

# SCIENCE SPAZA

## MANUAL



Knowledge is Ncah!

NAME OF CLUB: .....

NAME OF SCHOOL: .....

PROVINCE: .....



Knowledge is Ncah!



# WHAT WILL YOU FIND IN THIS MANUAL?

Congratulations on registering your **Science Spaza Club**. Science Spaza will send you a number of Activity Worksheets during the year to inspire your members with the wonder of Science. But it is up to you – your whole club – to make this a great year of hands-on discovery.

The organisers need to work through this Manual together and make decisions about how the club will be run. Use the spaces provided to keep a record of what you decide.

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SCIENCE IS  
**EXCITING!**

**EVERYBODY**  
CAN DO SCIENCE!

SCIENCE HELPS YOU TO  
BECOME A **PROBLEM**  
**SOLVER.**

YOU DON'T  
NEED **SPECIAL**  
**EQUIPMENT**  
TO DO SCIENCE.



SCIENCE IS  
ABOUT PEOPLE  
**SHARING**  
**IDEAS.**

# ORGANISING



NOW THAT WE'VE REGISTERED OUR CLUB, WHAT DO WE DO NEXT?

THE FIRST THING TO DO IS TO GET **ORGANISED**.



- Choose a small group of organisers. They can share tasks and ideas.
- One of the organisers needs to be the contact person.
- A teacher, learner or parent can be an organiser.
- Organisers make sure that everything is arranged. They handle communications and the general running of the club. They can ask other members to help.
- An organiser does not necessarily have to be highly knowledgeable in science.



HOW WILL WE **CHOOSE ORGANISERS** AND GET EVERYONE INVOLVED?

THERE ARE SOME VERY HELPFUL THINGS WE CAN DO AT THE BEGINNING.



**CHOOSE AN APPROPRIATE NAME FOR YOUR CLUB.** THIS CAN BE DECIDED BY THE CLUB MEMBERS AMONGST THEMSELVES, OR IT CAN BE THE NAME OF THE SCHOOL THAT THE LEARNERS ATTEND.

- We can ask all the members what their vision and goals are for the club.
- Then we can set up group norms or values, or a group contract based on shared expectations.
- It is helpful for all the members of the club to decide on criteria for choosing organisers.
- Organisers can be changed at time intervals if the club agrees, e.g. every quarter or every year. This will spread the load and give more people the opportunity to gain experience.
- Choose an appropriate name for your club. This can be decided by the club members, or it can be the name of the school that the learners attend.

## 1 DISCUSS

- **HOW WILL YOUR CLUB CHOOSE ORGANISER(S)?**
- **HOW OFTEN WILL ORGANISERS BE CHOSEN?**

SEE PAGE 12 FOR MORE IDEAS ABOUT STARTING YOUR CLUB.

## 2 DECIDE

**ORGANISER(S):** .....

.....

.....

**CONTACT PERSON:** .....

**ADULT ASSISTANT/ORGANISER:** .....

**FUNCTIONS OF ORGANISERS:** .....

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.....

# ORGANISING

WHEN SHOULD WE MEET?



WE NEED TO SET A **REGULAR DAY AND TIME**, AND DECIDE HOW **OFTEN** WE WILL MEET.



- We also need to decide the length of time for the meeting.
- Remember, if meetings are too long there may not be enough to do and we will lose the members' attention.
- On the other hand, if meetings are too short there won't be enough time for members to understand what's happening, or tasks may not be completed.

PUT UP A SCHEDULE, SHOWING DATES OF MEETINGS AND WHAT WILL BE COVERED DURING EACH MEETING. THE SCHEDULE CAN ALSO BE USED TO KEEP A RECORD OF WHAT ACTUALLY HAPPENED AT EACH MEETING.

AN EXAMPLE OF A MEETING SCHEDULE IS PROVIDED ON PAGE 15.

WHERE WILL WE MEET?



TRY TO FIND A **SUITABLE VENUE** WHERE THE CLUB CAN MEET EVERY TIME.



- The venue should be big enough for the members to move around freely and safely.
- Desks and chairs will be needed for writing and sitting, as well as places to put any equipment.
- It is advisable to have a back-up venue if your regular meeting place has to be outside, or if the school sometimes needs to use it for other activities.
- Some activities may need to be done outside for various reasons.

CONSIDER IF THE VENUE IS SAFE; IF IT IS AVAILABLE AT THE TIME YOU HAVE YOUR MEETINGS; AND IF MEMBERS CAN GET TO IT EASILY.

## 1 DISCUSS

- HOW OFTEN WILL YOU MEET?
- HOW LONG WILL YOUR MEETINGS LAST?
- HOW WILL YOU CHOOSE A MEETING PLACE?
- WHAT OTHER THINGS DO YOU NEED TO ORGANISE?

## 2 DECIDE

MEETING TIME: DAY: .....  
TIME: .....

HOW OFTEN? .....

MEETING PLACE: .....

BACK-UP VENUE? .....

# MEMBERS

WHO WILL BE IN OUR CLUB, AND HOW MANY MEMBERS WILL THERE BE?



EACH CLUB NEEDS TO MAKE ITS **OWN DECISIONS** ABOUT MEMBERSHIP.



- The most important thing is that club members have a passion for science, and are committed to coming to meetings.
- We should keep a register of the members who attend each meeting.

HOW WILL WE DEAL WITH **NEW MEMBERS** WHO WANT TO JOIN THE CLUB?



IT'S IMPORTANT TO HAVE NEW MEMBERS, BUT THEY MUST BE **COMMITTED TO THE GOALS** OF THE CLUB.



- We may want to have new join-ups if some members leave the club.
- We will need to make sure they understand how the club works.
- New members will bring new ideas into the club.
- We will also need to inform Science Spaza if our club gets much bigger and we need more resources.

DATE	ACTIVITY	ZINZI	MUTALI	THEMBA	KLARA	TSEBO	FAITH
10 FEB	WIND ENERGY	✓	x	✓	✓	✓	✓
24 FEB	SOLAR WATER HEATING	✓	✓	x	✓	✓	x
9 MAR	BIOGAS	✓	✓	✓	x	✓	x

## 1 DISCUSS

- WHAT CRITERIA WILL YOU USE FOR LEARNERS WHO WANT TO BE MEMBERS?
- HOW MANY MEMBERS CAN YOUR CLUB HAVE?
- HOW WILL YOU ORIENTATE NEW MEMBERS WHO JOIN LATER?

## 2 DECIDE

CRITERIA FOR MEMBERSHIP: .....

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WHO WILL FILL IN THE REGISTER? .....

.....

# MEMBERS

HOW WILL OUR CLUB MEMBERS **COMMUNICATE** AND BE INFORMED?



GOOD **COMMUNICATION** IS VERY IMPORTANT.

- Work out a reliable way to communicate with club members, in the event that a meeting is cancelled or rescheduled.
- You can also use your communication strategy if club members need to bring a requested item to the meeting, or to make arrangements for field trips.
- Some possible ways could be phone calls, sms, email, what's app, facebook, or even the school notice board.

HOW WILL WE KNOW WHO ARE MEMBERS OF OUR CLUB?



MEMBERS COULD **WEAR SOMETHING** THAT SHOWS THEY BELONG TO THE CLUB.



- We may want to design club IDs or badges for all the club members.
- Members can wear their name badges during the meetings.
- Having name badges will ensure that the club feels like an organisation and not just a group of individuals. This will also assist club members to learn each other's names easily if they do not know each other very well.

## 1 DISCUSS

- **WHAT INFORMATION DO YOU NEED TO COMMUNICATE?**
- **WHICH WILL BE THE BEST WAYS TO COMMUNICATE ARE THE MOST RELIABLE IN YOUR AREA?**
- **IS IT IMPORTANT TO HAVE A WAY OF INDICATING CLUB MEMBERSHIP?**

## 2 DECIDE

**WHICH METHOD(S) WILL YOU USE TO COMMUNICATE WITH YOUR MEMBERS?** .....

.....  
 .....  
 .....

**WHO WILL BE RESPONSIBLE FOR KEEPING IN TOUCH WITH MEMBERS?** .....

.....

**WILL YOUR CLUB MEMBERS HAVE IDS? WHAT WILL THEY LOOK LIKE?** .....

.....  
 .....

# RESOURCES



WHERE WILL WE GET THE **RESOURCES** WE NEED FOR OUR MEETINGS?

SOME RESOURCES WILL BE SENT TO YOUR CLUB BY **SCIENCE SPAZA**.



- The most important resources are the free **Activity Worksheets**, which will be sent to the club. Sometimes they are included in *Spaza Space*.
- These worksheets can also be downloaded from the Science Spaza website [www.sciencespaza.org](http://www.sciencespaza.org).
- **This Manual** is another important resource to help you run your club.
- *Spaza Space* is a science newspaper which is sent to all the clubs a few times a year.
- Sometimes Science Spaza will also send other useful items to the clubs. Check your post regularly to make sure you get all your resources.



WHAT **OTHER RESOURCES** CAN WE USE?

WE CAN THINK OF OTHER THINGS THAT WILL HELP US TO EXPLORE SCIENCE.



## 1 DISCUSS

- WHAT IS A "RESOURCE"?
- HOW CAN THE MEMBERS OF YOUR CLUB HELP TO COLLECT RESOURCES?

- Look out for science magazines and booklets to bring to meetings.
- We can collect everyday resources, such as plastic containers, etc. which are needed to do the activities.

## 2 DECIDE

WHICH RESOURCES WILL YOUR CLUB TRY TO COLLECT FOR ITSELF? .....

.....

WHERE WILL YOU STORE RESOURCES THAT YOU COLLECT? .....

.....

# RESOURCES



WHAT ELSE DO WE NEED TO HAVE AT OUR MEETINGS?

THINK ABOUT **BASIC SUPPLIES** THAT WILL BE USEFUL.



## RAISING FUNDS FOR YOUR CLUB

- ALL THE MEMBERS SHOULD BE INVOLVED. THIS WILL HELP TO BUILD CLUB UNITY.
- FUND RAISING EVENTS COULD BE THINGS LIKE DOING A CARWASH, A CAKE-SALE OR A HOT DOG SALE. YOU COULD HAVE A RAFFLE FOR A PRIZE, OR OFFER TO DO GARDEN WORK, ETC.

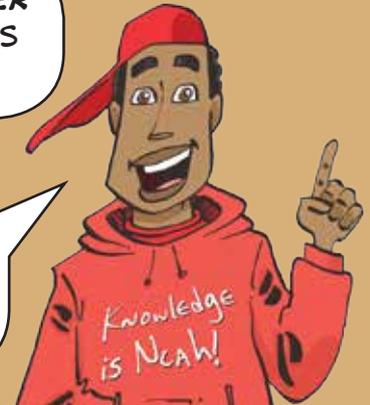
- Make sure there are paper, pens, markers and rulers available.
- It's also a good idea to have some scissors, glue and other supplies and tools available to use when needed for a particular activity.
- Club members could use their own notebooks to record their observations, results and notes.

AND WE CAN ASK LOCAL BUSINESS PEOPLE AND PARENTS TO **SPONSOR** SOME OF THE CLUB'S ACTIVITIES.



WE CAN HAVE A **BRAINSTORM** TO THINK OF LOCAL PEOPLE AND THINGS THAT WILL HELP US TO UNDERSTAND AND ENJOY SCIENCE.

ARE THERE ANY **OTHER** KINDS OF RESOURCES THAT WE CAN USE?



- Invite local people who work in science to speak to our club.
- The world around us is full of science. Let's learn to recognise it.
- We can raise funds to pay for some of the activities we want to do.

## 1 DISCUSS

- WHAT BASIC SUPPLIES DO YOU THINK YOU WILL NEED? WHERE CAN YOU GET THEM?
- DO YOU KNOW ANY PEOPLE IN YOUR AREA WHO USE SCIENCE IN THEIR WORK?
- DOES YOUR CLUB NEED TO RAISE FUNDS?
- WHAT IDEAS CAN YOU THINK OF TO RAISE FUNDS OR GET SPONSORSHIP?

## 2 DECIDE

WHO CAN YOU ASK TO SPEAK TO YOUR CLUB?

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THINK OF TWO INTERESTING THINGS THAT HAPPEN IN NATURE THAT YOU WANT TO FIND OUT MORE ABOUT.

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# ACTIVITIES

HOW WILL WE RUN THE WORKSHEET ACTIVITIES?

MEMBERS WILL LEARN MORE AND ENJOY ACTIVITIES IF THEY ARE *INVOLVED*.

- Always remember, before the experiment have a short discussion and allow the club members to ask questions.
- Get the club members to note down their observations and results during the activity.
- Get them to talk to each other about the experiment and results, and discuss what is happening and why.
- The responsible people/organisers should ensure that during every club meeting a different activity is worked through. The activity should not be revealed to the club members before the club meeting.

HOW CAN WE GET *ALL* THE MEMBERS TO HAVE HANDS-ON EXPERIENCE WITH THE ACTIVITES?

- The number of members in each group will depend on the size of the club and on the needs of each activity.
- If the members are from different grades, you may decide to separate groups according to different levels of understanding. Or you may mix different grades in each group so that older members can mentor the younger ones.

WE CAN LET THE MEMBERS WORK IN *GROUPS*.

## DISCUSS

- HOW CAN YOU MAKE SURE THAT ALL THE MEMBERS ARE INVOLVED IN ACTIVITIES?
- WHAT ARE THE ADVANTAGES OF GETTING MEMBERS TO DO THE ACTIVITIES IN GROUPS?
- WHAT DO YOU NEED TO DO TO MAINTAIN SAFETY?

### NOTE:

MAKE SURE THAT SAFETY IS MAINTAINED WHEN WORKING WITH SHARP OBJECTS OR ANYTHING THAT COULD BE A DANGER, ESPECIALLY IF YOUNGER STUDENTS ARE INVOLVED.

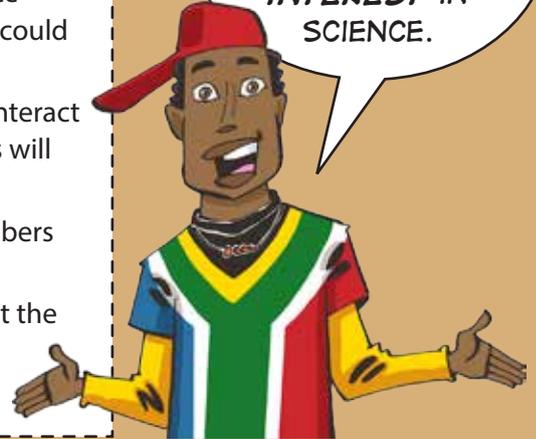
# ACTIVITIES

WHAT ABOUT **FIELD TRIPS**?



- You could go somewhere interesting like a science museum or a local water treatment plant, or you could arrange a visit to a university.
- When you visit these places try to speak and/or interact with a scientist or knowledgeable employee. This will make the experience much better.
- The scientist or employee can also speak to members about possible careers.
- Even if a bigger trip is not affordable, you can visit the nearest park or river to hold your meeting and make observations.

FIELD TRIPS CAN BE VERY INTERESTING AND **GENERATE MORE INTEREST IN SCIENCE.**



WHAT **OTHER ACTIVITIES** CAN WE ORGANISE?



THERE ARE QUITE A LOT OF OTHER THINGS WE CAN DO.



- We can contact a scientist or professional and ask them to attend a club meeting and give a talk to the club members. This talk could be in the form of a short lecture on a concept, an experiment, a question and answer session or even a talk about careers and the future.
- We can sometimes have science debates to make meetings more interesting.
- We could also have a quiz or competition at the end of each meeting, or at the end of each school term. Quizzes and competitions will add excitement and also help to gauge the understanding of the club members. The quiz can even be created by a non-club member.

## 1 DISCUSS

- **WHAT PLACES COULD YOU VISIT THAT WILL GROW YOUR INTEREST IN SCIENCE?**
- **ARE THERE PROBLEMS WITH ORGANISING FIELD TRIPS? WHAT ARE THEY?**
- **CAN YOU THINK OF WAYS TO OVERCOME THESE PROBLEMS?**

## 2 DECIDE

**WHAT ACTIVITIES WILL YOU ORGANISE, APART FROM THE ACTIVITY WORKSHEETS?**

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# ORGANISING

I DON'T KNOW MUCH ABOUT STARTING A CLUB.



IT'S IMPORTANT TO HAVE GOALS THAT EVERYBODY **AGREES** WITH.



- We need to start by discussing goals with the whole club, and then agree on our group goals.
- Our group goals could be things like these:
  - ✓ To enhance our science skills
  - ✓ Help each other to learn
  - ✓ Try new ways of understanding science
  - ✓ Exchange ideas and skills



HOW WILL WE MAKE SURE THAT WE CAN **ACHIEVE** OUR GOALS?

WE NEED TO AGREE ON SOME **GROUP NORMS** FOR OUR MEETINGS.



- These are some examples of **group norms**:
  - ✓ Every club member participates during experiments.
  - ✓ Everyone assists in cleaning up after the meetings.
  - ✓ Be on time/ punctual.
  - ✓ Always attend and apologise when you can't attend.
  - ✓ Turn cell phones off.
  - ✓ Help each other to learn (especially younger members).
  - ✓ Respect each other.
  - ✓ Be honest but constructive with raising problems.
  - ✓ No drugs or drink.
- We could even type our goals and norms into a contract which each member could sign.

## 1 DISCUSS

- **WHAT RULES DO YOU THINK YOUR CLUB NEEDS SO THAT MEETINGS WILL RUN WELL?**
- **WHO SHOULD PARTICIPATE IN MAKING THE RULES?**

## 2 DECIDE

WRITE DOWN THE RULES THAT YOUR CLUB AGREES ON:

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# ORGANISING

I HEAR THERE CAN SOMETIMES BE **PROBLEMS** IN A GROUP.



YES, IT IS GOOD TO KNOW THAT GROUPS ALWAYS HAVE WHAT WE CALL '**DYNAMICS**'. BUT IF THESE DYNAMICS ARE **WELL MANAGED**, THE GROUP CAN GROW INTO A BETTER GROUP IN THE FUTURE.



- Groups go through different phases. They can start excited and happy. Then the members get to know each other well enough to start raising their problems. This can cause unhappiness. If you manage this well the members will learn to understand each other and work well together.
- New members coming into a group can also sometimes upset the dynamic in the group. But it is good to have new members and new ideas.
- Older learners must be patient and support the younger learners. Older learners can often put younger learners down. This lowers their confidence to do the activities or take on leadership roles.
- Conflicts between older learners can discourage the younger learners from attending the group because they become fearful. The older learners must be conscious of this.
- Some members may often disrupt the group. This could be because they are feeling unable to do the tasks, or lack confidence in their own abilities. You could try to get a counsellor or adult to explain that their behaviour is affecting the group.

## 1 DISCUSS

- **HOW WILL YOU IDENTIFY CONFLICTS THAT ARISE IN THE CLUB?**
- **HOW WILL YOU HELP MEMBERS TO RESOLVE THEIR CONFLICTS?**

## 2 DECIDE

**COUNSELLOR OR OTHER ADULT WHO CAN HELP YOU TO MANAGE CONFLICTS THAT ARISE:**

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# SAMPLE DOCUMENTS



HERE IS A **FORMAL LETTER** INVITING A SCIENTIST TO GIVE A TALK TO A SCIENCE CLUB.

- This letter is an example. It shows how to write a formal letter.
- When you write a letter the details will depend on who you are writing to and what you are asking them for.
- You could also write letters to ask for sponsorship, to request help with transport, etc.

Ionic Bonds Science Spaza Club  
Kotane High School  
P O Box 987, Molapo 1818

20 March 2015

Mr Moses Sibande  
Water Quality Officer  
Molapo Municipality  
Private Bag 02  
Molapo 1818

Dear Mr Sibande,

## INVITATION TO SPEAK TO SCIENCE CLUB

I am Ndumi Khumalo, organiser of the Ionic Bonds Science Spaza Club at Kotane Senior Secondary School.

Our club runs many projects related to science. We get some activity worksheets from Science Spaza and we have tried to develop some activities of our own. We would also like our members to hear from people who are trained in science and use it in their work.

This letter is written on behalf of our club to invite you, as a person working in a Science field, to visit our science club and talk to us about your work. Our members will be very interested to know how you became involved in science and what training was needed for your profession. This will motivate our members to deepen their interest in science.

If you are able to accept our invitation, I will contact you to arrange a time which suits you.

Yours sincerely,

..... (Signature)

Ndumi Khumalo

..... (Signature)

Principal: Mr/Mrs/Miss: .....

School Stamp

# SAMPLE DOCUMENTS

## SCHEDULE OF PLANNED ACTIVITIES

<b>DATE &amp; TIME</b>	<b>PLANNED ACTIVITY</b>	<b>NOTES (E.G. SPECIAL VENUE)</b>
10 FEBRUARY 15:00	WIND ENERGY (SCIENCE SPAZA ACTIVITY WORKSHEET)	FIRST MEETING. MEMBERS SIGN UP. MEETING ROOM AND SCHOOL GROUNDS
24 FEBRUARY 15:00	HOT WATER FOR MAHALA (S S ACTIVITY WORKSHEET)	MEETING ROOM AND SCHOOL GROUNDS
9 MARCH 15:00	BIOGAS ACTIVITY WORKSHEET	
23 MARCH 15:00		
13 APRIL 14:00 - 17:00	TALK BY MR MOSES SIBANDE - "CLEAN WATER FOR HEALTHY COMMUNITIES"	POSSIBLE VISIT TO MOLAPO WATER TREATMENT PLANT
ETC.		

# SCIENCE SPAZA



Knowledge is Ncah!



**Science Spaza** is a science club supported with fun activities as well as tips and tools to make your science time really worthwhile. It's a space where learners can engage with science in a fun and interactive manner and where teachers can get new ideas for practical science teaching.

This Manual is designed to provide guidelines and ideas to support the organisers of **Science Spaza** clubs.

Name of your Science Spaza Club:	_____
Name of school:	_____
Province:	_____
Contact person:	_____
Phone number:	_____
Email address:	_____

If you have any questions or enquiries visit our website [www.sciencespaza.org](http://www.sciencespaza.org).

Or you can write to us at:

**what's app or sms:** 076 173 7130  
**Fax:** 086 610 5453  
**Email:** [info@sciencespaza.org](mailto:info@sciencespaza.org)  
**Post:** PO Box 22106, Mayor's Walk, 3208



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Science Spaza is an initiative of Jive Media Africa. *What moves you?*

Find out more at [www.sciencespaza.org](http://www.sciencespaza.org)  ScienceSpaza

