planning guide

FOR ELEMENTARY MUSIC PROGRAMS

Wenger®

A NEW CONSTRUCTION, RENOVATION AND EXISTING FACILITY RESOURCE FOR MUSIC EDUCATORS, FACILITY PLANNERS, ADMINISTRATORS AND ARCHITECTS

INTRODUCTION

This Planning Guide is designed to help you — music educators, administrators, facility planners, architects and consultants — focus on the fundamental requirements of the Music Suite. Though it is written from the perspective of the music educator, your entire planning team can use this information to create a Music Suite that is both effective and exciting.

The following guidelines are the culmination of over 65 years of Wenger experience. By visiting with thousands of music educators, we understand what it takes to make a Music Suite successful and what seemingly insignificant design elements can jeopardize its effectiveness.

Use our expertise. If you have questions, a Wenger representative is always just a phone call away.

Wenger works with the American Institute of Architects Continuing Education System as a registered AIA/CES provider.

USING THIS GUIDE

This guide provides brief explanations of the critical factors affecting the Music Suite. By applying this information to your needs and using the tools included, you'll be able to communicate music area fundamentals to architects and administration more quickly and clearly. You'll get the most out of this guide if you use it in the following fashion:

- Read the guide thoroughly.
- Use the information to establish the fundamental needs of your music program.
- Apply these fundamentals to your specific project.
- Use the Planning Guide tools (pages 13, 20 and 26) as the basic programming documents you'll share with architects.
- Submit your information online at www.wengercorp.com/plan for Wenger consultation.
- Most importantly, start now. The most critical decisions are often made years before construction begins. And, as the project progresses, changes become difficult and cost-prohibitive.

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FOR THE ELEMENTARY ADMINISTRATOR OR MUSIC EDUCATOR

For you, this Planning Guide will do three things:

First, it will give you an outline around which you can organize your plan. Along with keeping you mindful of details that are easily forgotten, this is also a good way to help you think about new and different ways you can organize your music area.

Second, the Planning Guide will give you a basic understanding of the design and construction process. This will help you see the process from the architect's point of view and will also help you understand the critical points in the timeline.

Third, the Planning Guide will provide an outline for discussion. Since the architect may have other areas or even an entire school to design, the Planning Guide will help you explain the needs of the music area in an organized and concise fashion.

Throughout the process, it's important to remember that while architects are experts in what they do, you are the expert when it comes to music education. You are the one who needs to champion the cause of an effective music facility. You need to get involved early and stay involved in the process until the end. Your knowledge and a positive attitude will ensure that the entire process is a successful one that benefits your music program well into the future.

COMMUNICATION – THE KEY INGREDIENT TO A BETTER MUSIC FACILITY

Over the years we've worked closely with music educators, architects and facility planners as new facilities are designed and built, or old ones are renovated. We've seen some excellent facilities come together, and we've seen a lot of things that should have been done differently.

By providing an outline of what we've learned over the years, this Elementary Planning Guide creates an excellent forum to promote and improve communication and understanding between educators and architects.

FOR ARCHITECTS AND FACILITY PLANNERS

Compared to the rest of a school, the general music room is a whole new world. It's unlike any other classroom, and special considerations must be made in order to make it as functional as possible. For you, this Planning Guide defines today's interactive teaching methods and explains why designing the most effective music room possible hinges on flexibility.

This Planning Guide also covers other areas used for music education and performance, like the gymnasium, cafetorium and auditorium. There are photos, diagrams and schematic drawings and even rule-of-thumb guidelines on things like square footage, traffic flow, ceiling heights, furniture, storage and more.

DESIGN AND CONSTRUCTION 101

(a brief overview for elementary educators)

GET INVOLVED

Proper planning and continued involvement are essential to creating the Elementary Music Suite you want. Use this information to get involved early so you can put, and keep, the project on the right track.

CONSTRUCTION PHASES

The following phases are the basic steps in a new construction or renovation project.

Phase I
Pre-Planning:

In this phase the planning committee is formed and facility goals are defined. The most successful committees consist of administrators, district officials and educators. It is very important to include teacher representatives from all fine arts, athletics and music as the requirements for their teaching environments are so unique.

Phase II
Programming:

Programming is an architectural term for the process of defining the activities and requirements of spaces to be designed. This is the committee's most important phase, and the gathering of input should begin as soon as possible. The longer you wait, the more it will cost and the more unlikely it becomes that your Music Suite will be what you need it to be.

Now is the time to create a "big picture" of everything you want the Music Suite to be. Use the programming documents in this guide to present ideas to an architect, making clear what is desired and what makes the area unique. And though budget will ultimately determine the scope of the project, anyone who's been through the process will agree — "You'll never get what you don't ask for."

The architect will need to know how much space you require, how each space within the Music Suite is used, and how all spaces relate to one another. Our Rule of Thumb charts for square footage considerations were specially devised to help you determine these needs. This is also the best time to compile your equipment lists so you know how much money to set aside for purchasing fixtures, furniture and equipment (FF&E).

Phase III
Schematic Design:

Following the programming documents and budget constraints, the architect will proceed to diagram the facility. He or she will present drawings in different stages so the planning committee can help fine tune the design. Be sure to agree upon the final schematic, because any subsequent changes will be more difficult.

PROJECT SEQUENCE

The Bond can be approved during any of the initial stages.

Music educators should concentrate the majority of their involvement during these initial stages. This is when your Music Suite design takes shape, and trying to alter the design or add ideas later in the process becomes very expensive.

I. PRE-PLANNING	II. PROGRAMMING	III. SCHEMATIC DESIGN	IV. DESIGN DEVELOPMENT
Formation of the Planning Committee and identification of facility needs.	The architect solicits input from school personnel regarding program requirements.	Considering the input and budget, the architect creates preliminary sketches of the proposed facility.	The architect refines the design and creates the blueprint.

CONSTRUCTION PHASES

Phase IV
Design Development:

The architect next creates blueprints. Exact room dimensions, ceiling heights, door and window locations, and electrical, plumbing, and mechanical systems, are finalized. These blueprints must be inspected very carefully, because all bidding and construction will be firmly based on this plan. Future changes are very expensive.

Phase V
Construction Documents:

Before talking with contractors, the architect will develop construction documents that clearly define what is being built and to what specifications.

Phase VI
Bidding:

With final blueprints and construction documents in hand, it's time to open the project to bids from general contractors, as well as electricians, carpenters and other subcontractors. After a review of bids, the contract is awarded to a general contractor. Next it's time to buy products — such as storage cabinets, acoustical treatments and pre-engineered practice rooms — installed during construction.

Phase VII
Construction:

This is the final opportunity to make sure that the Music Suite is being built according to specifications. Visit the site often. And, if something isn't following the agreed-upon plan, be sure to discuss these concerns with the architect and administration.

Phase VIII
Equipment Purchasing:

While the building is being constructed, the furniture and equipment identified in Phase II should be specified, bid and purchased — for delivery prior to the school opening.

Phase IX
School Opening:

Congratulations!

RESPECTING THE ENVIRONMENT

As a member of the U.S. Green Building Council, Wenger has long invested in the materials and processes required to create green products. Many of our products have achieved GREENGUARD certification.

Along with our expertise and credentials we also have great enthusiasm for helping our customers make green strides. Wenger recognizes and supports The Leadership in Energy and Environmental Design (LEED) rating system. In fact, as a member of the USGBC, Wenger has the insights and experience to make the LEED certification process easier for our customers to understand and attain.

As your partner, Wenger will help you complete LEED documentation requirements, including identifying and implementing practical and measurable green building design, construction, operations, and maintenance solutions.

V. CONSTRUCTION DOCUMENTS	VI. BIDDING	VII. CONSTRUCTION	VIII. EQUIPMENT PURCHASING	IX. SCHOOL OPENING
Preparation of necessary documents outlining the construction requirements.	The project is open to bidding and a contractor is selected.	The actual building of the facility.	Specify, bid and purchase equipment with delivery prior to opening.	Congratulations!

ELEMENTARY MUSIC EDUCATION 101

(an overview for architects, designers and facility planners)

What happens in the elementary general music room? A lot more than just singing and clapping. In each class period there will be a variety of physical and musical activities. One minute you might find the kids organized in a large circle, and the next minute, in a bunch of small circles. They dance, sing and play instruments. They listen to lessons and work on choreography. They play learning games and rehearse for performances. They sit on the floor, stand on risers and march around the room. In a word, what goes on here is "activity" – and lots of it.

MUSIC TEACHING PHILOSOPHIES AT A GLANCE

Orff, Kodály, Suzuki and Dalcroze are the three most popular teaching philosophies in elementary music education. Some educators are extremely effective at focusing on just one of these philosophies while many teachers prefer an eclectic combination or their own curriculum. But no matter how an educator chooses to teach music, movement is common to every approach.

ORFF

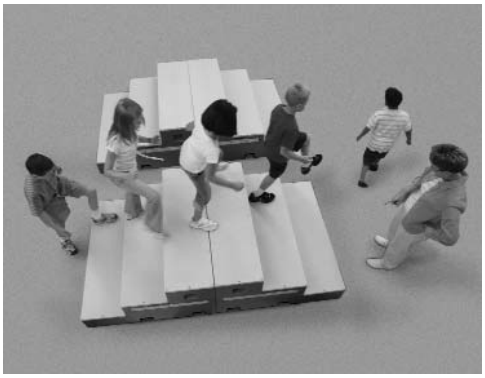
Orff is an instrument-based program that uses a variety of percussion and xylophone-like instruments. Orff education is also characterized by the extensive use of blackboards/whiteboards, easels and visual symbols. Movement, speech and singing also play significant roles in typical Orff curriculum. Integrating Orff into your space means planning for use, storage and protection of expensive instruments. You must have an area that can accommodate visual lessons and quickly change for movement and instrument playing. Your space also needs ample, secure storage for when these instruments are not in use.

KODÀLAY

Kodály emphasizes music literacy through a singing-based philosophy that incorporates movements and hand-signals to represent steps of the musical scale. Traditional Kodály-based curriculum utilizes familiar folk songs as well as some instrumentation. Integrating the Kodály room means providing spaces for the use and storage of song boards, lesson incidentals, some instruments and lots of movement.

DALCROZE

Dalcroze is a movement-based philosophy. Kinesthetics are utilized to naturally experience rhythm and develop musicianship. Dalcroze is often used to enhance other teaching philosophies. The primary factor in a Dalcroze room is an open space that will accommodate lots of free movement. And, just as in any music room, there are instruments and lesson materials that must have accessible storage.



SUZUKI

The Suzuki method is an approach that believes that every child, if properly taught, is capable of learning to play music. Learning music by ear is emphasized over reading musical notation at first. Dr. Shinichi Suzuki's philosophy was that since children learn their native language through listening, then that method can work with music as well. Factors such as immersion, encouragement, small steps and an unforced timetable make this teaching philosophy unique. The Suzuki method often starts with learning a violin or piano but can be used on other instruments as well. This method emphasizes beginning with children as young as 3-5 years of age.

TECHNOLOGY

Working with MIDI keyboards, computers and other multimedia equipment are another way that children can work as a class or independently to learn music. Some classrooms have a few "stations" and other programs have a dedicated music lab room with many workstations. Such rooms may incorporate the use of interactive whiteboards which are becoming more prevalent with interactive, internet-based programs. Don't forget to plan for plenty of connectivity including wiring and cabling plans to accommodate the system network and internet access required.

FLEXIBILITY

The most effective spaces are designed with one overriding goal – flexibility.

In an average half-hour class period, children will be involved in as many as four or five distinct activities. The busy elementary music educator is looking to use all the space the room has to offer. Transitions between lesson activities have to happen quickly and easily. A smart design is the first, and one of the most important, steps toward creating an effective, interactive elementary music room.

Music areas that work

Elementary music programs will differ from school to school. Some programs will include choirs, orchestras and bands. Some facilities will have an auditorium with a stage while others will utilize multi-purpose rooms for performances. Successful planning suggestions for the activities that take place in these areas are covered in this guide.

- **General music/choral room** (pages 10-16)
- **Instrumental music room** (pages 17--22)
- **Multi-purpose performance areas** (page 23-25)

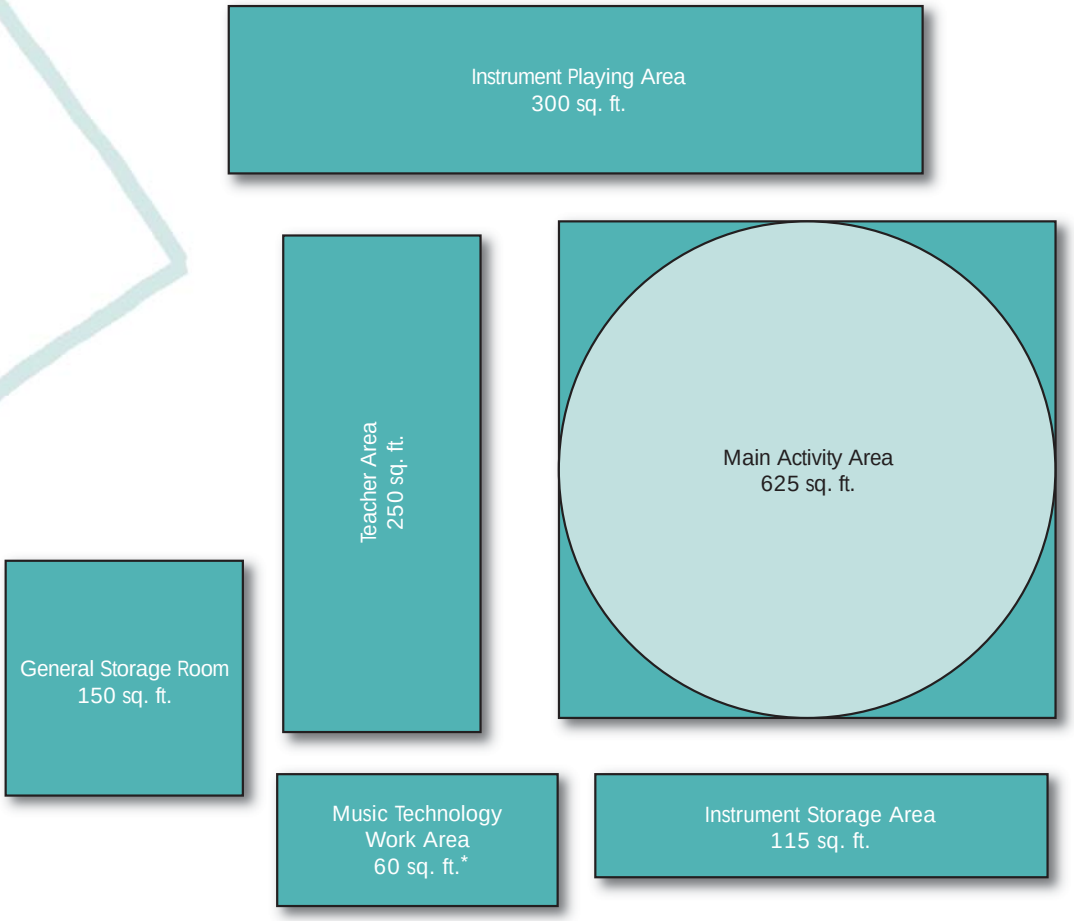
Because music is learned by listening, acoustics is another topic covered in this guide.
The acoustical section on pages 29-32 gives a broad overview of the vital acoustical considerations that must be accounted for while planning music areas.

GENERAL MUSIC/CHORAL ROOM

ESSENTIAL ELEMENTS

There can be up to six different elements to an effective elementary music room. For the purpose of this guide, we've represented these areas as the basic building blocks you will need in order to put together the best possible facility.

- Main activity area
- Instrument playing area
- Teacher area
- Music technology work area
- Instrument storage area
- General storage room



* Based on two workstations

MAIN ACTIVITY AREA

The heart of the general music room is a large, open, square area. This is where the action is – the dancing, singing and the creative movement. Although the room itself doesn't need to be square, an area that can be quickly cleared is best so that a class can be effectively organized in a big circle.

All the movement in this area makes a flat, open floor a necessity. We have seen a number of well-intended designs incorporate poured concrete risers into this area. It's an unfortunate mistake that can render this area nearly useless for interactive, kinesthetic learning and most of the common approaches to elementary music education. There are a number of portable risers on the market that can be moved in and out of this space without restricting its uses.

INSTRUMENT PLAYING AREA

A designated area for instrument use is a great time saver and convenience in the general music room. Typical instruments used in this area include Orff instruments, like xylophones and glockenspiels, as well as a host of percussion instruments. When a dedicated instrument area is provided, it allows a teacher to have the larger instruments out and ready to play before class begins. And that allows for a fast, effective transition between lesson activities.

TEACHER AREA

Perhaps one of the biggest differences between the general music room and other classrooms is the amount of time spent with the children seated in desks listening to the teacher. In fact, for music education, desks or chairs cause more problems than they solve, and as a result, are almost always absent from the landscape of the general music room.

When it is time for a teacher to give a verbal lesson, a variety of mediums are often used. Typically a standard or interactive whiteboard, or projector is used, as well as posters or cards that display things like musical scales, songs, etc. The teacher will frequently use an instrument like a piano or recorder to illustrate lesson points. Audio equipment, easels and mobile whiteboards are also frequently used in this area. And, although children are usually seated on the floor, this time is still highly interactive. Along the walls of the teacher area there should be whiteboards and bulletin boards. Enough clear floor space must be available for children to comfortably sit and participate in the lesson. There is usually a piano in this area, and it's often an excellent place for the teacher's desk.

MUSIC TECHNOLOGY WORK AREA

Technology has become a core part of many curriculums, and computers and electronic education have become integral to your program. Therefore you should consider planning a space that will accommodate at least a few students at a time using computers, electronic pianos, and other multimedia equipment. You will want a flexible plan that can accommodate future program growth.
It is crucial that wiring and cabling plans are designed to handle additional workstations and components, as well as the system network and internet access needs that are likely to increase over time.

The ideal multimedia environment consists of a separate room where students can work with music technology without being distracted and without distracting the rest of the class. A dedicated room also allows the educator to keep this expensive equipment secured and in a protected, manageable area. There should be adequate voltage to the room and plenty of electrical outlets. The room should also be well-ventilated and well-lit for optimum equipment performance and maximum student benefit.

INSTRUMENT STORAGE AREA

Not enough storage – it's one of the most common complaints we hear from educators. Too often the storage that does exist is difficult to organize because of the highly specialized instruments used in elementary music education. A wall of shelves, for example, usually results in wasted space because many instruments are too big for the cabinets and must be kept elsewhere. Small, loose percussion instruments can't be effectively contained on an open shelf and, as a result, they usually end up getting tossed into separate boxes. This is damaging to the instruments and is an ineffective way to organize them.

Not only does the general music facility need to be planned with enough instrument storage, but the shape of the individual compartments must be created to specifically accommodate the instruments and equipment that will be used.

GENERAL STORAGE ROOM

Elementary music programs are equipment-intense. They surpass just about every other discipline when it comes to the amount of equipment necessary for effective education. Even when compared to physical education and sports programs, the equipment used by the music department will require a substantial amount of storage space.

Aside from instrument storage needs, there is a great deal of larger equipment to plan for. Things like risers, acoustical shells, props, costumes and so on. And, because most of this equipment is used both in the general music room as well as in the performance areas, It is wise to plan on:

1. Locating the general music room next to or very near the performance space.

or

2. Planning for large equipment storage space in both the general music room and the performance space.

This list represents the instruments, equipment and quantities that a typical, fully equipped elementary music program will need in a school of 600-800 students. Actual numbers will vary from class to class and school to school, so it will be important to estimate the equipment needs for your facility and plan for the appropriate storage areas.

INSTRUMENT AND EQUIPMENT LIST

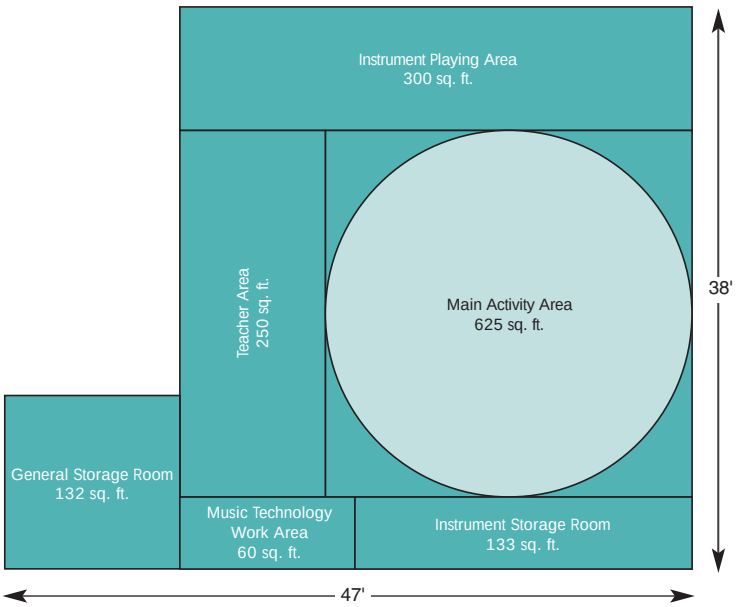
TOOL

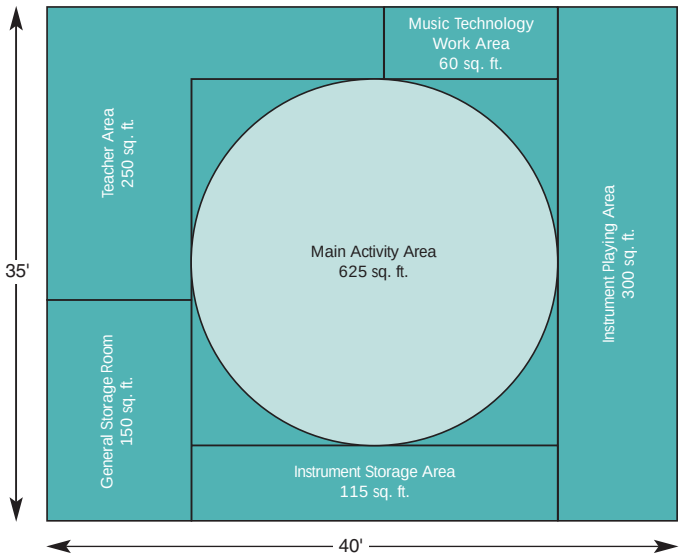
INSTRUMENT	AVERAGE QTY.	YOUR FACILITY
Autoharp/Chromaharp/Omnichord	1-2	_____
Bongos	1 set	_____
Castanets	2-4	_____
Congas/Tubanos	4-8	_____
Cowbells	2-4	_____
Crash cymbals (5" -14")	1-2 pair	_____
Finger cymbals	4-8 pair	_____
Guitars	4-8	_____
Handbells (wrist, cluster, sleigh, and mounted)	8-16	_____
Jingle taps	4-6	_____
Maracas	1-2 pair	_____
Recorders	25-30	_____
Resonator bells	1 set	_____
Rhythm sticks	25-30	_____
Sand blocks	2-4 pair	_____
Tambourines/Hand drums	4-12	_____
Triangles with strikers	2-4	_____
Wood blocks with mallets (tick tock, tone, and guiro tone)	2-4 pair	_____
Other_____	_____	_____
Orff instruments		
Bass bars (C, F, G)	3	_____
Glockenspiels, Alto	2-6	_____
Glockenspiels, Soprano	2-6	_____
Metallophones, Alto	2-3	_____
Metallophone, Bass	1-2	_____
Metallophones, Soprano	1-2	_____
Orff mallets	25-30 sets	_____
Xylophone, Alto	2-4	_____
Xylophone, Bass	1-2	_____
Xylophone, Soprano	2-4	_____
Other_____	_____	_____
Keyboard instruments/Electronic workstations		
Piano	1	_____
Computers	Varies with program	_____
Software programs	Varies with program	_____
MIDI keyboards	Varies with program	_____
World instruments		
_____	_____	_____
_____	_____	_____
_____	_____	_____
Miscellaneous teaching materials		
Lesson manipulatives	Varies with program	_____
Posters and song boards	Varies with program	_____
Stereo system	1	_____
Tapes, CDs, ipod docking station	Varies with program	_____
Texts and song books	25-30/grade	_____
Other_____	_____	_____
Other_____	_____	_____

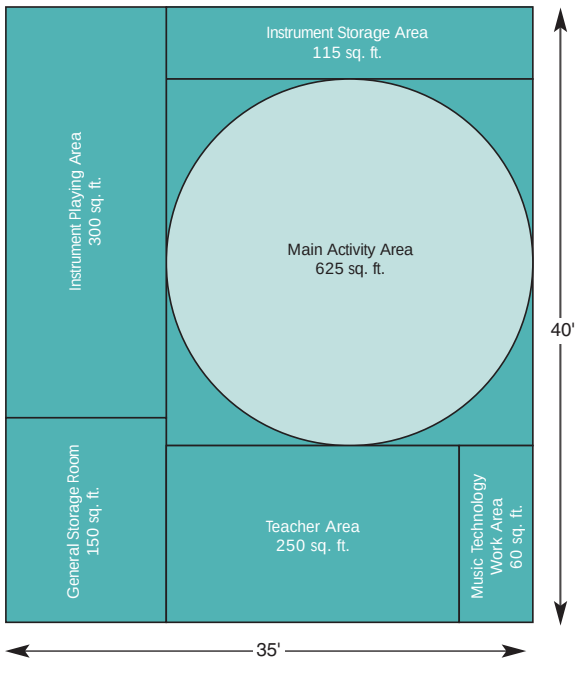
This checklist can also be found online at wengercorp.com/plan

Bringing the General Music Room Together

There are hundreds of effective ways to lay out the six basic areas of a general music room. For the purpose of this guide, we have chosen to represent each of these areas with simple rectangles. In the reality of your facility plan, some or all of these areas will probably take on a variety of shapes. The important thing to remember is to provide enough usable space for each area.







All examples shown above are 1,500 sq. ft.

Rule-of-Thumb for: General Music/Choral Rehearsal Room

ACTIVITY	FREQUENCY	STUDENTS PER CLASS	SPACE REQUIRED	RECOMMENDED CEILING HEIGHT
General Music and Choral Rehearsal	6-12 classes daily 1-3 times weekly	25-30 65-70	1200-1500 sq. ft.	12-16 ft.

Think beyond square footage

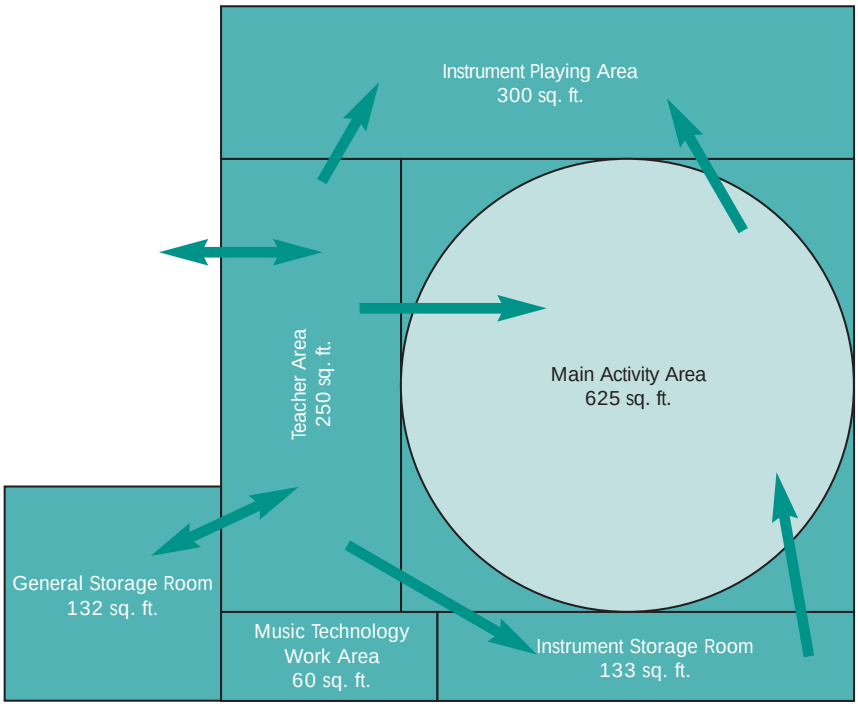
The square footage measurements we have attributed to each of the six areas of the general music room are approximate guidelines compiled from our experience and studies. These dimensions are intended to accommodate a class size of up to 25 fifth-grade children along with the basic equipment a program of that size will need.

But, in order to put together the most effective music room, it's necessary to think beyond just square footage measurements. Because of the importance of acoustical qualities, cubic volume becomes the critical measurement for the music room (see acoustical section, page 29). We have seen countless rooms with plenty of square footage, but ceiling heights that are no higher than in other classrooms.

A low ceiling also becomes a problem when risers are used. It's important to remember to plan for ceilings that are much higher than in other areas in the school so that even the tallest children can stand on the top row of a riser and have plenty of headroom to spare.

TRAFFIC FLOW

The traffic flow of equipment and people is another important consideration. The large, open space of the general music room naturally lends itself to easy movement between the designated areas, but there are still some things that can be done to make the space even more efficient. Large double doors into the storage room and into the general music room itself will make it easier to move items like pianos, performance props, risers and other large equipment. And, more than one entrance/exit into the room can make it easier for one class to leave while another is entering. Locating the storage area near the instrument playing area will also promote smooth traffic flow.



Choir in the general music room

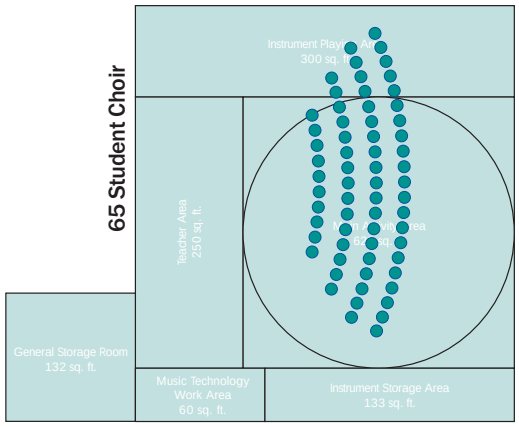
In the upper grades of elementary schools, it's very common for students to move into more advanced types of music education – like choir. When an elementary school has a choir program, it will most likely use the general music room as its primary rehearsal space. If this is the case with the facility you are planning, creating a flexible room is more important than ever.

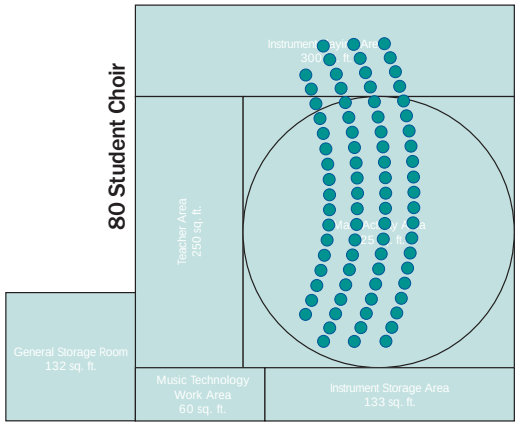
As pointed out earlier, flexibility is the key to an effective elementary music room because of the wide variety of back-to-back activities that happen here. A choir program adds yet another dimension of activity and equipment.

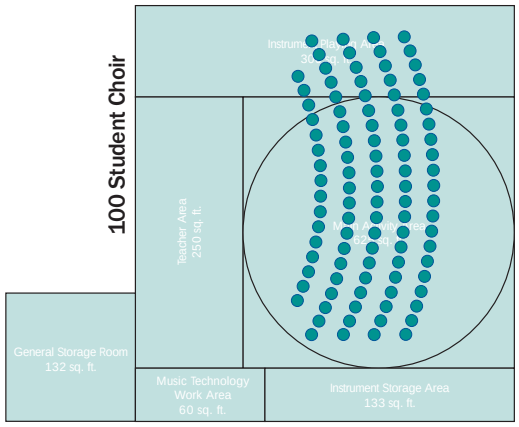
One of the most common equipment needs for choir programs is standing riser sets. As explained earlier, because poured concrete risers can render this area all but useless for elementary music programs, portable risers are a much better solution. And, the easier it is for the educator to move these risers in and out of storage, the easier it will be to manage transitions between classes and grades.

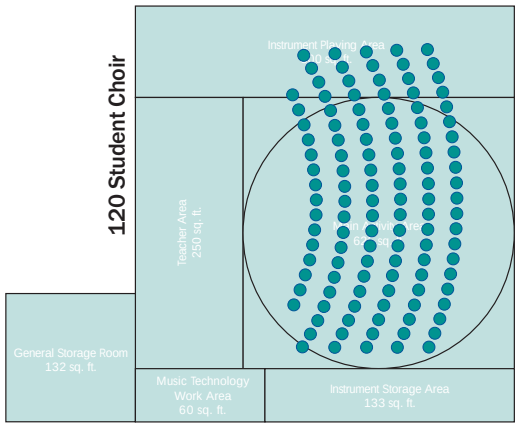
With a choir program, there may also be the need for acoustical shells or uniforms. Storage space must be provided for all the additional equipment and garments needed by a choir.

A choir program also magnifies the importance of creating a room with good acoustical qualities. These students are more advanced and at a point where they are developing their critical listening skills. Elementary choirs usually have 60-70 members and, as a result, produce a greater amount of sound energy. Sound energy that must be accommodated with adequate cubic volume. If the room is to be used for choir, you will need to plan for acoustical surface treatments to help balance and tune the qualities of the area (see acoustical section, page 29).









When using the general music room for choir, make sure you will have enough open, usable space for your group size.

As you add more musicians and take up space in the instrument playing area, some equipment will have to be moved.

Rooms shown are 36' x 38' and 1,368 sq. ft. (not counting General Storage Room)

INSTRUMENTAL MUSIC ROOM

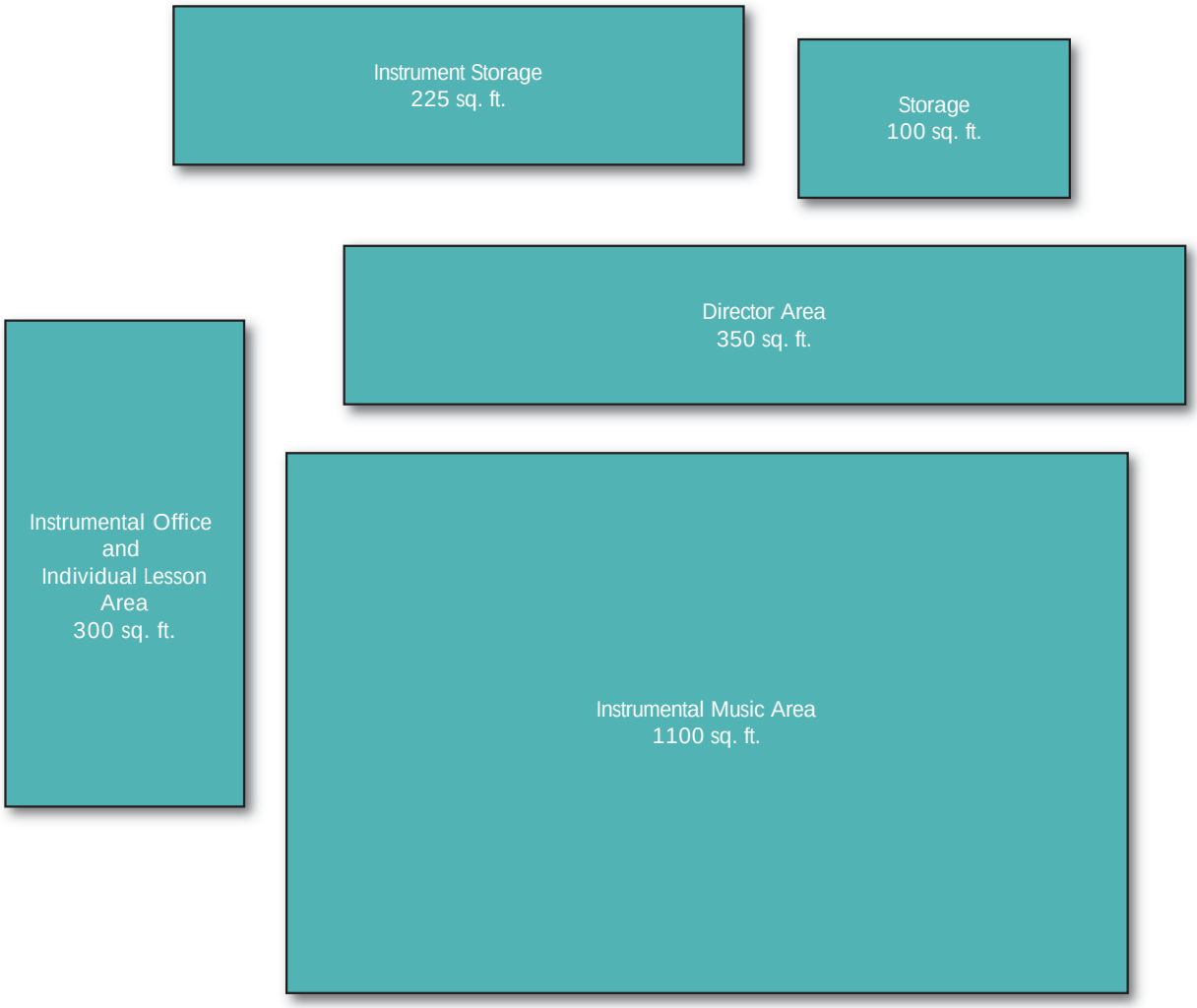
CONSIDERATIONS

Band/orchestra programs are offered in approximately 48 percent of elementary schools, and are most common in schools with fifth and sixth grades (according to National Center for Education Statistics). For an elementary music program that incorporates band/orchestra, the ideal facility will have a dedicated rehearsal room.

FIVE BASIC BAND/ORCHESTRA ROOM AREAS

There are five basic elements or areas that make up a functional elementary band/orchestra room:

- Instrumental music area
- Director area
- Instrumental office and individual lesson areas
- Instrument storage room
- General storage room



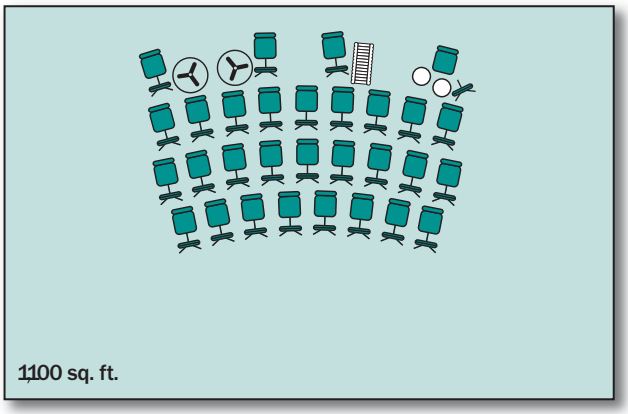
Instrumental Music Area

Space is definitely the issue here. Not only as it relates to the acoustics of the room, but also as it relates to creating a comfortable, functional environment in which to learn music.

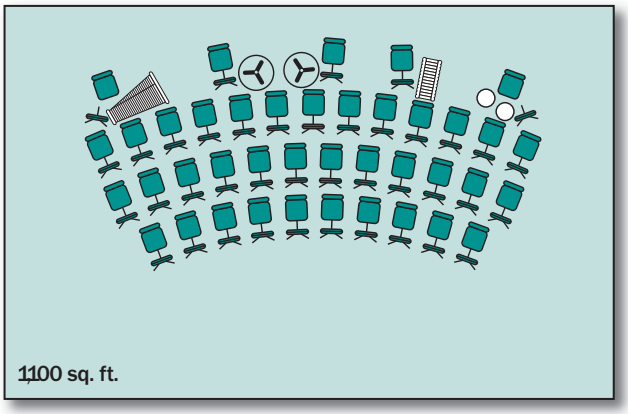
The students need room and instruments need room (approximately 30" average width per student). When you bring them together there needs to be enough space for elbows to move, bows to slide back and forth, and a music stand in front of every musician. Some instruments are larger, like tubas and basses, and they'll obviously require twice the space of flutes or violins. A footprint of 1,000 sq. ft. - 1,500 sq. ft. will provide enough instrument playing space for average-sized programs of 45-50 students per band or orchestra. When you plan for your space, it will be important to look beyond immediate needs and to create a space that will allow for the growth of the school.

# OF MEMBERS	INSTRUMENTAL MUSIC AREA SPACE REQUIRED
30	800 sq. ft.
40	900 sq. ft.
50	1100 sq. ft.
60	1300 sq. ft.

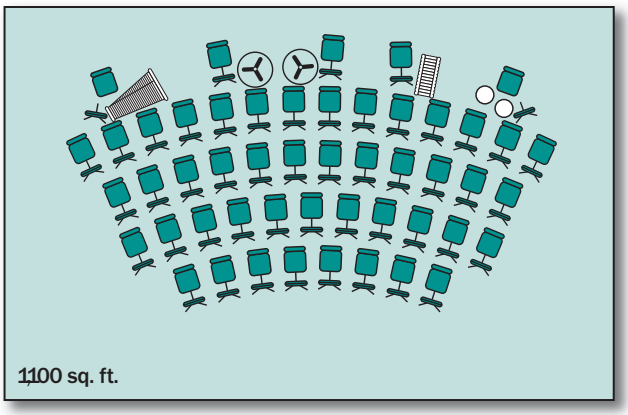
These diagrams give you a basic idea of how various sized groups fit into the 1,100 sq. ft. of space.



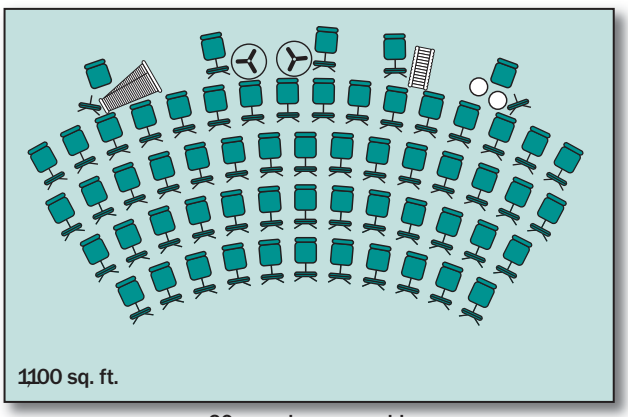
30-member ensemble



40-member ensemble



50-member ensemble



60-member ensemble

DIRECTOR AREA

In addition to providing enough space for the musicians, there needs to be a dedicated area for the director.

This area needs to be large enough so the director has a comfortable area to work in. Usually a director area will have at least a podium with a stool on it as well as a music stand. A larger setup will have a full workstation. Behind the director there will be whiteboards. Often, there will also be a piano, stereo equipment and/or computer in this space.

There will need to be enough room between the podium and the back wall so the director can use the whiteboards. It's also just as important not to get the podium too close to the group. More and more, we are talking to band and orchestra directors who are being diagnosed with permanent hearing damage from teaching in rooms which are too small. Thus, positioning the director a comfortable distance from the musicians is very important. And when a director can position the podium about eight feet from the front row of the group, sightlines and peripheral vision will also be improved.

OFFICES AND INDIVIDUAL LESSON AREAS

Elementary band and orchestra directors often teach at more than one school within the district. When they have an office at each facility, their job is much more efficient.

An office with a lock provides a secure, organized area. It means the director won't have to work out of a briefcase or keep track of music, lesson programs or miscellaneous equipment that must constantly be packed up and moved between facilities.

The offices can also be used as individual lesson rooms. Students at this age are often in their first or second year with an instrument, and require one-on-one tutoring. It's a big part of any elementary band or orchestra program and there needs to be a smaller, sound-isolated room where individual lessons can take place free from distractions.

When the instrumental offices are large enough, they also provide an excellent area for the sheet music storage. A mature program will have a significant investment in both lesson books and sheet music. Whether the music is kept in mobile folio cabinets or in a Music Library System, large band and orchestra offices provide safe, organized areas to store the music library.

INSTRUMENT STORAGE

Even though many instruments are either owned or rented by the students and taken home each night, an elementary band or orchestra can easily have $30,000-$50,000 invested in school-owned instruments. These are usually the larger instruments like tubas, stringed basses, percussion instruments and so on. In addition, the investment parents make in instruments can add up to over $80,000. All of these instruments need to be housed securely during the school day.

Instrument Storage
225 sq. ft.

The best storage will utilize a combination of cabinets for instruments in cases, wall hangers for instruments like tubas and sousaphones, and mobile racks so that expensive basses and cellos can be transported safely wherever they will be used. The storage room will also need to provide space for students retrieving and storing instruments. Double exits will accommodate high traffic flow of students in and out of the storage room. It's also important to have at least one set of double doors so that there is room to move large instruments and storage racks.

We often see built-in cabinets organized by instrument — for example, all the flute cabinets are in one area, then all the clarinets, and so on up to the large instruments. This is one of the most common mistakes which leads to traffic jams in the storage area. It crowds 15 flute players in front of the small cabinets while providing three tuba players with more space than they need. For the best results, cabinets should be laid out in a way that will spread out the traffic.

# OF MEMBERS	INSTRUMENTAL STORAGE SPACE REQUIRED
30	150 sq. ft.
40	185 sq. ft.
50	210 sq. ft.
60	230 sq. ft.

This checklist can also be found online at **wengercorp.com/plan**

If you provide Wenger with an instrumentation list for your program, your Representative can show you the best possible cabinet layout by utilizing our exclusive software program.

www.wengercorp.com/plan

TOOL

INSTRUMENT LIST

INSTRUMENT	AVERAGE QUANTITY	YOUR FACILITY
Flute	6	_____
Oboe	1	_____
Clarinet	8	_____
Trombone	4	_____
Alto Saxophone	4	_____
Cornet/Trumpet	6	_____
Tenor Saxophone	1	_____
French Horn	2	_____
Baritone Horn	1	_____
Bassoon	1	_____
Baritone Saxophone	1	_____
Tuba	1	_____
Snare Drum	3	_____
Bass Drum	1	_____
Violin	15	_____
Viola	10	_____
Cello	4	_____
String Bass	1	_____
Other	___	_____
Other	___	_____

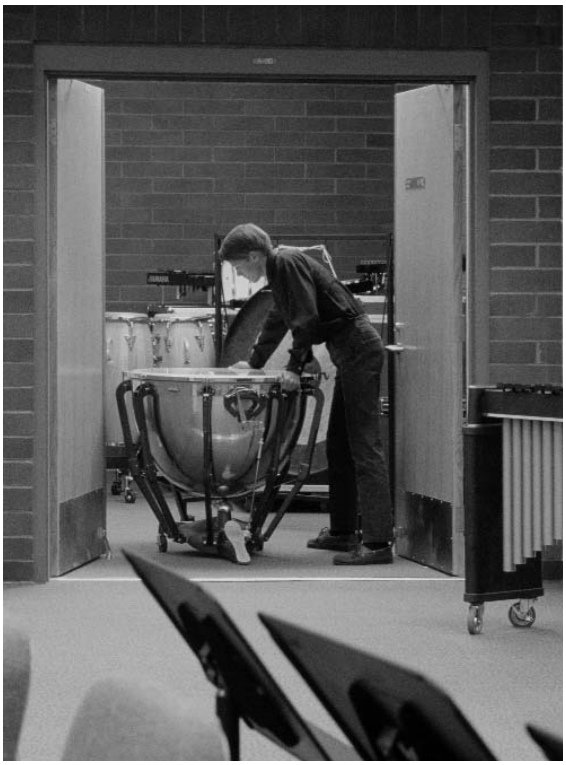
This is a listing of typical instruments in an elementary band of 40 members, showing the average quantities. For both band and orchestra, the quantities can vary greatly. Consultation between the architect and music director will help ensure the proper amount of storage necessary for that particular program.

GENERAL STORAGE ROOM

Aside from the instrument storage area, an additional storage space will be necessary for the miscellaneous equipment needs of the band and orchestra programs.

These needs will differ greatly from school to school, but they commonly include things like band uniforms, extra chairs and stands, and large instruments.

Storage
100 sq. ft.



A WORD ABOUT SEATED RISERS

Seated risers are a great addition to any band/orchestra room. When students are elevated on risers their sound is clearly projected over the people in front of them instead of being blocked by backs and heads. Sightlines between the director and musicians are also greatly improved when students are elevated on risers.

Although poured concrete risers solve sightline and projection problems, they are not ideal. The problem is that solid, built-in risers eat up a significant amount of the cubic volume in the room. Cubic volume that is vital to controlling the sound level and acoustical qualities of the space. The best solution is portable risers that maintain reverberant space in the open area underneath. Not only are they a smarter option acoustically, but (if need be) they can be moved, reconfigured or utilized elsewhere around the facility.

Bringing the band/orchestra room together

Acoustics first

In a band/orchestra room, a good acoustical environment is more important than ever. These bands and orchestras usually number about 30-50 students with instruments, and as a result, they are producing a lot more sound than the general music classes. And because they are learning to train their ears to the subtleties of music, they need an environment that enables them to develop their critical listening skills.

The most common acoustical problem is a room lacking the cubic volume required to handle all the sound energy produced. Cubic volume becomes one of the most precious commodities in this area. Every effort must be made to provide enough cubic volume and then treat it correctly so that sound is balanced and spread throughout the room. The basics of creating a quality acoustical environment are covered in the acoustical section on pages 29-31.

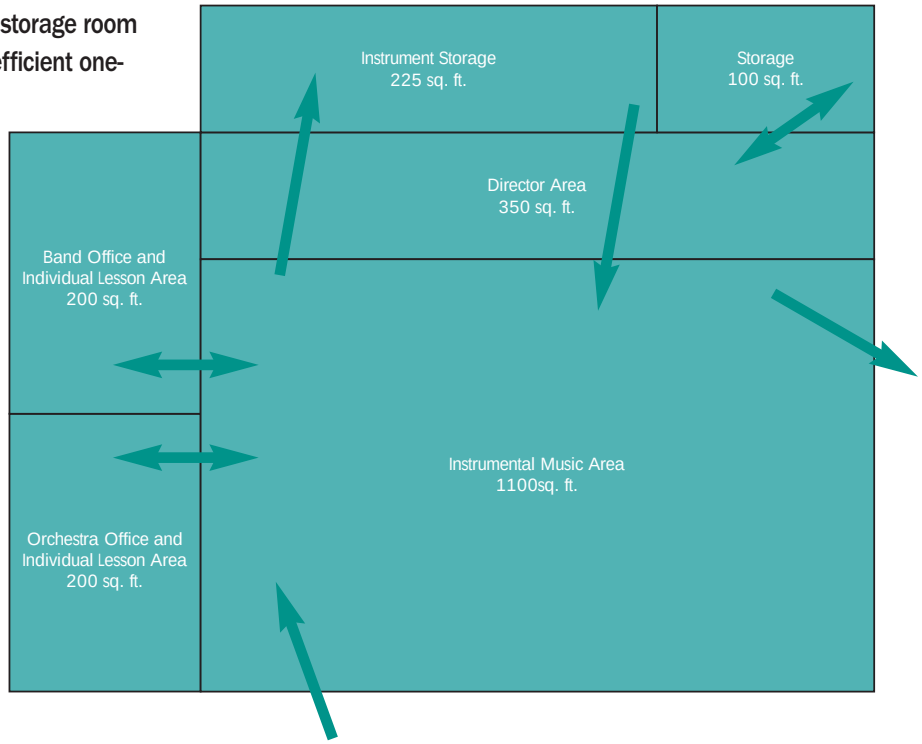
Rule-of-Thumb for: Band and/or Orchestra Rehearsal				
ACTIVITY	FREQUENCY	NUMBER OF STUDENTS	TOTAL SPACE REQUIRED	RECOMMENDED CEILING HEIGHT
Band and/or Orchestra Rehearsal	1-3 times weekly	45-50	1400-1800 sq.ft. (not including offices)	14-18 ft.
Individual and Group Band Lessons	1/2 hour lessons 4-6 per day	1-4	200-300 sq. ft. (includes office)	8-12 ft.
Individual and Group Orchestra Lessons	1/2 hour lessons 4-6 per day	1-4	200-300 sq. ft. (includes office)	8-12 ft.

Traffic flow

By creating a room that promotes a smooth traffic flow, you can give your students more teaching time. Time that is lost in facilities where it's difficult for students to quickly get their instrument and get ready for class.

Separate entrance and exit doors in both the rehearsal room and the instrument storage room are a great way to facilitate a fast, efficient one-way flow of students. This is especially beneficial when one class will be leaving while another is entering.

Planning for generous aisles in the instrumental music area will also make it easier for students with instruments in tow to get to and from their seats. The rule of thumb – more space means less wasted teaching time and fewer damaged instruments.



CONSIDERATIONS

It's difficult to explain the standard elementary performance area, because no such standard exists. Unlike a secondary school where there is usually an auditorium, relatively few elementary schools have a dedicated formal performance area. Most often, a larger area in an elementary school, like the lunchroom or gymnasium, is designed for multi-purpose use.

MULTI-PURPOSE AREAS

Creating an effective multi-purpose room means thinking beyond food service in the lunchroom or phy-ed in the gym. In most elementary schools, these areas have to be equally effective for both school and community assemblies, sports programs, guest speakers, plays, recitals, band or orchestra concerts, pageants, choir concerts, holiday events, parties, carnivals and on and on.

More than any other area, the multi-purpose room becomes the show-place of the school. This is where parents come to enjoy the accomplishments of their children and it's where the school is showcased to the community. It's very important that the room provide a flexible, functional, positive environment.

THE MUSIC PERSPECTIVE

In these areas, our expertise is focused on music department performances. But many of the recommendations we make about size and layout also apply to creating a facility that is functional for a variety of other uses.

Based on an elementary school, grades K-5 with a student body of 550, the following chart gives an approximate outline of how a music department will use the multi-purpose area and how many group members and audience members will need to be accommodated.
It's important to note that while there are average audience sizes given for different performances, the ideal multi-purpose area should be designed to accommodate the entire student body for all-school assemblies and functions.

Typical Annual Performances	Typical Number of Performers	Typical Audience Size	Approximate Space Needed
2-4	150-300	300-800	3000-6000 sq. ft.

SETTING THE STAGE

A raised stage is a necessity in a multi-purpose room. Unlike an auditorium with sloped seating, the audience is often seated on a single level and a raised stage is the most effective way to ensure good sightlines. And, because these areas pose a number of acoustical problems, raising the performers will help to control and project the sound over the audience. There are basically two approaches to a raised stage in the multi-purpose area – built-in or portable.

The Built-in Stagehouse

A built-in stagehouse will help create the most formal, auditorium-like environment. But the critical factor in planning for a stagehouse that works is planning for one that is big enough to accommodate the performers and equipment. The best designs will resemble proscenium-type theaters.

A proscenium stagehouse is characterized by wings, a fly-loft and adjoining storage. The fly-loft and wings will accommodate the rigging assemblies for curtains, theatrical lighting and sound systems. The wings also provide space for equipment and behind-the-scenes activity. The adjoining storage area is necessary so that large equipment like risers, acoustical shells and props can be stored on the same level as the stage. If storage can't be provided here, a ramped access from the storage area to the stage will be necessary.

Portable Staging

While not as formal as a built-in stage, a portable stage does offer flexibility. Portable stages let you set the stage you need according to the size of the performance group. They also allow you to reconfigure the performance area or use the stage elsewhere in the facility or school district as needed. If you plan for portable staging, remember to provide storage either in the multi-purpose area or close by.

AUDIENCE AREA

Flexibility is paramount here. The same space that feeds hundreds of hungry children or plays host to a basketball tournament will have to accommodate a PTA meeting or holiday concert just as effectively. As this space gets planned, it will be important to list all the various activities that will happen here and then plan for the space, equipment and storage to handle it all.

ADA GUIDELINES

Equal access for everyone is the goal of the Americans with Disabilities Act that was signed into law in 1990. The ADA guidelines detail the things that must be done in order to make public areas equally accessible to people with disabilities. If you've ever actually seen the ADA guidelines then you know how extensive and how complex they are. They cover everything from signage to stairways and ramps. Your architect should be well aware of what needs to happen in your new facility in order to comply with ADA legislation.

When it comes to musical performances, multi-purpose rooms are traditionally acoustical nightmares. They're loud, boomy, full of echoes and prone to excessive reverberation. Acoustical solutions for these areas must be approached from two perspectives. First, where the sound originates – the performers' area. And secondly, where the sound needs to go – the audience area.

On-Stage Acoustics

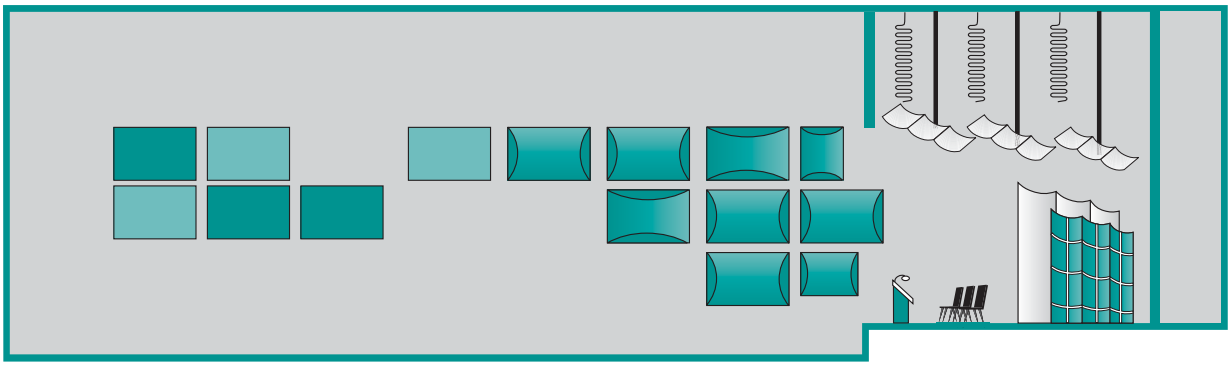
Whether the stage is built-in or portable, the acoustical solution for the performers is the same – acoustical shells and overhead panels. Shells and panels contain the sound in this area and keep it from getting lost in the fly-loft or behind the group. They also blend and balance the on-stage sound. This is extremely important so performers can hear one another and maintain their timing and tone. Shells and panels then help to project the sound out into the audience area.

Audience Area Acoustics

Once sound enters the audience area, a variety of acoustical surface treatments will be needed. The best solutions will come from professional acoustical consultation which will determine surface treatments that are specifically engineered to absorb, diffuse and spread sound. The acoustical section of this guide, on pages 29-31, will also help to provide a general understanding of what must be done to create quality acoustical environments.

Avoid the Gym

If at all possible the gymnasium should be avoided as the primary performance area. The problem is mainly acoustic. In the gym, the floor, walls and ceiling are hard and usually arranged in parallel formations. This greatly increases loudness and reverberation problems. And, because of bouncing balls, acoustical treatments on the walls and ceilings could be damaged easily.



EQUIPMENT AND STORAGE

Musical performances require a significant amount of equipment for both the performers and audience members. It will be important to determine the equipment a particular facility will use so that adequate storage space can be provided. The following list covers some of the basic large equipment needs for musical performances.

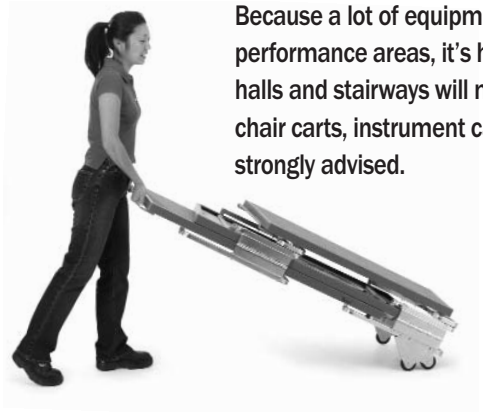
- Acoustical shells
- Standing risers - Choir
- Seated risers - Band/orchestra
- Portable stage system
- Chairs for performers
- Music stands
- Chairs for audience
- Props and costumes

LARGE EQUIPMENT STORAGE NEEDS

TOOL

EQUIPMENT	YOUR FACILITY
Acoustical Shells	_____
Choral Risers	_____
Band/Orchestra Risers	_____
Portable Stage System	_____
Chairs for Performers	_____
Music Stands	_____
Chairs for Audience	_____
Props and Costumes	_____

PROXIMITY

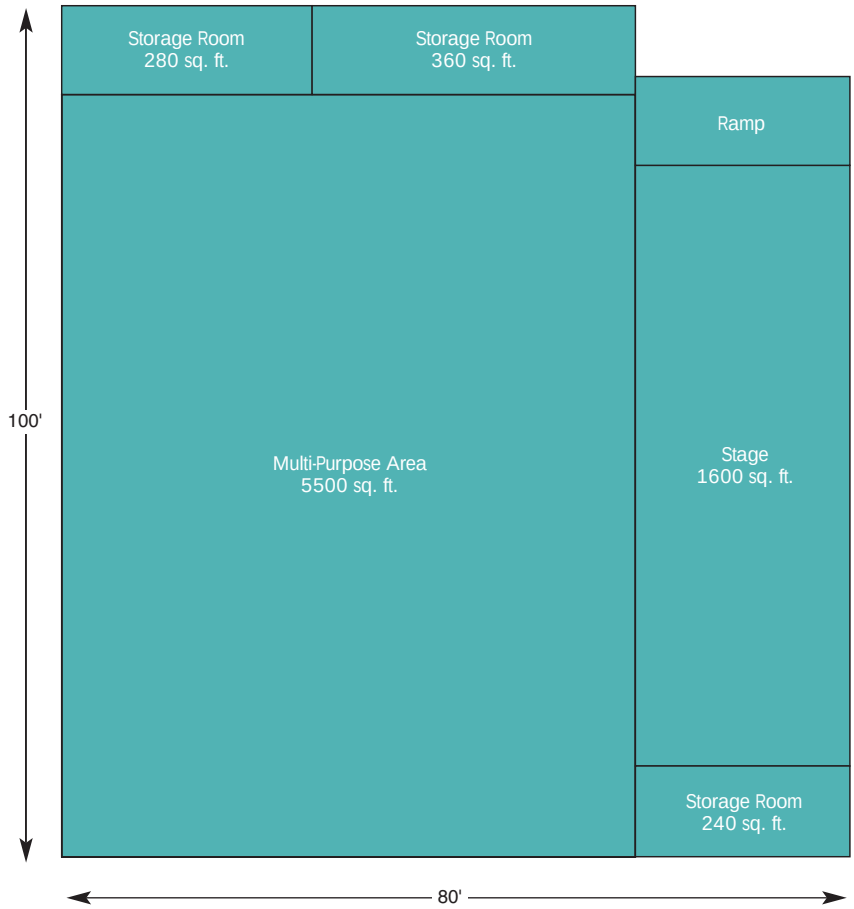


Because a lot of equipment will perform double-duty between the music department and the performance areas, it's helpful if these two areas are close to each other. Tight corners, narrow halls and stairways will make it very difficult to move equipment like music stand carts, risers, chair carts, instrument carts and so on. Planning for double doors and ramps in your design is strongly advised.

Bringing the Performance Area Together

The key to bringing together an effective multi-purpose area is flexibility. No other area in the school will have to accommodate such a wide variety of activities. As a result, no other area in the school will need as much equipment and storage.

The equipment and layout should facilitate fast, easy transitions between activities. Because the multi-purpose area will often be full of people, multiple entrances/exits and double doors will ensure that you have a smooth traffic flow no matter how the room gets configured.



An Auditorium

No question about it, an auditorium or proscenium theater would be a fantastic asset and occasionally the elementary budget allows for a dedicated performance space.

The classic proscenium theater provides the best all-purpose performance area. It's made up of three basic elements; a stagehouse, an orchestra pit and an audience house.

The stagehouse is characterized by a thrust stage, wings off to either side and a fly-loft overhead. The orchestra pit in front of the stage is standard, but in an elementary school, you may simply want to plan for an open area between the audience seating and the stage. The audience house is usually sloped to ensure good sightlines, and seating is usually permanent. You'll need to plan for storage nearby or adjacent to the stagehouse for equipment like shells, risers and props.

A school auditorium like this becomes more than an ideal place to showcase the talents and accomplishments of the students and faculty. It becomes a gathering place for the entire community. It's a place where you want to put your best foot forward. For planning a dedicated performance space we recommend the involvement of theater consultants and acousticians to ensure that you put together the best space possible.

BRINGING ALL THE ELEMENTS TOGETHER

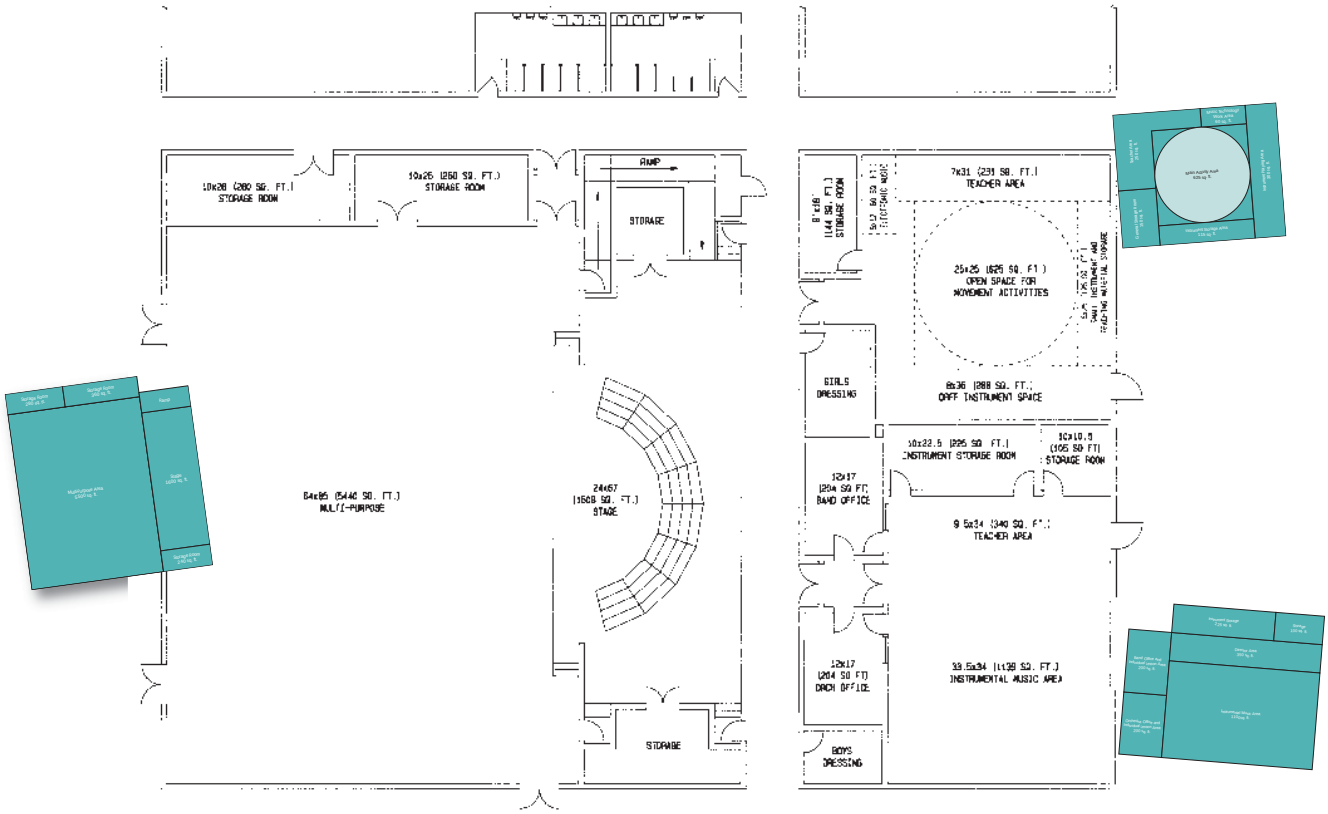
When you look at all the areas covered in this Planning Guide, the better they work together, the more effective and functional the music department will be as a whole.

It's time to step back and look at the big picture.

Ideally, the performance space, the general music room and the instrumental music room are located together in a separate wing. These areas generate a lot of noise and activity, and when they are isolated they won't cause distractions for other classes and activities around the school. Also, by locating them near each other, moving students and equipment from one area to another will be as fast and simple as possible. And lastly, because the performance area will often be the site of evening performances, locating it in a separate wing makes it easy for parents and visitors to find and access.

Below, we've diagrammed a layout that reflects key points outlined in this guide.

- Smaller rooms act as sound insulators between the general and instrumental rooms and hallways.
- One central hallway accesses all the primary rooms.
- There is adequate storage in all the areas.
- Large double doors make it easy for large instruments and groups of students to move in and out of areas.
- We've included considerations like a disability ramp accessing the stage and large facilities just outside the performance area.
- Keep large open space for classroom activities.



ACOUSTICS

CONSIDERATIONS

One of the primary issues that makes music education unique is the importance of sound. After all, music is sound and music is learned by listening. Because of this, there is no other area in the school where the acoustic environment is more critical. To study music, students must learn to hear and understand differences in tone, tempo, pitch, articulation and sounds that are in-tune or out-of-tune (intonation). This is called "critical listening" and it is through this skill that musicianship is developed.

Excellent acoustics are a function of four related elements:

1. **Cubic volume and shape**
2. **Sound isolation between rooms**
3. **Acoustical treatment**
4. **Efficient mechanical systems**

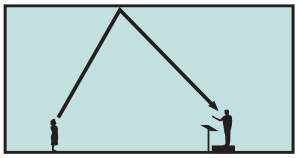
CUBIC VOLUME

Adequate cubic volume is the most basic acoustical requirement in a music area. Good ceiling height combined with enough square footage provides surfaces that are far enough apart to delay primary sound reflections. This delay gives musicians a sense of the sound they have just produced. This is called "response," and without good response, a singer or instrumentalist can't hear if they are in-tune, balanced with the group or producing good tone.

Instruments in both the general music room and in the instrumental music room can generate high sound levels. In fact, the sound levels in rooms that are too small can permanently damage an educator's hearing over time. These rooms must be designed with enough cubic volume to accommodate all the sound energy that is produced.

This chart shows some basic guidelines for general music class sizes of 25-30, choirs of 65-70 and bands of 45-50. If the class size of choir, band or orchestra differs significantly, you can generally add or subtract 300 cubic feet for each singer and 500 cubic feet for each instrumentalist.

INCORRECT
Ceiling Height too Low



PREFERRED
Proper Ceiling Height

Rule-of-Thumb for: Ceiling Height/Cubic Volume

ACTIVITY	CUBIC VOLUME	CEILING HEIGHT
General Music/Choral	17,000-20,000 cu. ft.	12-16 ft.
Band/Orchestra	19,000-25,000 cu. ft.	14-18 ft.

ROOM SHAPE

The angles of the walls are also important acoustical factors. Untreated parallel walls will cause flutter echo, an undesirable ringing or buzzing. Flutter echoes can be acoustically treated with sound diffusing and absorbing panels. Diffuser panels scatter and blend sound with reflective, irregular surfaces. Absorber panels reduce sound levels with soft, porous surfaces.

Poor sound isolation can compromise even the best-designed, best-equipped music room. Sounds from other areas can confuse students and impair the teacher's ability to teach. And, sound generated within the music rooms can distract other classrooms or offices.

The Music Wing

One of the first things to do for good sound isolation is to locate the music rooms in a separate wing of the building. Also, be sure to protect the music rooms from adjacent noise-generating rooms such as cafeterias, gyms or noisy mechanical system rooms.

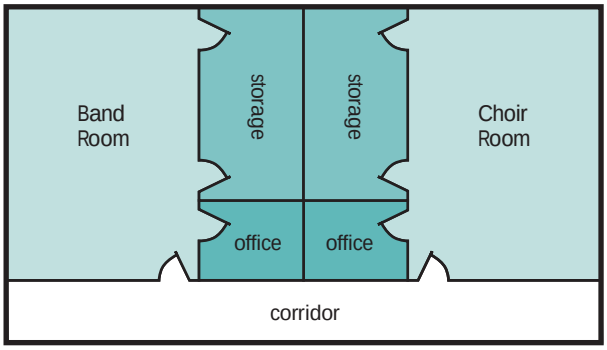
Keep the Music Where it Belongs

Good sound isolation can be achieved at reasonable cost by building full-height, sound-isolating walls sealed to the building structure at the floor and ceiling. Corridors, offices and storage rooms should be used as buffer zones. This isolates the sound between adjoining areas like the general music room and the instrumental music room.

Leaks and Interference

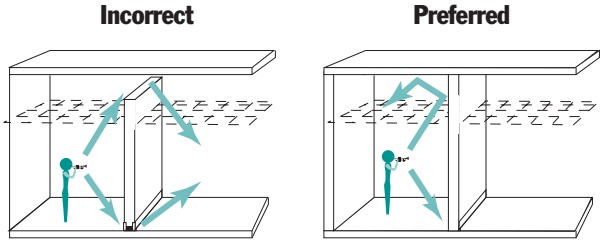
Wall seams, electrical outlets and ventilation ducts are common sources of sound leakage. Staggered wall seams and outlets, as well as baffled, filtered ventilation ducts will help to remedy sound leaks and HVAC interference. Doors and windows are another source where sound can escape. Be careful to specify doors and windows that have adequate acoustical ratings.

Floorplan



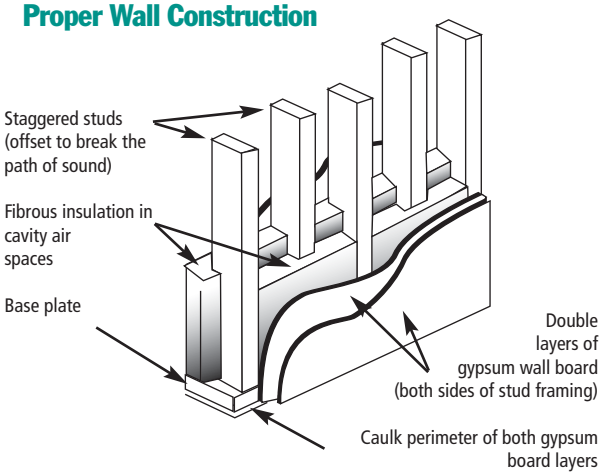
Buffer spaces should separate major rehearsal spaces. The most effective layouts put storage and office space between these rooms. Sound isolating walls between the rehearsal space and busy hallways are recommended as well.

Wall Construction

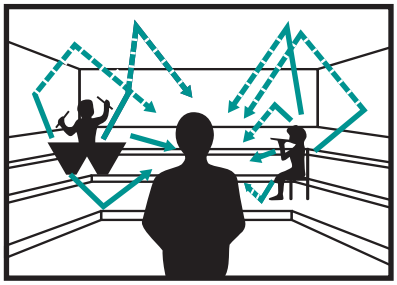


On a 4' x 8' wall, a hole the size of a quarter can reduce the sound isolation effectiveness by 80%. Therefore, gaps at the top of your wall above your suspended ceiling, walls not sealed at the floor, electrical outlets, and poorly-designed ventilation systems can sabotage your sound isolation efforts.

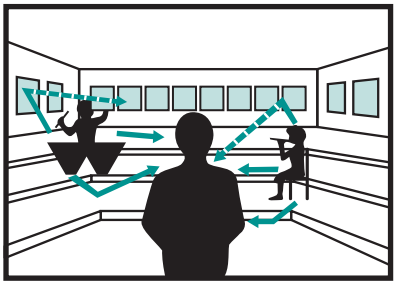
Proper Wall Construction



Quality acoustics depend on a carefully engineered combination of sound absorption and diffusion. Materials such as thick, fibrous panels absorb sound, which reduces loudness and controls reverberation. Large, reflective irregular surfaces will diffuse sound and improve communication among ensemble members and the director. Suspended ceilings of absorptive panels are also quite effective at broad-frequency musical absorption. By studying each individual room and determining the proper combination and placement of absorptive and diffusive panels, a wide variety of acoustical shortcomings can be effectively treated.



UNTREATED ROOM
Low frequencies are overpowering, reverberant and indistinct.



ROOM TREATED WITH ABSORBER PANELS ONLY
Loudness is reduced but lack of reflective surfaces has negative impact on timbre which causes forced singing and overblowing.

ACOUSTICALLY BALANCED ROOM WITH ABSORBER AND DIFFUSER PANELS
Loudness is controlled. Performers can hear themselves and each other. Conductor has accurate impression of balance.

The Carpet Myth

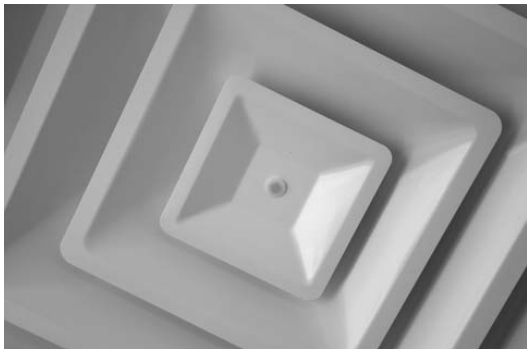
Don't depend on carpeting to effectively quiet a loud music room. It is effective at absorbing only high frequencies (approximately middle C and above). By using this material as the primary absorptive treatment, the ability to hear higher frequencies and softer sounds is diminished while the lower frequencies are unaffected. The only result will be an enhancement of the boominess and loudness of the area.

Mechanical Systems

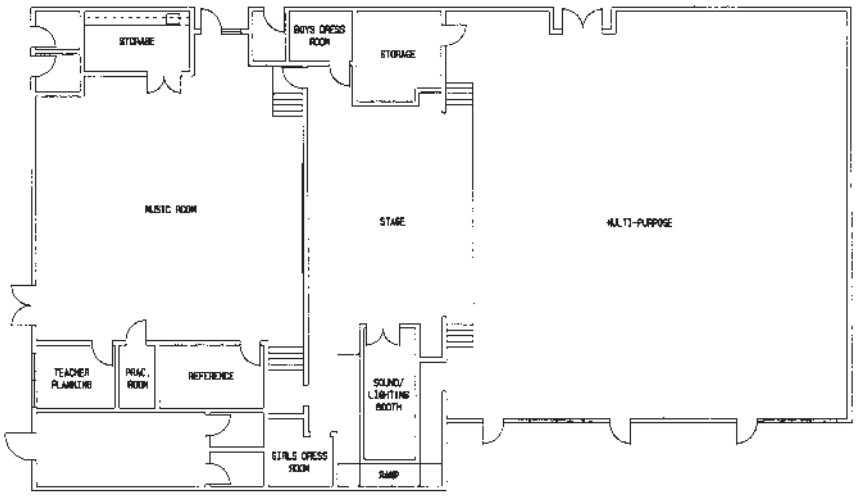
Mechanical systems are noisy by nature. Heating and air conditioning units, fans, drinking fountains, coolers, toilets, roof drains, fluorescent light ballasts, transformers and other necessities can be annoying and distracting, particularly in the music area.

Music requires substantial physical exertion, and often involves large groups of students. Because of this, the air exchange required is double that of ordinary classrooms. As a result, it is essential that the supply and return ductwork is large enough to accommodate the exchange rate without creating a “whooshing sound” that masks musical sound. And because adjacent rooms served by the ventilation ducts can result in acoustic cross-talk, music rooms should be supplied with separate supply and return lines.

Quiet-rated fluorescent light ballasts will help eliminate the “hum” associated with standard ballasts. The hum is usually an approximate B-flat musical pitch and can be very distracting in a music environment.



THE ELEMENTARY MUSIC DEPARTMENT – FLOOR PLANS THAT WORK



Westside Elementary School
Hernando Public Schools
Spring Hills, Florida

ARCHITECT: Reynolds, Smith and Hills Inc., Tampa, Florida

COMMENTS:

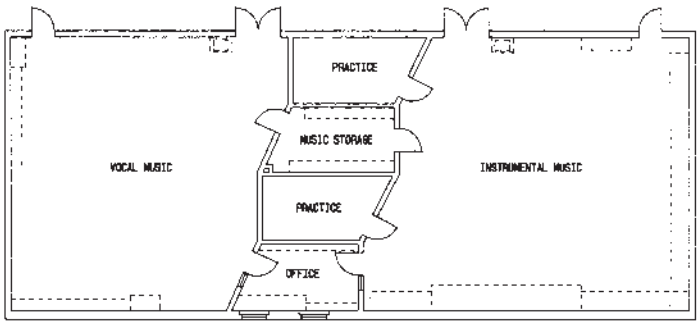
- Easy access to stage areas
- Well-planned storage and dressing rooms
- Control booth for stage lighting and electronics
- Wheelchair-accessible disability ramp

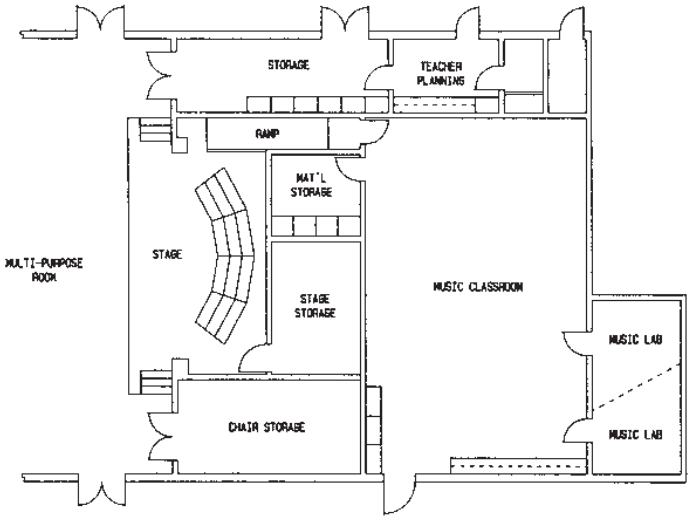
Bedminster Township Elementary School
Bedminster Township School District
Bedminster, New Jersey

ARCHITECT: Faridy, Thorne, Fraytak, P.C.
Trenton, New Jersey

COMMENTS:

- Use of storage, practice room and office as acoustical buffer zones between rehearsal rooms
- Shared, accessible office and music storage room





Schwarzkopf Elementary
Hillsboro School District
Tampa, Florida

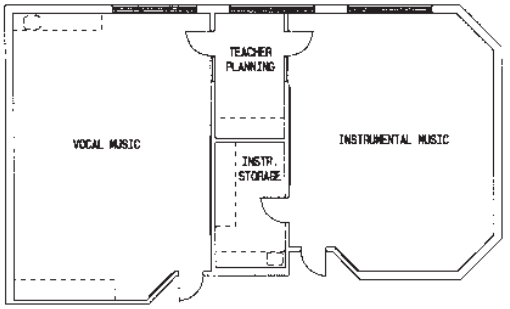
ARCHITECT: D.E. Holmes, F.A.I.A.
Tampa, Florida

COMMENTS:
- Ample classroom space for movement, music labs and simultaneous activities
- Proximity of teaching areas to performance area
- Ample storage
- Wheelchair accessible disability ramp

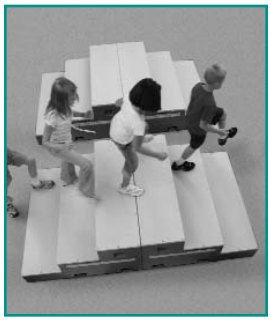
Kingsford Elementary School
Prince Georges County School District
Mitchellville, Maryland

ARCHITECT: Delmar Architects, P.C.
Olney, Maryland

COMMENTS:
- Smaller rooms used as acoustical buffer zones between vocal and instrumental rooms



A complete line of equipment



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These innovative products flip into whatever shape you need and go wherever you need them. They let you easily turn your classroom into a learning environment that gets students involved.

footNOTES®

Kids will love learning notation when it's this much fun. This interactive, flexible solution is also an enjoyable way to teach. The stain-resistant nylon carpeting is also designed to resist skidding.

Stage Boxes

Create just about any shape or set you need for kids to sit on, stand on, perform on, or play on. Tough, lightweight molded-plastic boxes lock together. With built-in handles and a skid-resistant surface.

Music Library

High-density storage for sheet music that stores far more than file cabinets – in less space. Slide out design makes organizing and accessing music easy.

Product Literature Available

Equipment Catalog

If you'd like a copy of the expanded Secondary Music Equipment Catalog, we'll be glad to send you one of those, too.

flipFORMS curriculum booklet

Helps you get the most out of your flipFORMS and your students.

footNOTES Activity Booklet

Written by Dr. John Feierabend, Ph.D., a champion of elementary music education. It's filled with effective and engaging activities to help you get the most from your footNOTES system.

TeacherTAXI®

This innovative "classroom on wheels" puts all essentials right where you need them in an easily transportable design. With TeacherTAXI,® transitional teaching has never been easier.

ORFFmobile™

The ORFFmobile is tailor-made to simplify the storage and transport of all your valuable instruments. Highly functional and flexible, it's extremely popular because it makes learning and teaching fun.

ORFFgarage™

Drive it in, park it, and you're ready for class. This unique product keeps instruments safe and secure, and there's plenty of storage for extra instruments and supplies. Lockable for added security.

lessonWORKS®

This multi-faceted, magnetic whiteboard system makes every lesson more fun to put together and more fun to teach. Classes become faster and more effective, and students love the interaction.

Whiteboard/TackBoard

WhiteBoards are perfect for the music room, some available with permanent music notation. And TackBoard's easy-to-clean surface offers the ultimate in durability and value.

Bookcases

Affordable and durable, these shelving units give you a place for books and music, as well as your day-to-day teaching aids. They also coordinate handsomely with other Wenger elementary products.

to outfit your entire department.

Elementary Storage Cabinets

They may just be the smartest things you put in your room. These unique cabinets offer color-coded storage for small instruments, mallets, and lesson incidentals.

Storage Cabinets

This smart design makes great use of under-utilized corner space. It's ideal for a variety of storage needs, whether you install it as a stand-alone solution or as part of a larger Wenger cabinet configuration.

Chairs

A music chair was Wenger's first product. Musicians everywhere are familiar with their posture-enhancing support. Today's offering is the most advanced line of music chairs ever available, with choices for every need.

Stands

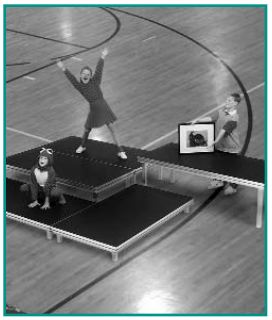
All Wenger music stands are easy to use and extra tough. Choose from Bravo, the premier heavy-duty stand; the stylish, lightweight Classic 50,® or RoughNeck – the standard in metal-stand performance.

Conductor's Equipment

The Flex™ Conductor's System is a customizable work environment. TechBridges of various lengths and various interchangeable parts let the user build a personalized work environment.

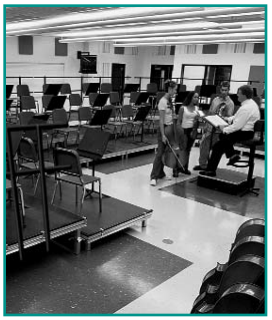
Choral Risers

We've been building better risers for half a century, and today we offer two industry-leading models. Tourmaster™ is the perfect portable riser, while Signature® is everything you want for in-facility use.



Staging

Our unique, innovative platform systems make the most of your time and money. Choose the advanced flexibility of Versalite,® the practical durability of Trouper,® or the simplicity of Stagehand.®



Seated Risers

Our world-famous Versalite® and Trouper® seated risers are known for their smart, simple, sophisticated designs. Both make it easier than ever to achieve the attractive, durable configurations you need.

Acoustical Shells

From shells that fit into a van to full-stage custom designs, Wenger Acoustical Shells provide the back-up your music groups need. With outstanding acoustics and easy operation and storage.

Acoustical Panels

Wenger's Acoustical Panel System is an attractive and extremely effective solution to a wide variety of acoustical problems in rehearsal and performance areas. You'll love the sound improvement.

Stereo Cabinet

Just roll it in, plug it in, and turn it on. The Wenger stereo cabinet is a great way to store, protect, and transport your stereo equipment. And it solves the problem of messy wiring and stacked equipment.

Stereo Workstation

Offering the ultimate in stereo convenience, Wenger's Stereo Workstation keeps all your stereo components organized and ready to go at a moment's notice. It's also attractive, durable, and lockable.

Percussion Workstation

Just roll it into place and you are ready to play. This tough, attractive, easy-rolling product lets you take everything from cowbells to a glockenspiel with you in a self-contained performance station.

Stringed Instrument Racks

Their smooth-rolling, stable design helps keep strings safe during storage and transport. Plus, the racks store flush in a compact footprint that takes very little floor space.

Music Lab Workstations

Streamlined, mobile, and highly functional, they put all components within comfortable reach while eliminating the disruption caused by stacked equipment and tangled cables.

GLOSSARY OF ACOUSTICAL TERMS

Absorption:

Sound absorption can be compared with light absorption. Just as sunlight is absorbed by a black velvet jacket, a portion of the sound of an orchestral horn section is absorbed when it is positioned in front of stage curtains.

Diffusion:

Sound diffusion is similar to the effect of light being scattered when it is reflected off a mirrored ball. The sound of a trumpet played into ranks of organ pipes is diffused in many directions.

Echoes:

Echoes are produced when different surfaces reflect sound to a listener long after the direct sound from the original source has already been heard. Trombonists on stage can often produce echoes off the back wall of an auditorium. While both absorbers and diffusers can be used to control echoes, diffusers are generally preferred.

Flutter:

Flutter arises when a sound source is situated between parallel, sound-reflecting surfaces. A rim shot played on a snare drum in an untreated rectangular classroom will produce the prolonged, buzzing sound of flutter. Diffusers are generally the best cure for flutter.

Frequency:

Frequency is the physical description of musical pitch. A thick carpet absorbs a portion of the high-frequency sounds of a piccolo but has little effect on the low-frequency energy of a tuba.

Loudness:

Excessive loudness occurs when an ensemble plays in a room that is too small or acoustically untreated. Absorbers can help control excessive loudness.

Masking:

Masking occurs when a noise conflicts with a musical sound similar or higher in pitch. Building mechanical system noise can easily mask the sound of basses and cellos in an orchestra rehearsal hall.

Reflection:

Sound reflection off a hard, flat surface can be compared to the reflection of light off a mirror. Vocalists often stand back from the edge of a stage so that their sound can be reflected off the platform into the audience.

Reverberation:

Reverberation is the buildup of reflected sound in an enclosure that affects the character and quality of music. The sound of a band in a fieldhouse is reverberant because it is reflected many times before it dies away. The same music played outdoors does not reverberate because there are no walls or ceiling to contain it. Absorbers are required to control excessive reverberation.

Transmission:

Sound transmission can occur through materials as light as air or dense as concrete and steel. The sound of bouncing balls in a gymnasium is transmitted into an adjacent choir room primarily through the building structure while the majority of the sound of a choir heard in an adjoining corridor is transmitted through the gaps around the rehearsal room door.

GLOSSARY OF ELEMENTARY MUSIC TERMS

Cooperative Learning:

Working with others in small groups. Socialization becomes an integral element in this learning process, of which interdependency, individual accountability, and open communication develop in the student.

Dalcroze:

An elementary music philosophy developed by a Swiss music educator, Emile Jaques-Dalcroze. This philosophy is based on the the premise that rhythm is the primary element in music, and musicianship is developed through the rhythm of body movement.

Eclectic:

A common self-descriptive term for elementary music teachers indicating they develop music curriculums by drawing from several philosophies such as Orff, Kodály, Dalcroze, etc.

Kinesthetic Learning:

Using physical motion to instill musical concepts such as beat and rhythm.

Kodály:

An elementary music philosophy developed by the Hungarian composer, Zoltan Kodály. This approach emphasizes music literacy based on the singing of folk songs, and using techniques such as hand signs and rhythmic movements.

MIDI:

An acronym for Musical Instrument Digital Interface. This music industry term describes the ability to link two or more electronic devices to work together musically, such as musical keyboards and computers.

Orff-Schulwerk:

An elementary music philosophy developed in Germany by Carl Orff. This philosophy promotes movement, song, speech and instrument playing integrated together in teaching music.

Orff Instruments:

A set of percussion instruments including xylophones, metallophones and glockenspiels which are used for teaching the elementary music Orff-Schulwerk philosophy.

Suzuki Method:

A music teaching philosophy that emphasizes, at a young age, learning to play music by ear rather than through reading sheet music.

Wenger has a long history of working with experts like yourself

In 1945, Harry Wenger, a band director, began developing products that would help music educators teach, students learn and audience members enjoy. He founded Wenger Corporation on a love of music and a commitment to better music education and performance.

Since that time Wenger Corporation has developed over 600 innovative products and grown to be the leading manufacturer of music education equipment worldwide. No other resource has spent more time studying the facilities and equipment used to teach and perform music. We've learned how the right spaces and the right products come together to create a better music environment. And we've done it by staying in constant communication with the experts – music educators, school administrators and architects.

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Printed in the U.S.A. 11-10/2M/LT0040B