

Hey! Listen up!

The Art and Science of Dining Hall Acoustics.

By Gary Forster (reprinted from *Camp Business Magazine*, February 2005)

In most cultures, meal times are the highlight social experiences of the day. So how come kids race through meals at so many camps and can't wait to get out? It's the horrible acoustics. If it's so loud you can't hear yourself think, how can you hold a conversation?

Would you go back to a restaurant where you couldn't hear what your friends were saying? Considering making friends is one of the most important things we do at camp, it would be worth our effort to try and fix the problem.

"Bad acoustics" are the result of a high reverberation rate; the "echo" from sound bouncing around instead of being absorbed. Two factors cause an increase in reverberation: the volume of the room, and the sound-absorption properties of surfaces in the room. So when the architect designs a tall walls and a high pointed ceiling, he's making it twice as bad every time the volume of the room doubles. And that beautiful tongue-and-groove wood ceiling? All those windows? A hard wood or concrete floor? All make it worse.

But most of these things can be fixed. For the ceiling, nothing beats acoustic tile. The most attractive solution may be 12"x12" glue-and-stapled up tiles with a strong texture. If you put it up between roof trusses or beams, you can still have a great "lodge" look. If your existing room needs a face-lift, don't hesitate to consider a suspended grid ceiling which can still have a "cathedral" pitch, but at a lower level and angle so the total volume is less. An added bonus of either ceiling is a new, white surface to brighten the room.



Camp Tecumseh YMCA, IN

But if you don't have the courage to tackle the ceiling, there are other intermediate steps to try. The more sound-absorbing materials you can put into the room, the better. Lots of flags are a start, heavy curtains, and wall-hangings will help. Most restaurants carpet their floors to pack as much acoustic material in as possible, but 8-year-olds carrying pitchers of "bug juice" make that impractical for most camps! At camp I like to use area rugs with nature, Americana or Native American patterns from the sale piles at TJ Maxx. They make beautiful wall-hangings. Regular commercial floor carpet makes a great wall covering, and can have the advantage of being fire-rated. Any piece of blank wall is a good prospect.

Open year-round? What do your guests do with their jackets at meals? If you put coat-racks all around the room, even right across your windows, all those coats will be soaking up extra noise, AND even helps insulate the walls!



The architect says "if we need to, we can add some acoustic panels later." Do you find this attractive? And it's still not enough. All to defend a wood ceiling.

Do you know why they keep talking at the far end of the dining hall while you're making announcements? It's because they can't hear you. You know how annoying it is to be in an audience and not hear what's going on. That's why they use microphones even in churches. So should camps.

You can get a professional to do it, but all the parts you need can be picked up at Radio Shack. The worst way to go is the "Rock Concert" route with big speakers on the stage. If they're loud enough to hear in the back, they'll be WAY to loud up front. Instead, think how they do it in restaurants and airports: lots of small speakers spread all around the building so no one speaker has to be loud at all. A rule of thumb to start with might be at least one speaker for every two to four tables of campers. Surprisingly, it doesn't take much of an amplifier to power a lot of speakers. I've run 16 speakers from a single 35 watt PA amp that cost \$120. The secret is in the wiring. The "runs" from the amp to the speakers can be very long, and you lose lots of power at the very low power most speakers are run on. The key is using the "70 volt line" outputs on the amp instead of the standard "8 ohms" connection you'd normally use for a couple of speakers. You connect as many speakers as you want (connecting them "in parallel"), but where you mount the speaker, attach your 70 volt line to a "step-down transformer" (only \$6 each at Radio Shack) that reduces the voltage to the 8 ohms the

speakers require. Your amp should come with a diagram of how to do it. You'll be amazed at how much sound you get.

What kind of speakers? Don't skimp; get some nice "bookshelf" size speakers that you can hang from your trusses. Just look for them to go on sale. If you've got a suspended ceiling, you can use ceiling grills and conceal the speakers.

Are you planning a new dining hall in the future? Find a restaurant that you love, where it's easy to have a conversation, and take your architect there. Get her to agree to include all the things you like about it in your new building! Bon appetite!



Acoustic tile highlights the beautiful trusses at YMCA Camp Takoda, NH

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