

TRAINING REPORT

BUVUMA DISTRICT

APRIL

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For very many years now, schools both at primary and secondary school level have been learning science though it has been challenging for both learners and teachers. The challenges have been ranging from the talk and chalk method of teaching, cramming concepts, very early and late preps, corporal punishment to examination malpractices all in an effort to produce results.

In abid to bridge the gap, River Flow International (RIFI), a group of educationists, scientists, researchers, and innovators came in with an innovation, the New Approach Primary Science Kit, as a mini-laboratory for primary schools to address the lack of laboratories in primary schools. The science kit was intended to simplify science, spark interest among learners, and improve performance in science subjects through the practical approach of teaching and learning science.



Figure 1: The representative of River Flow International presenting the science kit during the launch. In 2021, Ministry of Education and Sports in collaboration with River Flow International (RIFI) enrolled a phased program of distributing science kits to pilot primary schools in different districts. The science kit was later launched by the First Lady and Minister of Education and Sports, Janet Kataha Museveni at State House in Nakasero Kampala Uganda.



Figure 2: The first lady and minister of education and sports, Janet Museveni launching the science kit.

Every year since 2021, Ministry of Education and Sports has been procuring 334 science kits and distributing them to 17 districts with 16 districts receiving 20 science kits each and one district receiving 14 kits.



Figure 3: One of the 334 science kit batch ready for dispatch to schools.

This means that every year, 334 UPE primary schools receive science kits from Ministry of Education and Sports. Currently, a total of 1,336 UPE primary schools.

It is from this background that River Flow International in partnership with Ministry of Education and Sports are conducting district after district capacity building of primary science teachers on the practical and hands-on usage of the items/teachings aids packed in the science kit to teach primary integrated science practically in their classroom.

2 Training Objectives

The objectives of training primary science teachers on effective use science kits are;

- To empower primary science teachers with hands-on skills of assembling each and every teaching aid in the new approach primary science kit.
- To guide teachers on the relationship between the items in the new approach primary science kit.
- To enrol primary science teachers using science kits on the teacher support platforms for knowledge sharing among teachers countrywide.
- To assess the available knowledge and skills among science teachers on the effective use of the new approach primary science kit.



The training took place on Wednesday 02nd April 2025 at Buvuma College School in Buvuma district for one day. It was attended by forty (40) participants from twenty (20) UPE primary schools. Among the 40 participants, 06 participants were female and 34 participants were male.

The primary schools whose science teachers were trained include; Bugaya, Bulondo, Buyuba, Bugabo, Buwanzi, Bukaali, Namunyolo, St Francis Bubanzi, Kirongo, Mawanga, Lukoma, Namakeba, Lingira, Lufu, Namatale, Kyanja, Luby, Namiti, Kirewe, and Kitiko primary schools.

The training was facilitated by the experts from River Flow International, Mr. Stuart Nabaasa, the Science and Innovation Manager and Mr. Ambrose Tumuramy, the Primary Science Expert.

Training Methodology

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Like the River Flow International's approach, our trainings are collaborative, participatory, hands-on and practical with numerous demonstrations, problem-solving activities, group work, brainstorming sessions, and presentations.



Figure 4: The participants demonstrating a P.5 experiment of measuring the volume of irregular objects

The training at Buvuma College School was not in anyway different, and participants were engaged in many hands-on tasks including experiments, assembling, and practicing. During the training, there were also intervals of participants asking questions for clarification which made the training engaging and interesting.

5 Training Content

The one day training program covered a number of aspects in various sessions as highlighted below;

Session 1: The relationship between the new approach primary science kit and the primary integrated science syllabus.



Figure 5: The facilitator, Stuart Nabaasa introducing to teachers relationship between kit and syllabus.

Session 2: Practical and hands-on usage of each teaching aid in the new approach primary science kit.



Figure 6: One of the science teachers demonstrating how digestive system model can be used to teach.

Other aspects that were covered in session 2 are;

(a). Assembling and using the skeletal system to teach science practically.



Figure 7: The participants in the discussion group on how to use a skeleton effectively during teaching.

The teachers in their discussion groups first brainstormed on how to use items in the science kits and later demonstrated how the item can be used to teach science practically in their classrooms.

(b). Assembling and using the microscope to observe micro-organisms.



Figure 8: The participants observing a plant cell after learning how to assemble and use the microscope.

6 Observations and Outcomes

At the end of the training, the following were observed;

- Teachers appreciated the practical approach of teaching primary integrated science as they found it engaging, less tiresomes, interesting, and real.
- Teachers were very active during the training, asked questions to understand at every stage.
- All the participants gained the skills of assembling, handling, and using all the items packaged in the new approach primary science kit.
- The science teachers needed more of such training sessions as this was helping them to learn more to improve their teaching.



Figure 9: The facilitator, Ambrose Tumuramye clarifying issues on measurement to participants.

- Most science teachers showed high enthusiasm and curiosity when introduced to the items in the science kits, some teachers were hesitant at first but became more involved as they handled the teaching aids, and a few participants were passive and needed prompting to participate in hands-on activities.

- Some teachers were unfamiliar with the how to use some components in the science kits since they had never seen them before however the teachers with prior experience adapted quickly and assisted their peers.
- Science teachers frequently worked in groups, sharing ideas, and helping each other assemble experiments. Group discussions revealed diverse interpretations of scientific concepts, which enriched understanding among teachers.
- During training, teaching aids improved conceptual understanding for most teachers which intrigued science teachers to ask relevant questions about how the kits link to the curriculum and learning outcomes.
- Science teachers showed interest in how to integrate kits into everyday lessons, and raised concerns about how to managing large classes with limited few teaching aids.

In summary, the training revealed that while most science teachers were initially unfamiliar with the use of some components in the science kit, they quickly demonstrated enthusiasm and adaptability. Hands-on engagement fostered peer learning and improved understanding of scientific concepts. However, challenges such as limited prior exposure, technical difficulties with assembling some items in the science kits like microscopes, and concerns about classroom application were noted. Overall, the training highlighted the need for ongoing support, resource availability, and contextualized teaching aids to ensure effective integration of science kits into classroom practice.

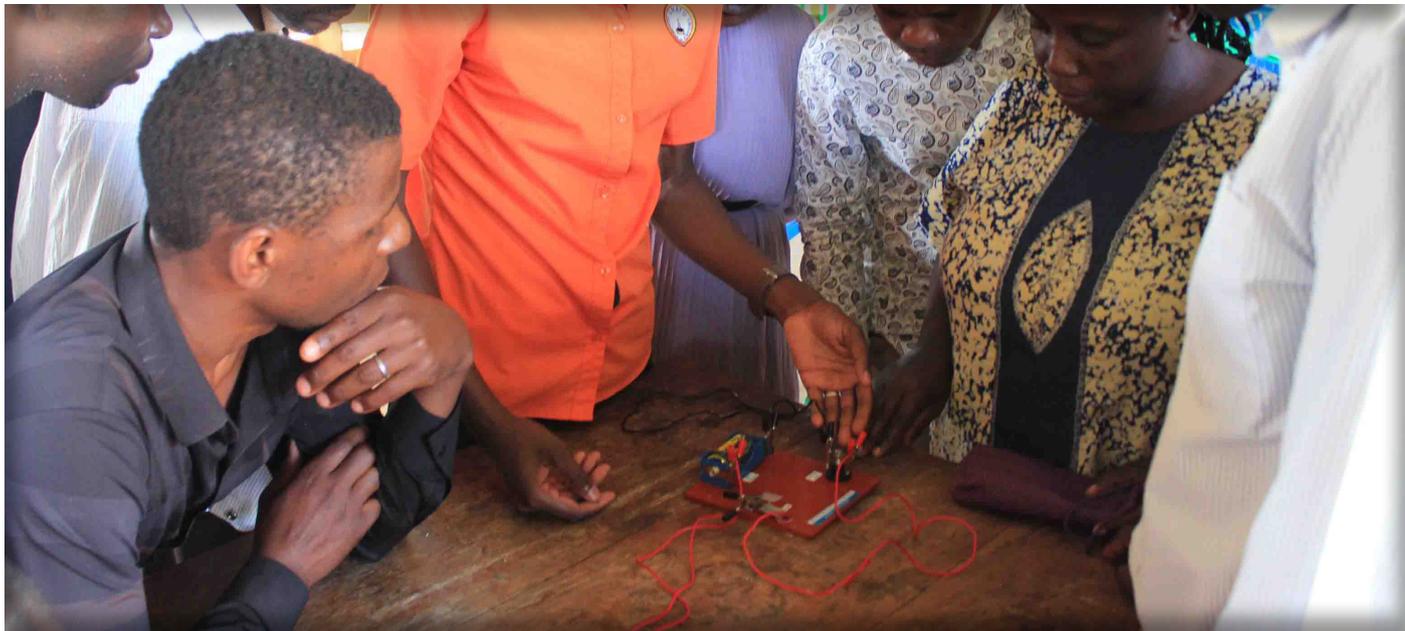


Figure 10: Participants in a peer group connecting the electric circuit one of the science kit components.

Teachers' Recommendations

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Some science teachers recommended follow-up support, including refresher training and online teacher support platform. They suggested forming teacher support groups to share experiences and best practices. Many requested additional kits for use in their schools.

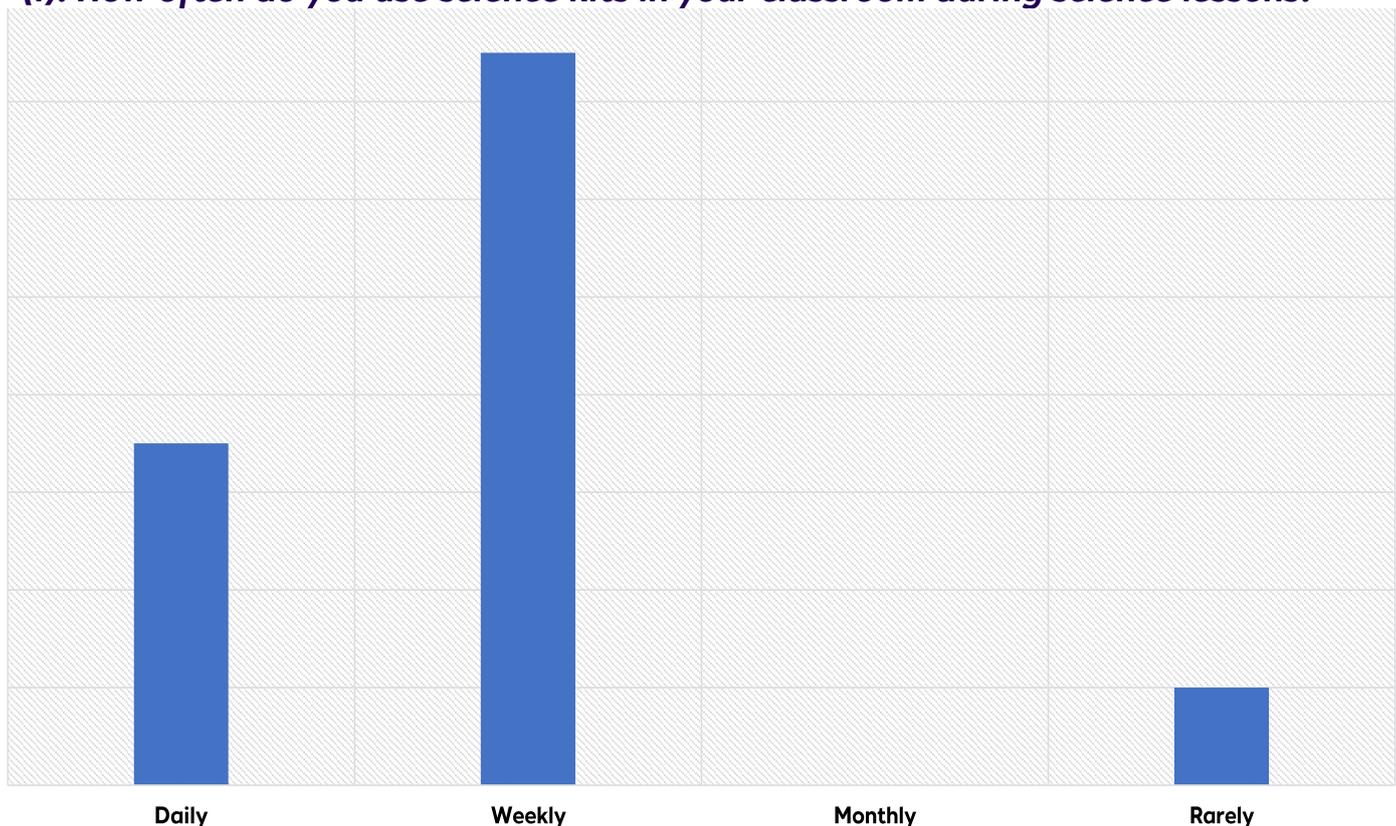
8.1. Pre-Training Evaluation

Before the training was conducted, the training team conducted a pre-training evaluation to understand participants' current knowledge of science content and usage of science kits. In this activity, assessment focused much on;

- accessibility of science kits and frequency of use during teaching at school.
- kit's effectiveness in simplifying the teaching and learning of science.
- prior training on science kits and comfort if science teachers while using kits.
- learner engagement and interaction during teaching and learning using kits.
- quality and suitability of science kits and its components.
- impact of science kits on improving the achievement of learning outcomes.
- suggested improvements in the components of science kits.
- challenges faced while using science kits.

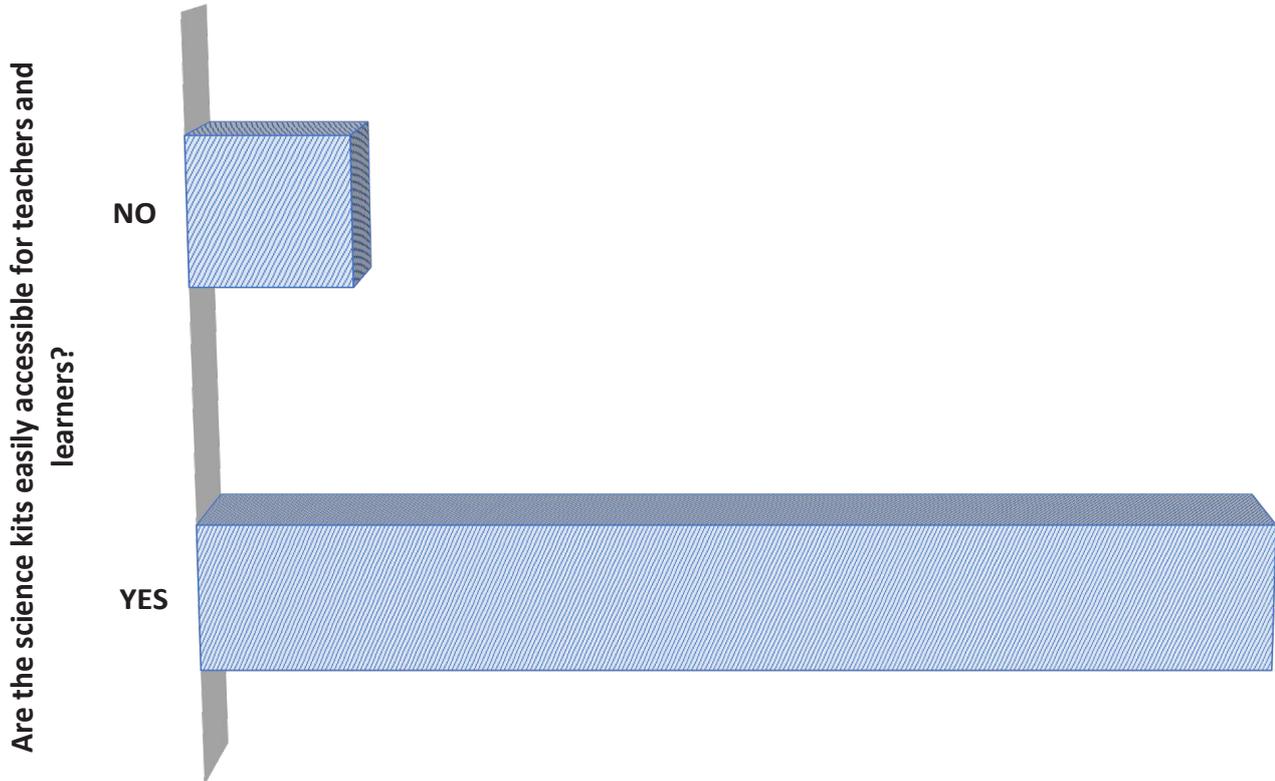
(a). Kit accessibility and frequency of use

(i). How often do you use science kits in your classroom during science lessons?



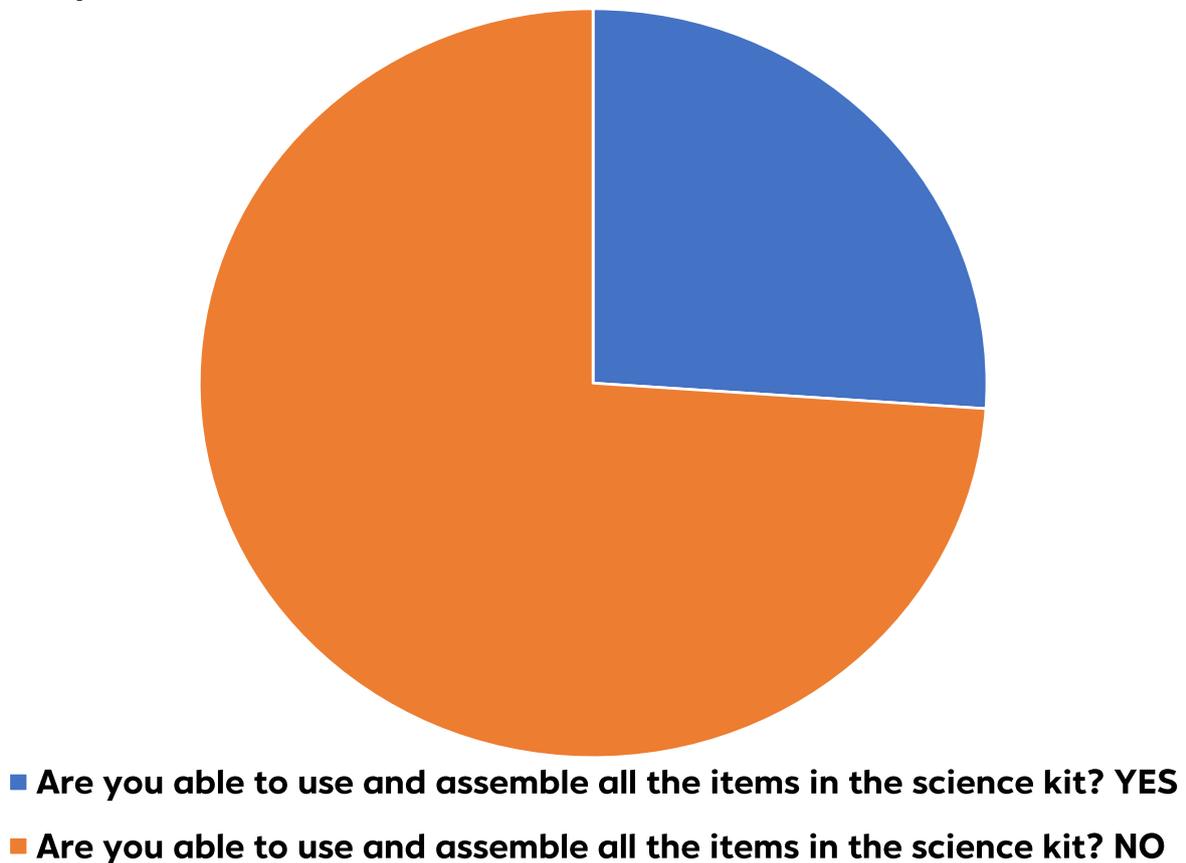
Participants before the training were asked about the frequency at which they use science kits during teaching and learning of science in the classroom. 62.5% of the science teachers reported weekly usage of science kits, 29.16% reported daily use of science kits in different classes and 8.3% of science teachers rarely used the science kits. The 8.3% who rarely uses kits attributed this to the accessibility and their capacity to use the teaching aids in the new approach primary science kit effectively before the training.

(ii). Are the science kits easily accessible for teachers and learners?



Teachers' report on accessibility of science kits show that 86.95% of the respondents said that they can access the science kit so easily while 13.05% of the responses cannot access the science kits easily which they attributed to science kits being locked in the headteacher's office and many times the headteachers are rarely at a school.

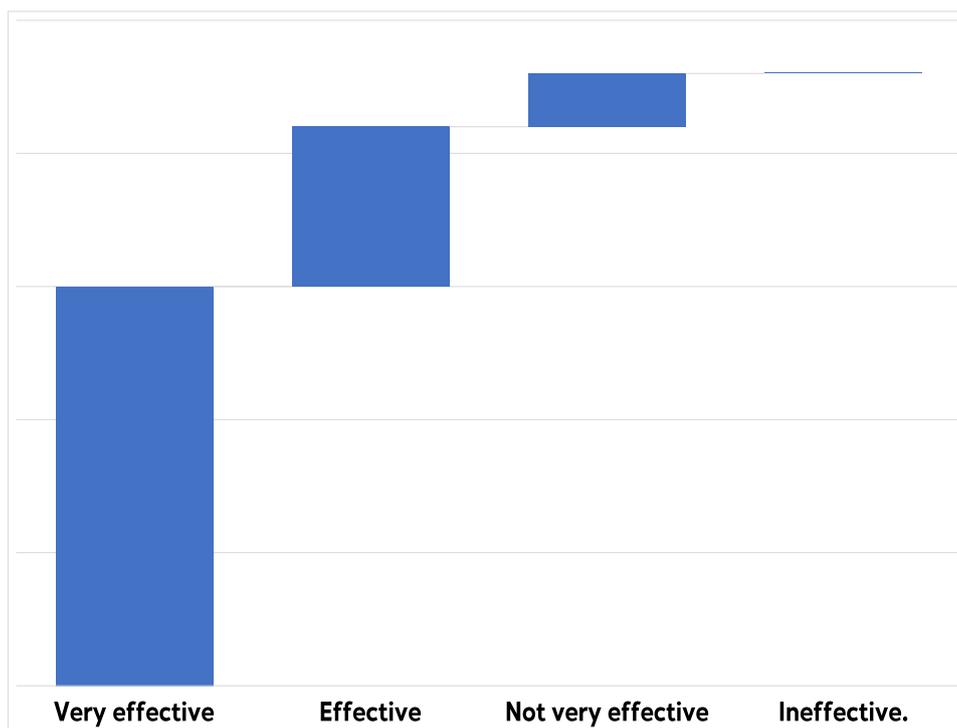
(iii). Are you able to use and assemble all the items in the science kit?



From the assessment, 73.91% of respondents are not able to use and assemble the items in the science kits and only 26.09% of the teachers are able to assemble and use the science kits before the training. Teachers incline their inability to on how to assemble components like the microscope, electric circuit, lack technical knowledge, and others. The 26.09% attribute their competence to individual initiatives of online learning from YouTube and River Flow International's teacher support platform.

(b). Effectiveness of science kit

(i). How effective are science kits in helping learners to understand concepts easily?



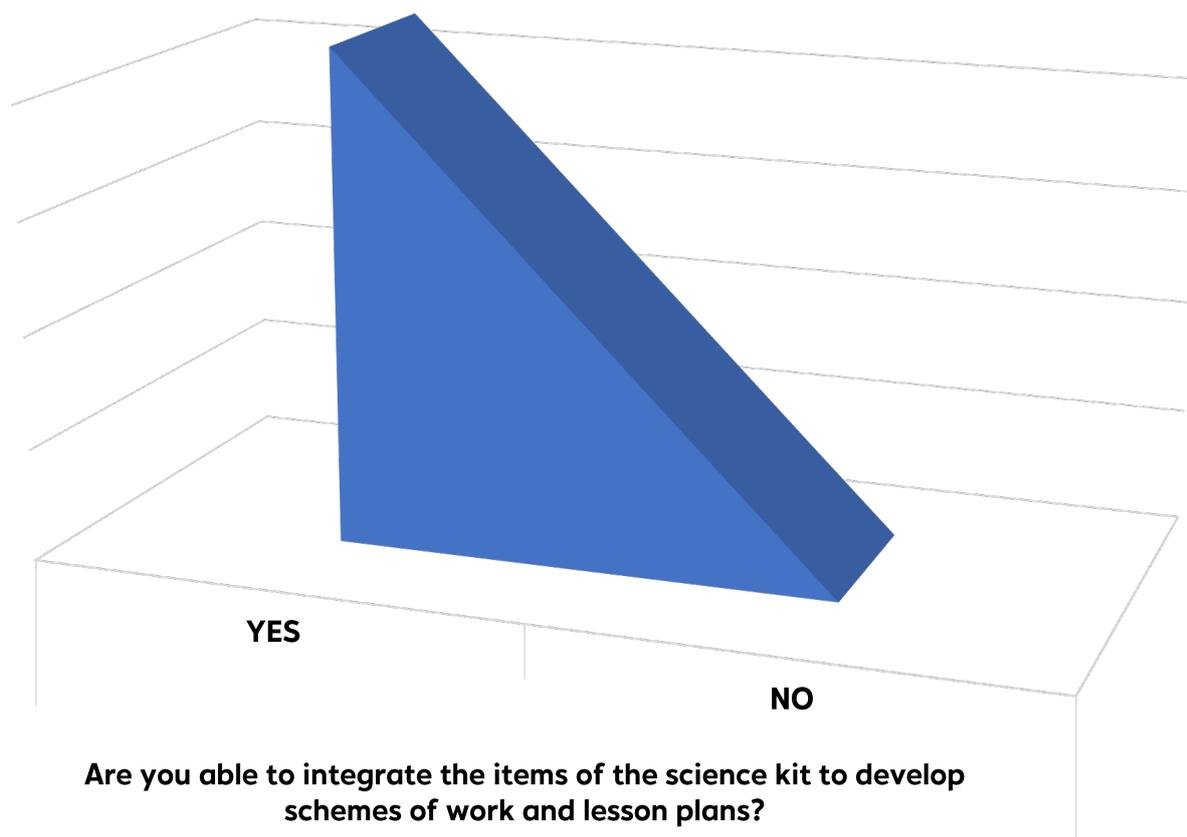
Basing on the statistical information from assessment, 91.30% of respondents reported that science kits are effective on helping learners to understand science concepts easily. 65.22% of these respondents say that they are very effective while 26.09% of the 91.30% respondents report that science kits are effective in making learning very easy.

The respondents' reasons behind their response include;

- make science lessons practical.
- encourages learners to participate during the lesson.
- promotes hands-on learning.
- learners get a chance to touch all the items and use them practically.
- stimulates critical thinking.
- learners comprehend concepts quickly.
- learners ably use the five senses.
- makes learning real and brings out abstract concepts to meaningful statements.
- learners can remember what they learnt (aid long term memory among learners).

However, 8.69% of respondents said that science kits are not very effective because of the items that give them difficulty to use like microscope, electric bell, skeleton, human eye as well as insufficient the teaching aids in the science kit that are not enough compared to the number of pupils in large classes.

(ii). Are you able to integrate the items of the science kit to develop schemes of work and lesson plans?



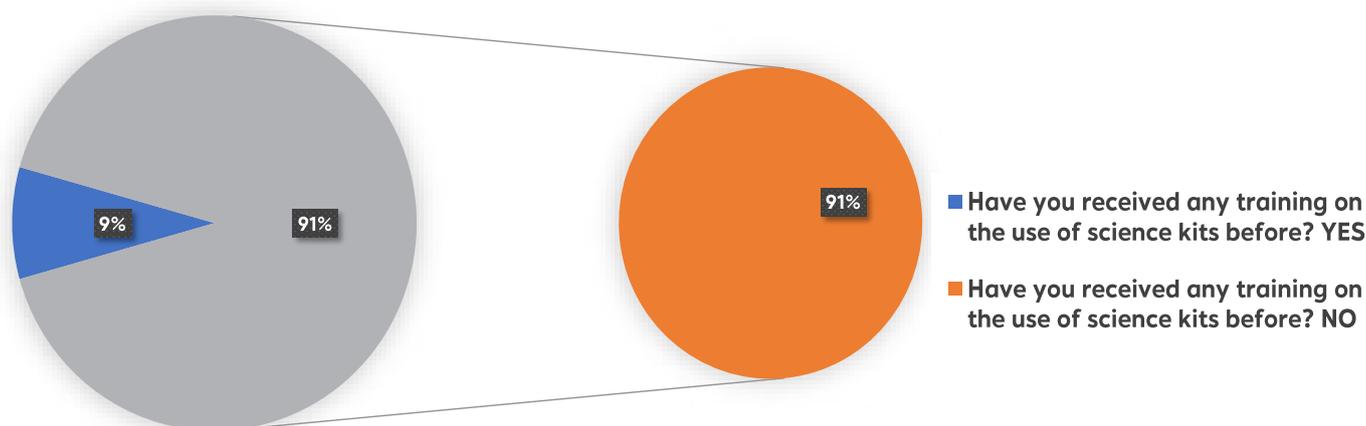
100% of the participants reported that they are able to integrate the items of the science kit to develop teaching tools like schemes of work and lesson plans while planning for lessons.

Science teachers stated the skills that learners gain from using science kits; including;

- Hands-on practical skills like measuring and using instruments correctly (thermometers, meter rules, measuring cylinders, beakers, tape measures, spring balance, weighing scale and others), assembling apparatus such as microscopes, skeleton, simple machines), handling teaching aids safely and effectively, as well as conducting experiments independently or in groups.
- Communication skills like presenting findings orally or visually.
- Confidence and motivation by building a sense of achievement through successful experiments, gaining enthusiasm for science, and increasing willingness to explore and ask questions.
- Problem solving like learning through trial and error.
- Critical thinking and reasoning.
- Collaboration and Teamwork for example working in small groups to conduct experiments, sharing responsibilities, and communicating findings and ideas with peers.
- Creativity and Innovation for example designing their own experiments or models.
- Scientific inquiry and investigation like designing experiments, making observations, and recording data accurately.

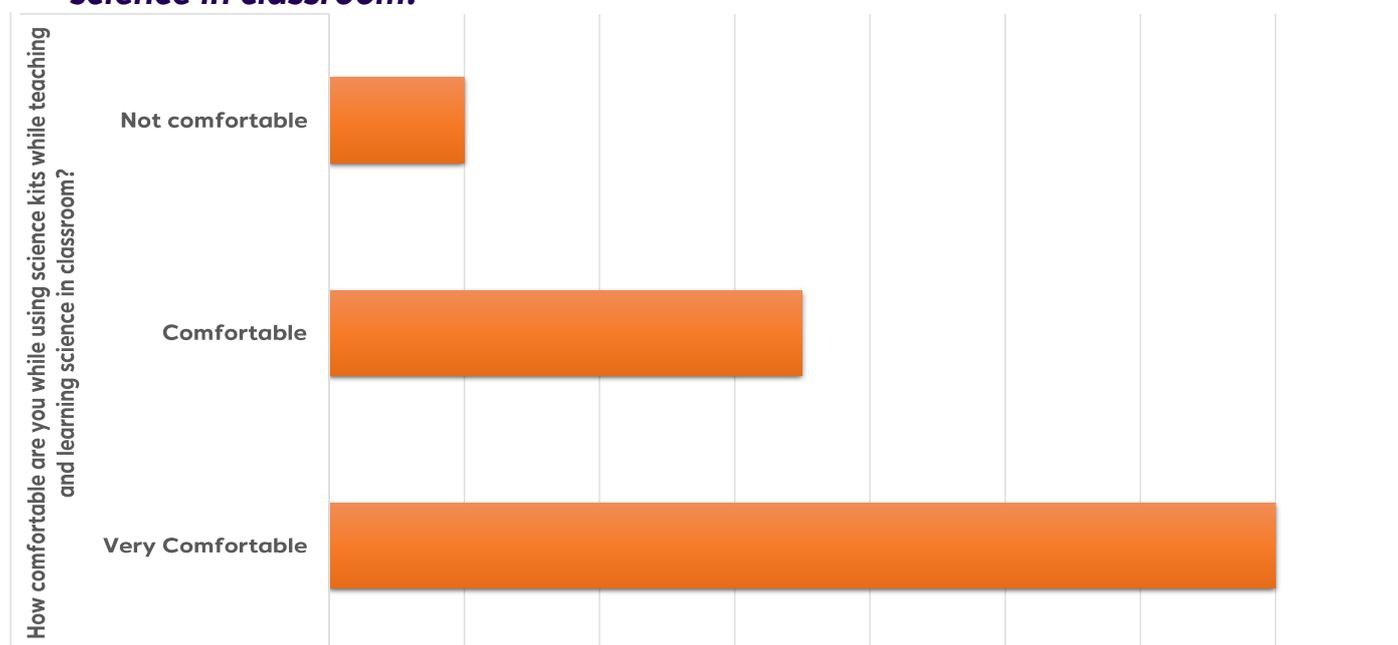
(c). Teacher training and comfort with science kits

(i). Have you received any training on the use of science kits before?



In order to ascertain available knowledge, teachers were asked whether they have been trained, responses indicate that 91% of science teachers have never been trained while 09% of the respondents confirm of prior training which was their own initiative to get basics from online trainings and from River Flow International's teacher support platforms which they had joined before. This indicates the real need as to why this training was very much needed.

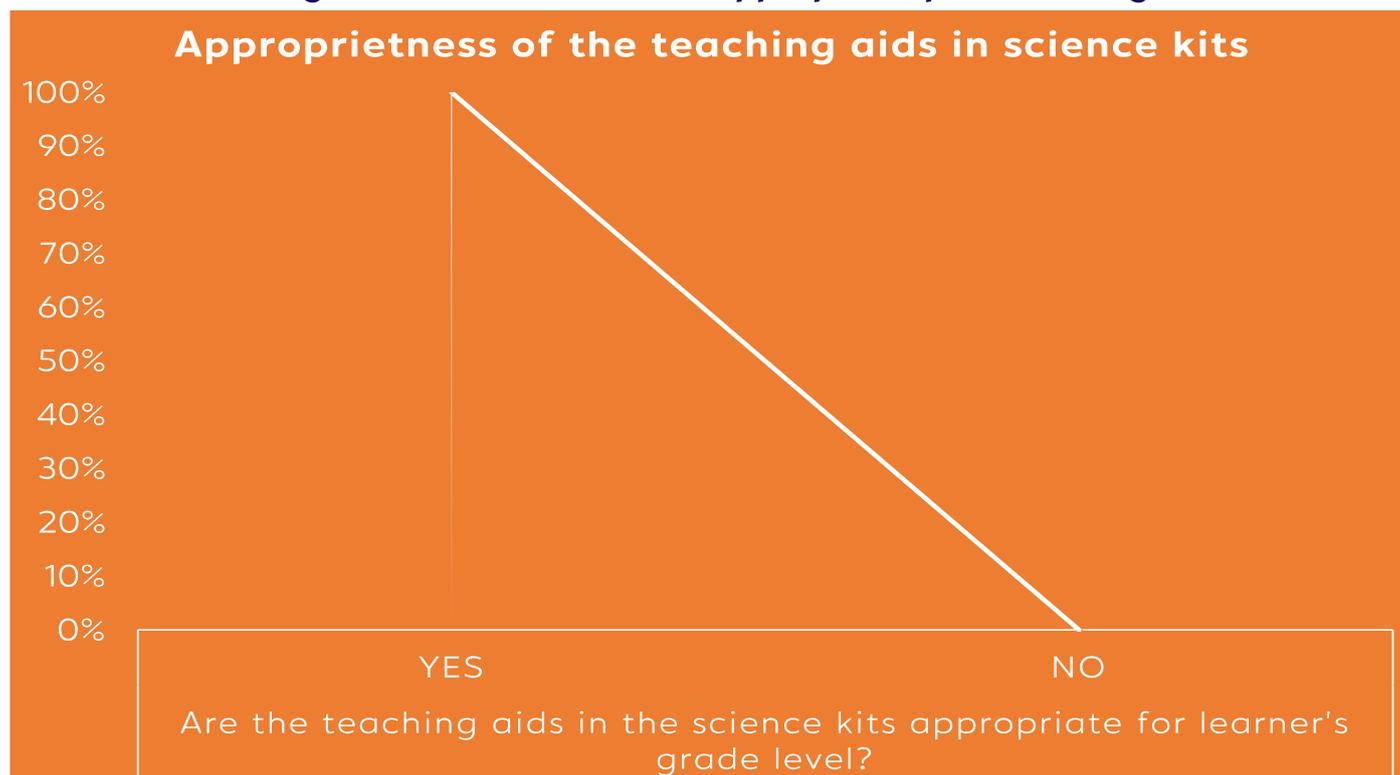
(ii). How comfortable are you while using science kits during teaching and learning of science in classroom?



The data shows that a majority of respondents (60.9%) feel very comfortable using science kits in the classroom, while 30.4% report being comfortable. Only 8.7% indicated they are not comfortable. Those who expressed discomfort cited challenges such as the need for technical expertise to operate certain components, like microscopes, and a lack of training on the effective use of the kits. This suggests that while science kits are generally well received, there is a need for targeted training to ensure all users can confidently and effectively utilize kits.

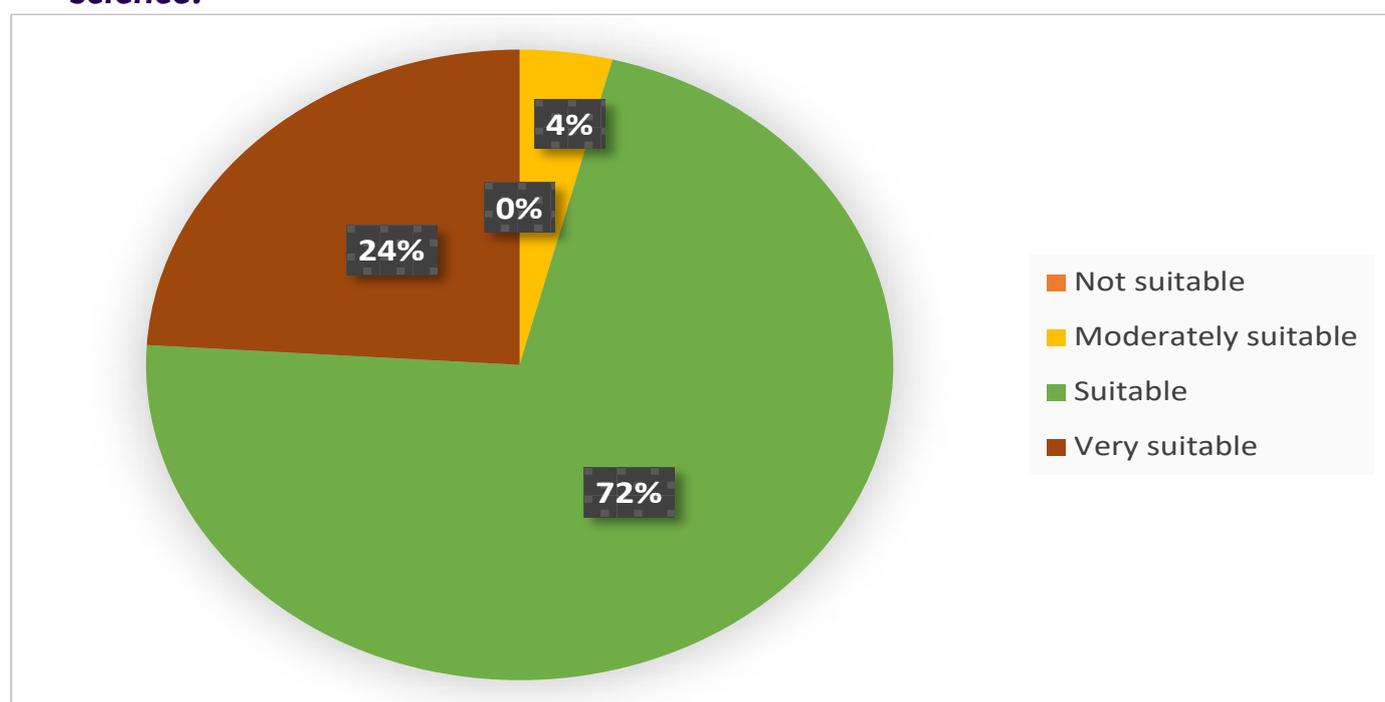
(d). Suitability and quality of science kits

(i) Are the teaching aids in the science kits appropriate for learner's grade level?



The data indicates that all respondents (100%) agreed that the teaching aids in the science kits are appropriate for the learners' grade level. This unanimous feedback indicates the kits' alignment to the curriculum requirements and the learning needs of the learners, meaning that science kits are well designed to support practical teaching and learning of science from primary four to primary seven.

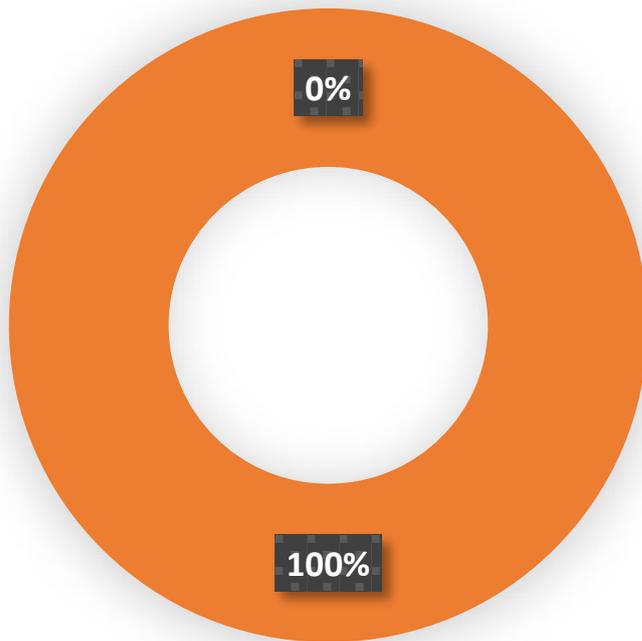
(ii). On a scale of 1-4, rate the suitability of the science kit in the practical teaching of science?



The data reveals that the majority of respondents rated the science kit as either suitable (78.3%) or very suitable (26.1%) for practical science teaching. Only one respondent (4.3%) rated it as moderately suitable, and none rated it as not suitable. This indicates a strong overall endorsement of the kit's relevance and effectiveness in supporting hands-on science instruction in the classroom.

(e). Impact of science kits on learning

Have you observed any improvements in learners' academic performance or confidence since you started using science kits?



- Have you observed any improvements in learners' academic performance or confidence since you started using science kits? YES
- Have you observed any improvements in learners' academic performance or confidence since you started using science kits? NO

All respondents (100%) reported observing improvements in learners' academic performance or confidence since the introduction of science kits in the classroom. This undisputed response strongly indicates that science kits have a positive impact on learning outcomes.

Teachers noted that the kits enhance learner engagement by making abstract scientific concepts more tangible and easier to understand through hands-on experience. This practical exposure fosters deeper comprehension, encourages curiosity, and boosts learners' motivation and enthusiasm for science.

Additionally, the interactive nature of using science kits builds learners' confidence as they actively participate in experiments, problem-solving, and collaborate with peers. The consistent improvement in both academic performance and self assurance suggests that science kits are an effective tool in strengthening science education and promoting learner centered instruction.

8.2. Post-Training Evaluation

(a). Impact of the Training

(i). Have you received any training on how to use the science kit?

All respondents (100%) indicated that they have received training on how to use the science kit. This finding demonstrates a strong commitment to capacity building and professional development in the implementation of science kits.



Access to training ensures that science teachers are well equipped with the knowledge and skills needed to integrate the kits effectively into their teaching. It also contributes to consistent and correct usage of the materials, maximizing the instructional value of the kits, and minimizes misuse or underutilization.

The availability of training likely plays a key role in the observed improvements in learner outcomes, as confident and knowledgeable teachers are better positioned to deliver engaging, hands-on science lessons. This underscores the importance of ongoing support and training in the successful adoption of educational tools.

(ii). How would you rate the quality of the training on using the science kit?

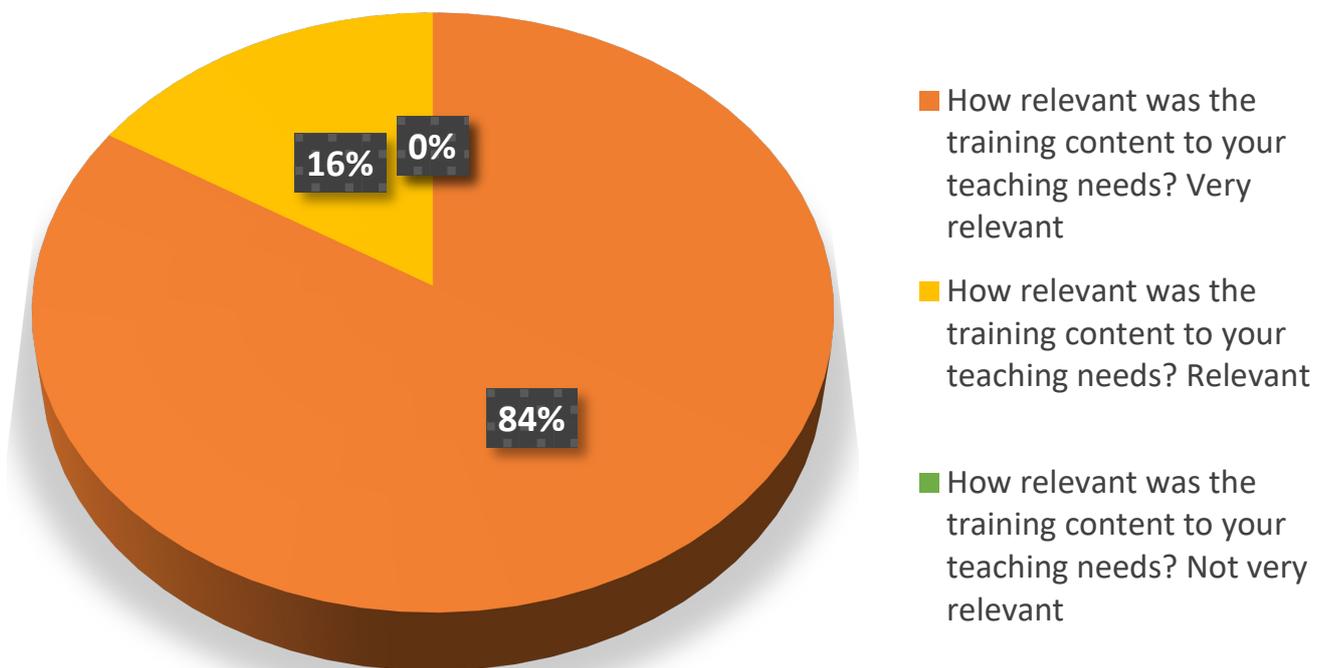
The data shows that the majority of respondents rated the quality of training on using the science kit as either excellent (54.8%) or good (45.2%), with no responses indicating fair or poor quality.

This reflects a high level of satisfaction with the training provided, suggesting that it was well structured and conducted, relevant, and effective in building the necessary competencies for using the kits in classroom instruction. The absence of negative ratings also implies that participants found the training valuable and felt adequately prepared to implement the science kits confidently.



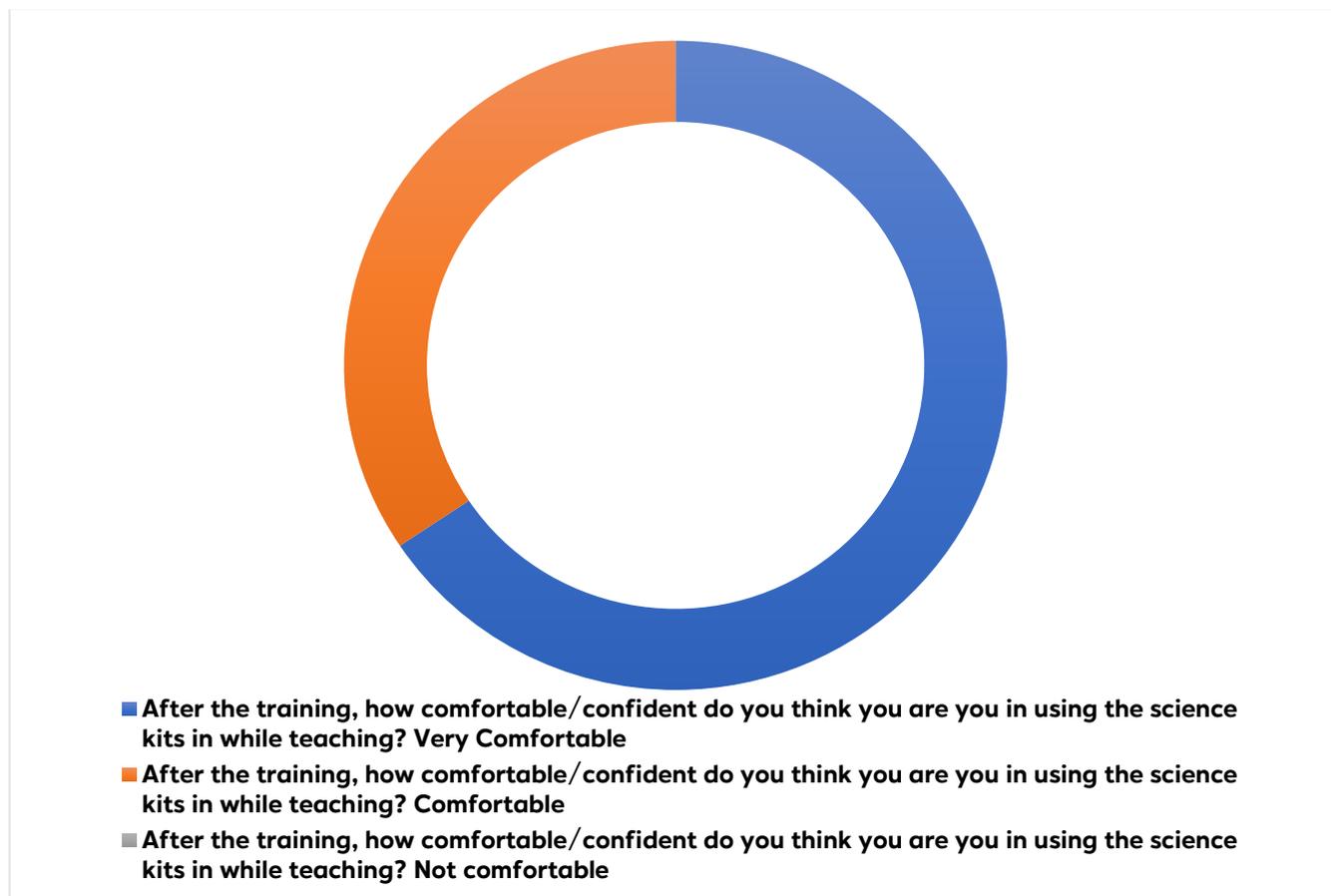
High quality training is essential in ensuring proper utilization of educational resources particularly science kits, and this positive feedback highlights its role in supporting successful science teaching and learning.

(iii). How relevant was the training content to your teaching needs?



The data indicates that all respondents found the training content relevant to their teaching needs, with 83.9% rating it as very relevant and 16.1% as relevant. There were no responses indicating that the training was not very relevant or irrelevant. This overwhelmingly positive feedback suggests that the training was well aligned with the practical demands of classroom instruction and addressed the specific challenges teachers face in teaching science. The relevance of the content likely contributed to the effective integration of science kits into teaching practices.

(iv). After the training, how comfortable/confident do you think you are you in using the science kits in while teaching?



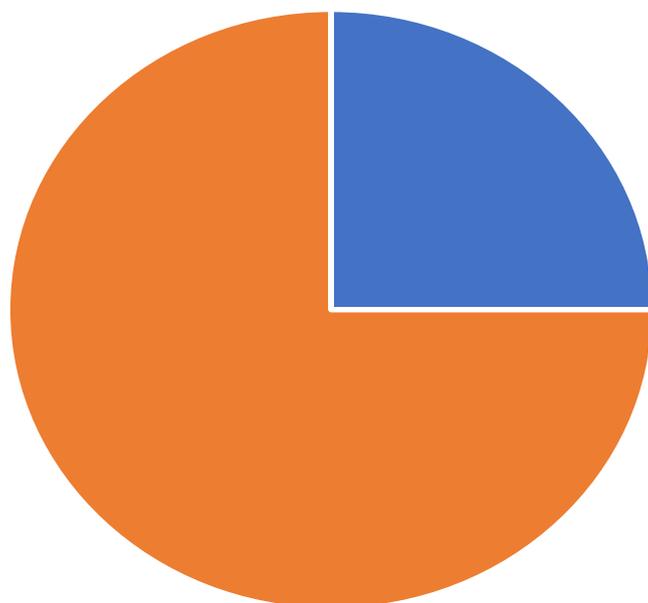
The data shows that all respondents (100%) felt confident in using the science kits after the training, with 65.6% reporting they were very comfortable and 34.4% indicating they were comfortable. Notably, none of the participants reported feeling uncomfortable.

This indicates that the training was highly effective in equipping science teachers with the practical skills and confidence needed to use the science kits in their classrooms. The high comfort levels suggest that teachers are well prepared to deliver hands on, engaging science lessons, which is likely to have a positive impact on learner participation and academic performance.

(v). After the training, how confident do you think you are you in using the science kits in while teaching?

The data reveals that all respondents (100%) felt confident in using the science kits after the training, with 25% reporting they were very confident and 75% indicating they were confident.

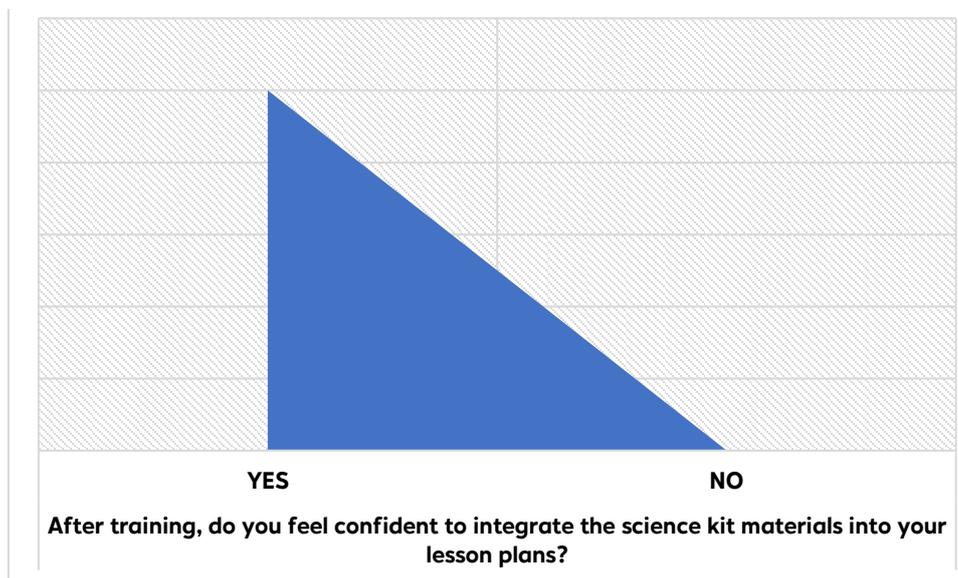
No respondent reported feeling unconfident. This reflects the effectiveness of the training in building teachers' capacity to integrate science kits into their instructional practices.



■ very confident ■ Confident ■ Not confident

The strong confidence levels suggest that teachers are well prepared to deliver practical, engaging science lessons, which is essential for enhancing learners' understanding, participation, and overall learning outcomes in science.

(vi). After training, do you feel confident to integrate the science kit materials into your lesson plans?



All respondents (100%) indicated that they feel confident integrating science kit materials into their lesson plans after the training.

This consistent feedback reflects the effectiveness of the training in not only building practical

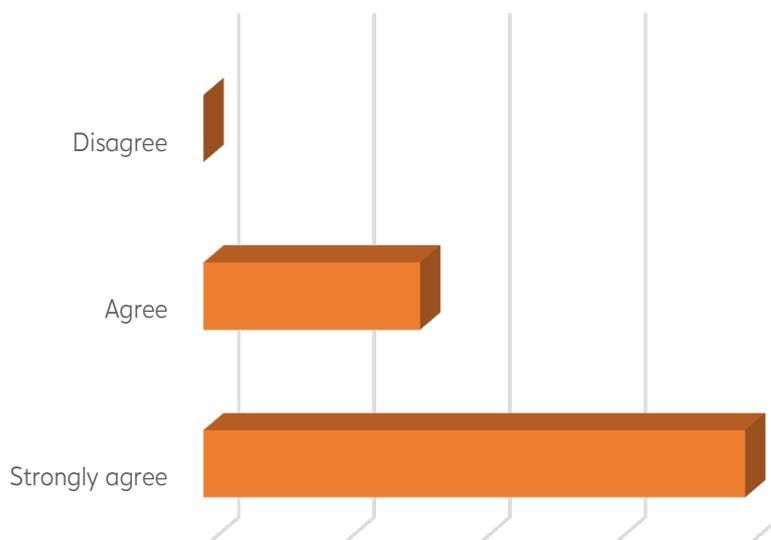
skills but also empowering teachers to align the kits with curriculum goals.

(vii). In your opinion, do you see the training helping you better facilitate hands-on activities for learners using the kits.

The responses indicate that all participants (100%) believe the training has enhanced their ability to facilitate hands-on activities using the science kits. Specifically, 71.4% of respondents strongly agreed, while 28.6% agreed. No one disagreed. This shows a

strong level of satisfaction with the training and suggests that it effectively equipped teachers with the confidence and strategies needed to implement interactive, learner centered science lessons. By strengthening their capacity to guide practical activities, the training is contributing to more engaging and effective science instruction.

In your opinion, do you see the training helping you better facilitate hands-on activities for learners using the kits.



(viii). Do you feel that any additional training sessions would be beneficial?



All respondents (100%) expressed that additional training sessions would be beneficial. This universal response indicates a strong interest in continued professional development and a recognition of the value that further training could offer.

It suggests that while the initial training was effective, teachers are eager to deepen their skills, explore more advanced uses of the science kits, and stay updated with best practices.

Ongoing support and refresher sessions would likely reinforce confidence, promote innovation in science teaching, and ensure sustained, impactful use of the science kits in the classroom.

TRAINING REPORT

BUVUMA DISTRICT



APRIL 2025