Length of Cables for AV Systems in a School Classroom

A simple calculator for judging lengths of standard audio visual cables needed for a classroom audio visual installation

School classrooms vary in size from country to country and even regions in the same country, but there are many common features since generally there is only one teacher who needs to be seen and heard also audio visual equipment used in the classroom is very similar around the world.

Let us assume that a school wanting a classroom Audio Visual system has the funds for a projector, whiteboard and sound system.

The projection screen may be a fabric screen or interactive whiteboard or even a painted wall (some special coatings are available). The projector may be desk, ceiling, wall or even floor mounted and maybe very close to the screen (300mm or so for an Ultra short throw) or 2 to 3 metres for medium throw projector lenses. The sound system may be wall mounted active speakers adjacent to the screen but could be ceiling mounted to distribute sound more evenly with a separate amplifier (we've only considered wall mounted active speakers here).

The teacher's desk location, where equipment like a PC, laptop and/or DVD player etc is usually located and controlled, may also vary from against the same wall as the screen, an adjacent wall or at a desk a metre or so iin-front of the screen (as in a science laboratory for instance).

A typical classroom may well be 6 metres from back to front and possibly 10metres wide (many variations of course) with a high or low ceiling which maybe a suspended (false) ceiling hiding cabling etc or a pitched roof even.

Despite these variations for the most part it is common for ceilings to be about 2.5 metres to 3.0 metres and with a maximum to top of screen height of about 1.8 metres to 2 metres depending on teacher (or users) height and reach.

Dimensions

	Length (M)
Standard throw ceiling mount	
Projector to ceiling	1.0
Distance from screen	2.0
Ceiling to top of screen	1.0
Half screen width	1.0
Top of screen to wall outlet	1.4
Total length	6.4

Ultra Short Throw wall mount	
Projector boom	0.4
Boom height above screen	0.3
Screen width	1.0
Top of screen to wall outlet	1.4
Total length	3.1

Ceiling mount to Science Desk	
Projector to ceiling	1.0
Distance from screen	2.0
Ceiling to top of screen	1.0
Half screen width	1.0
Ceiling to floor	3.0
Top of screen to floor	2.0
Wall to desk position	2.0
Floor to desk surface	0.7
Total length	10.7

Based on these simplistic calculations the "standard" length of cable needed would be as follows (since 2 - 3 metres excess cable can be wound into a coil of 300mm which will fit round any projector mount or be lost in ceiling voids).

Standard Cable Lengths (M)

Video

Ultra Short Throw projector with wall mount	3.5metres
Short Throw projector with wall mount	5.5metres
Standard projector with ceiling mount	10.0metres
Standard /ceiling mount to Science Desk	15.0metres

Audio

To wall mount	1.5metres
To Science type desk	5.0 metres

These calculations are intended as a very basic guide but in our experience these standard cable lengths cover more than 80% of the situations met by our customers when installing audio visual systems in school classrooms. Calculations can be adjusted, of course, for different projector distances and room dimensions etc.

About the Author

David Edis-Bates C.Eng MIET, a chartered communications engineer has spent more than 30 years in design and export related activities around the world, lived in Taiwan for 4 years in the 70s and in China for the past 5 years. Currently CEO EdisAV www.edisav.com

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