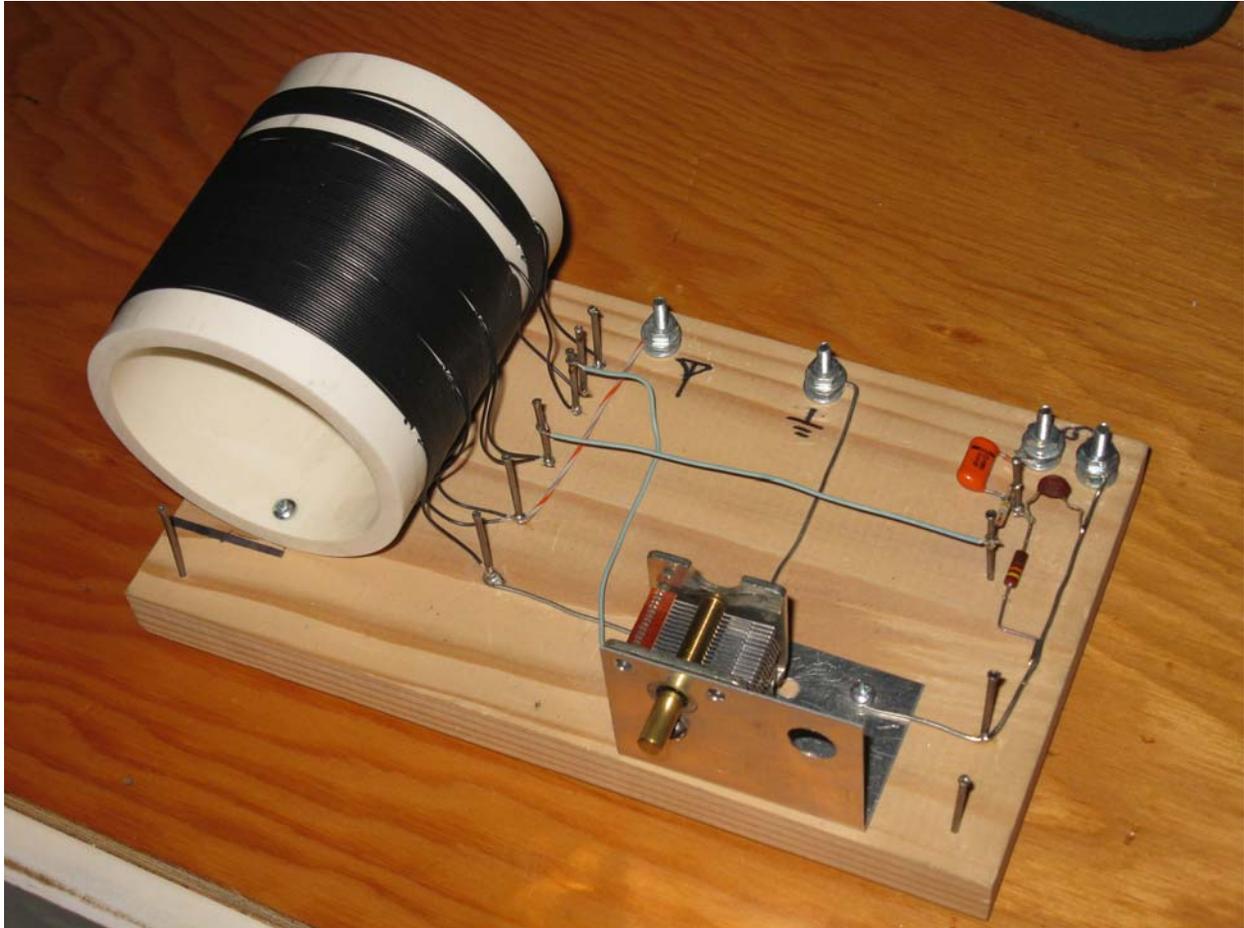


# The K6GBM Crystal Radio

Brian Lloyd, WB6RQN/J79BPL



Brian Lloyd, WB6RQN/J79BPL

Figure 1— One of the completed crystal radios used to teach basic radio theory to the Granite Bay Montessori School students. Note: The coil in the picture has an additional 10 turn winding that is intended to be a tickler coil to turn the crystal set into a regenerative receiver. The extra winding has also been used to couple the antenna but didn't prove to be any better than just connecting the antenna to the existing antenna tap.

Yes, this is yet another crystal radio. Still, the reason that we keep making crystal radios is that they are a valid tool for teaching the principles of radio. Also, building things fits in well with the hands-on philosophy at Granite Bay (California) Montessori School, where I teach science.

The K6GBM crystal radio is a classic design using old school construction techniques (see Figure 1). The circuit is laid out on a piece of wood using bright finishing nails as tie points. The coil is hand-wound on PVC pipe. The variable capacitor is a classic 365 pF single gang air-variable. The rest of the parts are available in your junk box. Kids have no trouble building this radio all by themselves.

Surprisingly, the coil has a relatively high Q, which increases selectivity and allows the radio to tune in five local stations when connected to a 100 foot end-fed wire antenna here at the school. The circuit for the Granite Bay crystal radio is shown in Figure 2.

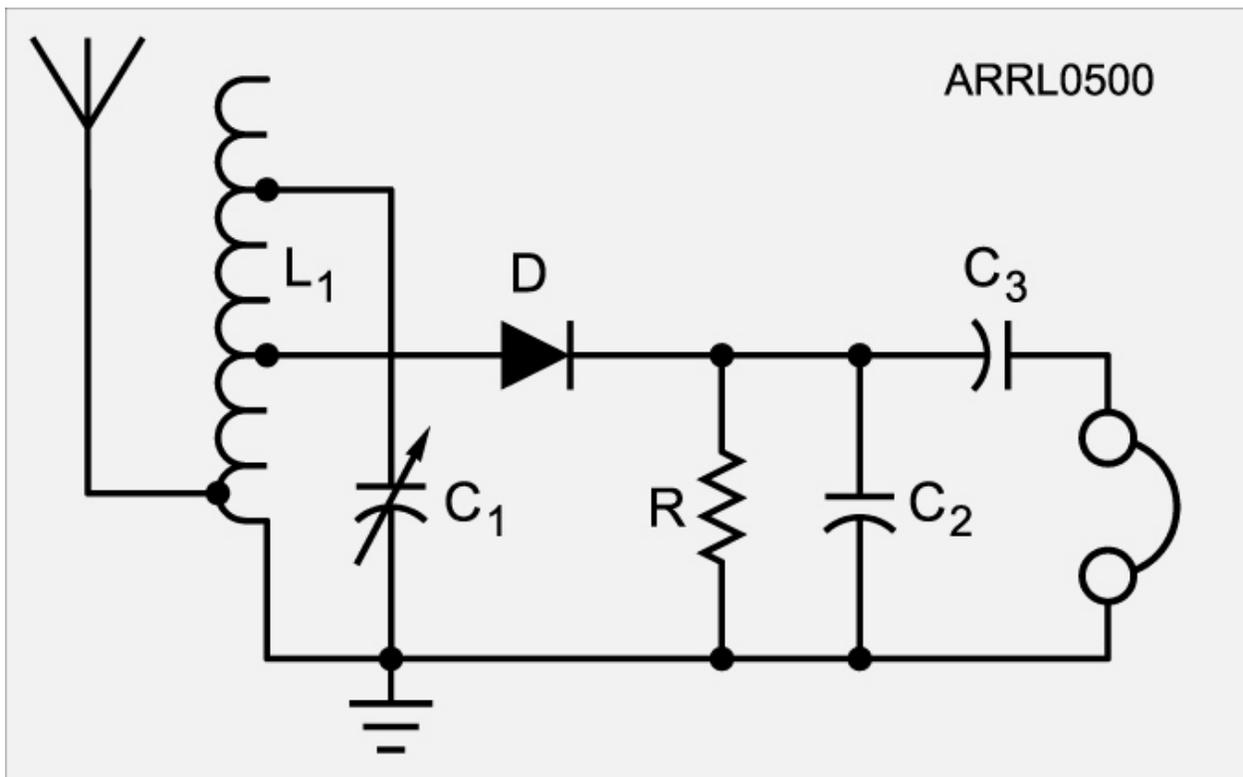


Figure 2 — The schematic of the Granite Bay crystal radio.

## Parts List

L — 60 turns of #24 AWG insulated wire on 3.5 inch diameter PVC pipe tapped at 20 turns for the antenna and 40 turns for the diode connection. Each 20 turn section is wound separately and connected together at a tie-point on the board.

C1 — 365 pF air variable capacitor

C2 — 1000 pF

C3 — 0.1 uF

D — 1N34A germanium diode

R — 22 k $\Omega$

High-impedance, high-sensitivity, crystal earphone

10-32 bolts and nuts are used as binding posts for the antenna, ground and earphone connections.

The air-variable capacitor, 1N34A and crystal earphone are all available from the [Xtal Set Society](#). Other hard-to-find crystal set components such as Fahnestock clips are also available from the Xtal Set Society.

*Brian Lloyd, WB6RQN/J79BPL, teaches science through ham radio at the Granite Bay Montessori School. Read more about his class activities in QST (B. Lloyd, "Ham Radio 101 at Granite Bay Montessori School," QST, Jan 2010, pp 67-69). He can be reached at 3191 Western Dr, Cameron Park, CA 95682-9205, [wb6rqn@arrl.net](mailto:wb6rqn@arrl.net).*