

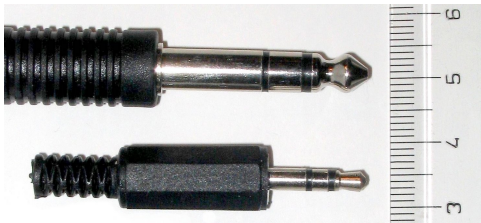
Recording

1 Recording equipment

Your audio recording setup consists of two parts: a **(digital) audio recorder** and a **microphone**.

1.1 Recorder variables

- (a) storage medium (SD cards, built in memory, direct to USB, ...) and file type (WAV, MP3, ...),
- (b) power sources (disposable batteries, built-in battery, A/C, USB, ...),
- (c) inputs (3.5mm phone, 1/4 inch phone, XLR, ...) and outputs,



3.5mm phone, 1/4 inch phone (cm scale)



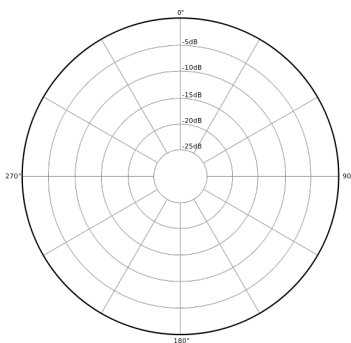
XLR

- (d) support for *phantom power* 🧛,
- (e) built in microphone type(s),
- (f) general properties like ease of use, portability, build quality, and reliability.

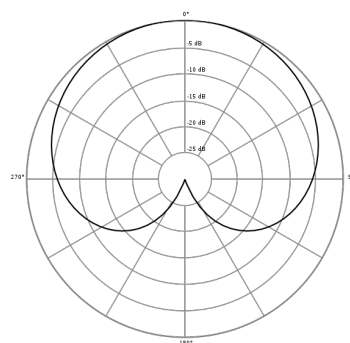
Decent recorders can be as cheap as \$100++ (Zoom H1n, Tascam DR-07) to \$400++ (Tascam DR-100) to much much more.

1.2 Microphone variables

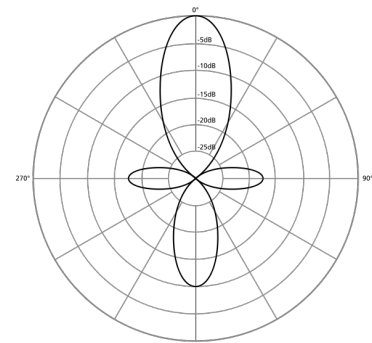
- (a) Physical shape: handheld (use a stand), lavalier (tie-clip), head-mounted, shotgun, etc.
- (b) Sensitivity and *frequency response*: the range of frequencies that can be recorded well (for speech, should cover 80Hz to 11kHz well)
- (c) *Pick up (polar) pattern*:




omnidirectional



cardioid



shotgun

- (d)
 - *Dynamic*: simple, durable, cheaper, no power needed; vs
 - *Condenser*: more sensitive, fragile, expensive, requires amplification (= power)
- (e) Power needs (phantom , battery, or none)


The right microphone should be chosen for the recording situation: background noise level, intrusiveness, for individuals vs groups, ...

2 Basic recording tips

- **Microphone placement:** In general, the speaker should be very close to the microphone without blowing directly into it, with minimal variance in distance due to head movement.
- **Levels:** Your recorder should have a *level meter* and *input level/gain control*. Adjust the input level so that the signal is as loud as possible without often peaking/clipping.

3 Get to know your gear

Your team will receive some equipment. Complete the following questions / tasks. You may need to look up manuals for your equipment online to answer these questions.

1. The recorder:
 - What storage medium (or media) does the recorder use? What file type is saved?
 - What power source(s) does the recorder use?
 - Turn it on. Record, stop, and play it back.
2. Microphones:
 - What is the pickup pattern for the internal mic? For the external mic (if available)?
 - Does the external mic require phantom power .
3. Find a quiet-ish place (not all in this room) and record some speech!
 - If you have an external mic, concentrate on that first. (And make sure the recorder is using it!) Time permitting, make some recordings using the internal mic too.
 - Try different microphone distances and head/mouth directions.
 - Try speaking (as the investigator) to the speaker.
 - Try different volumes of speech.
 - Make sure your levels are appropriate throughout.
 - Stop and start recording again to create separate files.
4. Get the audio files on your computer and play them back. What settings worked well?
5. (Optional) Open in Praat <http://www.fon.hum.uva.nl/praat/>
6. (Optional) Calculate the *signal to noise ratio* using this tutorial: https://www.ling.upenn.edu/courses/Fall_2008/ling520/lab1/lab1.html . 30 decibels (dB) is decent as a record of sessions. 50+ dB is desired for phonetic analysis.

- H1n + 3.5mm omni lav
- DR40 + SM10A headworn cardioid
- DR100 + Rode shotgun
- DR100 + AT803 omni lav
- (handheld)