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EDUCATIONISTS AND CONSULTANTS

TRAINING REPORT

Kole & Lira Districts

March 2025

Hands-On Use of the Items in the New Approach Primary Integrated Science Kits.

Executive Summary

This report highlights the details of the two trainings of science teachers that took place in Kole and Lira Districts on the practical usage of science kits in the teaching and learning of science at primary level.

During the training, science teachers pointed out different things concerning the usage of science kits, general aspects that were revealed by the teachers are summarised as follows;

- Science kits are accessible in schools for 99% of science teachers to conduct practical science lessons.
- Science teachers use science kits daily (66%), weekly (29.2%), and monthly (4.8%).
- 95% of the science teachers confirm that the science kit is effective when it comes to facilitating practical science lessons.
- 88% of teachers have some level of comfort while using the items in the science kit to teach practical science.
- 97% of science teachers state that science kits have increased the engagement and interaction of learners during the teaching and learning process in science lessons.
- 96.7% of science teachers affirm that science kit and all the items in it are suitable for use in their classroom from P.4–P.7.
- 95.3% of science teachers agree that science kits are durable enough and in good condition.
- 94% of the teachers say that they have observed improvement in learners' academic performance and are confident while expressing themselves to explain science concepts especially while using the items in the science.
- 95% of science teachers rated the training as very relevant while 5% of the teachers said that to a big extent the training was relevant.
- 71.1% of the teacher respondents said that the training on the effective use of science kits was good meaning that their expectations were met and are now able to use the science kit effectively. 28.9% of the teacher respondents also stated that the training was excellent implying that their expectations were met beyond measure and are ready to use kits.
- 74% of science teachers stated that they were confident to use science kits to teach science practically.
- 99% of science teachers that attended the training agree and strongly agree that this training will help them in organising, preparing, conducting and assessing practical science lessons in their respective primary schools using the science kits.

Introduction

Since 2021, Ministry of Education and Sports has been procuring the New Approach Primary Integrated Science Kits from River Flow International as mini-laboratories for primary schools to address the lack of laboratories at primary level.

Today in 2025, 1,336 primary schools have benefited from this initiative. It is from this background that River Flow International has been building the capacity of science teachers on the effective and hands-on use of the teaching aids/innovations that are contained in the primary science kits accross the country.

Fig 1: A picture of one of the consignments of science kits.

Figure 2: The picture showing Mama, and the Minister of Education and Sports launching the science kits at State House Nakasero.

It should also be noted that these science kits were launched by Mama Janet K. Museveni who is also the Minister of Education and Sports at State House Nakasero.

Official Opening of the Training in Kole and Lira Districts

Figure 3: DEO of Kole district opening the training officially

In Kole district, the training was officially opened by the District Education Officer (DEO), Mr. Okare Tom. In his opening remarks, Mr. Okare Tom emphasised the relevance of such trainings in the modern teaching and learning of science as we ll as the performance of learners in addition to the application of knowledeg in their daily life.

In Lira district, the remarks were not any different, but Mr. Ogwang Patrick Olwit, the District Inspector of schools urged teachers to teach learners practically for understanding not cramming.

Figure 4: DIS of Lira district opening the training officially

Training of science teachers in Kole and Lira Districts

The training was conducted in two phases;

Phase	District	Participants		
1	Kole district	144	Males	Females
			130	14
2	Lira district	60	52	08

The participants in Kole districts came from 24 primary schools of which 4 primary schools received science kits from World Vision Uganda while the other 20 primary schools recieved kits from the Ministry of Education and Sports. Each school sent 6 participants (4 science teachers, deputy headteacher and the headteacher.

On the other hand, 60 teachers came from 20 primary schools that were selected as beneficiaries of kits from Ministry of Education and Sports. In Lira, each school sent 2 science teachers and the headteacher.

Figure 4: Stuart, the facilitator on usi

Which schools were trained?

In Lira district, twenty (20) primary schools were trained while in Kole district, a total of tw schools were trained. Schools in Kole district included; Abilonino P/s, Abur P/s, Omug P/s, Abongodic P/s, Onoro P/s, Baramindyang P/s, Damatira P/s, Ayer P/s, Onyut P/s, P/s, Wigua P/s, Obuto P/s, Okwerodot P/s, Barkalo P/s, Akalo P.s, Igel P/s. Schools i Agak p/s, Onywako p/s, Gomi p/s, Atira p/s, Ayami p/s, Ober p/s, Stara p/s, Alikpot p/ Akangi p/s, Abongorwot p/s, Ogur p/s, Akore p/s, Orit p/s, Onyakede, Coorom p/s, A Barr p/s.

Figure 5: Training participants in Kole district during the training.

Figure 6: Training participants in Lira district during the training.

What was the training content?

The training of science teachers in Kole and Lira districts was majorly focusing on the effective and hands-on use of the items in the New Approach Primary Integrated Science kit. However, some other aspects were integrated as follows;

- Introduction to the practical approach of teaching science.
- The innovative practical methodologies of teaching science.
- Relating science kit with the science syllabus.
- Hands-on use of items in the science kit.

Figure 7: A science teacher studying the eye during Lira training.

Hands-On and Practical use of Items in the New Approach

The hands-on/practical session was interactive, engaging, and was entirely centered on the needs of the trainees. It commenced with the practical use of human models;

- Circulatory system
- Human heart.
- Human kidney.
- Human skin
- Human eye.
- Female reproductive system
- Human ear
- The human skeleton
- Respiratory system
- Male reproductive system.

In the same session, teachers practically used the materials in the measurement section of the the science kit find out the the length, width, and then area of an A4 paper. This was done to demonstrate to teachers how a topic like measurement can be taught practically with learners.

The science teachers with the guidance of facilitators conducted numerous experiments that they have been teaching theoretically before they had science kits. One of these experiments was the common one of finding the volume of irregular objects. In this particular experiment, teachers used a stone.

In addition, the teachers were empowered with a skill of assembling and operating a light microscope to help learners to understand the concepts of micro-living organisms but also inspire children in their dream medical careers.

What are science teachers saying about science kit?

> Science kit has made learning more effective because the learners observe, touch, and use real objects to perform experiments during science lessons collaboratively easing the masterly of concepts making learning learner-centered rather than teacher-centered, less abstract, meaningful, practical, and real.
> ***Emmanuel Omodo – Abongodic P/S (Kole District)***

> With science kit, learners are able to see and touch the parts of the model and interprete them better as compared to the time when they would only see such on wall charts and textbooks.
> ***Adyang Patrick – Acankado P/S (Kole District)***

> The learners can pick content quickly when the lesson is practical using the equipment from the science kit. As I teach skeletal system, learners enjoy seeing, touching, and using the skeleton model to look at short and long bones. ***Abalo Christine – Abongorwot P/S (Lira District)***

> With science kit, learners are able to see and touch the parts of the model and interprete them better as compared to the time when they would only see such on wall charts and textbooks.
> ***Adyang Patrick – Acankado P/S (Kole District)***

When you enter class with a model like a heart in primary 6, learners are very attentive and curious to touch and interact with it. This has made learners to love science lesson hence sparking interest among our learners to study science ***Aceng Enesther – Coorom P/S (Lira District)***

The teaching aids in the science kit makes learning real and learners able to understand, remember, and retain the learnt concepts in the classroom since it is hands-on instead of cramming and rehearsing notes.
Atoke Susan – Alikpot PS (Lira District)

Science kit arouses learners' interest and participation during the teaching and learning process and helps learners to explore new things.
Ekwan Jolly Joe – Tikoking P/S (Kole District)

The science kit caters for individual difference of learners and caters for the different abilities of learners.
Odongo Bonny – Abongodero Girls P/S (Kole District)

Feedback on the Usage of Science Kits

Prior to the training, all science teachers in both Lira and Kole districts were given pre-training feedback forms to collect information from science teachers on accessibility and usage of science kits, assembling of equipment, effectiveness of kits, training and comfort with science kits, learner engagement and interaction, suitability and quality of science kits, suggested improvements and impact on learning outcomes.

(a). Science kit accessibility and frequency of use

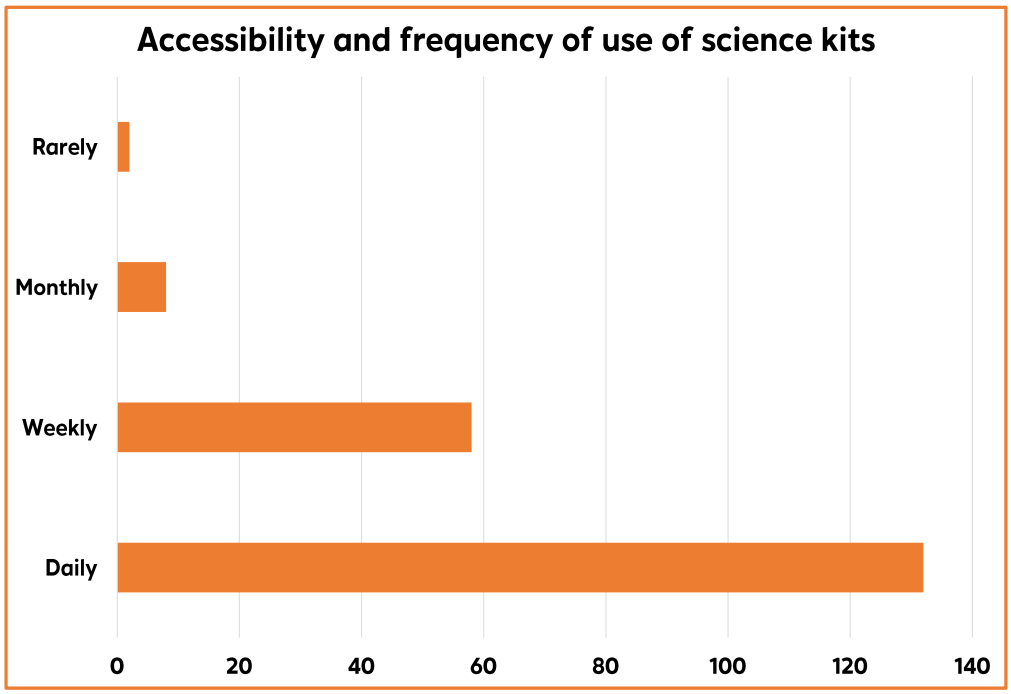


Figure 8: Graph showing how science teachers access and use science kits.

From teachers' feedback as shown in ***figure 8***, 99% of science teachers access and use science kits in their respective schools to teach science. 66% of the 99% use science kits daily, 29.2% of 99% use science kits every week and 4.8% of 99% use science kits to teach science every month.

However, there is a 1% of science teachers who rarely use science kits to teach science.

Conclusion of accessibility and frequency of use

The data obtained from science teachers indicate that;

- Almost all science teachers in both Lira and Kole districts have access to science kits.
- Most science teachers (99%) use the teaching aids in the new approach primary science kits to teach science in their lessons at their respective schools.
- Generally, science teachers use science kits daily (66%), weekly (29.2%), and monthly (4.8%).
- The 1% of teachers who rarely use kits may be due to accessibility issues at school.

(b). Effectiveness of science kits in the practical teaching of science.

When science teachers were asked about the effectiveness of science kits in the achievement of learning outcomes and promoting the practical approach of teaching and learning science, their responses were computed and presented in *figure 9*;

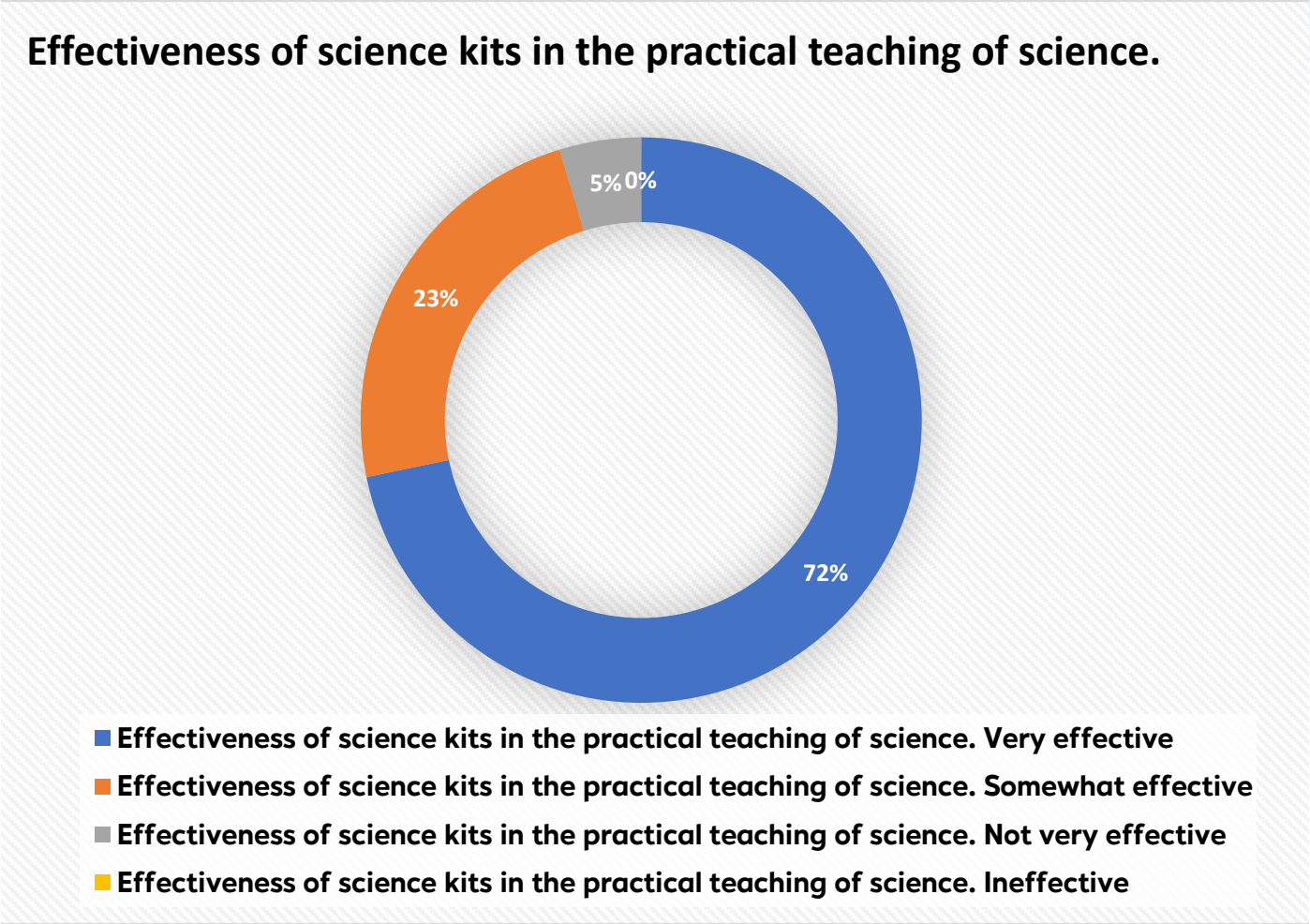


Figure 9: Chart showing responses of science teachers on the effectiveness of science kits.

From figure 9, it is evident that;

- 95% of the science teachers confirm that the science kit is effective when it comes to facilitating practical science lessons. Among the 95%, 72% of respondents say that the science kits are very effective while 23% of them say that science kits work to a bigger extent but there are some areas for improvement but are able to help learners to easily understand basic concepts but may not help in deep scientific concepts leading to the achievement of some learning outcomes.

- A minor 05% of science teachers expressed a low level of effectiveness showing that science kits has minimal impact almost ineffective, but not a total failure. This percentage of teachers highlight that science kits are not very effective in helping learners grasp key scientific concepts much as it provides materials for experimentation, but these teachers may have been lacking guidance on how to use most of the materials in science kit for effective teaching.

- None of the science teachers said that science kits are ineffective which clearly indicate that science kits are generally helping teachers to teach science practically at primary level and learners learning scientific concepts with ease.

(b). How comfortable science teachers are while using science kits during teaching

Looking at the responses from *figure 10*, 88% of teachers have some level of comfort while using the items in the science kit to teach practical science. 42% of this 88% are very comfortable while using the science kits while the remaining 46% are to some extent comfortable and able to use most but not all the items in the science kit to teach science practically.

A minimal percentage of science teachers (12%) are not comfortable to use the science kit. The teachers hinged this to the lack of knowledge on how to use some of the apparatus found in the kit. Teachers also recommended that a training on the use of kits would help them to comfortably use science kits during teaching.

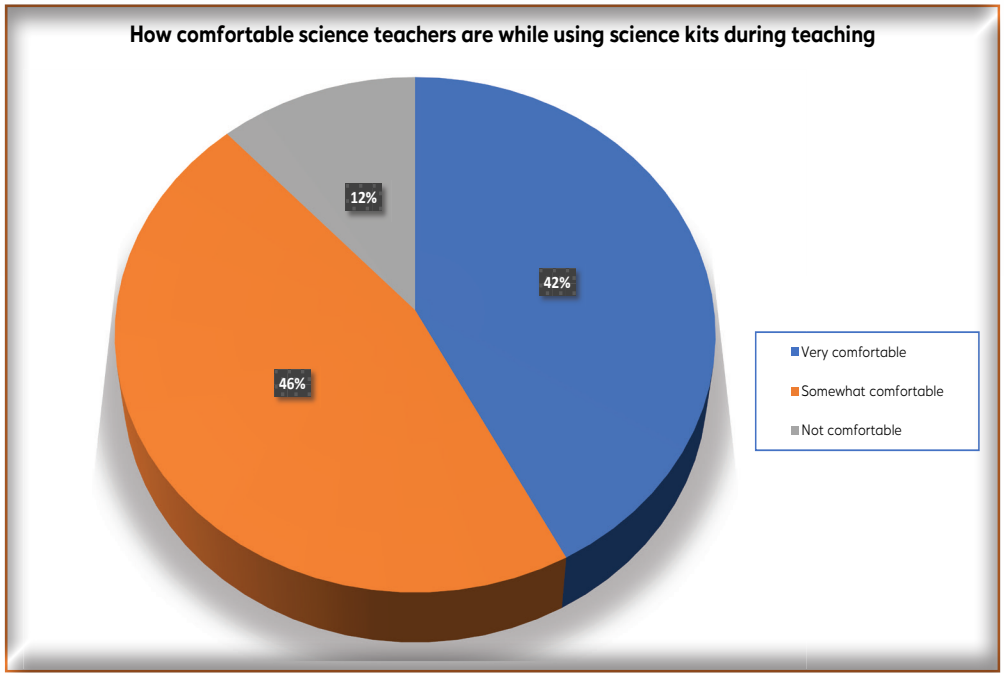


Figure 10: Chart showing responses of comfortability of science teachers while using the science kits.

(c). Learner engagement and interaction while using science kits.

Science teachers were also asked about the level at which science kits have improved learner engagement and interaction during the science lessons. *Figure 11*, shows a summary of computations; 97% of the respondents state that science kits have increased the engagement and interaction during the teaching and learning process.

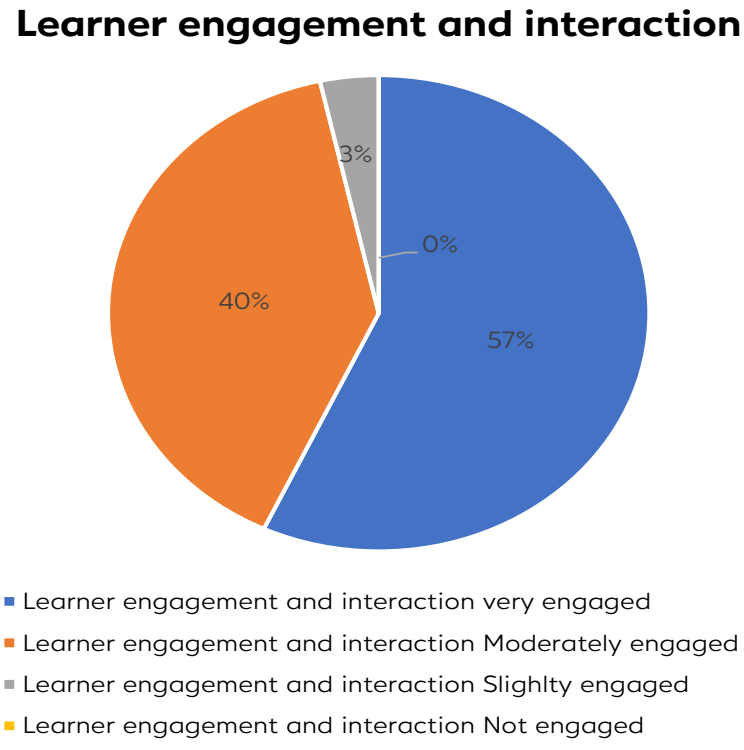


Figure 11: Responses of teachers on learner engagement and interaction.

Out of 97% respondents, 57% of 97% confirm that learners in their classrooms are very engaged while using the science kits.

Also, 40% of the respondents out of 97% say that learners in science lessons are moderately engaged when they are using the science kits.

Some respondents amounting to a 3% say that learners slightly interact and are less engaged with the materials. This group of science teachers attributed this challenge with the lack of knowledge and hands-on skills to use some of the items that are in the new approach primary integrated science kit.

Therefore, basing on this data, we can generally conclude that science kit has impacted the engagement and interaction of learners during science lessons. Training science teachers on the hands-on and practical usage of all the items in the science kit to help learners learn by hearing, seeing, touching, and doing.

(b). Suitability, approprietness, and quality of science kits

In an attempt to find out how suitable the science kits are to the teaching and learning of science, teachers were asked about the suitability, approprietness, and quality of the teaching aids in the science kits.

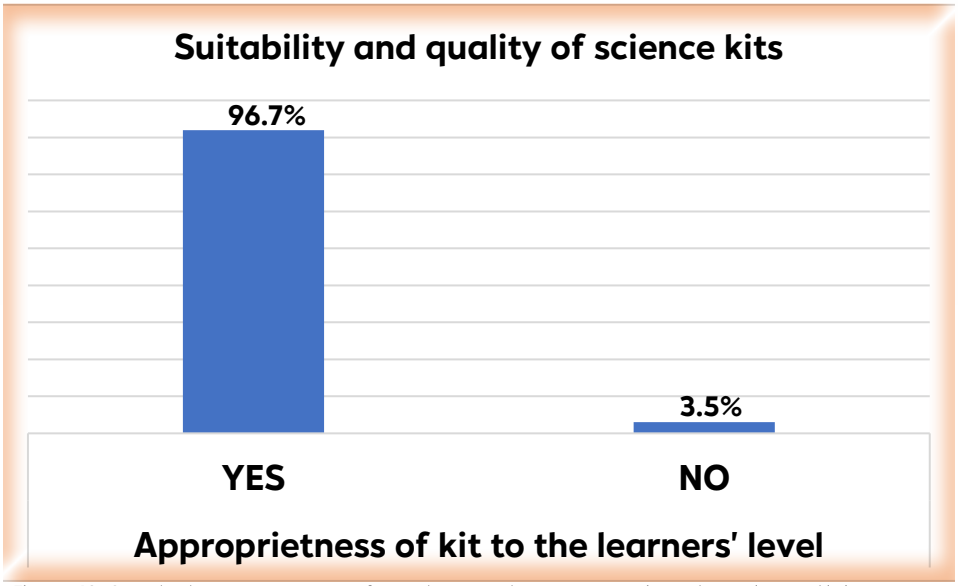


Figure 12: Graph show responses of teachers on how appropriate the science kit is.

The science kits are suitable to target learners' level as indicated in figure 12.

From figure 12, 96.7% of respondents affirm that science kit and all the items in it are suitable for use in their classroom from P.4–P.7.

The 3.5% of respondents say that lack of knowledge and training make them unable to use the science kit.

(i). Are the materials in the science kits durable and in a good condition?

From figure 13, it is clear that 95.3% of science teachers agree that science kits are durable enough and in good condition.

Of these 95.3% respondents, 84.7% completely believe that science kits are durable while 10.6% of the 95.3% say that to some extent durable however, some items are not durable enough and need refilling. This group says items like iodine need to be refilled.

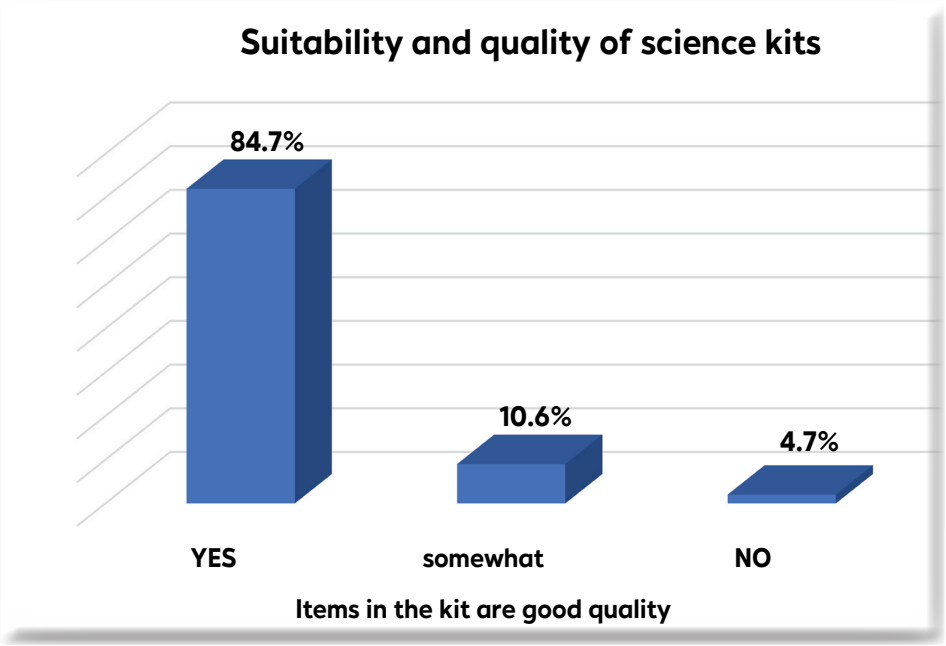


Figure 13: Durability and condition of items in the science kits.

However, a less significant percentage of respondents (4.7%) state that the science kits are not durable and some are not in good condition. Respondents say that some items in the science kit are delicate hence can easily break. Teachers also suggested that a training on how to handle and use science kits should be conducted.

(ii). Impact on learning outcomes

One of the things teachers were also asked about was the influence of science kit on the improvement of learners' academic performance or confidence. According to the responses from science teachers, 94% of the teachers say that they have observed improvement in learners' academic performance and are confident while expressing themselves to explain science concepts especially while using the items in the science.

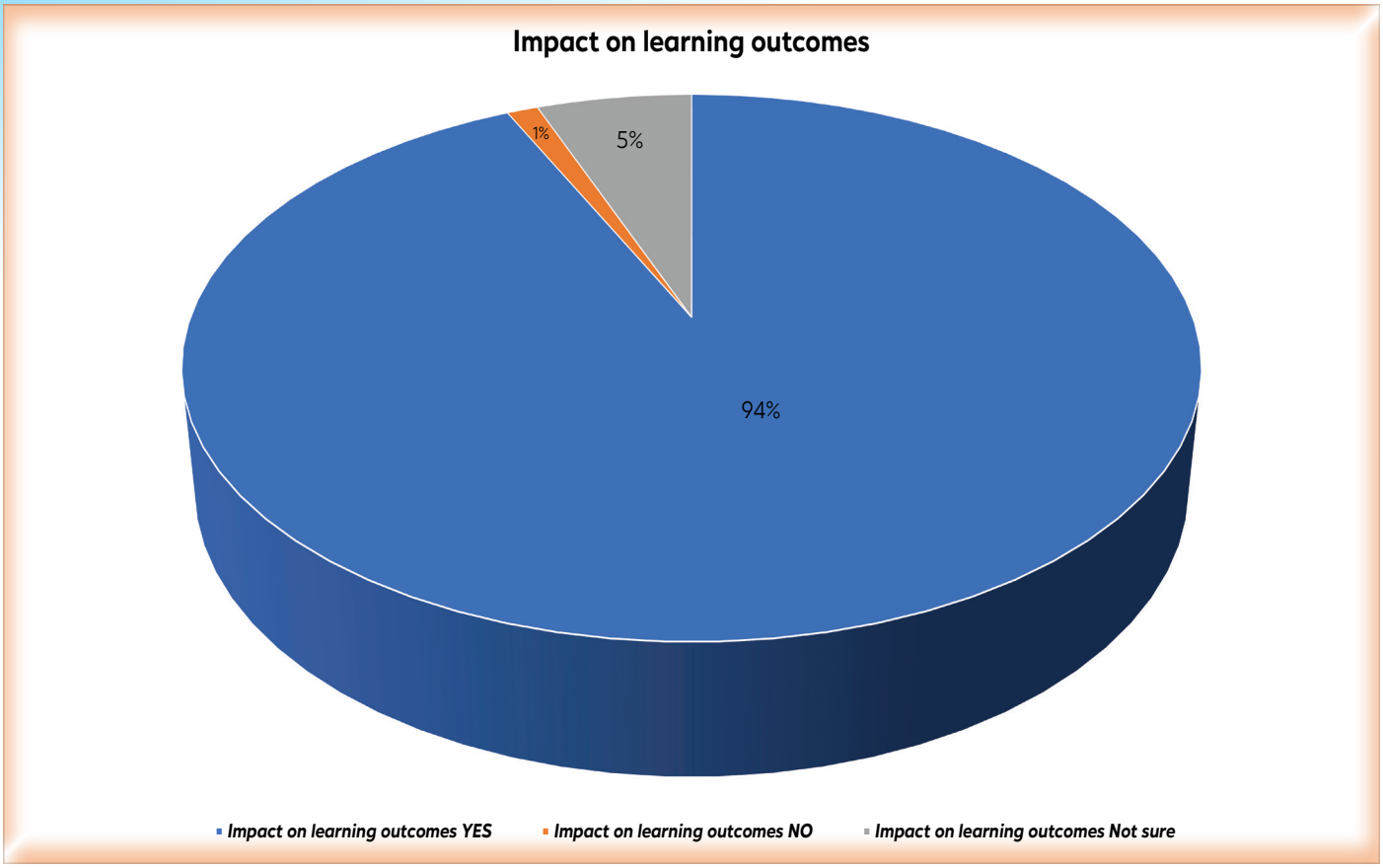


Figure 14: The chart is showing teachers' responses on the impact of science kit on learning outcomes.

Much as the biggest number of science teachers confirm that learners are improving in academic performance, 5% of teachers are not sure of whether science kits have improved performance of learners. This percentage of teachers attribute their response to their unintentionality to follow trends of performance of learners before and after using the science kits.

On another hand, 1% of science teachers state that science kits have not improved the performance of learners and they attribute their responses to the lack of skills, knowledge, and awareness about the effective use of items like microscope in the practical teaching of Science.

General Conclusion on feedback from science teachers

From what teachers are saying, we can generally conclude that;

- Science kits are accessible in schools for 99% of science teachers to conduct practical science lessons.
- Science teachers use science kits daily (66%), weekly (29.2%), and monthly (4.8%).
- 95% of the science teachers confirm that the science kit is effective when it comes to facilitating practical science lessons.
- 88% of teachers have some level of comfort while using the items in the science kit to teach practical science.
- 97% of science teachers state that science kits have increased the engagement and interaction of learners during the teaching and learning process in science lessons.
- 96.7% of science teachers affirm that science kit and all the items in it are suitable for use in their classroom from P.4–P.7.
- 95.3% of science teachers agree that science kits are durable enough and in good condition.
- 94% of the teachers say that they have observed improvement in learners' academic performance and are confident while expressing themselves to explain science concepts especially while using the items in the science.

Impact of the training of teachers on using science kit

To assess how impactful the training was, teachers were given opportunity to rate the relevance of the training to what they need to improve teaching of science.

From their responses, 95% of science teachers rated the training as very relevant while 5% of the teachers said that to a big extent the training was relevant.

None of the teachers said that the training was either not very relevant or irrelevant indicating that all teachers believe the training was relelevant.

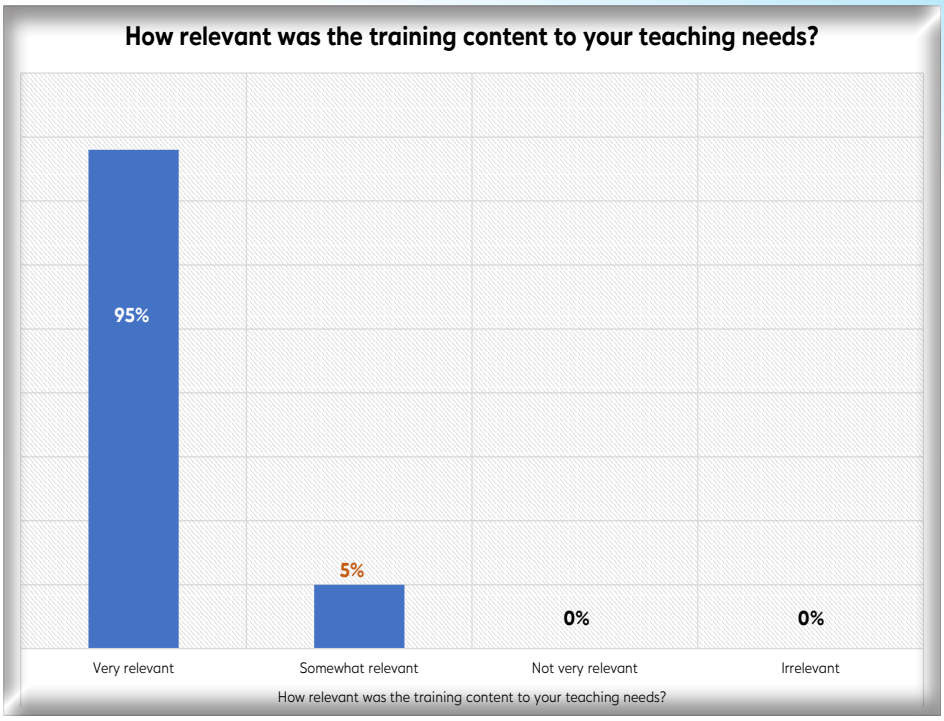


Figure 15: The responses of teachers on the relevance of training to teaching needs.

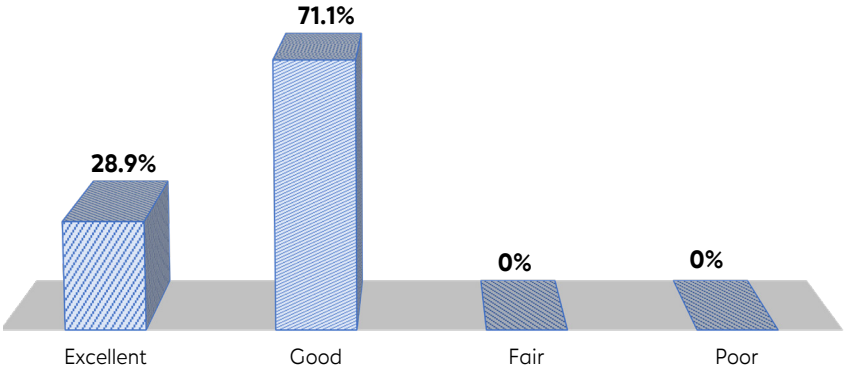


Figure 16: Responses of science teachers on the quality of training.

- None of the science teachers said that the training was either fair or poor. This indicates that teachers were satisfied with the training they received on the effective use of the new approach science kits.

On the quality of training, science teachers responded as follows;

- 71.1% of the teacher respondents said that the training on the effective use of science kits was good meaning that their expectations were met and are now able to use the science kit effectively.
- 28.9% of the teacher respondents also stated that the training was excellent implying that their expectations were met beyond measure and are ready to use kits.

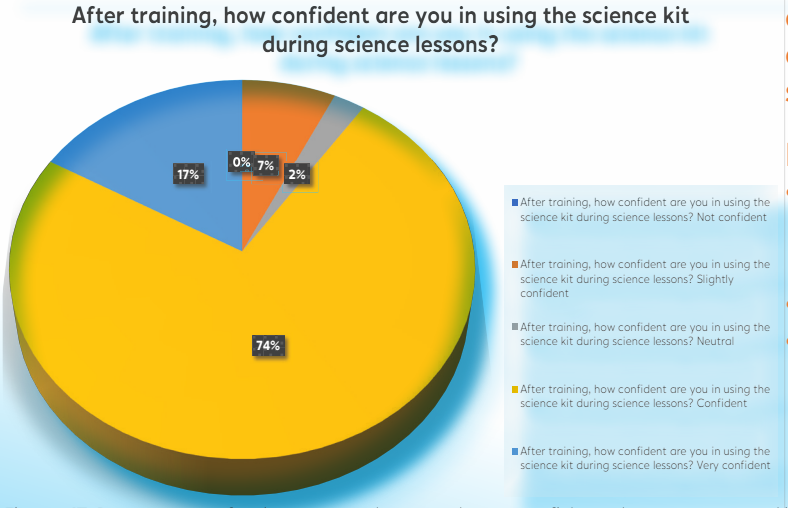


Figure 17: Responses of science teachers on how confident they are to use kits.

One of the expected outputs was to ensure that science teachers become confident in using the science kits during science lessons.

From their responses;

- 74% of science teachers stated that they were confident to use science kits to teach science practically.
- 17% said that they are very confident.
- 7% of teachers were slightly confident and 2% of them were neutral. These two groups of teachers hinged their responses to need for more support to using microscope, electric bell, and pulleys.

Science teachers were asked about whether they see the training they had helping them to organise, prepare, and conduct hands-on/parctical activities for learners during the teaching and learning of science.

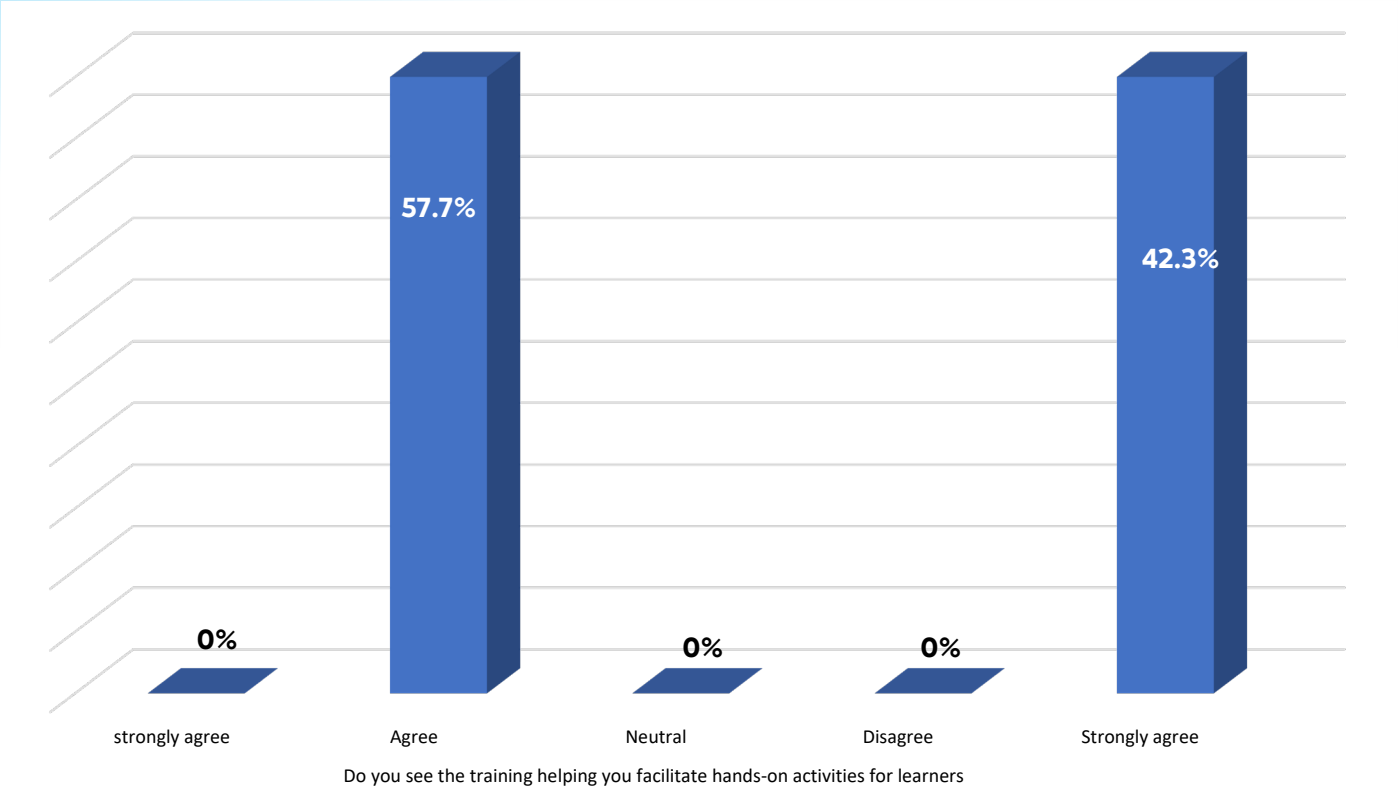
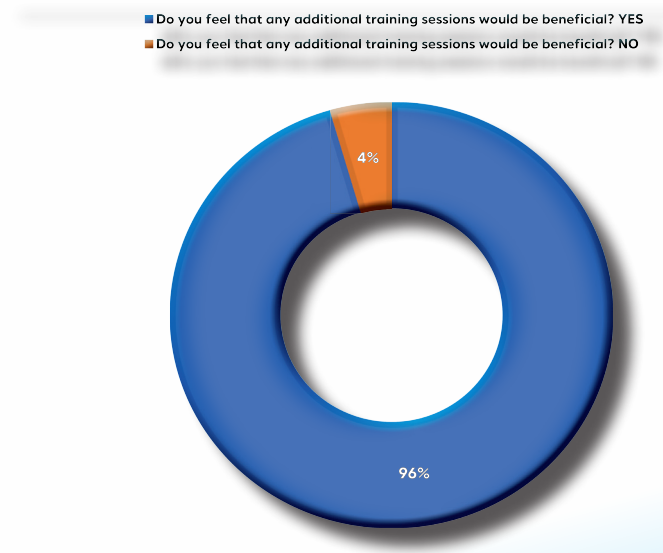


Figure 18: Responses of science teachers on how the training will help them to teach science pratically.

On matters of science teachers being able to conduct practical science lessons, teachers responded as follows;

- 57.7% of science teachers that attended the training agree that this training will help them in organising, preparing, conducting and assessing practical science lessons in their respective primary schools using the science kits.
- 42.3% of the participants/science teachers/respondents strongly agree that the skills and knowledge they acquired from the training will help them to facilitate hands-on activities for learners to do suring science lessons using the items in the science kit.
- None of the teachers disagreed (disagree and strongly disagree) or even chose neutral showing that all teachers will use the knowledge and skills attained from the workshop to teach science practically using the science kit.

In general, science teachers that attended the training are able to use the training knowledge to facilitate hands-on activities for learners using the science kit.



Do you feel that any additional training sessions would be beneficial?

While replying to this question, 96% of teachers replied YES to the question while 4% of teachers answered NO. This shows that there is a need of other trainings generally.

Teachers highlighted the following areas as specific topics that need emphasis in the next trainings;

- magnetism.
- Light energy/Optics.

- Heat energy.
- Reproductive system.
- Skin
- Application of microscope on syllabus
- More knowledge on distinguishing the parts of some body parts
- Excretory system.
- Pulley/machines system.
- Practical items in agricultural activities.
- Reviewing the skeleton.
- Using thermometers.
- Updates on curriculum reviews and research tools.
- Technology integration.
- Making a telescope.

Recommendations from science teachers

- More trainings on the same should be done in depth atleast 3 times a year to deepen teachers' understanding.
- More hands-on activities should be included in the kit especially a practical activities book that provide a variety of activities that teachers can give to the learners.
- The time for training is not sufficient enought for facilitators to fully cover concerns of teachers in depth and therefore, increasing time for training (at least 2 days).
- All government aided primary schools should be given science kits for uniform implementation so that all learners are taught in the same way for better results.
- Primary schools with a higher enrolment need more than one kit because teaching aids are very few as compared to the number of learners in each class.

Teachers in Kole district posing in a group photo after the training.

Teachers in Lira district posing in a group photo after the training.

TRAINING REPORT

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