a critical role to play in efforts to achieve all of the Sustainable Development Goals, with many targets specifically recognizing women's equality and empowerment both as the objective and as part of the solution.
Space matters when it comes to the right of women and youths to benefit from science and technology and also as a dimension of achieving the SDGs. Space-related science, technology, innovation and exploration will contribute to bettering humankind and the sustainability of our planet within many areas such as agriculture, climate change, disaster response, transportation, health, communication, banking and many more spinoffs and applications. We must strive to ensure that women and youths have access to these benefits, which unfortunately is now not a given. Moreover, we must also ensure that needs specific to women's and girls' empowerment and gender equality are also prioritized and addressed with urgency and utmost attention.

| | | |
|---|---|---|
| **29%** | **$12 trillion** | **90%** |
| Globally, only 29% of science researchers are women, although several developing nations are showing a positive trend. | Reducing the gender gap may bring as much as $12 trillion to the global GDP in only few years' time, by 2025. | It has been estimated that 90% of future jobs will require ICT skills, and some 2 million new jobs will be created STEM related fields. |
| **11%** | **11 to 15 years** | **20%** |
| Historically, over 560 people travelled to space. Only 11% of total space travellers have been women. | Girls gain strong interest in STEM subjects at the age of 11. They tend to lose it already at the age of 15. | Women represented only 20% of space industry employees in 2016, which is on par with numbers from 30 years ago. |


**Goal 4 on "Quality education"** reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. One of the aims of SDG 4 is to achieve equal and universal access to a quality higher education, which is of utter importance for the STEM fields, as the gap between boys and girls is growing with the level of education. This has direct implications on the opportunities for a better employment and thus results in disparities between salaries of man and women. STEM education plays a major factor in diminishing the disparities as STEM jobs tend to offer highly paying jobs. Space represents a swiftly growing industry and its current value of over $380 billion is estimated to triple in the next 30 years.


**Goal 5 on "Gender equality"** is known as the stand-alone gender goal because it is dedicated to achieving these ends. SDG 5 targets include ensuring women's empowerment - including at decision-making levels in leadership - in political participation, economic empowerment, ensuring a life free of violence and elimination of harmful practices, control over reproductive health and rights, and reforms to give women access to economic resources including natural resources. Importantly, one of the targets (5b) calls for enhancing the use of enabling technology, in particular information and communications technology, to promote the empowerment of women. In order to achieve gender equality and empower all women and girls, the United Nations Office for Outer Space Affairs wishes to address Sustainable Development Goal 5 in an all-inclusive manner and especially promote space technology in line with target 5b.

## WHAT HAS BEEN DONE

The first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE I) was held in 1968. In June 2018 we marked its 50th anniversary (UNISPACE+50) with a dedicated event that offered an appropriate venue to take stock of the contributions of all three UNISPACE conferences, held in 1968, 1982 and 1999 respectively, to global governance of space activities. At its 59th Session in June 2016, the Committee on the Peaceful Uses of Outer Space endorsed seven thematic priorities for the implementation of UNISPACE+50, including thematic priority 7 (TP7) "capacity-building for the twenty-first century", which is the most cross-cutting aspect of the initiative. Member States seek to define new innovative and effective approaches to overall capacity-building and development needs with a special focus on empowerment of women in developing countries.

# ONLINE STEM EDUCATION AND AEROSPACE MICRO-LESSON

"Real-world connections..."


"make your classroom..."

"come alive!"

# FORCE BALANCE!

**Force Balance** is when all forces are equal. Think of a cruising plane.

## LIFT!

Lift pulls the wing (and the plane) up, and is generated as air passes over the wing.

## THRUST!

Generated by the engines, thrust pushes the plane forward.

## DRAG!

Drag is created when air moves around an object. Drag acts opposite the force of motion. For a moving object like a plane, drag pulls the plane back.

## WEIGHT!

The plane's weight pulls it downward.

**Force Imbalance** is when all forces are ***not*** equal.

Think of someone swinging. A push is stronger than gravity, so up you go! Then gravity pulls you back down.

## ROCKET READY TO BE LAUNCHED INTO SPACE

## SIMULATION LABORATORY

## THE LEARNING PLATFORM


**EDUCATOR LOGIN**

aviationpalace@gmail.com

••••••••••

SIGN IN

Need assistance signing in?

**STUDENT LOGIN**

First Name

Last Name

Teacher Name

SIGN IN

Need assistance signing in?

## ONLINE STEM EDUCATION AND AEROSPACE MICRO-LESSON

Our mission is to stimulate a lasting interest in the STEM disciplines, with the goal of encouraging students to pursue careers in these fields. This is accomplished by actively involving students in the support of authentic research currently being conducted on the International Space Station (ISS) or in a NASA ground-based laboratory. This will inspire young generation in developing nations and underserved group in developed nations around the world to pursue careers in science, technology, engineering, and mathematics (STEM); for the future will be built on people's capacity to innovate, invent, and solve problems creatively.

Through collaboration with NASA and NASA sponsored researchers, we create an educational mini-curriculum for the high school or middle school classroom that engages students as research assistants, providing data for the Principal Investigator, (PI). Currently, we have a collaborative relationship with several NASA or NASA supported researchers. The program is delivered and managed via our website; each teacher being assigned a password protected page for management and program delivery.

During our mission students briefly learn about the scientist and their research, participate in classroom experiments or activity that mirrors the research experiment on the ISS, and then do some type of an analysis and data gathering activity. These hands-on inquiry-based activities are supported by near-real time digital and video images downlinked from orbit and provided to the classroom via our website. Also provided are real time images of a control ground experiment being conducted by BioServe Space Technologies, a NASA Research Partnership at the University of Colorado or elsewhere.

Student research supports the work of the PI, while meeting the educational goals of the classroom and final student data is provided to the PI for review and, if appropriate, inclusion into research databanks.

Our missions typically require between three and seven classroom periods and could involve:

1. Introduction of NASA and its mission
2. Introduction of PI and research focus
3. Instruction on download and use of any required software
4. Conducting the research (the heart of the mission) which may include:
    - (i) Hypothesis development
    - (ii) Observation and photo/video analysis
    - (iii) Data recording and submission
    - (iv) Formulate conclusions
    - (v) Evaluation
    - (vi) Classroom lab activity mirroring the actual research

In conjunction with our partners, we have developed an American Institute of Aeronautics & Astronautics (USA) and Space Foundation (USA) approved curriculum covering over 65 lessons. The mini-curriculum for schools and colleges consists of 65 courses and subdivided in 13 course-packs for easy accessibility. At the end of the pack, we have 10 selected multiple choice questions with 2 each from the 5 topics.

We have designed the course to be offered at a token of just $1USD in order for majority of the youths from various backgrounds to have access to a cheaper and affordable STEM education believing that Democracy hinges on the broadest possible dissemination of quality scientific education and has created an interface where STEM students and teachers can improve a failed education system through self-organization.

Once a course is purchased with a credit card, access is granted to the student immediately via a carefully chosen username and password. (https://skillscenter.co.ug/course/index.php?categoryid=25).

| **Course Name** | **ONLINE STEM EDUCATION AND AEROSPACE MICRO-LESSON** |
|---|---|
| **Degree/qualification** | Certificate |
| **Awarding Institution and accrediting(s) i.e. NCHE, if any )** | Aerospace Palace International, Nigeria |
| **Course Curriculum Author** | Aeroversity, Nigeria |
| **Course overview and aim** | These lessons are easily digestible lessons focused on aerospace principles. Each lesson is broken down into grade levels and is meant to spark conversation and interest in aerospace. Lessons will range from engineering to mathematics, to physics, to highlighting aerospace anniversaries -- all of which will be presented in a way that easily relates to your students. For this programme, we have 65 lessons in all. The mini-curriculum is subdivided into 13 course-packs. At the end of each pack, we have 10 selected multiple choice questions with 2 each from the 5 topics. |

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| | The online STEM Education and Aerospace Micro-Lesson is designed to inspire, influence, and mold the next generation of aerospace scientists and engineers by providing a series of resources and programming to teachers, students, parents, and aerospace professionals. The programs enlighten and engage our global community of future aerospace professionals by helping them learn more about science, technology, engineering, and mathematics. The developing countries have suffered a series of decadence in Aerospace and STEM Education, therefore our mission is to stimulate a lasting interest in the STEM disciplines, with the goal of encouraging students to pursue careers in these fields. This is accomplished by actively involving students in the support of authentic research currently being conducted on the International Space Station (ISS) or in a NASA ground-based laboratory. Through collaboration with AIAA, Space Foundation and researchers, we have created educational mini-curriculum for the university, college, high school or middle school classroom that engages students as research assistants, providing data for the Principal Investigator. |
| **Student characteristics and knowledge level** | - Pupils and Student at all levels<br>- Age 08-15<br>- Age 16-18<br>- Age 19-25<br>- Age 25 above |
| **Student hooks (intrinsic motivation) within the topic-Why this course?** | In Africa, average African lives on amount less than $2 per day and hence cannot afford the huge cost of education; especially Aerospace and STEM education. Hence, this is a problem we designed our project to solve by making education accessible, affordable, cheaper and reachable to an average Nigerian. Around the globe, particularly in developing countries, women and youths lack opportunities to obtain the education that they so desperately need and deserve. Cultural stigmas, religious restrictions, and oppressive laws keep women trapped in desperate poverty and ignorance, unable to obtain the education that might give them hope. History has shown time and again that educating girls provides benefits to the economies of nations. In many cases, changes in cultural attitudes and the legal status of women have resulted in economic benefits that break the cycle of centuries of poverty in just a single generation. The fields of Science, Technology, Engineering, and Mathematics (STEM) are critical to any nation seeking to grow in the 21st century global economy. A robust and democratic economy will require citizens thoroughly equipped to compete in the science and technology fields. STEM-focused education responds to the reality that a nation's future will be built its capacity for innovation and invention.<br><br>Our feasibility study showed that majority of our target audience spend most of their time on their mobile phones and laptops using various applications on the go than they do inside a conventional classroom, hence we decided to take our virtual classroom to every home where a phone, laptop and internet facilities exist. We believed that once, not long ago, classroom space was considered an essential component for nearly every school and training institutions. You'd fill it with desks, chairs, telephones, a fax machine and photocopier and then people, who'd arrive each day at 7am and leave by 7pm. Most of us still utilise classroom space to some degree, but increasingly its role is shifting from essential to optional extra because the powerful mobile devices, the cloud and social collaboration tools are enabling staff and teachers/educators to step outside the traditional confines of classroom and chalkboard. |
| **Learning outcomes** | By the end of the course, students should be able to:<br>• Understand the basic concepts of Aerospace Micro-Lessons<br>• Understand NASA mission and objectives.<br>• Understand the basics of Space Science, Aeronautics and Astronautics<br>• Identify the basic components of an aviation environment, controlled and uncontrolled airports, the forces of flight<br>• Compute some basic mathematics and physics associated with subject matter.<br>• Conducting the research (the heart of the mission) which may include:<br>  ○ Hypothesis development<br>  ○ Observation and photo/video analysis<br>  ○ Data recording and submission<br>  ○ Formulate conclusions<br>  ○ Evaluation<br>  ○ Classroom lab activity mirroring the actual research |
| **Assessments** | Assessment shall be carried out through 10 short multiple questions based on the current course content only. |

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| **Delivery mode** | • eLearning |
| **Course duration** | 1 month – 3 months depending on the student's determination and commitment to the programme. |
| **Sessions in the course:** | In conjunction with our partners, we have developed an American Institute of Aeronautics & Astronautics (USA) and Space Foundation (USA) approved curriculum covering over 65 lessons.<br><br>The mini-curriculum for schools and colleges consists of 65 courses and subdivided in 13 course-packs for easy accessibility. At the end of the pack, we have 10 selected multiple choice questions with 2 each from the 5 topics.<br><br>LESSON PACK 1:<br>(1) Aerospace Micro-Lesson 1 -- The Earth's Hemispheres<br>(2) Aerospace Micro-Lesson 2 -- Orbital Debris<br>(3) Aerospace Micro-Lesson 3 -- Living In Space<br>(4) Aerospace Micro-Lesson 4 -- Large Numbers<br>(5) Aerospace Micro-Lesson 5 -- Observing the Moon<br>LESSON PACK 2:<br>(6) Aerospace Micro-Lesson 6 -- Up, up, and Away in my Beautiful Balloon<br>(7) Aerospace Micro-Lesson 7 -- How Long is a Day<br>(8) Aerospace Micro-Lesson 8 -- Orbital Dynamics<br>(9) Aerospace Micro-Lesson 9 -- Transit of Mercury<br>(10) Aerospace Micro-Lesson 10 -- Jackie Cochran<br>LESSON PACK 3:<br>(11) Aerospace Micro-Lesson 11 -- Gemini VIII<br>(12) Aerospace Micro-Lesson 12 – Airspeed<br>(13) Aerospace Micro-Lesson 13 -- Asteroids and Dinosaurs<br>(14) Aerospace Micro-Lesson 14 -- Spinning Ball of Water in Space<br>(15) Aerospace Micro-Lesson 15 -- Metric Units of Measurement<br>LESSON PACK 4<br>(16) Aerospace Micro-Lesson 16 -- How do Airplanes Fly<br>(17) Aerospace Micro-Lesson 17 -- Parallax and the Size of the Solar System<br>(18) Aerospace Micro-Lesson 18 -- Hedgehog Robot<br>(19) Aerospace Micro-Lesson 19 -- The Mariner Project<br>(20) Aerospace Micro-Lesson 20 -- How Long Is A Year<br>LESSON PACK 5<br>(21) Aerospace Micro-Lesson 21 -- Images from Space<br>(22) Aerospace Micro-Lesson 22 -- The Magnus Effect<br>(23) Aerospace Micro-Lesson 23 -- The Rosetta Mission<br>(24) Aerospace Micro-Lesson 24 -- Measuring the Size of the Universe<br>(25) Aerospace Micro-Lesson 25 -- Antoine de Saint-Exupery<br>LESSON PACK 6<br>(26) Aerospace Micro-Lesson 26 -- Spot the Space Station<br>(27) Aerospace Micro-Lesson 27 -- How High Is It<br>(28) Aerospace Micro-Lesson 28 -- Everyday Drones<br>(29) Aerospace Micro-Lesson 29 -- Divisibility Rules<br>(30) Aerospace Micro-Lesson 30 -- Earth's Temporary Moons<br>LESSON PACK 7<br>(31) Aerospace Micro-Lesson 31 -- Ride a Sounding Rocket (NGSS)<br>(32) Aerospace Micro-Lesson 32 -- Earth's Weather<br>(33) Aerospace Micro-Lesson 33 -- Navigating the Skies<br>(34) Aerospace Micro-Lesson 34 -- Pi Day (002)<br>(35) Aerospace Micro-Lesson 35 -- Hanny's Voorwerp<br>LESSON PACK 8<br>(36) Aerospace Micro-Lesson 36 -- International Day of Human Space Flight<br>(37) Aerospace Micro-Lesson 37 -- Aerial Refueling<br>(38) Aerospace Micro-Lesson 38 -- Sensing Weather from a Distance<br>(39) Aerospace Micro-Lesson 39 -- Crossing the Atlantic by Air<br>(40) Aerospace Micro-Lesson 40 -- Solar Eclipse |

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| | LESSON PACK 9<br>(41) Aerospace Micro-Lesson 41 -- Hoaxes and Bad Science<br>(42) Aerospace Micro-Lesson 42 -- The International Geophysical Year<br>(43) Aerospace Micro-Lesson 43 -- Vapor Trails<br>(44) Aerospace Micro-Lesson 44 -- Rocket Science 101<br>(45) Aerospace Micro-Lesson 45 -- Voyager Missions<br>LESSON PACK 10<br>(46) Aerospace Micro-Lesson 46 -- Atmospheric Pressure<br>(47) Aerospace Micro-Lesson 47 -- Sputnik 1<br>(48) Aerospace Micro-Lesson 48 -- Regular Geometric Figures<br>(49) Aerospace Micro-Lesson 49 -- Prevailing Winds<br>(50) Aerospace Micro-Lesson 50 -- Length of a Day on Different Planets<br>LESSON PACK 11<br>(51) Aerospace Micro-lesson 51 -- Liquids in Microgravity<br>(52) Aerospace Micro-Lesson 52 -- The Wright Brothers<br>(53) Aerospace Micro-Lesson 53 – Calendars<br>(54) Aerospace Micro-Lesson 54 -- Make Your Own Telescope<br>(55) Aerospace Micro-Lesson 55 -- Wingtip Vortices<br>LESSON PACK 12<br>(56) Aerospace Micro-Lesson 56-- Rocket Science II Guidance and Stability<br>(57) Aerospace Micro-Lesson 57 – Clouds<br>(58) Aerospace Micro-Lesson 58 -- Equinoxes and Solstices<br>(59) Aerospace Micro-Lesson 59 -- Aviation Oddities (1)<br>(60) Aerospace Micro-Lesson 60 – Polyominoes<br>LESSON PACK 13<br>(61) Aerospace Micro-Lesson 61 -- Star Wars<br>(62) Aerospace Micro-Lesson 62 -- SR-71<br>(63) Aerospace Micro-Lesson 63 -- Weather Patterns in the Solar System<br>(64) Aerospace Micro-Lesson 64 -- Asteroid Day<br>(65) Aerospace Micro-Lesson 65 – Neil Armstrong |

We have also introduced the following 9 free online courses developed for students' participation at no cost. This is to challenge students in developing countries to excel in math and science through their active participation in space–based research.

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| 1 |  | **STEM CELLS STUDY ON STATION**<br>In this experiment, Principle Investigator (PI) Dr. Abba Zubair of the Mayo Clinic at Jacksonville, FL, studies the effects of microgravity on three types of human stem cells (cancer, hematopoietic, and mesenchymal). He wishes to identify if stem cells can expand (increase in number) in microgravity, assess the feasibility of generating clinical grade stem cells in microgravity, and evaluate the efficacy and safety of microgravity grown stem cells. Dr. Zubair ultimately wishes to be able to generate large quantities of stem cells in microgravity and then return them to Earth for use in patients who have suffered strokes or other debilitating injuries or illnesses. In collaboration with Dr. Zubair, we are offering teachers the opportunity to get their students directly involved in this exciting new research by joining the "Stem Cell Studies on Station" mission. Participating teachers will be provided with curriculum materials to help student understand stem cell types and expansion, to follow the work that has previously been done by Dr. Zubair, and to understand Dr. Zubair's current research. Students will gain access to the actual images of three stem cell types from both Dr. Zubair's space-based and ground-based experiments and will be guided through their analysis. Student data will be forwarded to Dr. Zubair for possible inclusion in his database. |
| 2 |  | **STEM ON STATION**<br>This particular study is important because future exploration of the moon, asteroids or Mars will require long periods of space travel, which creates increased risk of health problems such as atrophy of the heart muscle. In addition, because conditions in space mirror the effects of aging on Earth, the finding of this research could not only help astronauts but also advance the study of heart disease and the development of drugs and cell replacement therapy here on Earth. In this experiment Principle Investigators (PI's) Dr. Joseph Wu of Stanford University and Dr. Peter Lee of The Ohio State University use human heart cells derived from non-embryonic stem cells to look for changes in things like beat rate, morphology and gene expression while in the microgravity environment of space. Now we are offering teachers the opportunity to get their students directly involved in this major new research by joining the "Stem On Station" mission. Participating teachers will be provided with curriculum materials, suggestions for classrooms activities and access for students to analyze actual video of the heart cells from both the space-based and ground-based experiments. Student data will be forwarded to the PI's for possible inclusion in their databases. |
| 3 |  | **MANAGING MICROBES IN SPACE**<br>This research work get students involved in a journey of discovery as they support the work of NASA scientists looking for ways to protect astronauts in space. This experiment is a first of a kind study of the interactions of germs and host organisms in real time while in microgravity. By analyzing video downlinked from an experiment onboard the International Space Station and submitting their data to the Principle Investigator Dr. Cheryl Nickerson of the Biodesign Institute at Arizona State University, students will be engaged in real space-based research and work in support of NASA's Human Space Exploration program. Recommended for Middle and High School students. |
| 4 |  | **PLANT GROWTH IN SPACE**<br>**DR. LOUIS STODIECK** of University of Colorado, Boulder<br>**STEFANIE COUNTRYMAN** of University of Colorado, Boulder<br>Our virtual mission "Plant Growth in Space" represents a decade of working with NASA scientists doing research in space. This tenth mission uses the plant species Brassica rapa or Wisconsin Fast Plants and is designed to shed light on the question, "How do plants react to microgravity in their early growth stages". As humans continue to expand the duration of space flights and the distance travelled from Earth the need for sustainability in space becomes essential. This investigation is designed to have students discover how the phototropic and gravitropic responses of plants grown in a space-based experiment onboard the International Space Station compare with those of plants grown in an earth-based control experiment. Students will participate in 4 activities analyzing FLIGHT and GROUND photos. Data collected in these activities will allow students to draw their own conclusions about the impact of microgravity on early plant growth and student data will be submitted to the Principle Investigator (PI) for the mission for possible inclusion in their databases. |
| 5 |  | **SPIDERS IN SPACE**<br>**DR. LOUIS STODIECK,** University of Colorado, Boulder<br>Our "Spiders in Space" virtual mission supports the research of NASA scientists and piggybacks on the "Fruit Flies in Space" mission. This space-based research project gathers data about the interaction and movements of the fruit fly Drosophila melanogaster and the orb weaving spider Nephila clavipesliving in the same habitat while onboard the International Space Station (ISS). The investigation focuses on the spiders and is designed to study the differences between webs spun in the space-based experiment and the earth-based control experiment. Students will be asked to do a variety of activities including measurement of the growth of the spider and observing and recording the web spinning process in microgravity. Students will participate in the activities by analyzing and comparing photos and video from both the space-based and earth-based investigations via our website. Student data will be submitted to the Principle Investigator (PI) for the mission. |

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| 6 |  | **FRUIT FLIES IN SPACE**<br>This virtual mission "Fruit Flies in Space" was part of the payload on NASA's STS 134 flight. It is a biology-based mission which focuses on the Fruit Fly Drosophila melanogaster and uses actual photographs, video and data downlinked from the International Space Station. The mission is designed to have students support the work of NASA scientist Dr. Sharmila Bhattacharya, Head of the Biomodel Performance and Behavior Laboratory at NASA Ames Research Center, as she studies the effects of microgravity on the development, behavior and movement of this organism. By studying the behaviors of the Fruit Fly and other model organisms in microgravity scientists contribute to the body of knowledge in understanding how organisms adjust to their environment. All organisms use the same basic signaling pathways and good data shows how changes in gravity alter these systems. Behavior changes can then be used to analyze the genetic basis for the change. Because the Fruit Fly genome has genetic similarity with the human genome information gained in studying these simple organisms can then be translated to complex human organisms. Students will report observations and measurements of the Fruit Fly behaviors by comparing photographic records from the International Space Station and an earth-based comparison study. Student data collected on our website will then be sent to Dr. Bhattacharya for review and possible inclusion in research databanks. |
| 7 |  | **BUTTERFLIES IN SPACE**<br>**DR. LOUIS STODIECK,** University of Colorado, Boulder<br>**MARY ANN HAMILTON,** Butterfly Pavilion, Colorado<br>Launched to the International Space Station aboard NASA's mission STS-129 in November of 2009, this activity focuses on the ability of "Painted Lady Butterflies", Vanessa cardui to "pupate" in microgravity.<br>This activity supports the research of the Butterfly Pavilion at Westminster, CO. Students construct a butterfly habitat in the classroom mimicking the structure and conditions of the "in-flight" habitat aboard the International Space Station. Utilizing the same butterfly larva and food supply being used in both the microgravity and ground control experiments, students follow the larva to pupa stage of the butterfly life cycle. At the teacher's discretion, students' access photos of the space and earth-based activities via our website and analyze these photos, comparing them with classroom outcomes. Data entered through the online interactive data page will be submitted to the Principle Investigator (PI) for possible inclusion in databases. |
| 8 |  | **SILICATE GARDENS IN SPACE**<br>Our "Silicate Gardens in Space" virtual mission is a chemistry-based research study in support of the work of crystallographers Dr. Julyan Cartwright and Dr. C. Ignacio Sainz Diaz at the Laboratory for the Study of Crystallography in Granada, Spain. This investigation combines two experiments that were part of the payloads of NASA's space shuttle Endeavour missions STS-118 and STS-123. Both flights delivered their experiments to the International Space Station (ISS), STS 118 in August 2007 and STS 123 in March 2009. Silicate Gardens or Chemical Gardens have been studied on earth for many years and now the research continues onboard the International Space Station. Using sodium silicate solution and various metal salts, this research is designed to provide new information on the formation and growth of hollow tubes, the basic structures of silicate gardens, while in a microgravity environment. Student's record observations and measurements of silicate tube growth to evaluate one of several variables as they analyze and compare photographic records from the ISS with an earth-based control study. As a part of this ongoing study student data is submitted online and forwarded to Dr. Cartwright and Dr. Diaz for possible inclusion in their databases. |
| 9 |  | **WORMS IN SPACE**<br>This high-flying education effort features a science investigation that supports of the research of NASA scientist Dr. Catharine Conley and genetic researcher, Dr. Nate Szewczyk. The study uses the soil nematode Caenorhabditis elegans(C. elegans), a free-living (non-parasitic) round worm about 1 mm in length as the model organism for the ongoing research that support NASA's program in the areas of Human Space Exploration and human genetics. Dubbed "CSI-01" this project allows students to participate in meaningful scientific research on gravity-dependent biological processes. This nematode experiment sponsored by the Malaysian Space Agency used an automated growth chamber designed and built by BioServe Space Technologies in Boulder, Colorado. Based on Dr. Conley's research the study provided video, still images and data that were downlinked to Earth from the International Space Station and placed on our website. Using these photographic records participating students observe and analyze C. elegans living in liquid media. The study is designed to provide scientists with data related to the effectiveness of the media and the effects of microgravity on life processes of the C. elegans. Observation of population densities and the tracking the progression of the worms through four growth stages are part of the study and student data is submitted to Dr. Conley and Dr. Szewczyk. |

Currently, our learning platform is being hosted by the skill development center of the Ugandan government but it is our dream to develop out ICT Innovation center whereby we can host our platform and students can walk in to enjoy the facilities at their convenient time during our hours of operations.

We opted for this platform so as to be able to accommodate the millions of youths that will register and take part in the courses.

# MARKET SURVEY AND ANALYSIS

## DEMOGRAPHICS

When it comes to the average of a Nigerian citizen, the country is relatively young.

For both males and females, the median age of the country is actually 17.9 years of age. The split between the males and the females in Nigeria are quite even. Men take the edge in numbers, but not by much. There are, according to estimates, about 1.04 males to every 1 female in the country. It should be noted, though, that while women are slightly outnumbered by men, after the age of 65, women outnumber the number of men.

There are multiple ethnic groups in the country of Nigeria. The Hausa-Fulani ethnicity outnumbers every other ethnic group, accounting for two-thirds of the population. Out of those two-thirds, a very large majority of them are of the Muslim faith. The other ethnic groups in Nigeria are the Nupe, the Tiv, and the Kanuri.

The official language of Nigeria is English, but the country does feature multiple languages. The most common non-English languages include the language of Hausa, the language of Yoruba, and the language of Igbo. Those three languages are the most widespread, apart from the language of English.

The overall religious aspect of Nigeria is generally split between Christianity and Islam. Most Nigerian Muslims are Sunni and are located in the northern parts of the country while the Christian population is located mainly in the middle and the southern areas of the country. A study in 2010 stated that 45.5% of the population was Muslim while the rest were Christian.

## POPULATION OF NIGERIA (2018)

The following demographic statistics are from the CIA World Factbook.

**Population:**
190,632,261 (July 2018 est.)
178.5 million (2014 est.)
174,507,539 (July 2013 est.)

**Population distribution**
Nigeria is the Africa's most populous country. Significant population clusters are scattered throughout the country, with the highest density areas being in the south and southwest.

**Age structure:**

**(2017 est.)**

| S/N | AGE GROUP (YEARS) | PERCENTAGE | MALE | FEMALE |
|---|---|---|---|---|
| 1 | 0-14 | 42.5% | 41,506,288 | 39,595,720 |
| 2 | 15-24 | 19.6% | 19,094,899 | 18,289,513 |
| 3 | 25-54 | 30.7% | 30,066,196 | 28,537,846 |
| 4 | 55-64 | 3.9% | 3,699,947 | 3,870,080 |
| 5 | 65 years and over | 3% | 2,825,134 | 3,146,638 |

**Median age:**
Total: 18.4 years. Country comparison to the world: 212th
Male: 18.3 years
Female: 18.5 years (2017 est.)

**Population growth rate:**
2.43% (2017 est.) Country comparison to the world: 24th

**(2013 est.)**

| S/N | AGE GROUP (YEARS) | PERCENTAGE | MALE | FEMALE |
|---|---|---|---|---|
| 1 | 0-14 | 43.8% | 39,127,615 | 37,334,281 |
| 2 | 15-24 | 19.3% | 17,201,067 | 16,451,357 |
| 3 | 25-54 | 30.1% | 25,842,967 | 26,699,432 |
| 4 | 55-64 | 3.8% | 3,016,896 | 3,603,048 |
| 5 | 65 years and over | 3% | 2,390,154 | 2,840,722 |

**Median age:**
Total: 17.9 years
Male: 17.4 years
Female: 18.4 years (2013 est.)

**Population growth rate:**
2.54% (2013 est.)

## TARGET CUSTOMERS

Our target groups are in the range of 10-45 years which according to CIA Factbook =(41,506,288)+(39,595,720)+(19,094,899)+(18,289,513)+(30,066,196)+(28,537,846)=177,090,462. Resulting in a percentage of 92.8% of the entire population, out of which we are targeting approximately 60% participants. Hence, our customers have been segmented into 4 categories as:

**(i)** **The general public:** These are the main people and organisations that really need our services for their day-to-day operations.

**(ii)** **Students and teachers:** These are the categories of people who come to our office for training and empowerment and/or make use of our mini-curriculum in their school activities. Pupils and Student in the age range 08-15 years, 16-18 years, 19-25 years and age 25years above.

**(iii)** **Organisations:** These are Staffs from other non-academic institutions and organisations that need training prior to employment, promotion and/or for self-development.

**(iv)** **The Government:** The government of the 36 states & Federal government can adopt our curriculum for National development.

## CUSTOMER CHARACTERISTICS

The following characteristics have been taken into consideration in the development of our products/services:

(i) **Age:** We consider the participants between the ages of 10 and 45 years becasuse they are the hope of any nation aspiring to develop.

(ii) **Sex:** We welcome students without any form of gender discrimination. We believe

(iii) **Education:** No prequisite knowledge is required as long as the students can read and write and above all has passion for the nation's development.

(iv) **Occupation:** Students and participants and welcome from all spheres of life without any discrimination.

(v) **Psychology:** We welcome students from various psychological background without and discrimination.

(vi) **Culture:** We encourage people of diverse cultures to take part in or projects in order to enhance international collaborations.

## OUR COMPETITORS

We have been able to identify the following competitors in our line of business:

(i) Educonsult, Nigeria
(ii) EduPoint, Nigeria
(iii) Heroic Educational Consult, Nigeria
(iv) Charisma4Edu, Nigeria

Although all of them produce products similar to ours', we have been able to identify that:

(i) None of them is into Aerospace education and e-learning and online education, hence giving us an advantage over them.

(ii) None of them has ever incorporated Aerospace Micro-lesson into their STEM Education. All they deal with is STEM and STEM only. The introduction of other concepts gives us an advantage

(iii) None of them operates a standard and internationally approved curriculum like ours' which was approved by the Space Foundation, USA and American Institute of Aeronautics and Astronautics, USA.

(iv) None of them operates e-learning innovation center as we are proposing. This is also a plus to our business.

(v) None of them has ever been certified by the International Youth Federation for the works they are doing. Our certification and accreditation by International Youth Federation, UK and the International women of Aviation, USA speaks volume about our projects in Nigeria, Uganda and across the world.

## COMPETITIVE ADVANTAGE

Our curriculum was designed taking the following competitive advantages and our unique selling point into consideration:

**(1) Annual National Rocket Competition:** We have created a competition tagged 'Reach for the Star' for kids age 10-18 years.

**(2) Specialised STEM Education:** We have carefully selected our area of specialization by focusing on a unique and specialized STEM aspect of education upon which the pivot on which the 21st century economy of any nation revolves, e.g banks, hospitals, satellite applications, research institutes, institutions, etc

**(3) Networking with world-class researchers and Principal Investigators (PI):** The project has been designed to give our students the opportunity of relating with and being mentored by renowned researchers across the world at no cost. Student work as research assistants and support the work of the PI, while meeting the educational goals of the classroom and final student data is provided to the PI for possible inclusion into research databanks. Some of the researchers (Principal Investigators) already on ground are:

(i) Dr. Abba Zubair of the Mayo Clinic at Jacksonville, FL
(ii) Dr. Joseph Wu of Stanford University
(iii) Dr. Peter Lee of The Ohio State University
(iv) Dr. Cheryl Nickerson of the Biodesign Institute at Arizona State University
(v) Dr. Louis Stodieck of University of Colorado, Boulder
(vi) Stefanie Countryman ofUniversity of Colorado, Boulder
(vii) Dr. Sharmila Bhattacharya, Head of the Biomodel Performance and Behavior Laboratory at NASA
(viii) Mary Ann Hamilton of Butterfly Pavilion, Colorado
(ix) Dr. Julyan Cartwright of Laboratory for the Study of Crystallography in Granada, Spain
(x) Dr. C. Ignacio Sainz Diaz of Laboratory for the Study of Crystallography in Granada, Spain.
(xi) Dr. Catharine Conley, a NASA Scientist
(xii) Dr. Nate Szewczyk, genetic researcher with NASA, USA

**(4) Partnerships:** In terms of partnership, we have been able to establish concrete relationships with the following organisations as a result of which we have access to invaluable educational and instructional materials. Some of the researchers (Principal Investigators) already on ground are:

(i) Space Foundation, USA
(ii) America Institute of Aeronautics and Astronautics, USA
(iii) European Space Board, France
(iv) NASA Researchers
(v) Amateur Radio on International Space Station, USA
(vi) Experimental Aircraft Association, USA
(vii) Astronomers without boarders
(viii) IIE

**(5) Long-Term goal for Nigeria:** The project's long-term effects aim to contribute to the betterment of the country as a whole, both by engaging and educating youth, generating employment opportunities, and reversing the status of Nigerian Aviation and Aerospace industry.

**(6) Excitement of Aerospace:** Airplanes and rocket, by nature, foster excitement, and are often beyond the reach of many African youth. Thus, this project will naturally attract young people, and provide a unique and valuable platform both for creating individual sustainment, fulfillment, and preventing the perpetuation of corruption and illegal activities by providing a legitimate alternative.

**(7) Youth Engagement:** Aerospace is mesmerizing to young people, and provides avenue for inspiration that they may not have otherwise. There is an excitement associated with the word airplane that creates the spirit of adventure, the project will use the excitement of aviation to educate and inspire the youth in Africa and their counterparts across the world, engage their minds in meaningful and rewarding investment, thereby using it as a veritable tool to address the menaces of corruptions that Africans, especially the youth, get involved in and reduce the chances of being lured into secret cults and other unlawful societies.

**(8) Conflict Management and Resolution:** The project has the capacity to make significant contributions in advancing the understanding of peace and conflict issues, as its monitoring and evaluation component will yield important data from vulnerable populations in Nigeria, particularly those in the Niger Delta region. The project is channeled towards bringing the youths of different background and beliefs together under one umbrella, Managing Crisis and Sustaining Peace among the youths using aviation as a veritable tool for unity, peace, motivation, and social re-engineering of the African youth.

**(9) Quality and Safety Assurance:** The project is designed to fill a much needed and life-saving gap in Aerospace and medical transportation (Aeromedicine) in Nigeria.

**(10) International Civil Aviation Organisation (ICAO) Standard:** Our curriculum was designed **b**ased on ICAO SMS four pillars:

(i) Safety Policy;
(ii) Risk Management;
(iii) Safety Assurance; and
(iv) Safety Promotion

**(11)** **Excellent Features**: We have incorporated excellent features into our curriculum to make it user-friendly.

**(12)** **Low Cost:** A simple yet powerful Enterprise Solution at a small business price.
**(13)** **Anywhere, Anytime (+Anyone):** Access next generation Web Application from any Internet Browser.
**(14)** **Worldwide Support**: World class 24/7/365 LIVE support with worldwide experts
**(15)** **Accreditation**: Our certification and accreditation by International Youth Federation, UK and the International women of Aviation, USA speaks volume about our projects in Nigeria, Uganda and across the world.
**(16)** **European Alliance for Innovation**: Aeroversity, Nigeria has been inducted by the "European Alliance for Innovation" in order to foster excellence in research and innovation on the principles of transparency, objectivity, equality, and openness. Our guiding principle is community cooperation to create better research, provide fair recognition of excellence and transform best ideas into commercial value proposition. Also to create an environment that rewards excellence transparently, and builds recognition objectively regardless of age, economic status or country of origin, where no membership fees or closed door committees stand in the way of your research career. Through these shared values, we lead the way toward advancing the world of research and innovation, empowering individuals and institutions for the good of society to fully benefit from the digital revolution.

| FOR THE EXECUTIVE | FOR THE SAFETY PROFESSIONAL | FOR THE DEPARTMENT HEAD |
|---|---|---|
| Dashboards provide greater certainty of business objectives such as performance monitoring and safety assurance. | Automated alerts & real-time decentralized risk management process involving all stakeholders | Qualitative and quantitative risk assessments against personnel, environment, equipment, and mission |
| Confidence that management is focused on mitigating risk to as-low-as-reasonably-practical (ALARP) | Consolidation, aggregation and integration of hazard/risk registers eliminating disparate spreadsheets and other silos of safety information to provide unified interface | Hazard, issue and opportunity management in one interface to address both quality and safety management principles. |
| Full transparency of the potential business impact of every risk involved in ensuring SMS objectives are met. | Automated escalation and auditing tools to provide assurance safety risk management processes and controls are effective. | User-friendly charts and graphs to allow proactive investigations and search for opportunities to improve operations and reduce risk |

## POSITIONING STATEMENT (BRANDING)

The branding strategy adopted both the vertical and horizontal positioning because positioning is a specific aspect of our company's brand that refers to the perception of our customers about our brand in reference to our competitors.

(i) We chose horizontal positioning because our product is meant for a specific target customers which goes in line with the definition that Horizontal positioning is a way for a company to set itself apart from competitors by focusing on how it is meant ***only for certain kinds of people***.

(ii) On the other hand, we adopted vertical positioning because we have set our company apart from competitors by focusing ***on how to make the product much better and cheaper***.

## PRICING STRATEGY

Our product has been fixed for a commitment fee of just $1USD in order for majority of Nigerians to be able to have access to cheap and affordable education. The fee was charges to ensure maximum commitment and seriousness of students and participants.

## SELLING STRATEGIES

**(i)** **Wholesale**: By wholesale we refer to purchasing of our goods at larger quantities for lower prices. Usually the goods are sold to retailers, who then sell them directly to customers.
In this case we appoint selected agents that can redistribute our products and services to their clients and customers at their localities and communities.

**(ii)** **Retail**: By retail, we refer to the selling of goods directly to participants at our office, usually in smaller quantities for personal use.
Here, the participants, students and/users visit our center to make use of our facilities.

**(iii)** **High volume, Low margin**: By high volume, low margin we refer to a category of goods or services that are sold in large quantities with a small amount of profit from each sale.
This is because our services are designed to be an essential commodity that customers will purchase regularly as it has to deal with educational programme for the youths.

**(iv)** **Low volume, High margin**: By low volume, high margin we refer to a category where we sell our goods or services in small quantities with a large amount of amount from each sale.
We embrace this concept based on customers' individual perception of our goods and services because our services are usually more luxury items that are purchased infrequently by some customers, schools, institutions and participants.

## SWOT ANALYSIS

| Strength | Weaknesses |
|---|---|
| (1) Cheapest prices ever<br>(2) About 6 major languages<br>(3) Adaptation on ICAO 4 safety pillars<br>(4) Experience and partnerships across the world<br>(5) Saleable Plans<br>(6) Consistent Quality<br>(7) Competitive edge in Africa<br>(8) Strong team capability<br>(9) Good database of potential customers<br>(10) Free FLIGBY Trainings for our clients | (1) Low initial/startup capital<br>(2) Access to Aviation Authority for necessary permission<br>(3) Low reputation as a start-up<br>(4) Access to latest technologies |
| **Opportunities** | **Threats** |
| (1) Massive presence of social media<br>(2) Business registration<br>(3) Customer loyalty<br>(4) Growing market<br>(5) Competitors weak presence in Africa | (6) Existing Competitors<br>(7) New competitors<br>(8) Unstable Government Policies<br>(9) Piracy<br>(10) Irregular exchange rates between naira and dollars<br>(11) Epileptic/erratic power supply |

## RISK ANASLYSIS

(1) **POWER SUPPLY:** In Nigeria, the problem of electricity supply has been the bane of many businesses and prevented them from thriving in the emerging global economy. This has also been a major concern to us. To mitigate against the issue of erratic power supply, we have proposed a standby generator to power all our systems. Also, we are introducing inverters in order to keep our database online 24/7 so that our clients can have access to their details as at when due.

(2) **POOR INTERNET CONNECTION:** In Nigeria, internet connection has not been at its best. We need internet to support the development and usage of our mobile App compatible with android, iPhones & windows for the online STEM Education & also to ensure our helpdesk is available to customers 24/7. To solve this problem, we have made contacts with Internet Service Providers (ISP) to help in providing quality service.

(3) **LACK OF FUNDING:** This is why we have decided to apply for funds from organizations and philanthropists. Funding has been a major hindrance to the progress of our projects because the image of Nigeria often causes funders and investors to balk due to the perception of financial risk.

(4) **LACK OF TRUST IN NIGERIAN PRODUCTS:** We have also made Nigerians to believe we are a company founded on the basis of truth, genuine purpose and sincerity of idea. **Investors balk and see financial insecurity once they hear the name Nigeria;** this has really affected my business negatively since inception.

(5) **UNSTABLE GOVERNMENT POLICIES:** The government policies affect the exchange rates between Naira and other foreign currencies. To mitigate against this, we have secured a partnership agreement with a competent supplier of our raw materials at a fixed price, even when the economy is unfavourable.

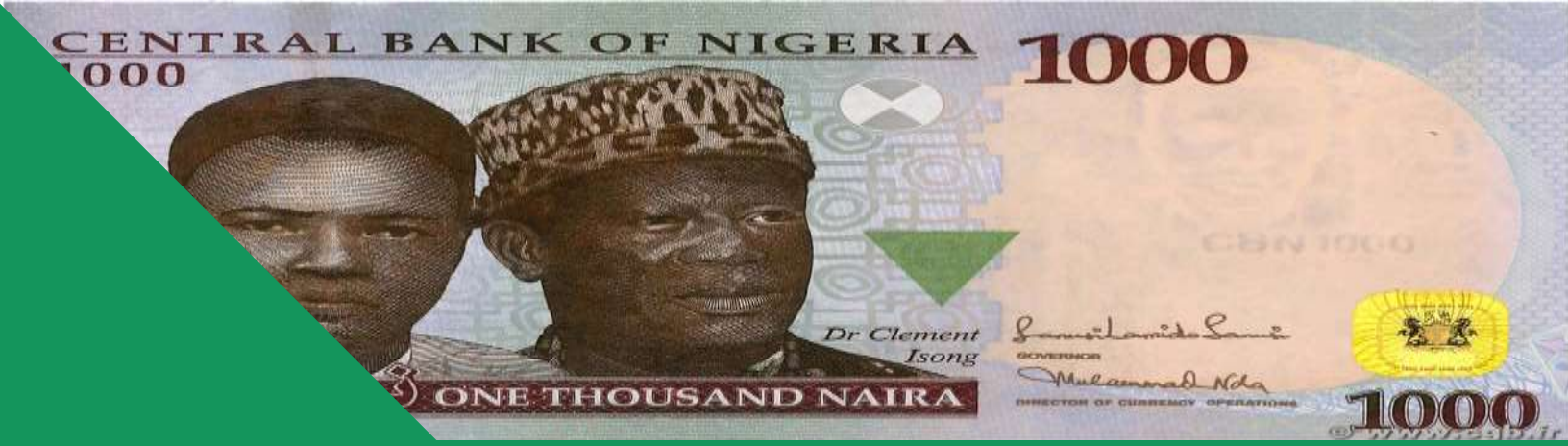
## MARKETING STRATEGIES

Our feasibility study showed that majority of our target audience spend most of their time on their mobile phones and laptops using various applications on the go than they do inside a conventional classroom, hence we decided to take our virtual classroom to every home where a phone, laptop and internet facilities exist. Hence, we support our innovation by developing an e-learning innovation center and our official education mobile App.

Most of us still utilise classroom space to some degree, but increasingly its role is shifting from essential to optional extra because the powerful mobile devices, the cloud and social collaboration tools are enabling staff and teachers/educators to step outside the traditional confines of classroom and chalkboard. This freedom gives education greater agility and offers staff a work-life balance that is no longer a nice perk but instead a given.

Therefore, in today's world, the younger generation concentrates their energy, time and resources on the social media, internet and the latest technology. Hence we have identified the following methods of reaching them:

(i) Jingles on radio
(ii) Appearance of televisions (TV talk shows and appearances), radio talk shows focus meetings, strategic presentations with relevant organizations and agencies, etc
(iii) Contact via emails and Direct visit to our target audience
(iv) Playlets and promotional videos
(v) Distribution of handbills
(vi) The use of social media such as Facebook, Google adverts, blogs, Instagram, etc.
(vii) We belong to a number of organizations across the world, hence we promote our services through their websites.




# FINANCIAL PLAN

## BUDGET FOR OUR E-LEARNING CENTER

| S/N | ITEMS | COST (USD) | PURPOSE |
|---|---|---|---|
| 1 | Purchase of land for the e-learning center | 57,143 | It accommodates all the facilities applicable to the project. |
| 2 | Building construction and roofing | 14,286 | This is the main complex where all the e-learning project facilities will be installed. It also houses the offices for the staffs and recreation center for the students. |
| 3 | Electrification | 2,286 | This is to supply the entire e-learning center with electricity from the national grid. |
| 4 | Installation of electricity generating plant (50KVA) | 13,428 | To mitigate against the issue of erratic power supply. |
| 5 | Installation of internet facilities | 572 | It provides students 24/7 access to the learning platform. |
| 6 | Purchase of 10 Laptops | 4,918 | This will be in addition to the systems we have already. This allows the students to access all our online courses at the Academy e-learning center |
| 7 | Purchase of 6 Air conditioners and Installation | 1,200 | These are to cool the e-learning center for students' comfort and good system maintenance |
| | **TOTAL** | **93,833.00** | |

**TARGET SALES VOLUME = (TARGET MARKET SHARE) X (TARGET MARKET SIZE)**

According to the demographic statistics from the CIA World Factbook:

**Population:**
190,632,261 (July 2018 est.)
178.5 million (2014 est.)
174,507,539 (July 2013 est.)

**Population distribution**
Nigeria is the Africa's most populous country. Significant population clusters are scattered throughout the country, with the highest density areas being in the south and southwest.

**Age structure:**

**(2017 est.)**

| S/N | AGE GROUP (YEARS) | PERCENTAGE | MALE | FEMALE |
|---|---|---|---|---|
| 1 | 0-14 | 42.5% | 41,506,288 | 39,595,720 |
| 2 | 15-24 | 19.6% | 19,094,899 | 18,289,513 |
| 3 | 25-54 | 30.7% | 30,066,196 | 28,537,846 |
| 4 | 55-64 | 3.9% | 3,699,947 | 3,870,080 |
| 5 | 65 years and over | 3% | 2,825,134 | 3,146,638 |

**Median age:**
Total: 18.4 years. Country comparison to the world: 212th
Male: 18.3 years
Female: 18.5 years (2017 est.)

**Population growth rate:**
2.43% (2017 est.) Country comparison to the world: 24th

## OUR ESTIMATION

When it comes to the average of a Nigerian citizen, the country is relatively young.

Our main target groups are in the range of 10-45 years and CIA Factbook table gives us
(41,506,288) + (39,595,720) + (19,094,899) + (18,289,513) + (30,066,196) + (28,537,846) = 177,090,462

Resulting in a percentage of 92.8% of the entire population, out of which we are targeting approximately 60% of the group by the year 2025.

Hence, **OUR MINIMUM TARGET SALES VOLUME** = 106,254,278 (approximately)

**UNIT COST OF THE COURSE PER STUDENT** = $1USD

## BREAK-EVEN POINT ANALYSIS

It has been estimated that we need approximately $93,833.00 (USD) to set up our e-learning innovation center.

With a minimum target of 106,254,278 population @ the rate of $1USD each

Total amount expected = $106,254,278(USD) approximately

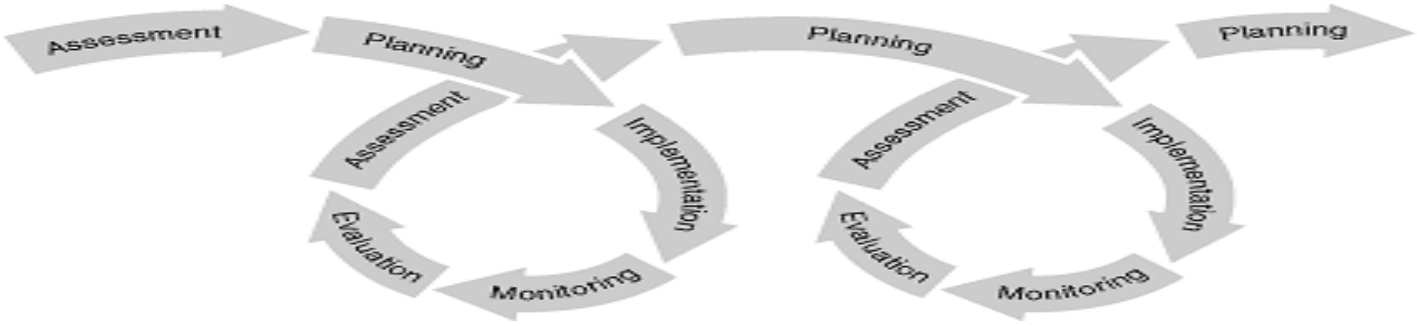
If we invest a minimum of $**93,833 (USD) with the expected sales volume of 106,254,278, then:**

Our break-even point is calculated as ($93,833)/( $106,254,278)=0.0009

This interprets to the fact that in less than a year, we are expected to break even.

Our target is to empower most Nigerian youth and provide cheap and affordable education for all by the year 2025. With our new approach, we intend to work as smart and fast as possible in order to gain our large share of the market. Hence, it is our mandate to break even within a year but at most within the period of 2018 and 2025.


# SUSTAINABILITY PLAN




Our sustainability agenda is centered on the following operations:

(1) Planning
(2) Implementation
(3) Monitoring
(4) Evaluation and
(5) Assessment

**MONITORING:** By monitoring we mean keeping records of different resource and activities in order to ensure the achievement of our mission. Evaluation means using these records and other information, such as user surveys and focus group discussions, to review performance at set intervals and identify ways to improve the resource centre and its services. It is useful to monitor key aspects of the our services, to provide information that can be used to evaluate these activities. Before deciding what to monitor, it is important to know what is to be evaluated, and how the information collected through monitoring will be used for evaluation.
We monitor regular activity, such as keeping monthly records of the number of enquiries received, or a periodic activity, such as keeping records for a three-month period over the course of a year.

**EVALUATION:** To evaluate our project, we make use of 'qualitative data', as well as the 'quantitative data' collected by monitoring. Evaluating our activities enables us to know how useful the activities are. Collecting and analysing data might involve an outside evaluator, such as a representative of a donor agency, and/or the evaluation might be a 'participatory evaluation' involving our staff, students and other users. Participatory evaluation provides an excellent opportunity for staff to learn from their experiences and contribute to the continuing development of our facilities. Evaluation requires a combination of 'quantitative' and 'qualitative' data:

- **Quantitative data** is data that can be measured, such as the number of visitors, the number of written and telephone enquiries, the number of searches carried out by staff, the number of subjects requested, or the number of sources used to provide information requested. Quantitative data is collected through monitoring.
- **Qualitative data** is data that cannot be measured, such as users' opinions about our activities and programmes, and how they have used information obtained from the Aeroversity. Qualitative data is collected through questionnaires, interviews and focus group discussions.

**COLLECTING QUALITATIVE DATA**

(v) Qualitative data, such as users' opinions, are gathered in different ways. For example, users could be asked to complete a questionnaire, or they could be interviewed using the questionnaire as a structure for the interviews. Questionnaires could be given to a representative selection of visitors and enquirers, to keep the number of questionnaires down and make them easier to analyse. WE ensure that the questionnaires sent to enquirers should be accompanied by a copy of the original request and the reply, including details of the activities. This is particularly important if the questionnaire is sent some time after the enquiry was made (such as more than six months).

(vi) Focus group discussions (small group discussions) could be set up for staff or students, visitors and more distant users. Users could discuss their opinions of the Aeroversity curriculum and services, what impact information from the study has had their work, and what subjects and services are required for improvement.

Thereafter, information gathered through questionnaires and focus group discussions can be used both for evaluation and as part of ongoing needs assessment.

**TEAM ASSESSING THE OUTCOME OF EVALUATION**

## BENEFITS OF THE AWARD TO OUR OBJECTIVES

(1) **COLLABORATION OPPORTUNITIES:** Since inception, I have single-handedly created the organization from my sweat without any support but our e-education needs global connection and recognition. Therefore, we want to expand our circle of opportunity to include new and varied voices. We want the award in order to support our ideas to benefit from the abundant and prestigious opportunities and global attention; this will connect us to the networks and resources needed to advance the work. The award will afford us the opportunity to connect with visionary and exemplary leaders, network and meet with potential investors for the project. This freedom gives our business greater agility. Moreover, we want to use the networking opportunity to collaborate with other entrepreneurs, connect with potential partners, and collectively push our works forward. Throughout the program, we intend to pursue a personalized plan to leverage the award experience to take our work to the next level.

(2) **LIBRARIES AND SCHOOLS**: The award will enable us to publish our Aerospace Micro-Lesson curriculum and distribute to major libraries and schools in Nigeria for adoption and possible inclusion in the academic curriculum.

(3) **ADOPTION AEROSPACE MICRO-LESSON AS NATIONAL CURRICULUM:** The award will also further strengthen and enable us to get necessary government approvals in Nigeria in order to enable us present the curriculum to the Federal Government of Nigeria for possible adoption as a National curriculum.

(4) **OUR APP ON GOOGLE PLAY STORE AND E-LEARNING CENTER:** This freedom gives our education greater agility and offers staff a work-life balance that is no longer a nice perk but instead a given, hence we want to expand our technology and innovation by improving on our official education mobile App and e-learning facilities.

(5) **NEED FOR MORE TEACHERS:** The award will empower us to employ more teachers/staffs in order to meet up with the high education demand in Nigeria.

## OUR VISION IN 5 YEARS TIME

Our target is to empower most Nigerian youths by providing accessible, cheap and affordable education for all by the year 2025 but presently, it is our aspiration to be a force to be reckoned with not only in Nigeria but Africa as this will move us a step closer to our 'agenda 2025' mission.