

UNEARTHING THE DETERMINANTS OF SUCCESS IN SOFTWARE ENGINEERING EDUCATION: A CASE STUDY FOR BOTHO COLLEGE STUDENTS' PERFORMANCE

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ABSTRACT

The Botho College Software engineering curriculum has been running for quite some time now since 1997 up to date. Over the years we have seen considerable discrepancies or inconsistencies with regards to the results of Software Engineering Undergraduate Students. It therefore struck to our mind that we ought to investigate and analyze these results in the context of our own teaching and learning scenario. We found that the delivery mode, the learning styles being employed, the nature of the curriculum itself, the infrastructure in place, the environment in general in terms of the job market and other challenges have a direct bearing on the performance of Software engineering students. We found these challenges to be the nucleus of factors that impinge upon SE program of study outcomes at the Institution.

This white paper goes on further to suggest a framework that can be employed to improve the quality of results in light of all the categories of challenges being faced by the students as well as by the educators at Botho College. The Student Feedback system was used to gather views from students. Motivational skills will be devised so as to plot the way forward in a bid to improve students' performance.

KEYWORDS

software engineering, curriculum, delivery mode, Botho College, undergraduate students, feedback, challenges.

1 INTRODUCTION

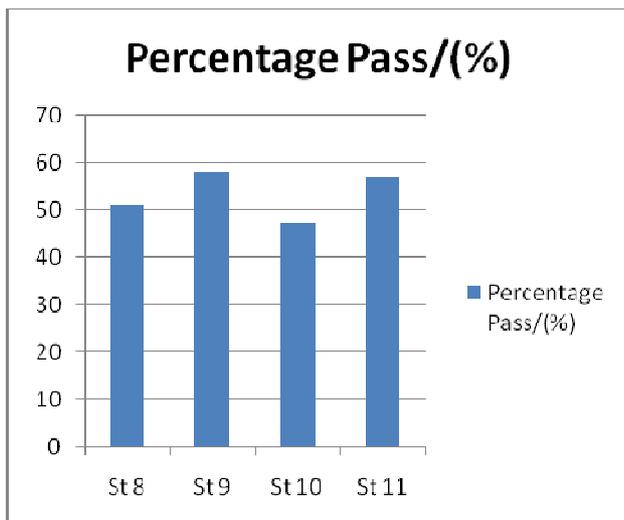
Botho College is one of the biggest private institutions in Botswana that offers Software engineering education (SEE) [1]. The institution was founded in 1997 and it offers courses in Information Technology as well as in Business and Accounting. It works in partnership with other Universities like Teeside University (TU) from the UK, the Open University of England (OU) and The National Institute of Information Technology (NIIT) from India. Of particular interest to us is the Software Engineering program which is being offered by the College in partnership with NIIT and the OU. We have chosen this as a case in point because over the years we have seen considerable discrepancies or inconsistencies with regards to outcomes of Software Engineering undergraduate Students. It therefore struck to our mind that we ought to investigate and analyze these results in the context of the delivery mode, the learning styles being employed, the nature of the curriculum itself, the infrastructure in place, the environment in general in terms of the job market and other challenges that have a direct bearing on the performance of Software engineering students. All these challenges have lead us to conclude that teaching software engineering is not an easy task and a lot needs to be done so that better results can be achieved in the foreseeable future. If we

look around us, over the years, the adoption and use of SE technology and related ICTs has become the dominant feature in modern day organizations. Even individuals are not spared in this trend. The results are there for us to see and share our experiences. Almost the entire service industry like insurance, banking, tourism and so on is driven by SE technology. Stand-alone systems have long since been superseded by distributed systems and Internet-based services. The demand for software engineers is therefore growing exponentially by each day. The big challenge posed by the developments is for institutions of higher learning to churn out SE engineering graduates of a high caliber who can face off this challenge. Table 1 below shows the results of the different streams or cohorts of students so far.

Table 1: Some results of different streams of students who completed the SE program

Stream	Percentage Pass/(%)
St 8	51
St 9	58
St 10	47
St 11	57

Fig 1 Bar graph showing results of different SE streams (St)



The results shown in Fig 1 above shows that the overall results of students in the four streams so far have not reached the 60% mark. The lowest

overall percentage pass for the streams that have completed so far is 47% which shows a dismal percentage. What then is causing this low performance in Software Engineering Education (SEE) at our institution?. This is debatable and is the centre of our investigation in this paper.

2 SOME HIGHLIGHTS OF THE SE PROGRAM

The Bachelor of Software Engineering course being offered at Botho College is completed within four (4) and half years of full-time study. This program of study is accredited by BOTB (Botswana Training Authority)- a national body that oversees human resource development and training in Botswana. The course is normally taken by around 500 students every year and they are put into classes of 25-30 [1]. Their work is managed and guided by a lecturer or an associate tutor. In the fourth year students undertake a software engineering project where they are supposed to identify and work with a local client organization to provide a software engineering solution to a problem using a process such as the RUP (rational unified process).

3 RESEARCH METHODOLOGY

Our methodology was centered around an intensified interaction with the students on a one-on-one basis.

There was also the use of questionnaires allowing the students to fill feedback forms.

We also had a look at the results of the performance of the students in the SE program within a period spanning over five (5) years. This way we were able to generate a lot of data pertaining to the SE program being offered at the institution.

3.1 Questionnaire

The following is the sample questionnaire that was used to gather information about the SE

program at the institution. The sample questions are shown in Fig 2 below.

Fig 2 Sample Question used to gather data

1. Level of study being undertaken-----

- Certificate Diploma Degree

2. The Lecturer is knowledgeable about the material being taught.

A	SA	N	D	SD
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3. The lecturer uses effective and creative teaching methods.

A	SA	N	D	SD
---	----	---	---	----

4. The practical activities done in class have a strong relationship with what happens in industry

A	SA	N	D	SD
---	----	---	---	----

5. This course is challenging and forces me to think

A	SA	N	D	SD
---	----	---	---	----

6. I feel that I am learning more in the course

A	SA	N	D	SD
---	----	---	---	----

7. I am gaining confidence in myself by each day as I proceed with this program of SE

A	SA	N	D	SD
---	----	---	---	----

8. I can get employment after completing this course

A	SA	N	D	SD
---	----	---	---	----

9. There are many employment opportunities in my country after completing this course.

A	SA	N	D	SD
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10. What do you want to become after completing this course? Try to expand on this by supporting your answer here

11. What skills have you gained by undertaking this course? Again substantiate your answer by supporting your answer-----

12. How do you distinguish yourself from the other students who have done a similar course such as yours in SE-----

13. How have your dreams changed after doing this program-----

14. Please describe what you are most likely to remember from or about this course in ten years time? -----

15. Do you think the infrastructure is the one of the important element for the effective teaching? With reason. -----

16. What do you feel your course needs to become a better course? -----

17. What are the current leading technologies that are dictating the pace of life these days?

Key

Scale points for Questions 2-9

A=Agree, SA=Strongly Agree, N=Neutral, D=Disagree, SD= Strongly Disagree

3.3 Data Analysis

100 students took part in the exercise. The response was above 80% because students find the program very challenging and were interested to know how they can improve their results.

Here are the responses at a glance:

Table 2 SE Students responses.

Question	A	SA	N	D	SD
2	30	12	10	28	20
3	10	15	13	30	32
4	17	12	3	32	34
5	78	8	0	6	8
6	23	18	0	30	29
7	10	12	3	35	40
8	20	15	6	28	31
9	22	18	5	30	25

Table 2 above shows the results of students 'responses on questions 2-9 provided in the Questionnaire given in Fig 2 above.

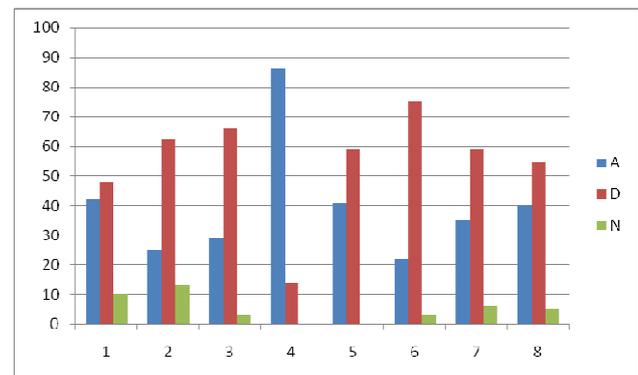
Values for agree and disagree opinions were combined into a single value since they have the same contextual meaning, the same applies to the disagree and strongly disagree opinion. These are shown in Table 3 below. N is for those who did not want to express their opinion.

Table 3 Combined responses of SE students

Question No.	A	D	N
2	42	48	10
3	25	62	13
4	29	66	3
5	86	14	0
6	41	59	0
7	22	75	3
8	35	59	6
9	40	55	5

Fig 3 Graph of SE Students opinion

Opinion /(%)



Item No.

Question numbers from the Questionnaire in Fig2 above were numbered from 1-8 items in the graph presented in Fig 3 above.

From the Bar graph on students's opinion shown in Fig 3 above:

For item no. 1

48% of students said Teacher not knowledgeable,
42 % agreed that the teacher is knowledgeable
10% did not disclose their opinion

For Item No 2.

62% disagreed teacher uses creative methods
25% agreed teacher uses creative methods
13% were not sure.

For item No.3:

66% disagreed practical activities are relevant
29% agreed practical activities are relevant
3% were not sure.

Using the graph drawn in Fig 3 above we were able to note where the students are experiencing problems in the SE teaching/ leaning situation

3.4 The Findings

A closer look at each of the responses given to the given the questions made us to be fully aware that there are indeed problems that need to be addressed in order to realize better results in SEE in the country.

After an intensified interaction with students in all the levels of their courses we were able to crystallize and categories the problems confronting SE in at the institution in particular. Our notable major categories were as follows: Pedagogy, Learning style, Curriculum, Infrastructure and Environment. For instance we noted: 1. students could not answer questions on the current 'hot technologies' – possibly reflecting a **curriculum gap**.

2. Students lacking understanding of fundamental concepts, failing to form discussion groups in the school probably reflecting pedagogy **and learning style gap**.

3. Students lacking 'big dreams' about careers in SE – **Environmental gap**

4. Students failing to take part in discussion forums- **Infrastructure gap**

We also further noted that effective teaching methods bear fruit when students are motivated by addressing the above mentioned gaps. On the other hand SE educators with industrial experience performed better in the classrooms especially when it comes to supervising projects than the pure academia. Students who are into self-organising teams such as those advocated for in the Agile Methodologies produced better results than those who study as individuals. On a daily basis such students valued principles and ideas of time boxing , communication, self-organisation , feedback from the teacher concerning their tutor marked assignments (TMAS), collaboration and cooperation in assignments , early completion of assignments , mission focused [2] and the like .

4 THE NOTABLE GAPS

4.1The Delivery Mode and Learning Style Gap

[3] noted that, “Most of SE courses in India use the traditional lecture based teaching pedagogy.” This is the case at our institution. Faith , the first author of this article being a module leader for the SE module for a period spanning over four years has had the chance to carry out classroom observations on a number of SE engineering lectures being delivered at the institution. Very often there seemed to be a paper-thin margin difference between delivering a sermon and delivering a SE lecture.

SE activities done in classrooms like programming , project management software testing and debugging and so on form the bedrock of ideas that can spring up to have a positive impact on the survival of mankind in this dynamic world.

We suggest a case-study based approach to teaching that should solely rely on concrete facts on the ground. Tech-based companies would play a role as models for technology-driven businesses so that values of technological advancement can be inculcated in our SE graduates.

Students should not only attend SE lectures for the sake of passing exams but should also aim to acquire life skills like entrepreneurial ones that help enrich their SE experiences for the benefit of the wider society.

We advocate here that SE educators should adopt current practices, principles and methodologies of SE. What is the need for placing more emphasis on the traditional process lifecycle model like the Waterfall model when we are in the Agile methodology era?

It their final year, SE students undertake a project. We have noted a serious problem where students fail to come up with realistic project schedules for their work. Those students who follow the traditional Waterfall model have faced problems in meeting their TMA deadlines but those using the agile approaches like Scrum have occupied themselves throughout the project lifecycle since each day they had something to do

Similarly again we have witnessed SE lecturers shifting jobs between academia and industry.

Such lecturers have performed very well in the classroom because of their blended experience

(they are able to convert theory into practice). [4] shed more light on the importance of strengthening the relationship between technology and the organization when he said that “the intellectual engagement of these two fields lies the potential for an important fusion of perspectives, a fusion more carefully attuned to explaining the nature and consequences of the techno-social phenomena that increasingly pervade our lives”. Thus no matter how challenging SE jobs are, students will always work hard to relate with their environment so that they acquire the necessary skills to fill up the posts in the Software industry.

SE educators must continuously update their skills by attending world conferences; engage in research and through in-service training. [5] summed it all by saying that “As new technology is developed corresponding changes must be made in retraining the current workforce as well as in educating the future workforce.”

Furthermore the success of students in SE programs in previous researches has been very much centered on what happens in the classroom settings. Our emphasis here is on influencing or facilitating students to learn even when they are outside the classroom

4.2 The SE Curriculum Gap

Hilburn and Bagert (1999) quoted in [6] noted SE has not yet been identified as a mature discipline. They identified the major problems that SE is facing as a discipline notably as: “

- SE program as an independent discipline is aspiring to become mature;
- There is confusion about the difference between computer science and SE;
- There is lack of understanding and appreciation among computer science faculty about the need for SE; and there

is little available material on curriculum guidance.”

It is important to note that the Software engineering curriculum at Botho College is embedded in the Computer Science curriculum and this should not be the case. We suggest here that the discipline be treated as a separate entity from CS so that it gains its status and maturity that way. This is supported by [7] who noted that software engineering is not computer science and as such these disciplines must be treated separately. The depth and breadth of the SE curriculum should be stretched to cover the deep things that help change life for the better. On the other hand the discipline needs to be complimented with other disciplines so that students can be equipped with the necessary skills. [8] quoted by Dieste (etal) (1999) who retorted that, “ although SE and KE were originally two approaches taking different paths , as the problems they address and the software systems construction process have evolved , points of intersection have been found where the two disciplines feed off each other.” Along the same lines we identify the disciplines where SE can borrow ideas from –disciplines like engineering mathematics, discrete mathematics, forensic sciences, information systems, industrial design etc.

Our vision here is to have these departments established at the institution in the near future so that students can do modules from the disciplines that can help enrich the SE curriculum.

The other issue to do with the curriculum is that the method of assessment used is not quite appropriate. From quarter one up to quarter 8 students write pro-metric exams (online multiple choice exams) and this has had serious repercussions on the performance of the students. We have found out that students can pass these exams but in most cases they lack confidence in themselves as they will be simply concentrating on passing the exams. This method of assessment has to be changed so that students can answer structured questions and thereby feel

confident in most cases to put across their ideas. All- in- all the SE curriculum should be evaluated by different stakeholders the industry and business community so that it can be continuously updated to reflect the current trends in SE.

4.3 The Infrastructure and the Environment Gap

SE by its nature requires individuals or groups of people who are versatile, adaptable to change and who are accommodative. The presence of such characteristics in SE educators or practioners gives innovation a chance to shape human destiny in the quest for new inventions. This is supported by [10] quoted “Katz an advisor to Singapore’s wireless research” as saying that, “Singapore has a strong educational system, as well as an outstanding telecommunications infrastructure and an exemplary readiness to use technology. Its electronic –road-pricing system, for example is efficient and effective.” This implies that a infrastructure and a rich environment open up avenues for innovation and this even translate to innovation even in the classroom setup where students would be doing SE . Even during the days of Piaget, psychologists believed that the environment has a direct bearing on the learning behavior of a child. We believe that ‘big dreams’ or visions come from the environment surrounding the students. As such the Government of Botswana in partnership with the private sector must rise to the occasion by encouraging investment in sectors such as manufacturing, engineering, education, economy and the like.

Such an environment would allow for the creation of a Software Engineering community with a common vision. Collaborative projects among the different SE educators would be enhanced and this allows for sharing of ideas and experiences. Our belief is that knowledge is only useful when it is shared with others and applied to situations that benefit the global society. This

only works in rich environments with good digital infrastructure.

A good infrastructure would create many employment opportunities as well as room for innovation. There is also room for so many windows of opportunities in the job market and society would expect institutions of higher learning to churn out graduates who would fill up the vacant posts in the Software industry so that they influence societal development trends for the better.

The Global recession has hard-hit our economy and caused a serious downturn in the mainstream economy of the nation. This has had devastating effects on the human capital base already being churned out from our institutions of higher learning because of the shrinkage in the job market. We have reached a stage where there is need for massive investment in technology companies. The government in partnership with the private sector can turn around things by funding these investments.

[11] summed it all when he gave hints on the culture of innovation which is vital for a state:

- A knowledgeable labour pool
- Economic dynamics of a nation such as the number of start-ups and of fast-growing companies
- Capacity for innovation, venture capital investments and patent filings
- Digital infrastructure and its access to global markets.

Psychologists have long found out that the environment has a direct influence on the behavior of an individual. A massive investment and improvement in this sector would be a wake-up call to SE educators and students to help the country burst into the world scene of technology. In other words how can Botswana appear on the global front page of technology? .Our far-cry here is to make the country establish it own software industry as everyone on-board would need to

be challenged to prove his worthy in this highly industrialized society to help change human life for the better. Graduates who leave institutions of higher learning would be naturally forced to acquire global skills in SE that encompass ethical skills, social technical and entrepreneurial for the betterment of human society. We also believe that SE educators can begin to switch jobs from academia to industry or vice versa or at times can work part time in industry thereby further enriching their SE talents.

- Opportunities for challenges
- Know challenges that lie ahead with respect to their careers
- Students would work towards set targets
- Determination and desire to excel so as to address the needs of society
- The ability to check on their progress and evaluate their SE program
- Impetus to be part of technological advancements shaping human civilisation
- Competition

At the time of writing this article [12] reported that, “Nokia design chief Marko Ahtisaari is spending a third of his time on creating a tablet for the cell phone maker, which would stand out among hundreds of iPad-challengers...”. Our belief is that competition in the environment translates to competition in the classroom just as ‘yawning is transferrable from birds to humans.’

On the other hand if the environment is controlled by accreditation bodies everyone who would then update the contents of the curriculum can always be checked or regulated to see to it that it meets the acceptable standard. [13] reported that, Computer Science and other Information technology-related degree courses in the UK are regulated by the British Computer Society (BCS) or the Institute of Electrical Engineers (IEE) or both.” The role of professional

bodies in the environment has been articulated well by [14] when they pointed to their three main contributions as:

- Professional development
- Public awareness and lastly,
- Standardization.

Literature is awash with other roles of professional bodies that include accreditation, awarding professional qualifications such as MCSE , CCNA, and the like, promoting research , hosting and funding research conferences , promoting SE standards and so on.

[15] summed it all by pronouncing that professional bodies, “

- Set and assess professional examination
- Provide support for Continuing Professional Development through learning opportunities and tools for recording and planning
- Publish professional journals or magazines
- Provide networks for professionals to meet and discuss their field of expertise
- Issue a Code of Conduct to guide professional behavior

We need such a body in our environment so that the SE practices are guided by knowledgeable professionals who are there to guide the maturity of the discipline.

A good environment in terms of infrastructure and the like is a good catalyst for excellent SE program outcomes as students will be competing to achieve good results as they aim would be kingmakers in making ground-breaking contributions to the SE global community of technology inventors.

5 SEE GAPS AND THEIR REMEDIES

Table 4 summarises the major gaps identified as well as the suggested remedies to these gaps. Although the infrastructure and environment gaps cannot be solved in a single day a long term strategic plan should be put in place by the Government and private players and even global partners in high-tech investments can accelerate the investment engine.

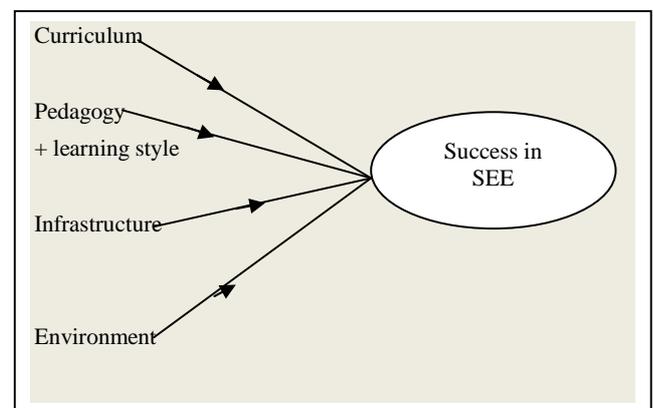
Table 4 The Gaps and their Remedies

Category of problem	Description of problem	Remedies
Curriculum	Depth and breadth is shallow. Method of assessment needs to be changed, relationship with mainstream economy	Update curriculum regularly, Inclusion of case studies with local content, Use structured Qs in final exams and mocks, Abandon quarter system and engage semester system and to extend period of projects
Infrastructure	Lack of high bandwidth, global partners in technology and business	Funding IT large projects, Digital infrastructure with large bandwidth
Environment	No standards body, growth limited, future, little investment in high tech companies, shrinking job market	Start-ups by graduates, business meager, expansion, nature and scope of projects, connectivity to world markets
pedagogy	Staff experience-research background, work experience, industry exposure, vision , lack of peer reviews	Update and continuously improve it by attending conferences, joining the SE community ,engage in research, Work with real clients

Learning style	Tools/ resources needed, exposure to current technologies and job market trends, career advice , poor academic background	Use child-centred approach, Interaction with real clients to get requirements
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6 A CLOSER LOOK AT THE ROLE OF THE DETERMINANTS OF SEE SUCCESS

Fig 4 The Major Determinants of Success in SEE-Framework of Success.



In our context, success in SE means student satisfaction and confidence, advancement of one's career even after completion of the program, high pass rate, employability, acquisition of SE skills (project management, dealing with complexity, team work, ethical responsibility, entrepreneurial skills etc).[17,18] provide a detailed classification of skills engineering students should possess.

6.1 Advantages of the Motivational Model Framework

Fig 4 above represents our motivational framework of success in SE outcomes. We found out that such a framework makes the delivery of SE transparent and industry would be ready to absorb graduates who are churned out of the SE program. At the same time the SE curriculum becomes structured and different stakeholders easily share information so as to enhance the quality of the program. Similarly again , other

motivational factors can be identified and added to the framework.

The framework provides a basis for the formulation and implementation of strategies that enable the different stakeholders to have a common vision in confronting head-on the problems confronting SEE. SE curriculum designers and implementers are put in a position to expand the scope of their vision so that they accommodate the different learning styles of students for instance SE educators can act as “Scrum masters” so that these groups of students stay focused on their goals when it comes to their SE assignments and projects as is the case in the Scrum framework [16]. Similarly again different stakeholders are able to see the role they need to play in the success of SEE programs. For instance Governments have to work on the policies that encourage investments in high-tech Companies

6.2 Disadvantages of the Model

Some of the gaps raised cannot be sealed in one day. A long-term investment plan by Government in partnership with private players may take a long time to realize investment in high- tech companies.

7 THE ROLE OF MOTIVATIONAL FACTORS

7.1 The Role of the Curriculum

A well designed and well implemented SE curriculum:

- Determines the skill level attained by students
- Reflects on industrial , business and societal needs
- Provides room for experimentation
- Inculcates SE technological values (like sprucing up image of Co., generating profits, boosting employee morale, increasing competitiveness, improvements in service delivery , communication among various departments that are geographically sparsed etc)

- Bridging gap between industry and universities

7.2 The Role of Pedagogy and Learning Style

- Use of case studies. This helps in further research of SE projects, alternative methods- thinking in other terms, understanding of results, answering research questions.
- Well taught graduates would require minimum training when they join industry cutting low on training costs, effort and time.
- Effectiveness of pedagogy bridges the gap between industry and universities through strengthening the collaboration bond between the two entities.
- Students taking own initiatives in learning new SE technologies, practices , standards, methodologies so that they continuously update their knowledge in line with technological trends shaping human destiny.
- Pedagogy instills SE values, attitudes and engineering characteristics in students
- Tracking SE technology trends and also contributing to its cause

7.3 The Role of Infrastructure

- Resources such as the Internet, access to digital libraries and other resources
- Laboratories for carrying out SE experiments and research
- Ability to take part in students’ discussion forums with other students taking the same course
- Allows SE educators to collaborate with those in other institutions and share experiences and ideas in SEE.
- Gives students the potential to start-up their own Software –based Companies even if they fail to secure employment

- Gives room for diversification of products that can be offered. This gives opportunities for innovation even after leaving school.

7.4 The Role of the Environment

- Gives opportunities for innovation
- A rich job market- this enables students to set targets and have high hopes of achieving or pursuing certain careers (software engineer, software development officers etc)
- Motivation
- Funding of programs and later on students are absorbed as SE employees.
- Run joint projects with institutions of higher learning – gives tangible results to students as proof that ‘it works’.
- Used as learning objects – live projects experiences, case studies etc.
- Tutors gain industrial experience and perform better in class.
- Opportunities for starting up own Software –based Companies even if graduate fails to secure formal employment.

Industry can help to add new areas to the curriculum like emerging technologies useful in meeting new user requirements

Table 5: Jobs for Software engineers

Job title	Posted by	Location
1. Software engineer	Thousands oaks	CA
2. Senior software engineer	Agile	Atlanta, CA
3. Software developer	MRI, Software	Solon. OH
.....		

Part of data Adopted from [19]

Table 5 above shows software engineering jobs in the US showing a rich job environment. The jobs are high paying to the tune of USD5000.00. We believe that such environments go a long way in motivating students to achieve good results.

8. LIMITATIONS OF OUR RESEARCH

We were not able to get data pertaining to many streams on time stretching back to 1997 when the institution started. This limited our research in the sense that the sample data was not enough and in our analysis we could not use the Chi- squared test for instance to test our hypothesis that different factors could affect results in SEE.

9 CONCLUSIONS

While our findings are limited to Botho College as a case in point we believe that we have managed to crystallize the problems confronting SE education especially in developing countries.

We have shared here our experiences and views with respect to the SE program of study and best practices that will make SEE have a global impact in terms of channeling graduates with appropriate skill set, mindset and vision for the future. This foundation can act as a cornerstone or turning point in their SE education. Success in SE education is guided by visionaries who lay firm foundations to guide their future endeavors to reach greater heights. As such we suggest that institutions should rethink their undertakings in a bid to reshape their direction for the future because ‘failure to shape up would force them to ship out’. The rate at which SE technological advancements are taking place is even faster than the tick of a second and as such institutions of higher learning should be seen to be contributing to this cause rather than be secret admirers of these technological advancements. Our findings here are important to Governments, individuals, parastatals, industry, business, universities and civil society so that they warm up the SE Tech-investment engine to begin a journey whose destiny is to shape or influence human society globally for its survival and continuity. From now on problems haunting SEE can now be confronted head-on so that SE technology can be given its place in shaping our socio-economic development. Similarly again, while SEE endeavors have been explored in the past our

findings here are open to criticisms and we believe that the findings also cover a broad spectrum of challenges that need to be addressed so that success in SEE outcomes can see the light of the day in institutions of higher learning dotted across the globe.

10 RECOMMENDATIONS

- Institutions of offering SEE must find teaching partners from other institutions of higher learning
- Use of industrial case studies that unearth real SE principles, best practices, and standards
- Work with real clients so that students are convinced that it works
- An intensified use of peer reviews , mentoring and monitoring of programs
- Establishment of licensing and accreditation bodies of Software Engineering that are independent and not prone to manipulation by political players or the business people.

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