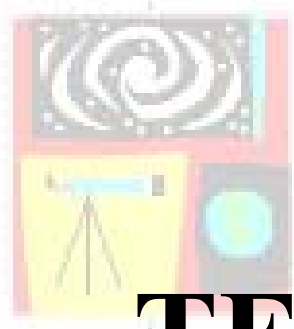


A Proposal

To Form



A BERMUDA TECHNICAL HIGH SCHOOL



To Solve the Technical Deficit



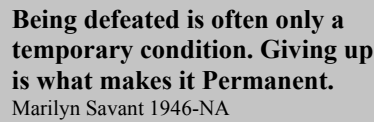
**Proposed by
C.V.Palmer**

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EXECUTIVE SUMMARY



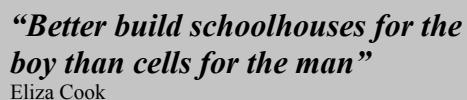
Being defeated is often only a temporary condition. Giving up is what makes it Permanent.
Marilyn Savant 1946-NA

Introduction

Looking forward to the near future and making technical education a reality once again in Bermuda, the benefits to the nation are too numerous to mention but the most important benefit is for our youth. The foundations have been laid, the research has been done, in fact, ten years searching for answers writing about it and wondering why it hasn't been done before now?

It is now time for action to restore respectability to our youth, to give them that which should be theirs in their adolescent years and that is the chance to aspire to all they can be. Thirty six years ago Bermuda Technical Institute was closed and it has cost this small country dearly. Our youth deserve to have the opportunity to join the elite craftsmen and management that once put this Island on the map and just a handful of them are still living but not forgotten.

In this technological age it is incredulous to imagine why our youth have not been included in the continuous prosperity of Bermuda by having the educational opportunity to contribute to their homeland. It is time to change this and present the opportunity to those willing and able to meet the challenge, the challenge for excellence in technical fields to re-engineer their homeland instead of watching others do it for them.



“Better build schoolhouses for the boy than cells for the man”
Eliza Cook

Overview

In a nutshell

It is intended to start a small private school with a big difference, a technical high school, starting with fourteen year olds (20) adding another class each year until there are four years of 14-18 year olds.

Classes of 20 in the first two years and with natural attrition, complete the final two years with classes of 16. The first two years will follow an approved homeschool academic curriculum, with additional technical curriculum in a practical workplace. The syllabus will include “soft skills” to furnish students with the “tools for life”, timekeeping, dress code, manners, and work ethic.

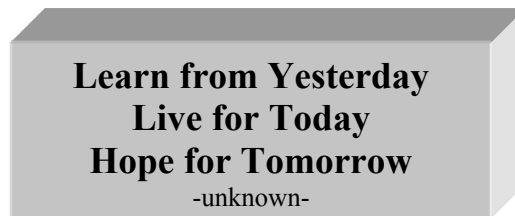
The final two years will follow an international curriculum such as the Stationary Engineer or City and Guilds programme. These programmes are intended to instill technical “basics” and not furnish apprenticeship or specialist status on students.

The school year will be a five term year with eight-week terms and two-week breaks in between except for the summer which will have four-weeks. The school day will start at 0830 (8:30am) and finish at 1700 (5pm). Uniforms will be worn, coveralls will be the practical uniform, and sports uniform all supplied at parents’ expense.

Fees for this school will be similar to those of other private schools.

Industry will be invited to sponsor and participate in all aspects of the school, workplace, admissions selection and board of governors. We are presently looking for sponsors to help us finance this venture to enable our students to follow a realistic syllabus leading to a meaningful career in Bermuda.

Upon graduation students will be able to choose their future with the help of career counseling received throughout their time at school. It is intended that students will be able to either enter the workforce with meaningful employment or continue full time education.



Unique Aspects of Technical Training

Industries involved in Bermuda:

- Mechanical trades: plumbing, waste disposal, water treatment, heating, venting and air conditioning, motor vehicles,
- Electrical trades: lighting, industrial drives, distribution, generation, control systems
- Electronic trades, security, computer technology, controls of industrial processes
- These all include:
 - Installation
 - Trouble shooting
 - Maintenance
 - Performance monitoring
 - Operation

In each trade there are:

- Trainees
- Apprentices
- Junior technicians
- Technicians
- Senior technicians

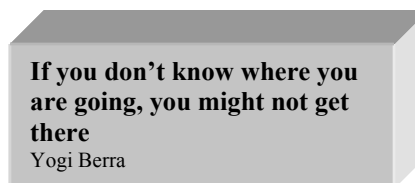
- Specialist
- Manager technician/engineer

In this programme it is intended to prepare the students to enter at the trainee or apprentice level and some for college/engineer training.

As with most careers a thorough basic education and an appreciation of “what is available in the workplace” are pre-requisites for students to intelligently choose the career path or vocation they wish to pursue. It is this level of education and appreciation that has failed in Bermuda since the “Tech” closed. There has not been a career counseling programme for high school students to intelligently choose any career, which is considered most important to employers, as school leavers drift from job to job until they find something compatible.

Most employers interviewed in breakfast meetings and research meeting have indicated that they want students to leave high school with; a basic education in mathematics, reading and writing, and the soft skills enabling them to “turn up on time daily for more than a week”, dress accordingly and to be able to verbally communicate respectfully. Unfortunately students do not leave school with these basics.

There is a need for sponsorship to buy a premises and have it put in Trust for Technical Education for Bermudians and residents, that would enable staff to direct their full attention towards the students and less towards raising finances, the requirement is for four classrooms and two offices, with the requisite amount of bathrooms and exits to meet the various codes and regulations plus room for expansion to build a workshop.



The Objective

To provide a comprehensive technical education that prepares students with the basic principles of mechanical, electrical and electronic engineering.

To provide students with practical experience in a hands-on environment whilst learning the basic tools and equipment of that environment

To prepare students for their future after high school, and give them the choice of trade or college.

It is the aim of this school to ensure all of its students receive a career path, an international qualification and the choice of a practical or theoretical career.

It is with great anticipation that I now write this business proposal. This has been a long journey, starting in 1998, so it has been ten years, and I am more determined now than ever; first I would like to share a portion of the “Foreward” from the book I wrote in 2006¹.

“During my time teaching at the Bermuda College it was apparent that all was not well with public education, the product was not up to the standard required to sustain the technology of the 21st century. This started a personal journey to find out what went wrong and how to correct it. Bermuda has a problem and has been throwing money at it without tackling the “grass roots” cause. My mission was to find out the cause and possible solutions.

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I started teaching at Cedarbridge Academy and found the “yearn for learning”, that basic “drive for information” was lacking in most of the students when they started high school which created discipline problems. It has become common practice to blame the teachers, “hold them accountable” and “micro-manage”; all of which adds undue stress on the teachers. Students know when the teachers are stressed, the atmosphere is tense and the students react to it. This in *my* opinion has been the major cause of teacher turn-over, coupled with unruly students that do not have adequate consequences for their behaviour. I have also taught at Berkeley Institute, where the culture is different and the consequences meet the behaviour, the students are not perfect but they quickly learn or leave.

The standards taught are good, the standards learnt are not; the old adage, you can take a horse to water..... Our students are not motivated, because they can’t envisage the usefulness of their learning and when they can use the information to do something. The “production-line” model of educating is meaningless to them.

The way I saw it, it was necessary for me to research and document the problems, I quickly found the problems are not unique to Bermuda. I know we can do better for our students. An enormous amount of time and resources have been devoted to this journey simply because I care what happens to our children and our Island. I believe we are wasting our talent; we are doing a great disservice to our Country in failing to produce a sustainable technical talent pool to enable us to remain a global and prosperous community in the 21st century. In the Words of the former British Prime Minister Tony Blair,

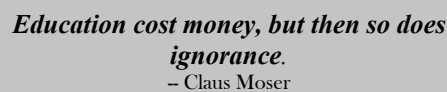
¹ Collaboration: the pathway to a brighter future for public education by C.V. Palmer 2006

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“There is no greater waste than the wasted talent of a child held back by poverty or the lack of opportunity” It is the way these opportunities are presented to our students that will enable them to apply their learning, this in itself is a form of motivation.

If this study helps to initiate dialogue, on our needs and outcomes of education then I have achieved my objective. If we are fortunate enough to open a technical school again it would benefit Bermuda in so many more ways.”

Those words are as true today as they were two years ago, the situation has not changed for the better. The whole public education system has been put under the microscope by Professor David Hopkins in 2007 and reform is to take another three to four years, already nine generations of high school students lost that would make ten. It is time for immediate action.



***Education cost money, but then so does
ignorance.***
– Claus Moser

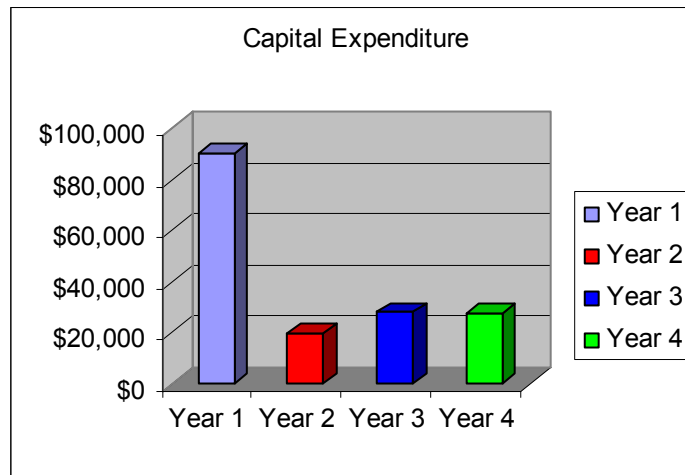
The Financial Plan

Funding Requirements - amount, type, term, etc.

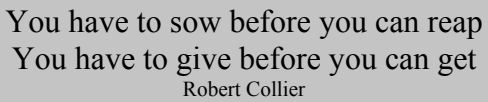
- a. The entire plan to help our youth and make a difference in so many lives is squarely dependent upon the support of and commitment of industry, international business and any philanthropic idealistic that believes as I do that the answer to a lot of the problems with our youth lies in education and technical education in particular. The requirement is for a building large enough for four classrooms two offices and requisite amount of rooms to furnish the code requirements in bathrooms and kitchen needs. The building would be set up in a trust for the school for future generations of technical education and technical education alone.
- b. Funding to aid the operations of the school would include the land-tax, maintenance, security, furnishings, re-modeling in the first instance, air-conditioning and the costs incurred to secure the use of the international qualification accreditation.
- c. Funding is also required in the form of scholarships should a student be highly recommended by the selection committee and the parents of the student be unable to meet the financial burden. It is then that the committee would request a partial or full scholarship for the four years; this would be conditional upon grades and performance.
- d. Funding from tuition would be used for salaries, utilities, Internet, insurance, air-conditioning maintenance and operation, transport, initial items of furniture, and technology in computers and software requirements and licenses.

Detailed financial forecasting and implementation plan are contained in the main report.

P & L										
Commodity	Monthly	Year 1	Monthly	Year 2	Monthly	Year 3	Monthly	Year 4	Monthly	Year 5
REVENUE										
tuition/student		16,000		16,800		17,640		18,522		19,448
# students		20		38		54		70		70
Tuition	26,667	320,000	53,200	638,400	79,380	952,560	108,045	1,296,540	113,447	1,361,364
EXPENDITURE										
Electricity	350	4,200	716	8,592	1,100	13,200	1,633	19,600	1,750	21,000
Telephone	100	1,200	200	2,400	200	2,400	250	3,000	250	3,000
Internet	60	720	83	1,000	100	1,200	125	1,500	125	1,500
Rent/Mortgage	-	-	-	-	-	-	-	-	-	-
Transport	50	600	700	8,400	700	8,400	700	8,400	750	9,000
Furniture	375	4,500	417	5,000	458	5,500	500	6,000	42	500
Wages	20,833	249,996	30,208	362,496	40,052	480,624	50,388	604,656	61,241	734,889
Insurance	291	3,492	333	4,000	375	4,500	417	5,000	750	9,000
Substitute	240	2,880	240	2,880	480	5,760	480	5,760	583	7,000
Service	100	1,200	120	1,440	150	1,800	200	2,400	333	4,000
Maintenance	150	1,800	200	2,400	240	2,880	300	3,600	417	5,000
Sundry items	250	3,000	300	3,600	350	4,200	450	5,400	583	7,000
Contingency	1,000	12,000	1,000	12,000	1,000	12,000	1,500	18,000	1,667	20,000
Start-up costs	7,355	88,260	1,486	17,830	2,096	25,150	2,054	24,650	-	-
Total expenses	31,154	373,848	36,003	432,038	47,301	567,614	58,997	707,966	68,491	821,889
Expenses p.a.		373,848		432,038		567,614		707,966		821,889
Profit / Loss		(53,848)		206,362		384,946		588,574		539,475



A typical practical syllabus with Industry has also been included in the main report appendix.

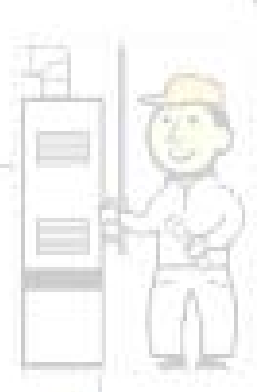


You have to sow before you can reap
You have to give before you can get
Robert Collier

Conclusion

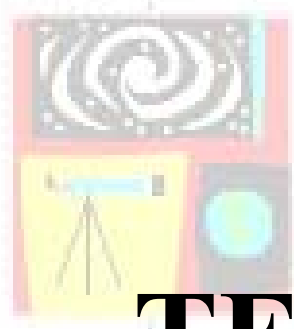
It is time for action, it is time for making things happen or suffer the consequences of lost generations of our youth. If there are those out there or those reading this proposal that think and feel in this way, *please* do not stand on the sidelines. We need your help to make this school a reality, we need industry, we need international companies, and we need individuals to make this plan a reality for the youth of Bermuda to make a difference for the few up for the challenge.

The contact name and address are on the cover, call and lend your support, your time and your help to make this happen.



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Without a quality career and technical education system, this nation will not be able to compete in a global marketplace –
US Bureau of Statistics

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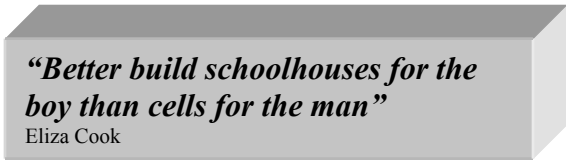
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Those words are as true today as they were two years ago, the situation has not changed for the better, the whole public education system has been put under the microscope by Professor David Hopkins in 2007 and reform is to take another three to four years, already nine generations of high school students that would make ten. It is time for immediate action.

In this regard it is now proposed to open a private technical school as soon as we are able to gain enough support and the premises to start teaching.



“Better build schoolhouses for the boy than cells for the man”

Eliza Cook

Background

It has been thirty six years (36) since the Bermuda Technical Institute (Tech) closed its doors, technical training of our youth has never been the same and we have been losing increasing numbers of our youth to drugs and illicit behaviour ever since. There have been many half-hearted attempts to bring back technical training and apprenticeships, and although these attempts were probably well intentioned the right formula has not been found and the results are for everyone to see.

Any country with an excellent educational system has a good economy and prosperity. The results to produce a sustainable programme to educate our youth in the technical mysteries have been a dismal failure since “Tech” closed. Technical education is an essential ingredient in maintaining the infrastructure of our community and our Island.

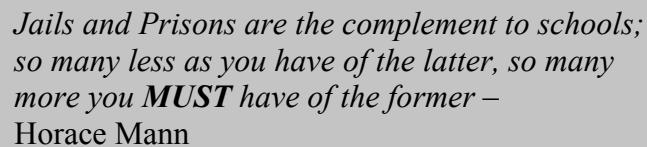
We believe we have that programme; we believe we have a solution, and it is time that we gave our youth the opportunities that “Tech” students’ relished so much.

This proposal and business plan will highlight the most innovative and demanding educational programme for the few students willing and able to meet the challenge. As an engineer/educator that has studied the past and the present educational systems; I have taught at the Bermuda College and both Bermuda public high schools, I am now ready and willing to take on the challenge to produce the first technically competent graduates from a small private technical school.

I was a Royal Naval Apprentice (Artificer), serving a full apprenticeship, continued in the trade for a further ten years and began teaching students, returned to college to further my education and became qualified in mechanical and electrical engineering. I worked in such places as Holland, Iran and on the North Sea oil rigs gaining valuable experience on the way. As a lifelong learner I continued my education in the technical areas specialising in Facilities Management, Water Treatment, and pressure vessels before gaining an MBA from a prestigious English university.

Once the education system raised serious “red flags” I used my extensive research to write a book recording some solutions to solve the problems and it was published in 2006 .

It is now more important than ever to do something positive and practical to put the ideas and enthusiasm into practice and make a difference so much needed in our society.



*Jails and Prisons are the complement to schools;
so many less as you have of the latter, so many
more you **MUST** have of the former –*
Horace Mann

Why Do We Need Another School?

Present Schools

Listing the schools in Bermuda and their educational emphasis does not highlight, the level of academic achievement and it does not give any information about the post school success rate.

We have two public high schools that have failed to achieve the graduation rates expected for the per student cost to the tax payer of \$18,000/yr (2007), reports and committees have deemed it necessary for a major shake-up that will take four years, that is another generation of high school students.

All of our private schools teach an academic syllabus with some traditional trade subjects all devoid of technical career emphasis.

The two public high schools have a basic safety course for the construction industry which can be continued at the Bermuda College but this is not a career path. This course is only two years without the basics in theory required for students to choose their career and continue their choice to technician levels above the very basic.

The World is becoming more technical, yet education in Bermuda does not cater to students wishing to become technicians. How will Bermuda meet the challenges of the 21st century, the requirements are demanding and the needs of industry are not being met by local graduates?

This proposed school will concentrate on technical education, the basics of physics required to enter mechanical, electrical or electronic engineering as a career or on to further academic careers. It has been proven that students receiving a comprehensive technical education prosper in whichever career they choose. (Proof can be gained from “Tech” graduates today)

Bermuda has an ever sophisticated environment, from the vehicles we drive to the security systems we use and even as complex as the computer networking systems used by international business. Our office environments require well-trained technicians to ensure the workforce is able to maximize its output. As we further develop our office base, the number of trained Bermudians required is rising.

The alternative to training Bermudians as qualified technicians is to import our expertise from outside the Island, and continue to build prisons for the Bermudian young men without hope or dignity. It is my intention to restore the hope and dignity with a technical career.

The frequent comments that “Bermudian students are not interested or incapable” were studied in the eight year research into producing “Collaboration: the pathway to a brighter future for public education”³ and it was found that on the contrary, students want to be introduced to more practical work and are capable but the present system has the effect of “turning them off” education.

There are many registered “homeschools” operating in all manner of situations because the public system does not cater to students’ needs. The Adult education school can afford to expand and is constantly renovating to improve their well used facility which fills the need of public school drop-outs to achieve a GED, proving that students want to learn, yet do not feel the public system meets their needs. Bermuda has about 40% private student education and is growing, the next Country that comes near is less than 10%, and this surely indicates that something is wrong. Is there a need for another school? The answer is **YES**, if it fits the needs of the students, parents, and industry. The research indicates that this type of school is the most required yet least available.

During the practical teaching research, it was found that students entering public high school are “turned off” to education, the questions have been asked and the answers are clear students need education to excite them, stimulate them and offer them a future, this is not being done and we believe that our formula will not only work but prosper.

³ Collaboration: the pathway to a brighter future for public education by C.V. Palmer 2006

**LEARN FROM YESTERDAY
LIVE FOR TODAY
HOPE FOR TOMORROW**

Author Unknown

Market Needs

The market can be described as the infrastructure of Bermuda, each home, each company, and each building. We are advocating educating future technicians in mechanical, electrical and electronic engineering. The market extends from each company selling air-conditioning, plumbing, computer technology in either stand alone or networked configuration. It also extends to the electrical generating plant, incinerator, water producing plants, repair and maintenance of heavy machinery to include road resurfacing equipment, our swing bridges, vehicles on the road, the telephone technology, and a whole host of other technologies we use in Bermuda.

We need educated students with aptitude to enter these various fields to become the maintainers. Presently we are not producing, we have failed to produce graduates that reach the minimum standards to enter apprenticeships or basic technician courses consequently most of the technical expertise is imported.

Quote from the Minister of Education June 9th 2008; “Maintenance is a big issue in our schools and we have had our issues” – Yet there is no technical education leading to career technicians, we will fill that need with Bermudian students. Low graduation rates and low educational standards do not prepare students to be successful technicians we will change that.

The National Training Board is concentrating on graduates which are not prepared. Sending those students overseas they are not, in general, reaching the grade, further frustrating industry because vast amounts of money are involved.

One cannot build a building from the second floor, and that is what we are attempting to do, when we teach students concepts and advanced technical skills without them first learning the basics. That is where this school will concentrate, not on the skills but the basics and the choices so that once a student reaches school leaving age not only can they choose the type of career they want but they would be knowledgeable and prepared to take the next step.

We have surveyed industry many times and they will be supportive when the training starts, if the students actually receive the basics then industry can build upon that foundation.

What does this new school require from industry?

It requires some financial backing, some practical assistance and involvement to ensure the training students receive, the foundation required for local industry to build on.

It is hoped to mobilize industry such that the management will become board members, and direct the school to better serve Bermuda. It is a costly undertaking but if every industry participated it would be affordable and beneficial.

What does the word industry mean in this context?

It means anyone operating a business that wants to use the infrastructure, the phones, the water, the electricity, the computers, the photocopiers, the air-conditioning, things we all take for granted. Someone has to maintain each and every part of every single piece of equipment that supplies those services; there are junior technicians, technicians and senior technicians. Businesses that benefit from the technology no matter how sophisticated will see the need to be supportive of this effort to increase the supply of local expertise.

What can this school do for industry?

Initially, it will do nothing, but as students spend time in industry and learn the different trade areas, management will have an insight into the attitude, the dress, the manners and the work ethic of these students. In the fourth year and every year thereafter sixteen students will graduate with an international qualification and with an idea of what is expected of them. It is then that industry can recruit from the graduates, and have a better knowledge of the capabilities, the work ethic and aspirations of potential employees.

The biggest cost in any business is labour. If the labour is home-grown, trained, educated and is groomed for senior positions, industry will improve and labour costs will be reduced.

Soft Skills

Industry continually complains that employees treat their jobs as their convenience, they are unable to make time, they don't know how to address people, are unable to write a sentence, and their language makes it difficult to employ them in certain areas of society. This is a very legitimate complaint and it is intended that we will concentrate our efforts in the first two years to that of dealing with those complaints by ensuring that a code of conduct is strictly adhered to and time is scheduled in to the syllabus for soft skill improvement.

Which Companies will be used for technical placement?

All companies willing to participate can be included in our programme, any company that has a technical system which includes Mechanical, Electrical or Electronic engineering can in fact participate if they have full time technical staff.

So a simple office environment does have a strong reliance on technical equipment, some basic in format and some rather complex, but with the lack of Bermudians trained and a predominance of guest workers in these positions the cost per company increases. The guest worker is brought into the country after a lengthy immigration process which is costly, then housing is required. Most guest workers send some of their income out of the country which is another drain on the economy especially when multiplied by 10,000 workers.

The advantage to having a Bermudian worker, correctly trained and having those work attributes that compare or exceed the guest worker would be less expensive on housing, immigration and they would hopefully have an "attitude of ownership" and pride in such a position.

The more ambitious technician would continue their education seeking more responsible positions and gaining experience on the way.

I hear, and I forget. I see, and I remember. I do, and I understand.

-- Confucius

Statistical Information

The facts as recorded show an increase in the total number of jobs in Bermuda between 2006-2007 by 739, unfortunately the classification of “professional, technical & related “ describes very little and should in reality be sub-divided into each category, because of the 385 jobs in that category that increased in 2006, it is unclear which area “technical” refers to. These could be junior technicians, middle management technicians or technical officers in a non-practical occupation or information technology.

In 2006 there were 39,686 jobs in Bermuda with 10, 338 held by non-Bermudians, international business has 4,489 employees, hospitality industry has 3012 employees, the remainder one can assume were the infrastructure on the Island, hospital, fire and transportation services, building services, construction of buildings, maintenance of buildings and utility services. The statistics for “technician categories” which include the mechanical, electrical and electronic industry have never been separated out from the “professional, technical and related category”.

It can be speculated that the numbers are fairly significant because each and every business uses air-conditioning technical personnel from design engineer to junior technician; plumbing is another important category as is the electrical field. Electronics covers security, computers and computer networks, the point of highlighting the numbers and their levels of technical expertise is very important to recruiting Bermudians such that they should have the facilities to enter and elevate upon their merit and ability from junior to senior technician and further from managerial technician to senior managerial positions, that academic pathway has been avoided for many years. What this business plan is suggesting is that with a start, with basics in technology, Bermudians will be able to elevate to senior managerial positions because the pathway will be well defined.

Numbers of junior technicians required every year

The resurgence of the hospitality industry has been threatened for several years and many special development orders have been signed for hotels to be built, yet to date none have broken ground. If this resurgence does take place, there are no qualified Bermudians to fill the positions. Water treatment technicians will become ever more important as we are forced to use larger desalination systems to meet demand. All buildings require qualified electrical expertise and we are not training enough to meet demand. Plumbers required to meet demand may be small but the importance of qualified plumbers cannot be emphasized enough, and getting a plumber these days is difficult. It is intended to encourage graduates to continue their studies to qualify for managerial positions and as there are several grades of technicians. As junior technicians seek upward mobility and graduate in higher examinations the lower positions would be opened to school graduates.

More and more office buildings are being built and will require experienced and junior facilities personnel. The hospital needs to be maintained better to enable the investment to be preserved, basic technician training is not available in Bermuda to the standards required Five Bermudians could be trained in Bermuda for the cost of sending one student to an overseas technical college.


Management in these senior technical positions and qualified senior level technicians are rarely Bermudians. This is a serious flaw when carrying out technical rehabilitation work; guest workers take their knowledge of the history of various projects with them when their term on the Island ends. This increases, future work prices, researching previous work with new technicians. Continuity in senior technical positions would make projects less costly and less labour intensive.

As stated earlier, 36 years since any concerted effort to train Bermudians in the technical fields has had a serious and devastating effect on the attitude towards technical training, safety and the infrastructure.

Whereas a qualified technician would know the “codes”, “techniques”, and correct working procedures, untrained and unqualified workers presently engaged in these positions are less likely to produce the quality of work, take short cuts and although it may work, would not pass a code inspection. (That is not to say all unqualified workers do inferior work but it is more likely as they have no formal training, and one cannot know what one has not been taught.)

Education in Bermuda has cost approximately \$18,000 per public school student per year, private schools charge approximately \$16,000 per student per year, (2007 prices) and the numerous homeschools charge varying amounts. Forty percent of students are in the private sector in Bermuda which indicates that the public are not satisfied with public education especially when the next closest country has less than 10% private school students.

To give an example of “academically challenged” students sent to the Technical Institute in the past, the trend was not only reversed but “Tech” as it was called surpassed most other high schools academically once it became established, these are facts and it is believed that this new technical high school will do the same.



Learn from Yesterday
Live for Today
Hope for Tomorrow
-unknown-

The Plan

The objective

To provide a comprehensive technical education that prepares students with the basic principles of mechanical, electrical and electronic engineering.

To provide students with practical experience in a hands-on environment whilst learning the basic tools and equipment of that environment

To prepare students for their future after high school, and give them the choice of trade or college.

It is the aim of this school to ensure all of its students receive a career path, an international qualification and the choice of a practical or theoretical career.

School Year

The school year will consist of five eight-week terms one static holiday, at Christmas, for two-weeks. The remainder of the school year shall be divided into eight-week terms with two-week vacations except for the summer when there will be four-weeks. The vacation periods will be used to allow students to attend their technical release companies with prior arrangement, enable school trips to industry abroad, and take family vacation time. It will also allow the teachers to share and assess the learning during the previous term and “tweak” the syllabus to better serve the desired result.

School Day

The basic school day will consist of academic classes in the morning from 0830 until 1200, with appropriate breaks, and the afternoons would consist of sports one or two days per week, release to a local company with set syllabus two days per week from 1pm until 4pm, and the remaining day would be classes teaching “soft skills”, “life skills” or completing the written portion of the technical release syllabus.

It is intended that school will continue until 5pm and all students will be released from the classroom dependent upon school location. Students will not be able to leave the technical release company premises and proceed home they will be required to return to their school.

Uniform

Students will wear a uniform whilst in school or when in public, but would be required to wear cover-alls when in the technical release company premises. All students shall have a sports uniform for inter-school games.

Outside Technical release

Students will spend five weeks, one or two afternoons per week, with a participating company; a set syllabus shall be written and approved by the technical advisory board as appropriate for that type of business.

The objective of this technical release period is to enable students to experience the atmosphere, workload, and learn some essentials that may benefit them in their daily adult lives.

The information they will be required to learn will be written into their exercise books and they will be examined on the subject after the consignment.

It is intended that there will be sixteen participating companies, enabling students to complete five weeks with each. This will cover the first two years of the four year programme.

The second two years of the programme will be more structured and entail the coursework for a two year international programme to be arranged with the aid of the technical advisory committee and be a recognized course Worldwide. Placement in companies will continue dependent upon the progress.

Careers courses will also be an important programme to prepare students to transition to either college or the workplace and continue their studies for upward mobility within the workplace.

It is intended to include industry as a part of the preparation, to encourage students to reach their potential and stimulate them regarding the rewards of a technical career.

Funding

I believe it is possible to raise funds to purchase a property and have it put in a trust fund for technical education for many generations of Bermudian students to come. We must recover our youth and I believe this is just one way to make a difference to our youth and to Bermuda.

It is intended that our industry partners and some corporate partners will either donate towards the operation of the school or offer the school scholarships for the students who qualify academically and have been selected by the industry selection committee as suitable candidates for this arduous programme.

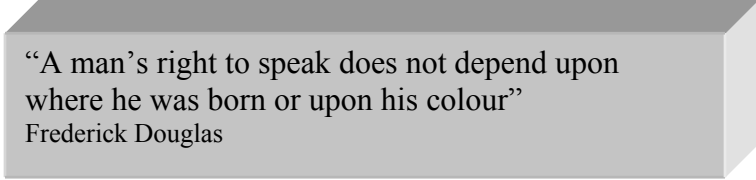
It is also intended to involve parents and students in fund raising efforts throughout the year. The school fees will be in keeping with other private schools in Bermuda.

Ten Year Plan

In time all lessons will be taught by specialist teachers, mathematics and science, languages, history and geography, which is intended as the school grows and funds can be found.

Our future vision for the ideal technical high school in the long term is for a workshop and equipment room where students can learn the skills of stripping, diagnosing faults and repairing machinery, as well as learning basic metalwork, practical electrical and electronics. The type of equipment would include a small boiler complete with control system, reverse osmosis system to make fresh water from well water and a small generator capable of running the school in the event of a power failure. Diesel engines and petrol engines on engine frames which can be

“bugged” and trouble shooting skills taught. It is with these activities in mind that the purchased property would have the required the room and potential to develop accordingly. These activities excite and encourage students to achieve what many generations of students have not had the chance to do since “Tech” closed. Technology is advancing quickly, but the basics remain the same, working things out from basic principles remains the main aim and intention of educating students except it must be enjoyable, exciting and demanding.



“A man’s right to speak does not depend upon where he was born or upon his colour”
Frederick Douglass

Structure of the Organisation

Operating Personnel

In the first year the Head Teacher, mentor, and organizer of the whole plan will continue in that role, ensuring students get to their placements, teaching, and organizing. He will further continue the planning process for the international programme and ensure the facility meets or exceeds code regulations for the school.

A versatile, efficient and energetic secretary or assistant to take messages, liaise with parents, check school premises, receive visitors, record important information, keep records, pay bills upon being approved, and other tasks as required.

In the second year, it would be necessary to hire another teacher, to take the first or second year, it would be convenient if the teacher were present during the last eight-week term to become conversant with the school policies, and curriculum.

In the third year it would be necessary to hire another teacher for the first year and the Head would start with the international programme.

The fourth year, the second teacher on board would teach the first year international programme the new teacher the second year and the head would teach the fourth year students.

It would be necessary for all teachers to teach each year and become conversant with the several programmes. After the fifth year it is intended to hire the fourth classroom teacher and the head can then use the time to ensure all programmes are running well and reaching their goals

One of the teachers would double as a sports teacher one afternoon per week in years one and two and two teachers would double as sports teachers in year three and thereafter.

School Rules

The Head of School shall introduce a set of school rules and a student/parent hand book shall be supplied to every student and parent upon their joining the school.

In the case of a serious breach of school rules and expulsion recommended it shall be decided by the Head of School and the Chairman of the Board only, with an explanation to the board at the next meeting.

Student Selection Committee

It is intended to use industry members to aid the head teacher in the selection of students; the process would work as follows:

An application form would reach the school six months before the end of the school year, a committee of five senior members of industry from participating companies would be asked to participate in the selection process.

There would be three interviews, the first to eliminate candidates, and pick a short list. The second, to pick the correct number of students required and the third to ensure that the students and the parents fully understand the implications of such a demanding programme and the penalty for dropping out.

It is intended that first year numbers will be twenty and with natural attrition by the third year be a number of sixteen.

Students selected to attend the school shall be informed of the fees, uniforms and expectations at all interviews and in advertising literature to dispel any notion that the school is free or devoid of fees. If however a student is strongly recommended for enrollment but the parents prove to be financially unable to afford the full fees, then it shall be the intention to send a request to participating members and other sources to raise the fees, or a portion thereof, on their behalf.

Benefactors of the School

Benefactors and contributors to the school shall be recognised in an appropriate manner as decided by the board, and a minimum contribution for such recognition shall be decided by the board.

The Board of Directors

The Board of Directors shall be selected from participating industry partners, major benefactors and include the Head of School.

The Head of School shall have a five-year contract as the Head of School and thereafter a board member if so required.

The remainder of the board members shall be asked to sign on for either eighteen months or three years to ensure continuity.

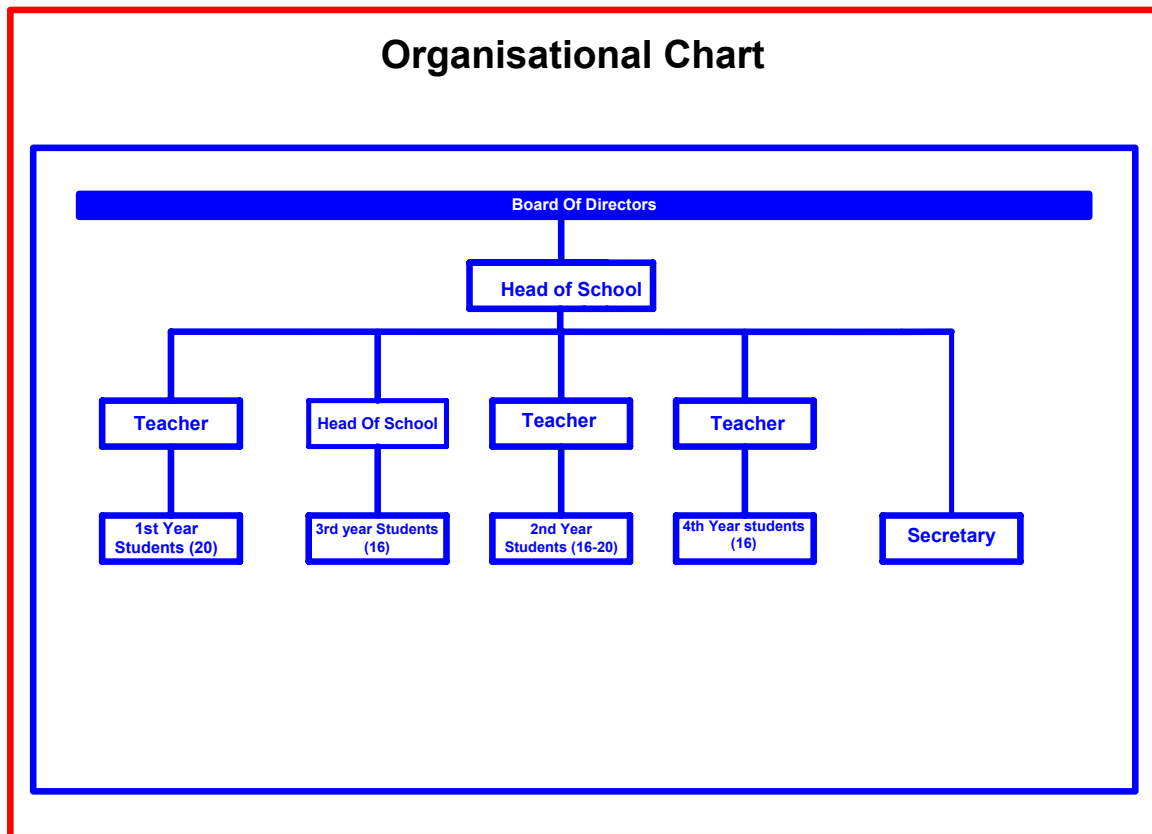
There will be eight board members plus the Head of School; all shall have full voting rights.

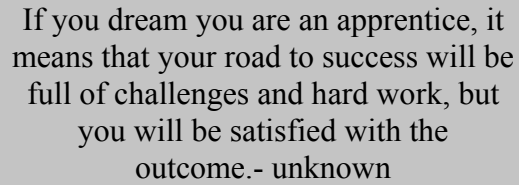
It is intended that the Board of Directors will become conversant with the school programme and be encouraged to attend the school to observe lessons and progress, and as industry representatives to ensure that the “basics” in mechanical, electrical and electronic engineering are being taught to a standard necessary for the students to achieve the international qualification.

Parent Participation

All parents shall be requested to participate in all fund raising activities as well as school public activities. A parent-teacher association shall be encouraged, but shall not be permitted to change the school activities or curriculum; it will be demanding and necessarily so, if our students are to succeed in the academic and technical standards of the world.

Parents shall be encouraged to participate in the homework which will at times be demanding. Dedication and determination will be necessary to succeed in this school. Be warned, it will not be easy, but then anything worth having never is.





If you dream you are an apprentice, it means that your road to success will be full of challenges and hard work, but you will be satisfied with the outcome.- unknown

Unique Aspects of Technical Training

Industries involved

Construction trades which includes:

Mechanical trades, plumbing, pumping sewage, water and air conditioning

Electrical trades, installation fault finding, controls, and operation

Electronic trades, installation, communication, controls, security, fire systems

Each of the above has a design aspect which requires education to degree level with practical experience. Systems must be designed to work efficiently, effectively and fit into the building, so there has to be liaison with the architectural designer to ensure everything fits without creating a conflict with other trades or the aesthetics of the building.

There is then the necessity to transfer the information from drawings into material lists which have to be ordered and shipped to the Island.

Once containers arrive in Bermuda the materials then need to be consolidated to the jobsite where they are required.

The tradesman then installs the materials following the drawings supplied by the mechanical, electrical or electronic contractor.

The skills required to progress an office building or a block of apartments from drawing to final completion requires the skills of many technicians and engineers of varying levels.

Before a technical company submits a bid for a contract the skilled senior technician “takes off” the drawings to produce a materials list to and price them to establish the material costs. Upon winning the contract he then has to order them from the supplier, this entails thinking in 3-D, an in-depth knowledge of the trade, knowing the code requirements and what is and is not possible, in this regard the senior technician would liaise with the architect to review the aspects which were considered problematic. The architect then issues a revision to the drawings, these things don’t just happen, skilled personnel are required to make them happen and the better trained and more skilled the technician the better the practicality of the finished job.

On paper, ductwork may look fine but the skilled tradesman reading the drawings interprets them and sees what no-one else has seen, this requires a “change-order” to be written which entails a change to the drawings to make the practical situation work.

This procedure is required by all trades for all buildings, the finished building is only as good as the skilled team that applies their knowledge to the task.

The above is one aspect of a tradesman's skills, in the case of an air conditioning chiller, or boiler or reverse osmosis system, an in-depth knowledge of the operating procedures, code requirements, safety devices, control system whether mechanical, electrical or electronic, and the associated physical plant installed. This requires years of training learning the "basics", the theory and the physics behind the process, with that ammunition a skilled technician can work with the physical plant to ensure it has been set-up to perform the tasks required of it.

An education should be exciting, stimulating, and progressive from primary school but we have failed to fulfill that mandate. An education is intended to prepare youth to become useful citizens in their society, preparing them with "soft skills", knowledge and skills to enter the workforce and lead a fulfilling life. We have failed to fulfill that mandate.

We constantly hear about students either in trouble or failing miserably at school, yet "he can strip a bike in two minutes", "he's a genius with a computer" or "he's a clever kid but totally off the rails". We have failed to excite or stimulate that student or even direct them towards a future. These students do not see a future in high school; they want an education but drop out of high school to enter adult education which is more meaningful.

Bermuda needs technicians to fulfill necessary tasks to maintain the infrastructure of the country and we are not producing any with a structured education, a progressive meaningful education, to fulfill both the needs of the individual and the needs of the country, and we believe we can make that happen.

If you are reading this and can assist in making this happen please call us. If you are reading this and believe what has been said, call us and support us in our endeavour.

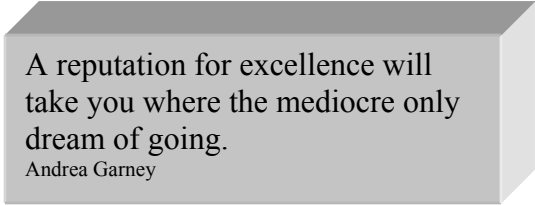
Bermuda's Past Strengths and Future Potential

Bermuda once had a skilled workforce to compare with and better than most in the world, training was difficult, very structured, but it worked. Bermudians were so proud of their skilled workforce that they still talk about them.

Today, Bermudians have the potential to reach that status again, "**Trained in Bermuda and sought after Worldwide**" It is not so fictitious, it can and will happen. We are looking for a helping hand to make it happen.

We have a college which is a political nightmare, we have new schools which produce students with an abysmal academic record and we **can** change that – we BELIEVE.

Remove the politics, remove the bureaucracy, restore the discipline and "soft skills", and return to the small units of yesteryear with a theme and purpose. Excite the students with subject areas applicable to the needs of the workforce. Involve the workforce, let industry drive education as it does the economy.



A reputation for excellence will
take you where the mediocre only
dream of going.

Andrea Garney

Industry Trends that have Affected Technical Industry

During the past twenty years the hospitality industry has declined, and larger hotels are owned by large international “chains of hotels”; unable to find qualified Bermudians to work in the industry they have had to resort to imported technical labour.

This then becomes a barrier for local youth, the training is not available on the Island and the hotels want experienced, qualified technicians to operate their machinery and systems.

This has further increased the barrier for local technicians in that foreign labour from less affluent countries than Bermuda will accept a much smaller remuneration package. Thus the decline in hospitality industry work for “locals” has been a result of the lack of adequate training, and we appreciate it is unfair to penalize a “necessary business” by not allowing them to import labour IF the local workforce is not trained and available.

In the past two or three years a resurgence of the hospitality industry has emerged, new hotels are going to be built and old ones torn down and rebuilt. This is an opportunity for local technicians to become trained, relieving the housing market and the workforce status from untrained to skilled. This is then an opportunity to start a technical school to commence the **“Trained in Bermuda”** motto and make it meaningful.

The workforce will be required to increase again if the number of hotels increases, it will be better for Bermuda and Bermudians to fill the “Skilled” positions and import unskilled labour, if necessary, than the reverse.

It is factual to say that industry will congregate in an area where the workforce is trained and skilled, and also that industry will avoid a workforce without training or skills. (Coweta County Georgia)⁴ Employers would find their task easier if local technicians were available instead of having to find housing and paying for work permit applications and having to employ someone to process them. The present legislation to “protect” Bermudian jobs by preventing long term immigrants is meaningless if we are not providing the training and consequent upward mobility to enable Bermudians to prosper in these positions.

There have been numerous studies and recommendations of late with the latest indicating major changes should be undertaken, and this is the intention during the next three or four years, but industry will not wait and cannot survive until this happens. They require technicians to run their businesses and will import them. In this regard; “Bermuda started a process of change they introduced the computer science curriculum (in public schools), it was implemented with professionalism, speed, and (comprehensive) professional development of the teachers. It was so effective that in general the classroom discipline improved. The importance of professional

⁴ From **Collaboration**: A pathway to a brighter future for public education by Colin Palmer

development must be emphasized for these front-line technology teachers, the curriculum is unique and the training of teachers must continue to ensure the course keeps the standards intended. Importing teachers – untrained in this curriculum – will quickly lose the benefits of having a unique first class curriculum”.⁵ I can now report that there are none of the original teachers in the public education system actually teaching this programme and it appears that our worst fears, for a purpose built curriculum by Stanford University implemented by them and paid for by international business and private industry, are now a reality. This trend in education has made it necessary for concerned and dedicated educators to leave public education and join the private sector, and a reason this business plan became necessary.

Competitors supplying Technical Education in Bermuda

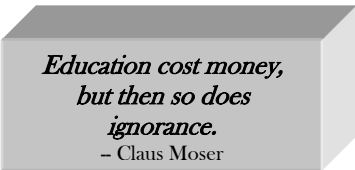
Currently there are no competitors supplying a technical education as a main theme in high school education. The only technical education taught in Bermuda is that supplied by the Bermuda College for school leavers at the age of eighteen. The National Training Board does supply public funds to send youth to the Bermuda College or overseas. There is a course as part of a curriculum in public schools called the NCCER safety training course which is basic safety training for those students wishing to enter the construction industry.

This proposal is to teach students, age fourteen years and upwards, a normal academic curriculum with a technical education component, leading to an international technical qualification in the final two years. This proposal does not “specialize” students but prepares them for a technical career either as a technician or as an engineer should they so wish. There is no obligation for students to follow a technical career, but we believe the preparation received will enable them to make an educated decision on the type of employment they wish to follow upon leaving school.

This decision to open a technical school has been taken after many years of procrastination by the other various educating bodies, and the research undertaken during the past ten years in particular. The reaction from the majority of the major companies recently consulted, has been one of support because they have a need for good graduates and also one of guarded incredulity because of the previous promises which have resulted in nothing.

Just one company has actually promised definite support when the school opens, but it is with confidence that there are others in the community in a position to help this proposal become a reality. It is one thing to meet and propose and another to actually put forward a detailed plan of action to move forward with the plan. This plan will succeed.

⁵ **Collaboration:** A pathway to a brighter future for public education by Colin Palmer



*Education cost money,
but then so does
ignorance.*
– Claus Moser

The Financial Plan

a. Funding Requirements - amount, type, term, etc.

The entire plan to help our youth and make a difference in so many lives is squarely dependent upon the support of and commitment of Industry, international business and any philanthropic idealistic that believes as I do that the answer to a lot of the problems with our youth lies in education and technical education in particular. The requirement is for a building large enough for four classrooms two offices and requisite amount of rooms to furnish the code requirements in bathrooms and kitchen needs. The building would be set up in a trust for the school for future generations of technical education and technical education alone.

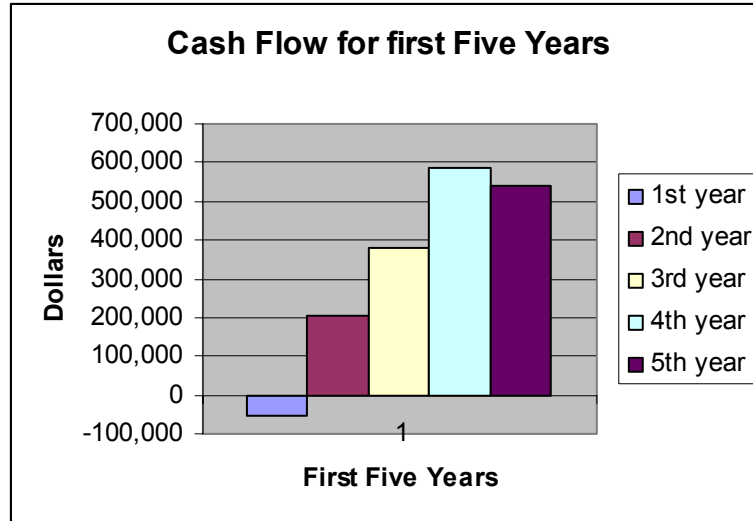
b. Use of Funds

Funding to aid the operations of the school would include the land-tax, maintenance, security, furnishings, re-modeling in the first instance, air-conditioning and the costs incurred to secure the use of the international qualification accreditation.

Funding is also required in the form of scholarships should a student be highly recommended by the selection committee and the parents of the student be unable to meet the financial burden. It is then that the committee would request a part or full scholarship for the four years; this would be conditional upon grades and performance.

Funding from tuition would be used for salaries, utilities, Internet, insurance, air-conditioning maintenance and operation, transport, initial items of furniture, and technology in computers and software requirements and licenses.

The amounts at this stage would be difficult to assess, it would depend upon the condition and size of the building, it would depend upon the cost to re-model, it would depend upon the support from the various members of society and it would depend upon the commitment and requirements from philanthropic sources



P & L										
Commodity	Monthly	Year1	Monthly	Year2	Monthly	Year 3	Monthly	Year 4	Monthly	Year 5
REVENUE										
Tuition/student		16,000		16,800		17,640		18,522		19,448
# students		20		38		54		70		70
Tuition	26,667	320,000	53,200	638,400	79,380	952,560	108,045	1,296,540	113,447	1,361,364
EXPENDITURE										
Electricity	350	4,200	716	8,592	1,100	13,200	1,633	19,600	1,750	21,000
Telephone	100	1,200	200	2,400	200	2,400	250	3,000	250	3,000
Internet	60	720	83	1,000	100	1,200	125	1,500	125	1,500
Rent/Mortgage		-		-		-		-		-
Transport	50	600	700	8,400	700	8,400	700	8,400	750	9,000
Furniture	375	4,500	417	5,000	458	5,500	500	6,000	42	500
Wages	20,833	249,996	30,208	362,496	40,052	480,624	50,388	604,656	61,241	734,889
Insurance	291	3,492	333	4,000	375	4,500	417	5,000	750	9,000
Substitute	240	2,880	240	2,880	480	5,760	480	5,760	583	7,000
Service	100	1,200	120	1,440	150	1,800	200	2,400	333	4,000
Maintenance	150	1,800	200	2,400	240	2,880	300	3,600	417	5,000
Sundry Items	250	3,000	300	3,600	350	4,200	450	5,400	583	7,000
Contingency	1,000	12,000	1,000	12,000	1,000	12,000	1,500	18,000	1,667	20,000
Start-up costs	7,525	90,305	1,674	20,090	2,345	28,140	2,287	27,440	-	-
Total expenses	31,324	375,893	36,191	434,298	47,550	570,604	59,230	710,756	68,491	821,889
Expenses p.a.		375,893		434,298		570,604		710,756		821,889
Profit / Loss		(55,893)		204,102		381,956		585,784		539,475

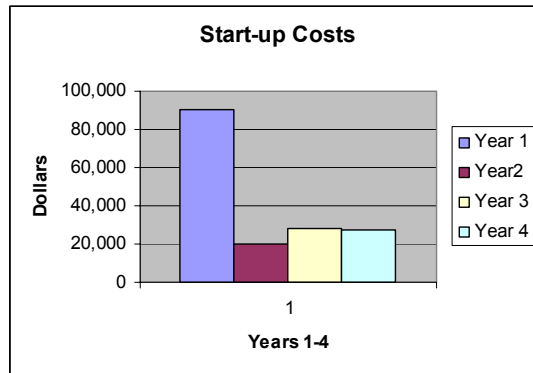
Sundry items to include; (toilet tissue, hand towels, hand soap, disinfectant, chlorox, etc.)

- c. Pay-out to investors - timing, return on investment, exit strategy for investors

This type of business is unlike a normal investment, the payback would be to the country in qualified and upright citizens. The return on investment will be greatly on the integrity of the teachers and Principal. Without which there would be little purpose in this venture.

Investment to put this school on a sound financial base would enable the fourth year and future years to be almost self-sufficient from a major capital viewpoint, and scholarships, donations and fundraising are envisioned to be less critical.

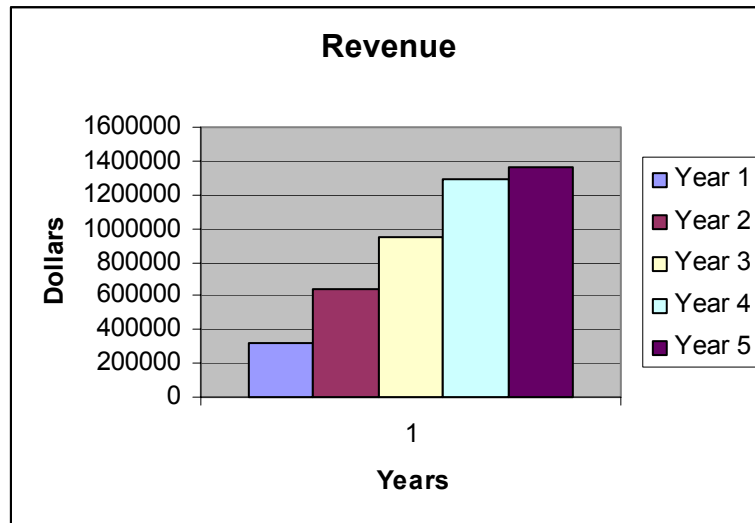
- d. Financials: This is a new venture and therefore there are no past or present financials to share, but there have been predictions made in this regard.



ITEM	SIZE	QTY	VENDOR	COLOUR	MATERIAL	UNIT COST	TOTAL COST
Chairs	18"	20	Von Rez	Navy	Plastic/metal	30	600
Desks	Adjustable leg	20	Von Rez	Cream	Wood/metal	55	1100
Tables	Large	3	Von Rez	wooden	wood/metal	115	345
White Boards	9' X 4 ft	2	white	white	metalcoated	255	510
Computers	10"	9	Dell	Black		1050	9450
Network	Server/Cabling	1?				10000	10000
Teacher Desk	Donation						
Secretary Desk	Donation						
Teacher Chair	Donation						
Secretary Chair	Donation						
Air-Conditioning Install		1				60,000	60000
Telephone install		1				800	800
Basic Security Install		1				2500	2500
Paint Classroom & office		1			Paint	1500	1500
Paint Building outside		1			Paint	2000	2000
Shipping		1				1500	1500
							90300
							0

Explanation and documentation or source of assumptions in projections:

The projections made are mainly for the monthly bills electricity, telephone, Internet, wages, a contingency for maintenance; although the condition and maintenance cannot be assessed until the building has been bought.



Items like printing cartridges, stationary, service calls for plumbing, air-conditioning, and structural leaks would need to be re-assessed once the building was purchased.

The electricity was assessed with the inclusion of air-conditioning, but the installation of the air-conditioning hardware is present in the capital required. The electricity costs will include one classroom and one office for the first year, and two classrooms and an office for the second year. The intention to start evening classes has also been factored in to the cost of electricity.

Service calls may be minimized by the promissory help of partners from the industrial sector.

Substitute Teacher has been factored in to allow for sickness and absence due to negotiations for courses.

Transportation of students to their workplace or help a parent pay fuel costs. Fuel and electricity are the major items and are expensive in Bermuda.

To reduce the electricity costs it would make economic sense to install window film proven to reduce heat transfer

To reduce fresh water usage a well has been included for flushing water and possibility of reverse osmosis project in the future.

Security will be increased as the cash flow allows, but basic alarm would be installed from the beginning.

Conclusion

It is time for action, it is time to make things happen or suffer the consequences of lost generations of our youth. If there are those out there or those reading this proposal that think and feel this way, *please* do not stand on the sidelines, we need your help to make this school a reality, we need industry, we need international companies, and we need individuals to make this plan a reality for the youth of Bermuda to make a difference for the few up for the challenge.

The contact name and address are on the cover, call and lend your support, your time and our help to make this happen.

APPENDIX A

You have to sow before you can reap
You have to give before you can get
Robert Collier

A Typical Practical Syllabus An Electrical Company

Periodtwo afternoons of three hours for five weeks

Total hours 30

Students will with the help of company employees identify the following parts, their uses and why they are used in that way.

Students will be prepared in school to ask the questions that will supply the answers they require and the company employees will be briefed about the depth of knowledge required

This is an exercise in familiarity, not in-depth knowledge, students should be able to identify the components and what they are used for, identify the differences in receptacles and their uses.

i.e. a wire colour green covering, copper 12 awg is used for 30amps load and will normally be a ground wire.

A black wire with the same credentials would be a live wire and a white the neutral wire, where there are two live wires in one conduit then one can be red coloured

Awg = American Wire Gauge

A 20A receptacle 120V is different to a 30A 240v receptacle when fitted into a standard size outlet.

Identify, and record the following

- Wire sizes and their uses from 22AWG to 00
- Wire size and amperages
- Colours and their uses
- Control cables
- Line fuses, glass fuses, slow blow fuses, and their uses
- Breaker panels and sizes,
- Types of breakers and sizes
- Conduit types, materials and how used
- Connector boxes, Pull boxes, LB, LR and LL
- Conduit clips, materials and connectors
- Outdoor receptacle covers and switch covers
- Wire clips, cable clips, cable ties
- OHMS Law write and learn
- Single phase and three phase breaker panels
- 120v outlets in 15A, 20A, 30A
- 240v outlets in 30A, 40A, 50A, 60A
- Marine fittings for 120v and 240v plugs and receptacles
- Identify the differences between all twist-lock plug/receptacles
- Identify all types of wall boxes, for receptacles, switches, etc.
- Single and double throw switches

- Single and double pole switches
- What is a GFI receptacle? Where is it used? And why?
What is it used for how many are there?
- List the number and type of “solderless” terminals and their uses
- Cable lugs, mechanical connectors
- Shielded cable and uses
- CO-axial cable and uses
- Liquid-tight conduit and fittings
- What is a wire nut? What is it used for?
- What is a split bolt connector?
- Hazardous location fittings why used and how do they work?
- Types of light fittings incandescent and fluorescent
- Types of “bulbs” lamps and differences
- Cable trays and components
- Wiremold and components
- Types of disconnects
- Types of contactors and uses

A Plumbing Company

Period..... 3hrs twice a week for five weeks

Total 30hours

Students will with the assistance of company employees identify the equipment used, the materials and the reason for the materials, i.e galvanized pipe has been replaced in MOST cases by PVC pipe sch40, the reason was the corrosion over time and installation times are less with PVC, hence the cost to install and longer life.

Identify and record the following

- Schedule 40 & Schedule 80 pipe two types of hot water pipe
- Acid resistant pipe
- Fire Sprinkler PVC and Black iron pipe
- Galvanised pipe
- Fittings to include:

90's	45's	Tees	reducers,	couplings,	unions,	bushings,
Reducing Tees	Drainage	Pressure sch40	Pressure sch 80			
Victaulic fittings	1/8 th bend	drainage	Male adapters,	Female adapters		
Check valves	Foot valves	Back flow preventer valve	Street elbow			
Nipple	Hangers and clamps	reducing coupling	reducing elbow			
Plug	Cap	Cleanout	Trap adapter	Toilet flange	Flange 4;6 & 8 hole	

- | | |
|---|----------------------------|
| • Copper pipe | Copper fittings |
| • Solder 50/50 and use 40/60 and use | Flare fittings and use |
| • PVC compression fittings | Flexible (repair) coupling |
| • Test Plugs | John Guest fittings |
| • Ball Valve | Butterfly Valve |
| • Gate Valve | Needle Valve |
| • Globe Valve | Rising stem gate valve |
| • Pressure and temperature relief valve | Water hammer arrester |
| • Swing Check Valve | Spring check valve |
| • Ball Check Valve | Y strainer |
| • Big Blue filter housings | Vacuum breaker |
| • Float Valve assembly | |