

WARNING

We are not just here to talk about it

We need YOU to start your own club!

Forward By Principal Michael Day

"It is interesting that in this day and age of mobile broadband networks and social media that Amateur Radio, the pioneering radio hobby of the last century, would be an excellent way of introducing science and technology to young children today. Amateur Radio enthusiasts are an amazing, untapped resource for educators. They are hidden away in every community, and can provide their own equipment and expertise. They also have a zeal to pass on this technology to the next generation. And, I would say, their aging ranks could do with some new recruits from us. So this largely free and enriching collaboration between the schools and the Amateur Radio fraternity is a classic win-win situation."



Introduction to SARC





What is SARC?

- A weekly, lunchtime activity for a select group of school students
- Using Amateur Radio to promote STEM (No STEAM required!)
- A first, positive experience of a new and fascinating hobby
- It is not a Foundation Licence course: Students are referred to clubs.
- Focus is on Primary Schools for best results: Years 1 to 6, ages 6 to 12.
- Sessions are 45mins. With options for before/after school and recess.
- Sessions comprise: On-the-air experience, Activities and Missions
- Groups of 10–12 students are picked from a waiting list each term
- Previous members can return each term to mentor others

What is SARCNET?

- SARCNET is the School Amateur Radio Club Network an affiliation of like-minded schools who have set up a club
- SARCNET is a lunchtime radio net (VK3SRC 7100kHz)
- SARCNET is a website (<u>www.sarcnet.org</u>) full of free resources for anyone interested in setting up their own club:



What does SARC mean to students?

- Feeling privileged to be a member of your own special club
- Doing cool things that you never expected to be allowed to do
- Using a real soldering iron to build your own kits
- Using special codes, terms and official procedures on the air
- Learning about radios, antennas, electronics and microcontrollers
- Expanding your horizons and developing your communication skills
- Exploring the planet, the ionosphere, the sun and space
- Working with real transmitters, high altitude balloons and satellites
- Everyone is equal, no matter what age or gender. Everyone is polite.

What does SARC mean to educators?

- A complimentary teaching aid providing hands-on enquiry into STEM
- A rewarding opportunity for a special group of students
- A free collaboration between Amateur Radio operators and educators
- Appreciated by parents: It boosts the school's academic profile
- A fascinating and quite sophisticated demonstration of technology
- A professionally-presented and safe, extra-curricular activity
- Potential for some parts to be run as Year 5/6 science electives
- Supported by formal lesson plans and Australian F-10 curriculum links

What does SARC mean to parents?

- "It is an area where the curriculum just isn't doing enough"
- "It helped our daughter fit in to her own group She loves it"
- "Our son never stops talking about radio club He can't wait"
- "She was so proud to show us her latest project It really worked!"
- "We could never do things like that when we went to school"
- "Well, if it gets girls interested in electronics I am all for it"
- "Now my child wants to get his own licence and radio Can he?"
- "I didn't think Morse code was used any more But they love it!"

What does SARC mean to Amateurs?

- Using your hobby to make a real difference in someone's life
- Passing on your experience and skills to the next generation
- Improving your own mentoring and communications skills
- Working on technical projects that actually benefit others
- Keeping your mind active. Something important to do each week.
- Rejuvenating your interest in kids, schools and the community
- A lot of time, effort, equipment and money Worth every bit of it!
- One of the most rewarding things you can do with Amateur Radio

How can I start a club?

A SARC program could be started by a school principal, teacher, student, parent or grandparent, who is a licenced Amateur Radio operator and who fits the profile.

- Get on to SARCNET to learn how and to download the resources
- Contact the school principal using the information provided
- Arrange a meeting to explain how it works
- Provide a copy of the SARC booklet, article, posters and brochures
- Your Amateur Radio club could sponsor you and provide support!

What schools fit the profile?

- Ideally you have a licenced Amateur Radio operator on staff, or one available in the wider school community, whom you trust.
- Your school should have an area like a library or classroom where the club can operate at lunchtimes; buildings or trees to suspend a 20m long wire antenna at least 8m above the ground.

What principals/teachers fit the profile?

- You are looking for an innovative approach to promoting science and technology to a select group of students.
- The idea of a free collaboration with an experienced and trustworthy Amateur Radio operator appeals to you.
- You are willing to devote your time to supporting the activity. For example: It might be that your school requires the activity to be supervised and you are willing to spend one lunchtime per week doing that.

What parents/students fit the profile?

- You are a parent looking to provide your child with an exciting, hands-on experience of science and technology.
- You are a student who likes to tinker with gadgets and find out how stuff works. You would like to spend one lunchtime per week in a group, exploring new concepts and gaining new skills. You are generally cooperative and work well with others, including younger and older students.

What operators fit the profile?

- You are associated with a school: For example a principal, teacher, parent, grandparent or relative
- You have or will get an Amateur Radio licence and a Working With Children card for this purpose
- You have genuine skills, previous experience and patience working with young students
- Your advice for using a transmitter for the first time would be: "Just be yourself You'll be fine"
- Your advice for someone having difficulties would be: "Take your time We can figure it out"
- You appreciate helping students with special needs and learning difficulties
- You don't mind providing your own transmitter and most likely everything else
- You need lots of time to properly prepare, setup and practice each activity, every week
- You think a monthly newsletter and additional weekly lunchtime sessions would be well worth it
- You would like to develop your own projects, activities and missions to expand the programme
- You are fairly IT savvy and have very good written and verbal communication skills
- Your only reward is the satisfaction of passing on your expertise and skills to the next generation
- It is not about YOU; it is ALL about the kids!

What operators don't fit the profile?

- You have never worked with school children before. So how hard could that be?
- Your advice for using a transmitter for the first time would be: "Quick, press this. Now say that"
- Your advice for someone having difficulties would be: "OK, let someone else have a turn now"
- Your advice for students with special needs would be to try something else
- You don't like other people using your equipment, especially if they "really have no clue"
- You have difficulty explaining simple concepts to some people who "just don't get it"
- You don't have time to prepare fancy lesson plans, posters, work sheets, diagrams, check lists etc.
- You are not very good with computers. "The kids these days can work it all out".
- You figure if the students aren't interested in the activity then at least you can still get on the air
- You can bring along your home-made, high-power, linear amplifier to really impress them

What SARCNET QSOs fit the profile?

Licenced Amateur Radio Operators calling in to SARCNET should:

- Always be polite, patient, interested and encouraging: "You are doing very well, Susan – Just take your time. What did you do today?"
- Engage each student by name in a real conversation
- Never swear, criticise or ridicule
- Never talk about religious, political or adult subjects
- Ask a lot of questions about the students and the club

Is it safe?

- Safety of young children is always of paramount importance
- The same precautions that apply to Internet use also apply on the air
- The students are very familiar with the drill: "Don't give your full name or location", "Don't provide any private information", etc.
- All radio contacts are fully supervised by the licenced SARC operator
- Safety also applies to the setup and operation of the radio station
- SARC guidelines ensure safety hazards are identified and mitigated

Is it free?

- Generally it should be totally free to the school
- The operation of the station must be completely voluntary
- School staff members would operate clubs in their own time
- Generally all the equipment required is provided by the operator
- The school may purchase equipment, but the transmitting equipment must be owned, maintained and secured by the licenced operator

Is it worth it?



Is a Working With Children Check required?

Yes!

VK1 www.ors.act.gov.au/page/view/3192/title/working-with-children

VK2 www.kidsguardian.nsw.gov.au/working-with-children/working-with-children-check

VK3 www.workingwithchildren.vic.gov.au/

VK4 www.bluecard.qld.gov.au

VK5 www.families.sa.gov.au/pages/protectingchildren/CSEHome/

VK6 www.checkwwc.wa.gov.au

VK7 <u>www.justice.tas.gov.au/working with children</u>

VK8 <u>www.workingwithchildren.nt.gov.au</u>

Is insurance required?

Generally, the school will have insurance to cover volunteers, but you need to check that your specific operation is covered by Public Liability Insurance.

The WIA PLI covers all member's engaged in "activities associated with the promotion, protection, application and advancement of Amateur Radio."

What equipment is required?

For all the activities listed you may need: • Electronics kit soldering tools (\$60)

- Yaesu FT-817 transceiver (\$700)
- AC power supply (\$40)
- Footswitch, if needed (\$25)
- Dipole antenna, balun, feed line (\$40)
- Books, maps, laminated charts (\$40)
- Booklets, printing (free)
- Antenna construction kit (\$10)
- Electronics components lab (\$25)

- - Electronics kits (\$1-\$10 each)
 - Solar power lab (\$120)
 - Electronics lab (\$150)
- Microcontroller lab (\$200)
- ARDF antenna and sniffer (\$200)
- VHF/UHF Satellite antenna (\$160)
- Morse code practice sets x 4 (\$20 each)
 Satellite antenna rotator/tripod (\$200)
 - High altitude balloon and payload (\$80)
 - RaspberryPi, keyboard, mouse (\$200)

What antenna is required?

- A half-wave dipole for 40m is the easiest.
- Generally it is end-fed from the second-floor of the school building and anchored to a pole, tree or building across the playground at least 8m high.



How to install the equipment?

- The equipment should be installed in a quiet area, where a group of students can use it at lunchtime. The library or a classroom is ideal.
- A lockable cupboard is a good idea if the equipment is to be stored at the school. Otherwise a personal shopping cart is a good way to bring the equipment to school each week.
- Install the equipment so that there are no cables lying on the floor.

How to install the antenna?

- Antennas must be installed safely and professionally
- The antenna must not fall down, cause any interference or be an eye-sore
- Good quality materials should be used and it should be a semi-permanent installation
- It should be possible to remove the antenna and restore the site to the original condition
- The antenna should be installed to minimise any EMR to students
- We recommend running no more power than 10 watts



What are the SARC rules?

The SARC rules are simple:

- Safety is number one priority when working with equipment or talking on the air
- Disruptive or insensitive behaviour will not be tolerated
- Everyone in the group is equal regardless of their age or gender
- Everyone must be respectful and polite to each other and to other stations on the air
- Everyone must return to class promptly at the end of a session



How to conduct a SARC session?

- All equipment and material must be provided and set up ready for use prior to each session. It might take an hour or so. This is also a good time to check the band and tee up QSOs.
- School lunchtimes are only 45 minutes, so being prepared and practiced is essential. Don't try to do too much, at first. The most important thing is to provide a relaxed and positive experience.
- Each session begins with an introduction and the assignment of tasks to every member of the group.
- Students watch videos, or are shown illustrations or demonstrations of what is expected
- Everyone gets a turn and has a say. Teamwork is essential. Advanced members can mentor others.
- Questions, discussion, original thinking and new ideas are encouraged. Everyone learns at their own pace and some have special needs.
- Praise, recognition of achievement, reassurance and help need to be provided to everyone in spades.
- A summary of each session and suggestions for further study at home is provided
- Students are returned to class promptly when the bell goes

A typical SARC session profile

- Students arrive, incrementally, eating their lunch. They are assigned to one of the following routine practice tasks until all are present:
 - Tuning in QSOs, filling out their log books, looking up QRZ or IPS reports
 - Interpreting Call signs, Q-Codes, Abbreviations, Radio Alphabet etc.
 - Practicing on-air procedures using flash cards and hand-held radios
 - Practising Morse code using an iPad app or VHF beacon
 - Sorting electronic components or building projects on the Electronics Lab
- The new SARC Activity is introduced with videos or demonstrations
- Everyone gets a hands-on experience, assistance and heaps of praise
- A new routine practice task is thereby created for the next session

SARC Activities

- 1. Amateur Radio Call Signs
- 2. International Radio Alphabet
- 3. International Morse code
- 4. Morse code battleship game
- 5. Amateur Radio Q-codes
- 6. Readability, Signal strength and Tone codes
- 7. Amateur Radio abbreviations and jargon
- 8. Coordinated Universal Time
- 9. Amateur Radio bands
- 10. Amateur Radio log books
- 11. Amateur Radio operating procedures
- 12. Amateur Radio operation
- 13. High Frequency communications
- 14. VHF/UHF communications

- 15. Amateur Radio repeater communication
- 16. Satellite communications
- 17. Amateur Radio Direction Finding
- 18. Radio Frequency Interference hunt
- 19. Emergency operating procedures
- 20. Electronics components lab
- 21. Electronic kit construction
- 22. Electronic project lab
- 23. Microcontroller lab
- 24. Solar power lab
- 25. Amateur Radio station construction
- 26. Amateur Radio antenna construction
- 27. Amateur Radio Digital Communications
- 28. Software Defined Radio

1.Amateur Radio Call Signs

- Students learn about international Amateur Radio call signs: Countries and regions; prefixes, numbers and suffixes; how to identify the operator's licence class; when to use call signs; how QSL cards, which display call signs and often fascinating pictures, are used to send signal reports around the world.
- Students practice identifying and using call signs on the air, using maps and QSL cards.



2.International Radio Alphabet

- Students learn the International Radio Alphabet. This is used to spell out words over the air when the band conditions are poor.
- Students practice spelling their names and other words using the relational Radio Alphabet

-			
al		CODE	SOUND
	Α	ALPHA	AL FAH
ρ	В	BRAVO	BRAH VOH
	С	CHARLIE	CHAR LEE
	D	DELTA	DEL TAH
r	E	ECHO	EKK OH
e	F	FOXTROT	FOKS TROT

3.International Morse code

- Students learn the structure of Morse code including dots, dashes and spaces. They learn how to use a Morse code table to send and a Morse code decoder chart to receive.
- Students listen to Morse code being sent and practice sending Morse code themselves using a real telegraph key. They use free apps to practice sending and receiving characters and to increase their speed.



4. Morse code battleship game

- Students increase their Morse code accuracy and speed through this fun roleplay adventure.
- Students play the Morse code version of the popular "Battleships" game.



5. Amateur Radio Q-codes

 Students learn that special codes are often used to replace common expressions, either for brevity or for clarity when the band conditions are poor. They learn how to use a Q-code table and how to replace common expressions either as a question or as an answer.

	Q-CODE	MEANING
	QRM	Interference
•	QRN	Noise
	QRP	Low power
	QRT	Off and Clear
5	QRV	Ready to operate

• Students practice sending and receiving Q-codes.

6.Readability, Signal strength and Tone codes

- Students learn how to give readability, signal strength and Morse code tone reports. These reports indicate the quality of the received signal.
- Students practice listening to other stations and giving RST reports.

,	No.	Readability	
۔ آ	1	Unreadable	
/	2	Barely readable	
	3	Readable with difficulty	
	4	Almost perfectly Readable	
	5	Perfectly Readable	
7. Amateur Radio abbreviations and jargon

- Students learn common Amateur Radio abbreviations and jargon.
- Students practice listening to othe stations for new words and phrases.

io	Roger	Yes, OK
	Negative	Νο
er	Over	Back to you
	Сору	Heard and understood
	Rig	Radio Transceiver
	Eyeball	Face to face meeting

8.Coordinated Universal Time

- Students learn about the international date line, time zones and Coordinated Universal Time (UTC), which is the time standard used for all radio communications.
- Students practice looking up and reporting the time in UTC.



9. Amateur Radio bands

- Students learn about the different HF, VHF and UHF Amateur Radio bands, their wavelengths and frequencies. They study the radio frequency spectrum allocation chart and the Amateur Radio band plans. They also learn about different transmission modes such as AM, FM and SSB and CW and the standard calling frequencies and modes for common bands, like 20m/14.1 MHz USB and 40m/7.1MHz LSB.
- Students practice using the charts and band plans.



10. Amateur Radio log books

- Students learn about keeping a log book of all their on-air contacts. This activity combines many other skills including call signs, RST codes, Amateur Radio bands and Coordinated Universal Time.
- Students create an Amateur Radio log book and use it to log information about stations heard including their onair contacts.
- SARC members submit their log books when applying for SARC award certificates like the SWL-10 Award and the QSO-10 Award for monitoring or working 10 stations.



11.Amateur Radio operating procedures

- Students learn about Amateur Radio operating procedures. Simple things like the need to listen on the frequency or channel first to see if it is clear before making a call. How to make a call and respond to a call. How to call CQ to anyone who might be listening. How to keep a log book. Things to talk about (and not to talk about) on the air. How to keep the conversation interesting. Where to look up on-line information about a station. Where to find information about on-air contests and events.
- Students practice making and receiving calls using call signs and operating procedures. They enter the date, time, call signs, frequency, mode, readability, signal strength, name, location and comments into their log book.



12. Amateur Radio operation

- Students learn all about radio operation. How to set up a radio and how to adjust the controls.
- Students practice tuning the radio receiver including selecting the band, frequency and mode.



13. High Frequency communications

- Students learn about communication on the High Frequency (shortwave) Amateur bands: How radio waves propagate around the world and how the propagation changes during the day and night. They learn how to adjust the radio controls for the best reception of USB, LSB and CW transmissions.
- Students practice tuning around the HF bands looking for activity. They log any stations they hear and check online databases for more information about them. They take it in turns to make contact with a station and have an on-air conversation.



14.VHF/UHF communications

- Students learn about communications on the Very High Frequency and Ultra High Frequency amateur bands: How propagation is largely limited to line of sight. How operating frequencies are channelized and how to adjust the radio controls for the best reception of FM transmissions.
- Students practice tuning around the VHF/UHF bands looking for activity. They log any stations they hear and check online databases for more information about them. They take it in turns to make contact with a station and have an on-air conversation.



15.Amateur Radio repeater communication

- Students learn about repeaters and how to use them correctly. How their transmit and receive frequencies are split. They learn that repeaters can extend line-of-sight communications to hundreds of kilometres.
- Students practice tuning in repeaters looking for activity. They log any stations they hear and check online databases for more information about them. They take it in turns to make contact with a station and have an onair conversation.



16.Satellite communications

- Students learn about space, Amateur Radio satellites, orbits, antennas, latitudes and longitudes, azimuth and elevation angles.
- Student practice using computer programs that show the location of orbital satellites. They can hold an antenna and manually track a satellite or they can use an antenna rotator to automatically track a satellite. Using a solar powered satellite tracking station they can listen to satellite beacons or to other stations up to several thousand kilometres away when the satellite passes overhead.



17.Amateur Radio Direction Finding

- Students learn how to use an ARDF beacon and tracker in an Amateur Radio version of "hide and seek". Students learn how to read a map and how to triangulate the beacon. ARDF has become a popular international sport of sorts.
- Students practice hiding and finding the beacon.



18. Radio Frequency Interference hunt

- Students learn how to recognize and track down sources of radio frequency interference.
- Students practice finding household devices that cause interference.



19. Emergency operating procedures

 Students learn how to make and receive radio urgency and distress calls and what to do in the event of an emergency or a life and death situation.

PAN	Urgency call –	
	Emergency	
	situation	
MAYDAY	Distress call –	
	Life and death	

• Students practice emergency procedures. Emergency calls are not made on the air of course.

20.Electronics components lab

- Students learn to recognize and sort different types of electronic components using a component tester.
- Students practice sorting a selection of common electronic components using a component tester until they can recognize them by eye.



21.Electronic kit construction

- Students learn to construct a simple electronic kit by assembling electronic components onto a printed circuit board.
- Students assemble the kit and then solder the components to the board. The construction is fully supervised and students must wear safety goggles and gloves for soldering. The kits cost as little as one dollar each and the students can take them home when completed.



22.Electronic project lab

- Students learn how to use an electronics project lab like the one shown.
- Students choose a project and follow the instructions in a booklet to built a working electronic circuit. There are 200 different projects to choose from. They show the circuit to others and can explain how it works.



23. Microcontroller lab

- Students learn how microcontrollers use sensors and actuators to control real-world situations. For example they learn how an electronic control system can be used to regulate the temperature, light or moisture level of a pot plant.
- Students try to solve real-world control problems by selecting an appropriate sensor and actuator. They connect them to a microcontroller and adjust its controls to achieve the desired result. Students can either solve set problems or invent their own. They discuss how their solution works and how it could be improved.



24.Solar power lab

- Students learn about renewable energy sources like solar panels. They learn how to regulate the power produced, how to store it in a battery and how to use it for a project.
- Students build a number of different solar powered systems and monitor them to see if they produce enough power. They discuss other forms of renewable energy sources and how they could be combined.



25. Amateur Radio station construction

- Students learn about the different components of an Amateur Radio station and how to connect and test them.
- Students build a station and test it under the supervision of the licenced Amateur Radio operator.



26.Amateur Radio antenna construction

- Students learn about different types of Amateur Radio antennas and how to construct them.
- Students build an antenna and test it under the supervision of the licenced Amateur Radio operator.



27. Amateur Radio Digital Communications

- By connecting a computer to an Amateur Radio, students learn about different types of amateur radio digital communication modes some used for weak signal communications and moon-bounce experiments.
- Students practice receiving and transmitting keyboard data all around the world.



28. Software Defined Radio

- Students learn about Software Defined Radios, which can be easily built by connecting a low-cost USB "dongle" to a home computer and installing free SDR software with many advanced features.
- Students practice exploring vast tracts of the Radio Frequency spectrum displayed as a "waterfall" on the computer screen. They can use the SDR to listen or decode many interesting types of signals.



SARC Missions

- Missions are imaginative, real-world, role-play scenarios designed to challenge students once they are proficient in the related activities
- All missions take place at the school, in the playground or hall
- Emergency calls are not made over the air of course
- The use of radio transmitters or beacon is fully supervised and all the settings are fully checked by the licenced operator
- Missions include:
 - 1. Emergency at Sea
 - 2. Shipwrecked
 - 3. Search and Rescue
 - 4. Summit Activation
 - 5. High Altitude Balloon Launch
 - 6. Space: The Final Frontier

1. Emergency at Sea

- Students use their skills in emergency procedures to call for help when their ship begins to sink
- Before they abandon ship they have to select the most useful survival gear from the ships hold
- They discuss which items would be best and why



2.Shipwrecked

- Students shipwrecked on a desert island have to assemble a makeshift radio station from salvaged parts and call for help.
- They discuss the best methods to use and work in groups to set up and test the station.



3.Search and Rescue

- Students receive a distress call and have to track down and rescue the survivors of a plane crash in rough terrain.
- They use their map-reading and navigation skills to triangulate the location of an Emergency Position Indicating Radio.





4.Summit Activation

- Students have to pack their gear, climb to a mountain summit and setup their portable Amateur Radio station to participate in the Summits On The Air contest.
- SOTA has become and extremely popular activity among Amateur Radio enthusiasts.
- A single SOTA activation can attract dozens of calls from SOTA chasers.



5. High Altitude Balloon Launch

- Students assemble and launch a small helium-filled party balloon with an Amateur Radio beacon on board.
- They track the balloon to see where it goes.
- The launch of the small balloon is fully approved by CASA.



6.Space: The Final Frontier

 Students set up a solar powered satellite tracking station and make contact with other stations via an orbiting Amateur Radio satellite.



SARC Awards and Sponsorship

- Local electronic kitset stores, Amateur Radio clubs or parents and friends associations may be interested in sponsoring one or more SARC awards.
- Suppliers should be approached by appointment with the store manager. A letter should be provided outlining the purpose, achievements and benefit of introducing science and technology to students through Amateur Radio and kitset building.
- Although the matter may need to be referred to the store headquarters it is important to make a good initial impression with the local manager. The initial letter should include pictures of what the students actually do. Remember to advise that you are working in a completely voluntary capacity.



SARC in the Media



School amateur radio is set for a comeback with SARCnet ET Staff

 Amateur
 Radio
 entrum radio
 communications is subject to
 simultaneously
 amazed,
 excited
 and
 a little

 KXFOWL) and Joe (VKSYSP)
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 terrified at the response: 'OK, why don't you try'.
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SARC Templates



School Radio Club - Proposal

The purpose of the School Radio Club is to provide an opportunity for interested students to explore and experience the fascinating world of amateur radio communications. It will also provide a safe, friendly and informative dialog between primary school children living in urban and regional areas of Australia The key learning outcomes are a basic understanding of radio technology, radio operating techniques, a historical perspective and conversational skills.

Amateur radio, unlike mobile broadband and Internet services, does not rely on any established network infrastructure. It is often the first line of communications available in emergency situations. There are many fascinating forms of amateur radio communications including microwaves, shortwaves, repeaters, satellites, balloons, telegraphy, teletype, telephony, television and computers: World-wide shortwave amateur radio communications is an ethereal process powered by the sun and the earth's ionosphere The science, skill and art of using shortwave radio makes amateur radio communications even more extraordinary. Shortwave radio also provides a historical insight into the role of outback radio in the settlement of Australia, notably: The "Royal Flying Doctor Service" and the "School of the Air"

Modern amateur radio is a community-aware, technology-based and rewarding hobby. It has become an outdoor sport for many enthusiasts engaged in portable radio operation from mountain summits, national parks, museums, lighthouses and many more. Amateur radio clubs actively support local community activities and provide free communications for public events. Recently, there has been a resurgence in amateur radio participation due to simplified licencing conditions, availability of low-cost equipment and no minimum age requirement. This has provided a new opportunity for primary school students, as young as nine, who have successfully obtained their own amateur radio foundation licence. Unlike Citizens Band, all amateur radio operators are licenced and must identify themselves using their individual call signs. Amateur radio communications is regulated by the Australian Media and Communications Authority providing an open, safe and friendly environment for children.

Format:

A small, safe, portable radio station will be set up in the school library. The radio club will operate each week on library days. It will be open to students during recess and lunch times as well as to parents and teachers before and after school. Each month a different group of 6 interested students will be selected to participate in supervised club activities. Each day there will be learning, practice and on-air sessions. Other resources will include posters, booklets, videos, games, Morse practice sets, badges and certificates. Graduates of the club can demonstrate their skills at school events.

Requirements:

The school library station is completely safe and transmits less power than a light bulb (10W). It requires a simple wire antenna, about 20 metres long, suspended from the library building, across the playground to nearby trees about 8 metres high. The antenna is safe and is professionally installed. The students will need written permission to talk on-air and to be photographed using the equipment. Photographs may be published in Amateur Radio magazine and on web sites to promote the club and encourage needed participation from other primary school libraries.

Setup and Operation:

The amateur radio station will be provided free of charge by Julie Gonzales who is licenced by the Australian Communications and Media Authority and is a member of the Wireless Institute of Australia. The antenna will be professionally installed by Joe Gonzales, who is a communications engineer







Learn about radio codes and operating procedures

- Practice portable radio operation
- Talk to shortwave radio stations around the world
- + Check in with regional schools and regular radio nets
- Participate in radio sports and contests
- Explore the history and technology of radio communications
- Send and receive Morse code with a telegraph key
- Set up your own simple antennas and radio stations
- + Get the Radio Club booklet, proficiency badges, QSL cards and more

The Radio Club operates in the School Library on library days. It is for small groups, by invitation only. Simply fill out this form to participate.

1	give permission for	to	
t			
talk to other licen	ced radio operators on air as part of a supe	rvised group	
participating in the	School Radio Club activities.		
Cineral	Data		
signed	Date_		
I	give permission for	to	
be photographed participating in the School Radio Club activities. Photographs			
may be used to promote the School Radio Club on Amateur Radio web sites and			
in Amateur Radio m	lagazine.		

Signed



School Radio Club

The purpose of the School Radio Club is to provide an opportunity for interested students to explore and experience the fascinating world of amateur radio communications. It also provides a safe, friendly and informative dialog between primary school children living in urban and regional areas of Australia. The key learning outcomes are a basic understanding of radio technology, radio operating techniques, a historical perspective and conversational skills.

Backgound:

Amateur radio, unlike mobile broadband and Internet services, does not rely on any established network infrastructure. It is often the first line of communications available in natural disaster situations. There are many fascinating forms of amateur radio communications including microwaves, shortwaves, repeaters, satellites, balloons, telegraphy, telephony, teletype, television and computers: World-wide, shortwave radio communications is an ethereal process powered by the sun and the earth's ionosphere. The science, skill and art of using shortwave radio makes amateur radio communications even more extraordinary. Shortwave radio also provides a historical insight into the role of outback radio in the settlement of Australia, notably: The "Royal Flying Doctor Service" and the "School of the Air".

Modern amateur radio is a community-aware, technology-based and rewarding hobby. It has become an outdoor sport of sorts for many enthusiasts engaged in portable radio operation from mountain summits, national parks, museums, lighthouses, remote islands and many more. Amateur radio clubs actively support local community activities and provide free communications for public events. Recently, there has been a resurgence in amateur radio participation due to simplified licencing conditions, availability of low-cost equipment and no minimum age requirement. This has provided a new opportunity for primary school students, as young as nine years old, who have successfully obtained their own amateur radio foundation licence. Unlike "Citizens Band", all amateur radio operators are licenced and must use proper operating procedures and call signs. Amateur radio communications is regulated by the Australian Media and Communications Authority providing an open, safe and friendly environment for children.

Format:

A small, safe, portable amateur radio station has been set up in the school library. It transmits less power than a light bulb (10W). It uses a simple wire antenna suspended from the library building, across the playground, about 8 metres high. The antenna is safe and is professionally installed. Other school radio club resources include posters, booklets, maps, kits, videos, mobile apps, games, Morse code practice sets, badges and certificates.

Operation:

The school radio club operates each week on library day. It is open to selected students during lunch time as well as to parents before and after school. Every few months a different group of 6 interested students from years 2 through 6 can participate in supervised club activities.

Each week there will be learning, practice and on-the-air sessions. Graduates of the radio club program can demonstrate their skills at school events. Students need written permission to talk on-the-air and to be photographed using the equipment. Photographs may be published in Amateur Radio magazine and on web sites to promote the club and encourage participation from other primary school libraries. The amateur radio station is operated by the school's library technician, Julie Gonzales, who is licenced by the ACMA.



Proposal

Entry Form

Date

Newsletter

What can I do?

- You fit the profile, so go ahead and start your own club!
- Or encourage other operators to start a club
- Talk to school principals, teachers or parents about SARC
- Contact SARCNET for assistance and resources
- Call into SARCNET, VK3SRC at lunchtimes on 7100kHz LSB
- Ask your Amateur Radio club to sponsor you

What can my club do?

- Promote SARC to local schools; help them find an operator
- Seek out SARC operators who fit the profile
- Sponsor a SARC operator (e.g. equipment or antennas)
- Organise a roster for additional SARC lunchtime sessions
- Call into SARCNET, VK3SRC at lunchtimes on 7100kHz LSB
- Provide a Foundation Licence course for interested students
- Provide free club membership for all students
- Organise weekly club activities for students. For example:
- SARCNET runs electronics/microcontroller workshops at MDRC

What can the WIA do?

- The new WIA board can support and encourage SARC operation by Foundation Licencees
- Please focus on STEM (Don't dilute it with STEAM or STEMM)
- Recognise that it is all about AR for STEM (i.e. kids) not STEM for AR recruiting
- Include Primary Schools in the STEM symposium briefing document
- Understand that SARC is delivered by licenced AR Operators, not teachers, c.f. ARRL
- Promote changes to the LCD supporting Foundation Licencee SARC operation:
 - Include the ACMA Amateur Apparatus Licence directive: "As long as a qualified operator is actually operating (adjusting the controls, etc.) an amateur station, other persons, whether qualified or not, are permitted to communicate through the amateur equipment." to remove widespread misinterpretation of section 27A(1).
 - Remove the restriction on computer-controlled/digital modes section 27A(2).
 - Relax the restriction on transmitter construction section 28.
- Help us deploy SARCNET as a nationwide program for School Amateur Radio Clubs

Our Vision

- Our vision is that one day School Amateur Radio Clubs will enjoy many of the benefits that other Amateur Radio clubs take for granted like having their own regular on-air nets, contests, hamfests, field days, conferences, newsletters and a regular column in Amateur Radio magazine.
- SARCNET will become a nationwide programme supporting all School Amateur Radio Clubs, providing consistent guidelines and free on-line resources to all SARC operators.
- We firmly believe that the children's young, wondrous, smiling faces will change the face of Amateur Radio.
- Please help us if you can. The children are our future.
Postscript By Principal Michael Day

"When I first introduced the School Amateur Radio Club at St. Kevin's Primary School in Ormond Victoria, I had no idea what a success it would be. We were lucky to have an Amateur Radio enthusiast within our ranks, so the introduction was initially driven by this staff member. The teachers, parents and students are now raving about it. To see the children confidently building electronic kits or talking to other schools over shortwave radio is quite incredible. I am now exploring ways to expand this program."





SARCNET – VK3SRC website: www.sarcnet.org email: info@sarcnet.org