



MID-TERM EVALUATION REPORT
THE IMPLEMENTATION OF THE EXPERIMENTO PROGRAM IN KENYA
FOR SIEMENS STIFTUNG
CONDUCTED BY IMPACTING YOUTH TRUST

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EVALUATION TEAM

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Mid-term evaluation report- The implementation of the experimento program in Kenya

ACRONYMS

S.T.E.M.....Science Technology Engineering and Mathematics

CEMASTE.....Centre for Mathematics, Science and Technology Education in Africa

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EXECUTIVE SUMMARY

Background

The overall objective of the experimento program is to offer teachers and educators a practical and curriculum-oriented selection of topics in the areas of energy, health, and environment to compliment the education curriculum and development visions of the country. The project aims to fill a gap in the implementation of the schools' curriculums through the provision of teacher training to improve the teaching pedagogy in S.T.E.M subjects, the provision of a mobile ab to encourage practical instructions and the provision of s network that encourages teachers to support each other and gain motivation in their day to day teaching.

The change objective of the program is to encourage discovery based learning can encourage leaners to explore, reflect upon and understand scientific and technological subjects independently and further develop their knowledge of global challenges to encourage sustainable development within the beneficiary communities. Some 130 experiments developed for age groups 4-7 (Experimento | 4+), 8-12 (Experimento | 8+) and 10-18 (Experimento | 10+) ensure that children and young people gain knowledge they can use throughout the educational chain.

The main outputs for the project are:

1. Strengthened capacity building of public primary school teachers.
2. Improved attitude change amongst key stakeholders towards S.T.E.M for sustainable development.
3. Networking and information sharing amongst teachers and schools as a long term strategy
4. Partnerships development amongst key stakeholders in the S.T.E.M sector in Kenya including corporates, government, educational institutions, parents, teachers, students and greater society.

In Kenya, the project is executed in Nairobi County in partnership with Impacting Youth Trust where 10 schools are trained annually. The program's implementation is under the management of the trust's executive director- s. Nyokabi Njuguna which included the assembling of the experimento kits including the training manual, the teacher training and currently the establishment of a teachers' network.

Purpose

The mid-term evaluation report aims at providing a comprehensive and inquiry-based assessment of the project. It provides an opportunity to critically analyse the technical and administrative strategies, opportunities, strengthens, threats and weaknesses associated with the long-term implementation of an education and S.T.E.M program in Kenya. The results and observations of the

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report provide recommendations to improve on the scope and impact of the program and to benchmark from wider education programs to achieve its expected outcomes and results that meet the needs of the donor and program within the set timelines.

The mid-term evaluation report was developed through the recommendation of Mrs. Rebecca Ottmann who is the senior program manager- Africa for Siemens Stiftung and Ms. Nyokabi Njuguna who is the project advisor for the Experimento Program- Kenya for Siemens Stiftung as an evaluation tool for the program in Kenya. The program which was introduced in Kenya in 2014 does not have an evaluation report that could be used as a reference point of its impact.

Findings and conclusion

Key observations from teachers and head teachers

A. Head teachers

1. The experimento program has made learning realistic and fun for the learners.
2. Teaching of sciences is more enjoyable and has brought team work and co-operation in school.
3. Introduction of the experimento program in school has increased the performance of science and math in school.
4. The experimento program is learner centered hence increased the learners' observation and research skills.
5. Learners are now able to conduct experiments on every other activity and subject.
6. Concern over the materials in the kits which are not enough to be used in the whole school.
7. Teachers transfers to other schools affecting the continuity of the program in the school.
8. The number of students in a class affecting the impact and participation of every student in the classroom.
9. The number of science teachers in a school is low hence the strain of teachers preparing for experiments.

B. Teachers

1. The experimento program is pupil focused and captures learners' interest.
2. The program has helped teachers on how to utilize locally available materials to complement their instructions.
3. The introduction of the program in the schools has led to higher score in science.
4. The teacher training has increased the confidence of the teachers in setting up experiments in the classroom.

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5. The program has made teaching science fun and made the teachers to have a more practical than theory approach towards science.
6. The teachers have gained skills and knowledge that has assisted in the understanding of more complex science concepts.
7. The teacher training has changed the attitude of the teachers towards the role of science towards development.
8. The learners are now able to discover, explore and explain science in a more practical manner.
9. The experimento program as enhanced the teachers' practical approach to teaching.
10. The program has enhanced team work and increased a positive attitude towards science amongst teachers.
11. The media portal is a great complimentary tool for the teachers.
12. Concern over the lack of science content for teachers and learners.
13. Concern over a designated resource room in the school to handle large number of students.
14. The disappearance of the kit from the school where materials are stolen.
15. The lack of financial assistance to maintain and replace materials that run out.

Key observations from the government (Ministry of Education and CEMASTE)

1. The experimento program is fun and educative for students to have an increased interest in science
2. The experimento program compliments the objectives of the new curriculum that emphasis on practical approach to education in Kenya.
3. The experimento program should be expanded further into other areas of the country.

Conclusion

The feedback from the interviewees shows that the program is in good standing and its impact is being felt in the beneficiary schools. The concerns raised also show that there is a need for additional kit management lessons that need to be generated to mitigate the issues in partnership with the ministry of education.

Progress

The progress of the program in Kenya as a whole in achieving listed objectives.

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The program has four stated objectives and are implemented annually. The project advisor Kenya provided an estimate of the completion of each objective that was considered in the evaluation of the program.

Objective 1: Strengthened capacity building

This objective was considered to be 90% completed based on an annual implementation schedule of the program. The experimento program started in 2014 with its introduction at the German school which then moved to Precious Blood secondary school and finally to Nairobi Technical Training Institute which was being implemented through 2 components: Teacher training and experimento kit. Earlier this year, there was a government directive on the ban on extra-curricular activities that interfere with the normal running of the schools and as a result, teacher training had to be stopped and moved to another facility which in this case ended up being Nairobi Technical Training Institute. The moving of the training significantly affected the implementation of the program hence affected the inputs though this particular unprecedented change will not be considered as a setback because the problem was mitigated in a timely manner.

Additionally, the change in the assembling of the kits from the kits being shipped from Germany, to the kits being assembled by Chemical supplies in Kenya to eventually Impacting Youth Trust with the trainers assembling the kit has affected the quality control of the kit substantially.

Objective 2: Attitude change towards S.T.E.M as a development tool

The evaluation considered this to be 60% achieved where attitude change amongst teachers and students has been realized. However, the interaction between the corporate sector has been limited thus has affected their contribution towards preparation of the learners for the needs of the industries which could add value to the program's target beneficiaries. The achievement of this objective is vital as part of the early strategic intervention measures that the experimento program considers to ensure that the demands of the Kenya job market and development agendas are accomplished.

Objective 3: Network and information sharing

This objective is 60% achieved as per the evaluation. Networking and information sharing amongst beneficiary schools and teachers has aspects that have been fully achieved such as the provision of the media portal and portable media support (DVD). Moreover, this has been complimented by the launch of the inaugural teachers networking event that was held in March 2017 that brought

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together all the head teachers and teachers from the beneficiary schools that resulted in the setting up of the program's support whatsapp group.

Currently, the experimento team is preparing to launch a formal experimento teachers' network that will be structured in a way that will support the activities and interest of the teachers and to ease how they approach and engage Siemens Stiftung and other potential sponsors. Additionally, it will provide a learning platform that will support teachers in their day to day activities through real time replies to their questions on S.T.E.M. The modus operandi of the network will ensure that it is independent in its workings which will assist in expanding its benefits countrywide.

Objective 4: Partnership Development amongst stakeholders

The Kenya program management team has been concentrating on establishing relationships with the government and corporates and so far has achieved between 30 and 40% of this objective. The program has had limitation because of the lack of official clearance by the Ministry of Education to implement the program because of institutional bureaucracy within the government institutions. To date, the project has established a working relationship with the Ministry of Education and CEMASTEА pending the signing of memorandums of understanding between the foundation and the institutions to solidify the interactions.

The program was also established a working relationship with Nairobi Technical Training Institute which is a national T.V.E.T institution that has contributed to further localisation of the program and cost reduction because the institution offers the training space for free.

The program management team has also approached Siemens Africa to engage them on the possibility of working together to financially support the implementation and expansion of the locally as a C.S.R intervention for the company.

Issues and recommendations

The experimento program is considered to be developing well by the evaluation team and is in line with the current plans prepared by Siemens Stiftung and Impacting Youth Trust. The program management implementing the program is considered to have the expertise and professionalism to successfully implement the program. Areas of concern were identified during the evaluation although majority have been or are being mitigated by the program management team.

There are some issues that are beyond the scope and influence of Siemens Stiftung and Impacting Youth Trust and in the workings of the government through the Ministry of Education and CEMASTEА.

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The issues identified in the evaluation are as follows:

1. Capacity building in teacher training

The teachers and head teachers shared their need for refresher training to be considered for the teachers to ensure that they maximize the benefits that come with the first training because they had a tendency to forget some of the training provided. The beneficiaries also suggested refresher courses will help them in training other science teachers in their respective schools.

Head teachers also raised the issue of transfer of teachers from one school to another which decreased the utilization of the kit. Additionally, the head teachers complained that the schools have very science teachers compared to the student ratio which has affected how often practical classes are conducted by teachers per week.

2. Capacity building in the kits

The interviews both in the government and CEMASTEAs complained that the kits should have more experiments, not necessarily matching the curriculum but encouraging exploration beyond the curriculum. Additionally, the science teachers suggested that the kit should be expanded to include more materials that will cover more experiments within a school week.

3. Strengthening partnerships

Greater emphasis should be placed on the need to strengthen partnerships with key stakeholders to ensure that there is dialogue on the best way to implement the project and as a means of accessing local funding for the program. This has been a weak area for the program until more recently where the team has been approaching more local partners.

4. Program expansion and duration

The program duration is not clear thus has affected strategic plans that would help with the future of the program. Additionally, interviewed stakeholders were concerned with the limited expansion plans of the program within the country in the past 4 years since its introduction and were keen on having the program introduced in marginalized areas of the country.

5. Monitoring and evaluation

The evaluation team noted that the program did not have a clear monitoring and evaluation system that would be used as a reference point for future evaluations. The evaluation team

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undertaking this evaluation has found it difficult to make reference to a system that is standardized enough to ensure that the report is free of influence and bias.

Lessons learnt

The program intends on executing the overall objective of the program with support from the program management team. Its effectiveness and expertise in implementing the program will assist in ensuring that a well put together program plan and design is generated. Lessons learnt in the program include:

1. Network and information sharing

Networking and information sharing is a core element of expanding the program through re-sharing of the information provided to teachers during teacher training and public awareness. Siemens Stiftung and Impacting Youth Trust through the networking event invited key stakeholders to interact with the program that has led to partnerships that have been beneficial to the program. Emphasis on this aspect had not been explored before but is now an ongoing activity for the program to attract local interest and expand its knowledge base.

2. Stakeholder involvement

There has been improved stakeholder engagement in the program that has culminated with the engagement of the government through the ministry of education and CEMASTE. The possibility of expanding the program further through the acquisition of an authorization letter and the utilization of already existing structures is being explored. Through the engagement, the program has also taken into consideration of special needs schools which will be invited in future trainings as part of the target group for the training.

3. Capacity building through teacher training

Teacher training is a main component of the program and has been successfully implemented in teaching the experimento pedagogy. Partnering with a more reliable institution to host the program as a training centre has been a challenge and continues to be a challenge that the program management team is continuously working on resolving. Additionally, the program management team has had difficulties in running the program because of the lack of an authorization letter from the Ministry of Education. This has been a learning curve that will influence future introduction of new programs in the country by the foundation where engagement with the government will be given first priority.

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4. Capacity building through the kits

The kits were initially being assembled in Germany and being shipped to Kenya which was expensive until a local assembler was approached to assemble the kits to ensure that the kit was assembled with local materials. This partnership was short lived and the program advisor and trainers assembled the kits in 2017 which in the trainers' opinion is the best kit that has been assembled yet. The local team was able to assemble the kit with materials that were easily available thus gave insight on where the beneficiary schools can be able to purchase materials that need replacement in the kit. Additionally, this has provided a quality control structure for future kits where the kits will have the same materials for the 2017 and future trainings.

5. Monitoring and evaluation

The program management team realized that there is a need for a monitoring and evaluation system for the program to ensure that there is standardized and continuous assessment of the program's objectives. The monitoring and evaluation system must be developed through the generation of a monitoring and evaluation plan which should include a logical framework. This particular report was generated without an established monitoring and evaluation system in place which made the evaluation against a set system more difficult though it is being resolved for future evaluations.

1. INTRODUCTION

Project Background

The overall objective of the experimento program is to offer teachers and educators a practical and curriculum-oriented selection of topics in the areas of energy, health, and environment to compliment the education curriculum and development visions of the country. The project aims to fill a gap in the implementation of the schools' curriculums through the provision of teacher training to improve the teaching pedagogy in S.T.E.M subjects, the provision of a mobile ab to encourage practical instructions and the provision of s network that encourages teachers to support each other and gain motivation in their day to day teaching.

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In Kenya, the project is executed in Nairobi County in partnership with Impacting Youth Trust where 10 schools are trained annually. The program's implementation is under the management of the trust's executive director- s. Nyokabi Njuguna which included the assembling of the experimento kits including the training manual, the teacher training and currently the establishment of a teachers' network.

Purpose of evaluation

The mid-term evaluation report aims at providing a comprehensive and inquiry-based assessment of the project. It provides an opportunity to critically analyse the technical and administrative strategies, opportunities, strengthens, threats and weaknesses associated with the long-term implementation of an education and S.T.E.M program in Kenya. The results and observations of the

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report provide recommendations to improve on the scope and impact of the program and to benchmark from wider education programs to achieve its expected outcomes and results that meet the needs of the donor and program within the set timelines.

The mid-term evaluation report was developed through the recommendation of Mrs. Rebecca Ottmann who is the senior program manager- Africa for Siemens Stiftung and Ms. Nyokabi Njuguna who is the project advisor for the Experimento Program- Kenya for Siemens Stiftung as an evaluation tool for the program in Kenya. The program which was introduced in Kenya in 2014 does not have an evaluation report that could be used as a reference point of its impact. With this in mind, it was suggested that the generation of this report would provide a reference point for future evaluations both internally and externally.

Key issues addressed

1. Assessment of the overall performance of the program against set objectives.
2. Assessment of the effectiveness and efficiency of the program.
3. Critical analysis of the program implementation and management strategy.
4. Assessment of the program's outcomes and results including the review of strategies and plans to achieve the program's overall objective.
5. Assessment of the program's relevance to the Kenya education system and the needs of the Kenyan society.
6. Identification and listing of lessons learnt in the implementation of the program in Kenya.
7. Provision of direction for future implementation and management of program activities
8. Assessment of the sustainability of the program taking into consideration the Kenyan education system, geographical location and financial capability of a school.
9. Assessment of the program if it meets all the legal requirements of the government of Kenya.

Intake of the evaluation report

The midterm evaluation report will be used to develop improved policy and program management frameworks of the experimento program to increase the impact of the program's implementation in Kenya. It will also be used to develop a logical framework which will provide key performance indicators which will be result orientated and be used for future evaluations.

Methodology of the evaluation

The evaluation was conducted by Impacting Youth Trust staff and the Siemens Stiftung Experimento team-Kenya under the supervision of Ms. Nyokabi Njuguna.

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The mid-term evaluation was conducted through a hybrid process which includes: Focus group discussions, question and answer sessions, questionnaires, selected site visits and a desk study with the beneficiary schools, teachers and students.

The following areas were covered in the methodology of the mid-term evaluation:

1. **Focus group discussions** during the inaugural Experimento networking event in March 2017
2. **Question and answer sessions** during the training sessions and the Experimento networking event. Additionally, interviews with the education sector government officials were conducted during different demonstrations of the Experimento program.
3. **Questionnaires** distributed before and at the end of the training sessions. Additionally, questionnaires distributed during the Experimento networking event in 2017.
4. **Selected site visits** where four schools were visited for observation purposes.
5. **Desk study** which included the reviewing of all program related documentation.

Structure of the evaluation

The evaluation is made up of a sequence of documents submitted in this report consisting of:

1. A report providing a summary of the findings and recommendations from the evaluation for future program activities.
2. An assessment of the program's key performance indicators.
3. A list of the sources of information used in the program.
4. Questions asked to the different stakeholders during interactions.
5. Responses to the questions asked.

Structure of the evaluation report

The evaluation report is divided into sections supported by annexes

Annex 1: Questionnaire 1- Before and after training

Annex 2: Questionnaire 2- Distributed during the Experimento networking event

Annex 3: Focus Group Discussion questions

The responses are included in the findings of the evaluation report.

2. THE PROJECT AND ITS DEVELOPMENT CONTEXT

	Item	Context
1	Program name	Experimento program
2	Program financier	Siemens Stiftung

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3	Program start	2014
4	Personnel	4 local staff members
5	Implementation status	Ongoing
6	Problems program seeks to address	<ol style="list-style-type: none"> 1. Strengthened Capacity building through teacher training and provision of infrastructural support in the instruction of S.T.E.M in public primary schools. 2. Attitude change towards S.T.E.M as a sustainable development tool. 3. Network and information sharing amongst teachers as a knowledge management tool. 4. Partnership development connecting all key stakeholders who can benefit from strengthened S.T.E.M instruction.
7	Development objectives of the program	To improve the impact and attitude towards S.T.E.M as a tool towards sustainable development through teacher training and infrastructural early intervention at the primary school level.
8	Key stakeholders	Ministry of Education Teachers Service Commission CEMASTE Ministry of Labour Ministry of Higher Education Learning Ministry of Trade Ministry of Information Technology Corporates Local Community
9	Results expected	Trained public primary school science teachers in the use of the Experimento methodology in utilizing the kits in the instruction of S.T.E.M subjects to strengthen and increase understanding amongst teachers and learners which will result to an increase innovation spirit for overall sustainable development.

3. FINDINGS AND CONCLUSION

Introduction

The project's performance assessment has been evaluated using the guidelines above. The layout covers the following three areas:

1. Program delivery
2. Program Implementation
3. Program finances

Key observations from teachers and head teachers

C. Head teachers

1. The experimento program has made learning realistic and fun for the learners.
2. Teaching of sciences is more enjoyable and has brought team work and co-operation in school.
3. Introduction of the experimento program in school has increased the performance of science and math in school.
4. The experimento program is learner centered hence increased the learners' observation and research skills.
5. Learners are now able to conduct experiments on every other activity and subject.
6. Concern over the materials in the kits which are not enough to be used in the whole school.
7. Teachers transfers to other schools affecting the continuity of the program in the school.
8. The number of students in a class affecting the impact and participation of every student in the classroom.
9. The number of science teachers in a school is low hence the strain of teachers preparing for experiments.

D. Teachers

1. The experimento program is pupil focused and captures learners' interest.
2. The program has helped teachers on how to utilize locally available materials to complement their instructions.
3. The introduction of the program in the schools has led to higher score in science.
4. The teacher training has increased the confidence of the teachers in setting up experiments in the classroom.
5. The program has made teaching science fun and made the teachers to have a more practical than theory approach towards science.

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6. The teachers have gained skills and knowledge that has assisted in the understanding of more complex science concepts.
7. The teacher training has changed the attitude of the teachers towards the role of science towards development.
8. The learners are now able to discover, explore and explain science in a more practical manner.
9. The experimento program as enhanced the teachers' practical approach to teaching.
10. The program has enhanced team work and increased a positive attitude towards science amongst teachers.
11. The media portal is a great complimentary tool for the teachers.
12. Concern over the lack of science content for teachers and learners.
13. Concern over a designated resource room in the school to handle large number of students.
14. The disappearance of the kit from the school where materials are stolen.
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Key observations from the government (Ministry of Education and CEMASTEIA)

1. The experimento program is fun and educative for students to have an increased interest in science
2. The experimento program compliments the objectives of the new curriculum that emphasis on practical approach to education in Kenya.
3. The experimento program should be expanded further into other areas of the country.

Conclusion

The feedback from the interviewees shows that the program is in good standing and its impact is being felt in the beneficiary schools. The concerns raised also show that there is a need for additional kit management lessons that need to be generated to mitigate the issues in partnership with the ministry of education.

4. PROGRAM DELIVERY

The program has four identified objectives that are implemented annually. The project advisor- Kenya provided an estimate on the completion of each objective that was considered in the evaluation of the program.

Objective 1: Strengthened capacity building

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This objective was considered to be 90% completed based on an annual implementation schedule of the program. The experimento program started in 2014 with its introduction at the German school which then moved to Precious Blood secondary school and finally to Nairobi Technical Training Institute which was being implemented through 2 components: Teacher training and experimento kit. Earlier this year, there was a government directive on the ban on extra-curricular activities that interfere with the normal running of the schools and as a result, teacher training had to be stopped and moved to another facility which in this case ended up being Nairobi Technical Training Institute. The moving of the training significantly affected the implementation of the program hence affected the inputs though this particular unprecedented change will not be considered as a setback because the problem was mitigated in a timely manner.

Additionally, the change in the assembling of the kits from the kits being shipped from Germany, to the kits being assembled by Chemical supplies in Kenya to eventually Impacting Youth Trust with the trainers assembling the kit has affected the quality control of the kit substantially.

Objective 2: Attitude change towards S.T.E.M as a development tool

The evaluation considered this to be 60% achieved where attitude change amongst teachers and students has been realized. However, the interaction between the corporate sector has been limited thus has affected their contribution towards preparation of the learners for the needs of the industries which could add value to the program's target beneficiaries. The achievement of this objective is vital as part of the early strategic intervention measures that the experimento program considers to ensure that the demands of the Kenya job market and development agendas are accomplished.

Objective 3: Network and information sharing

This objective is 60% achieved as per the evaluation. Networking and information sharing amongst beneficiary schools and teachers has aspects that have been fully achieved such as the provision of the media portal and portable media support (DVD). Moreover, this has been complimented by the launch of the inaugural teachers networking event that was held in March 2017 that brought together all the head teachers and teachers from the beneficiary schools that resulted in the setting up of the program's support whatsapp group.

Currently, the experimento team is preparing to launch a formal experimento teachers' network that will be structured in a way that will support the activities and interest of the teachers and to ease how they approach and engage Siemens Stiftung and other potential sponsors. Additionally, it will provide a learning platform that will support teachers in their day to day activities through real time

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replies to their questions on S.T.E.M. The modus operandi of the network will ensure that it is independent in its workings which will assist in expanding its benefits countrywide.

Objective 4: Partnership Development amongst stakeholders

The Kenya program management team has been concentrating on establishing relationships with the government and corporates and so far has achieved between 30 and 40% of this objective. The program has had limitation because of the lack of official clearance by the Ministry of Education to implement the program because of institutional bureaucracy within the government institutions. To date, the project has established a working relationship with the Ministry of Education and CEMASTEPA pending the signing of memorandums of understanding between the foundation and the institutions to solidify the interactions.

The program was also established a working relationship with Nairobi Technical Training Institute which is a national T.V.E.T institution that has contributed to further localisation of the program and cost reduction because the institution offers the training space for free.

The program management team has also approached Siemens Africa to engage them on the possibility of working together to financially support the implementation and expansion of the locally as a C.S.R intervention for the company.

Efficiency and Effectiveness of the program implementation

The program's implementation was in line with the tentative plan that was developed by Siemens Stiftung and Impacting Youth Trust. Changes in the assembling of the kit to the trainers and Impacting Youth Trust increased the efficiency and effectiveness of program. The localization of the assembling of the kits created a more reliable system and the establishment of a standardized quality control system. Partnership with Nairobi Technical Training Institute increased the program's scope and image because of being hosted by an institution of higher learning with a good standing countywide.

Timeliness of the program implementation

The change in the training centre earlier in the year changed the implementation timeline from having one training per month for five months from February to having two training in April 2017 to cover the training that was missed in March due to the unprecedented government directive. New activities are also being introduced in the program to maximize the impact of the program to teachers and Kenya as a whole within the program's timeline.

5. PROGRAM IMPLEMENTATION

Program overview

Feedback provided during the focus group discussions, questionnaire, selected field visits and interviews with the key stakeholders were very positive on the impact of the program. The feedback included increased discovery and exploration by learners and teaches during S.T.E.M lessons and lesson preparation. There were concerns expressed about the program such as the lack of financial support to replace materials in the kit and the expansion of the program to all schools nationwide. However, these problems are out of the scope of the foundation taking into consideration the level of influence it has on current education policies, its funding limitations and target location. In addition, the Ministry of Education and CEMASTEAs gave raving reviews to the program during its interaction with the program team especially how it is complimentary to the rolling out of a more practical curriculum in Kenya that encourages exploration and innovation. Linkages built with the GIZ were also helpful in exposing the program to other stakeholders and also allowing stakeholders to learn more about the workings of the program.

Program Execution

The program is well planned and executed even with unprecedented changes on timelines that were mitigated before they affected the implementation of the program.

Program Implementation

The Siemens Stiftung experimento team in Kenya under the guidance of the experimento program senior advisor-Africa is well staffed with a program advisor and three trainers with plans to train more facilitators. In instances where additional support is required, temporary staff members are engaged for the specified time. The staff members have clear understanding of their roles but some need more training to understand the overall objectives of the program. The staff members are always available for support to teachers and head teachers and are supported by an experimento teachers' network which allows for real time support that all members can access.

Partnership with Impacting Youth Trust has been an asset to the foundation because Siemens Stiftung now has a local partner to assist in the implementation of the experimento program thus has increased the impact of the program locally. The role of the trust and its partnership cannot be underestimated in increasing the impact of the Siemens Stiftung's experimento program and building relationships with local stakeholders.

Professionalism of the program staff

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Most stakeholders made reference to at least one or more staff members' ability to implement the program either through training or project management. The teachers who were interviewed agreed that the staff members are well qualified to implement the program and believe that they have expert understanding of the experimento program. The beneficiaries were also happy that the team is accessible during and after the completion of the teacher training and donation of the kit.

Program administration

The program's financial management process is controlled by Siemens Stiftung at the international level and Impacting Youth Trust at the local level with Siemens Stiftung providing funds for the program. Financial procedures set up by Siemens Stiftung's administration office are in place and are followed in the access and dissemination of the funds. Procedural administration of the different components is implemented under the supervision of Impacting Youth Trust under the responsibility of the program advisor. Siemens Stiftung and Impacting Youth Trust both have component administrative processes that have eased the logistical process.

Program planning

This practice is conducted regularly through constant contact between Siemens Stiftung, Impacting Youth Trust and trainers which has been effective in the program implementation.

Monitoring and evaluation

The program has not developed a clear monitoring and evaluation system that can be used to evaluate the program on a regular basis. This report aims at addressing this issue as the first local evaluation of the program since its introduction in Kenya in order to have a progress report annually from here henceforth.

Synchronization with similar projects

Relationships are being established with CEMASTEA and the Ministry of Education to ensure that there is harmonization of the experimento program with the government agencies that are in charge of education and more specifically S.T.E.M programs in Kenya.

Public Awareness

This is a vital aspect that has been undertaken by the program management team through interaction with key stakeholders in the education sector, more specifically the ministry of education and teachers service commission. Siemens Stiftung and Impacting Youth Trust held an experimento

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networking event this year that brought together teachers and head teachers from beneficiary schools, potential partners, media and educationalists. The program management team plans on liaising with more stakeholders to increase the level of public awareness of the program and its activities.

Risk management

The main risk of the program is the lack of official letters from the Ministry of Education to allow the program to be introduced to the schools. This has affected how the program management team approaches schools to participate in the program and the schools commitment to the training. This has also hampered the expansion of the program within Nairobi County because of the lack of the authorization to access schools which has affected local fundraising.

6. PROGRAM FINANCE

Financial planning

This is executed through the direction of Siemens Stiftung's experimento senior program manager-Africa and the Impacting Youth Trust's executive director. Planning is an ongoing process throughout the year that takes into consideration the program's different activities including teacher training, manual printing, assembling of kits and project management work. The structures and activities adopted in the financial planning are sufficient enough to ensure that a clear understanding of the program's activities are in line with its financial position.

Budget procedure

This is part and parcel of the financial planning process that is generated in agreement between Siemens Stiftung and Impacting Youth Trust.

Funds disbursement

The main cash disbursement is to teachers as travel allowance, trainers as travel allowance during meetings and other program related activities and daily wages to temporary employees when they are needed. Additional external payments made are for catering services offered during trainings.

Effectiveness of funding mechanisms

The funding mechanism is clear and effective in supporting the program's activities in Kenya.

Sustainability of the program organization

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The sustainability of the local partner organization which has partnered with Siemens Stiftung from 2016 is sound having been in operation from 2014 where it has been running its own programs. Thus, Impacting Youth Trust has its own independent workings and can handle its financial obligations while still running and maintaining the experimento program in Kenya.

Risks

Financial risks are considered low with an external audit procedure in place that is engaged continuously.

7. INDICATORS TO MEASURE THE IMPACT OF THE PROGRAM

	Indicator	Outcomes	Status
1	The experimento program as a change actor in the living conditions of the beneficiaries.	<ol style="list-style-type: none"> 100% of the teachers agreed that the program has been beneficial to their schools. 89.99% of the teachers agreed that experimento is applicable to the day to day living. 	The program has increased innovation and improvisation amongst teachers and students where the knowledge gained is being utilized in their day to day life.
2	The experimento program pedagogy shifting attitude and behavioural change towards S.T.E.M as a development actor.	<ol style="list-style-type: none"> 100% of the teachers agreed that the experimento training was effective in the teaching of S.T.E.M. 100% of the head teachers agreed that the experimento program has increased students interest towards S.T.E.M. 	The teachers and head teachers gave positive feedback on the change of attitude towards science and maths amongst themselves and the students. Students were more excited about science classes than before and were conducting their own experiments from improvised materials.
3	The experimento program increasing the level of knowledge and skills amongst its beneficiaries.	<ol style="list-style-type: none"> 100% of the teachers agreed that the experimento program has increased innovation amongst students. 100% of teachers agreed that students have a better understanding of science after the introduction of the experimento program 	The experimento program management team has received positive feedback on the impact of the program that has resulted to improved performance on science and maths in schools.

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4	The experimento kit being localized to the Kenyan curriculum.	<ol style="list-style-type: none"> 1. 94.44% of the teachers agreed that the experimento kit was localized to the Kenyan curriculum. 2. 100% of the teachers agreed that it was easy to maintain the kit. 3. 94.44% agreed that other teachers found it easy to use the kit. 4. 94.44% agreed that the kit is used often in the school. 5. 72.22% of the teachers said they use the kit weekly. 	The program team in Kenya had a meeting with the ministry of education and CEMASTEAs who complimented the objective of the program and believe that the kit is well localized through should have all the 130 experiments to increase curiosity and innovation amongst the beneficiaries.
5	The engagement of the experimento program with key stakeholders.	N/A	The program management team has established working relationships with Nairobi Technical Training Institute, the ministry of education and CEMASTEAs pending the signing of the M.O.U.s.
6	The utilization of the experimento online platforms (Media portal and WhatsApp group)	<ol style="list-style-type: none"> 1. 30% of the teachers said that they utilize the media portal. 2. 64% of the teachers said that they are members of the experimento program WhatsApp group. 	The experimento program management team is reviewing the use of the online portal to increase its usage and intends to expand the use of the WhatsApp platform as a complimentary asset to the program.

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7	Coverage of the experimento program by local media agencies.	N/A	The program received coverage in March 2017 during the networking evet in the Kenya times- business daily.
8	The utilization of the monitoring and evaluation system.	N/A	The program management team is currently developing a monitoring and evaluation system.
9	The implementation of quality teacher training.	<ol style="list-style-type: none"> 1. 100% of the teachers agreed that the program management team was qualified to implement the program. 2. 88.89% of the teachers agreed that it was easy to train other teachers on the experimento pedagogy. 	The experimento program management team is in talks with CEMASTEa to further improve on the teacher training by utilizing already existing systems to compliment the program.
10	The setting up of an experimento teachers' network.	<ol style="list-style-type: none"> 1. 100% of the teachers agreed that a network will be beneficial to them. 	The experimento program team is developing the teachers' network that will be an added component of the program.

8. ISSUES AND RECOMMENDATIONS

The experimento program is considered to be developing well by the evaluation team and is in line with the current plans prepared by Siemens Stiftung and Impacting Youth Trust. The program management implementing the program is considered to have the expertise and professionalism to successfully implement the program. Areas of concern were identified during the evaluation although majority have been or are being mitigated by the program management team.

There are some issues that are beyond the scope and influence of Siemens Stiftung and Impacting Youth Trust and in the workings of the government through the Ministry of Education and CEMASTEAM.

The issues identified in the evaluation are as follows:

1. Capacity building in teacher training

The teachers and head teachers shared their need for refresher training to be considered for the teachers to ensure that they maximize the benefits that come with the first training because they had a tendency to forget some of the training provided. The beneficiaries also suggested refresher courses will help them in training other science teachers in their respective schools.

Head teachers also raised the issue of transfer of teachers from one school to another which decreased the utilization of the kit. Additionally, the head teachers complained that the schools have very science teachers compared to the student ratio which has affected how often practical classes are conducted by teachers per week.

Recommendations for the issues named above are as follows:

- a. The recommendation for the provision of refresher courses will be included as one of the experimento teachers network component where different teachers will post videos of different experiments where other teachers will be able to access the information
- b. The transfer of teachers is beyond the scope of Siemens Stiftung and Impacting Youth Trust. The program has remedied this problem by encouraging the trained science teachers to retrain other teachers within their schools to ensure that the knowledge shared does not leave with the trained teachers.
- c. The issue of the science teachers' ratio to students is a problem that is beyond the scope of the program management team and rests with the Ministry of Education and Teachers Service Commission in the country.

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2. Capacity building in the kits

The interviews both in the government and CEMASTEAs complained that the kits should have more experiments, not necessarily matching the curriculum but encouraging exploration beyond the curriculum. Additionally, the science teachers suggested that the kit should be expanded to include more materials that will cover more experiments within a school week.

Recommendations made by the evaluation team are as follows:

- a. The global experimento program starts with 130 experiments that are adopted to each county's curriculum as a complimentary program to ensure that science is taught in the best manner. The recommendation of the program team is to generate more experiments from the localized kit to remedy the demand for the whole kit by the ministry of education and CEMASTEAs to ensure that Siemens Stiftung maintains its budgetary commitments while fulfilling the demand from the stakeholders.
- b. The evaluation team is recommending that the program management team re-evaluates the list of experiments currently in the kit taking into consideration the piloting of the new curriculum in the next 2 years or/ and after the new curriculum is launched in all primary schools.

3. Strengthening partnerships

Greater emphasis should be placed on the need to strengthen partnerships with key stakeholders to ensure that there is dialogue on the best way to implement the project and as a means of accessing local funding for the program. This has been a weak area for the program until more recently where the team has been approaching more local partners.

The evaluation team recommends that:

- a. More emphasis is placed in strengthening working relationships with the Ministry of Education, CEMASTEAs, corporates and other non-profits working in the same space.
- b. Explore models of similar projects with emphasis on partnerships to benchmark systems that can add value to the program to maximize its impact locally.
- c. Partner with the media to improve public awareness of the program locally to encourage local partners to invest in the program to assist with its expansion.

4. Program expansion and duration

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The program duration is not clear thus has affected strategic plans that would help with the future of the program. Additionally, interviewed stakeholders were concerned with the limited expansion plans of the program within the country in the past 4 years since its introduction and were keen on having the program introduced in marginalized areas of the country.

Recommendations of the evaluation team are:

- a. Partner with the ministry of education and CEMASTEa to utilize their structures to expand the program to other areas of the country.
- b. Partner with the ministry of education to approach bigger donor organizations to financially support the expansion of the program to other areas of the country.

5. Monitoring and evaluation

The evaluation team noted that the program did not have a clear monitoring and evaluation system that would be used as a reference point for future evaluations. The evaluation team undertaking this evaluation has found it difficult to make reference to a system that is standardized enough to ensure that the report is free of influence and bias.

The team recommends that:

- a. A suitable monitoring and evaluation system is generated taking into consideration the financial support from Siemens Stiftung, time and accessibility to data to ensure that the evaluation is against key performance indicators that can give an accurate assessment of the program.

9. LESSONS LEARNT

The program intends on executing the overall objective of the program with support from the program management team. Its effectiveness and expertise in implementing the program will assist in ensuring that a well put together program plan and design is generated. Lessons learnt in the program include:

1. Network and information sharing

Networking and information sharing is a core element of expanding the program through re-sharing of the information provided to teachers during teacher training and public awareness. Siemens Stiftung and Impacting Youth Trust through the networking event invited key stakeholders to

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interact with the program that has led to partnerships that have been beneficial to the program. Emphasis on this aspect had not been explored before but is now an ongoing activity for the program to attract local interest and expand its knowledge base.

2. Stakeholder involvement

There has been improved stakeholder engagement in the program that has culminated with the engagement of the government through the ministry of education and CEMASTE. The possibility of expanding the program further through the acquisition of an authorization letter and the utilization of already existing structures is being explored. Through the engagement, the program has also taken into consideration of special needs schools which will be invited in future trainings as part of the target group for the training.

3. Capacity building through teacher training

Teacher training is a main component of the program and has been successfully implemented in teaching the experimento pedagogy. Partnering with a more reliable institution to host the program as a training centre has been a challenge and continues to be a challenge that the program management team is continuously working on resolving. Additionally, the program management team has had difficulties in running the program because of the lack of an authorization letter from the Ministry of Education. This has been a learning curve that will influence future introduction of new programs in the country by the foundation where engagement with the government will be given first priority.

4. Capacity building through the kits

The kits were initially being assembled in Germany and being shipped to Kenya which was expensive until a local assembler was approached to assemble the kits to ensure that the kit was assembled with local materials. This partnership was short lived and the program advisor and trainers assembled the kits in 2017 which in the trainers' opinion is the best kit that has been assembled yet. The local team was able to assemble the kit with materials that were easily available thus gave insight on where the beneficiary schools can be able to purchase materials that need replacement in the kit. Additionally, this has provided a quality control structure for future kits where the kits will have the same materials for the 2017 and future trainings.

5. Monitoring and evaluation

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The program management team realized that there is a need for a monitoring and evaluation system for the program to ensure that there is standardized and continuous assessment of the program's objectives. The monitoring and evaluation system must be developed through the generation of a monitoring and evaluation plan which should include a logical framework. This particular report was generated without an established monitoring and evaluation system in place which made the evaluation against a set system more difficult though it is being resolved for future evaluations.

FOCUS GROUP DISCUSSION

INSTRUCTIONS:

In your selected groups, discuss the questions in 20 minutes and select someone to present the results of your findings.

QUESTIONS:

1. What role do you believe STEM plays in the development of Kenya?
2. How has experimento influenced your teaching methodology?
3. How have you as a teacher benefitted from experimento post-training?
4. How can parents be involved in the teaching of STEM?
5. How can we reduce the gender gap interest in STEM education in Kenya?
6. How can the KIT be made more easily available and affordable?
7. How can experimento sustainably be expanded in Kenya?
8. What policy changes can you recommend to be incorporated into the trident focus teaching in STEM?
9. What is the way forward for STEM education in Kenya?
10. What recommendations can you give to increase STEM application in schools?

Annex 2

Dear participants,

Currently the 'Experimento' range is in its pilot phase. Therefore experiences from the conduction of the experiments and from the handling of the materials are of great interest to us.

Please mark in each case with a tick where applicable and state reasons for your decisions in the corresponding spaces.

All indications are optional and will be treated with the utmost confidentiality.

Thank you very much for your assistance!

Section A - General part

1. Which 'Experimento' - kit are you using?

☐ 4+ ☐ 8+ ☐ 10+

2. What sex are you?

☐ Male ☐ Female

3. Which age bracket are you?

☐ under 25 years ☐ 25 – 35 years ☐ 36- 45 years
☐ 46 - 55 years ☐ 56 – 67 years ☐ over 67 years

4. At which institution do you teach?

☐ Kindergarten ☐ Primary school ☐ Middle school
☐ High school ☐ comprehensive school
☐ Special- needs school

5. Did you receive training in (i) Health? ☐ Yes ☐ No

(ii) Energy? ☐ Yes ☐ No

(iii) Environment? ☐ Yes ☐ No

If others, which one ? _____

6. What is your highest academic qualification?

☐ PhD ☐ Masters ☐ BEd. ☐ Diploma ☐ P1
☐ Others, Specify.....

Section B - Functional part

7. (a) I have been using Experimento up to now... ☐ Yes ☐ No

(b) If No what could be the cause?

☐ ... I had no time. ☐ ... I do not teach the appropriate class level at the moment.

☐ ... the children were not interested. ☐ ... experiments are not part of the curriculum.

☐ ... the experiments are too time-consuming ☐ ... others.

(c) If others, please

specify..... Functional part

☐ < 1 months ☐ 1-3 months ☐ 3 – less than 6 months

☐ 6 months or more ☐ no usage

8. How often did you... (circle one number)

	Very often	Often	Sometimes	rarely	never
...conduct experiments with the Experimento-set?	5	4	3	2	1
...use manuals for the experiments?	5	4	3	2	1
...use Experimento materials for your own experiments?	5	4	3	2	1
...use Experimento manuals for preparation?	5	4	3	2	1
...use your other materials for experiments?	5	4	3	2	1
...use the media portal of the Siemens Foundation?	5	4	3	2	1

9. How do you mainly conduct experiments? (Tick one number)

1. The children experiment on their own.

Strongly agree ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 Strongly disagree

2. The children watch me conducting the experiments.

Strongly agree ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 5 Strongly disagree

3. The children conduct the experiment under my supervision.

Strongly agree ☐ 6 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 Strongly disagree

Please select what applies to you. SA-Strongly Agree; A-Agree; U-Undecided; D-Disagree; SD-Strongly

10. The experiments...

	SA	A	U	D	SD
...can be conducted by children on their own.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...are too difficult with regards for contents for the respective age bracket.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...can also be conducted with a high number of students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. What are the critical reasons to conduct a certain experiment? (Tick one scale)

	SA	A	U	D	SD
1. Children are being motivated by the experiment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Experiments can be easily conducted by students/teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Experiments can be easily conducted by teachers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The curriculum implies the topic of the experiment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Experimenting allows action-oriented teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The material for the experiments is available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The children's self dependency is supported.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The topics covered in the experiment fits to my curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If others, please specify.....

.....

Functional part**12. How important were the following criteria at the choice of experiments?**

I chose experiments...	SA	A	U	D	SD
...for which all materials were available in the set.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...whose manual could be used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...I tried myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. How do you evaluate the following aspects regarding the Experimento-kits?

	SA	A	U	D	SD
There is sufficient material in the box.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other material had to be used in addition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The material breaks easily.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consumable items had to be replaced already.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. How do you evaluate the following aspects regarding the Experimento- instructions?

	SA	A	U	D	SD
The instructions in the manuals are helpful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The instructions are well adapted to the curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is enough time to arrange individually.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. What do you like most about the Experimento-kit?

Section C - Suggestions

16. Do you have any suggestions for improvement?

Thank you very much for your participation and have fun experimenting!

Your 'Experimento' - Team

ANNEX 3**SIEMENS STIFTUNG NETWORKING EVENT TEACHER FEEDBACK QUESTIONNAIRE****INSTRUCTIONS:**

Please indicate with a tick [☐] where applicable next to the answer of your choice and fill in the information where applicable.

BIO DATA

SEX: [☐] Male [☐] Female

AGE: [☐] 18 – 25 [☐] 26 – 30 [☐] 30 – 40 [☐] 40 and above

COHORT: [☐] 1 (2014) [☐] 2 (2015) [☐] (2016)

EDUCATION LEVEL: [☐] P1 [☐] Degree [☐] Masters

[☐] Other_____

WORK EXPERIENCE: [☐] 1-3 Years [☐] 4-6 Years [☐] 7-9 Years [☐] 10 and above
Years

QUESTIONS

1. Has the training been beneficial to you?

[☐] Yes

[☐] No

a. If Yes How?

b. If No Why?

2. Is the experimento teaching effective?

☐ Yes

☐ No

If Yes How?

3. Has experimento increased innovation among students?

☐ Yes

☐ No

4. Have the students grades improved as a result of using experimento?

☐ Yes

☐ No

5. Has experimento increased the interest of students in sciences?

☐ Yes

☐ No

6. Do the students have a better understanding as a result of experiment?

☐ Yes

☐ No

7. Has it been easy to apply the day to day teaching using experiment?

☐ Yes

☐ No

8. Has been easy to train other teachers?

☐ Yes

☐ No

9. Are other teachers able to use the KIT with ease in their teaching?

☐ Yes

☐ No

10. How often is the Kit used?

☐ Rarely

☐ Often

11. Is the KIT easy to maintain?

☐ Yes

☐ No

12. Do you feel a network would be beneficial? How?

☐ Yes

☐ No

If Yes How?

13. What are some of the challenges you have experienced?

14. What are your recommendations?

15. How would you rate experimento programme on a scale of 1 -5? 1 is very poor 5 very good

☐ 1 Very poor ☐ 2 Poor ☐ 3 Average ☐ 4 Good ☐ 5 Very good