Designing the Freshman Introductory Music Course

♦ Terminology and Definitions

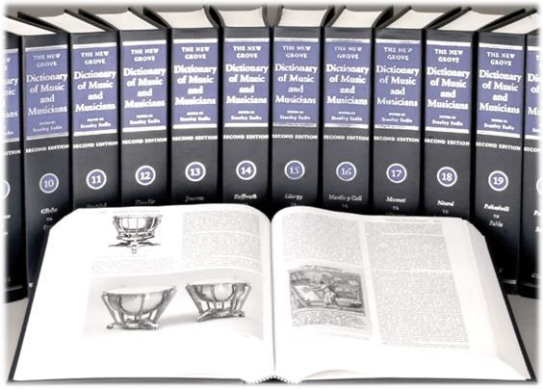
An exploratory design of a collegiate freshmen music major course or module, entitled "Introduction to Collegiate Musical Studies" (…how to get the most out of the undergraduate experience; navigating and maximizing the collegiate encounter)

…representing a prudent and pragmatic content portfolio – what should be in this subjective/objective toolbox?

- ❒ Musicianship Baseline
- ❒ Practicing (philosophy, strategy, outcome)
- ❒ Time Management for the music student
- ❒ Music History: functioning overview & timeline
- ❒ Careers
- ❒ Aesthetics & Related Thought
- ❒ Research Fundamentals and Resources (library)
- ☑ Terminology and Definitions
- ❒ Collaboration & Ensemble Etiquette
- ❒ The Concert Hall
- ❒ Leadership & Entrepreneurship
- ❒ Fundamentals of Acoustics
- ❒ Business Basics
- ❒ Examining Music-Related Technology
- ❒ Health & Wellness
- ❒ Cultural Analysis & Engagement
- ❒ Résumé/Bio Building & Networking
- ❒ Opportunities of the Summer
- ❒ Wrap-up and Review

Contents and Discussion Points:

- Common definitions
- Learning profiles
- Foreign language
- Italian musical terms
- Jazz-/commercial music-related terminology
- Howard Gardner – theory of Multiple Intelligences
- Problem-solving
- Four angles of arts learning
- 20th and 21st century approaches (music education, learning, movement, posture)
- Grading calculations: average (mean) / median / mode



♦ Terminology and Definitions

Beyond the common expectation of a musician's working knowledge of the conventional Italian musical vocabulary associated with classical notation, some of the terminology enumerated below approaches a widespread lexicon ubiquitous to higher education, collegiate musical studies, and relevant associations in the arts. These topical areas are presented in support of the "artist teacher's" pedagogical language, creative interdisciplinary engagement, public speaking, and general student success.

Common Definitions:

Aesthetics:

…a branch of philosophy considering the principles and/or the nature (study and theory) of beauty, art, and taste, and contemplating the creation and appreciation of beauty for its own sake. Aesthetic thought is a weighing and reflecting upon how artists imagine, create, and perform, and how society uses, enjoys, and criticizes art (including responses of feeling, mood, emotion, appreciation, fulfillment, meaning, beliefs, differentiation, interpretive concepts).

Artistry:

…creative skill or ability; quality of effect or workmanship (brilliance, finesse, genius, mastery, talent, virtuosity, creativity, touch & nuance)

Creativity:

…encompasses the ability to discover new and original ideas, connections, and solutions to problems.

…a phenomenon whereby something new and valuable [novel, useful] is formed. The created item may be intangible (idea, scientific theory, musical composition, joke) or a physical object (invention, literary work, painting, musical composition). Does creativity require silence, introspection, reflection?

Critical Thinking:

…objective analysis and evaluation of an issue in order to form a judgment; intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating

Metaphor:

…a figure of speech in which a word or phrase is applied to an object or action to which it is not literally applicable. Similar: imagery, analogy, word painting.

…a thing regarded as representative or symbolic of something else, especially something abstract.

(aid to enhance comparison, illustrate emotion, create vivid imagery, enhance memorable association)

Kinesthetic:

…relating to a person's awareness of the position and movement of the parts of the body by means of sensory organs (proprioceptors) in the muscles and joints – "kinesthetic learning through a physical activity."

…the study of body motion, and of the perception (both conscious and unconscious) of one's own body motions. Kinesthesis is the learning of movements that an individual commonly performs. The individual must repeat the motions that they are trying to learn and perfect many times for this to happen.

While kinesthesis is sometimes described as "muscle memory," muscles do not store memory. Rather, it is the proprioceptors giving information from the muscles to the brain. To do this, the individual must have a sense of the position of their body and how that changes throughout the motor skill they are attempting to perform. While performing the motion, the body uses receptors in the muscles to transfer information to the brain, conveying what the body is doing. Then, after completing the same motor skill numerous times, the brain begins to remember the motion based on the position of the body at a given moment in time.

…*Proprioception* is the sense of self-movement, force, and body position. Proprioception is mediated by *proprioceptors*, a type of sensory receptor, located within muscles, tendons, and joints.

Motivation:

…the desire to act in service of a goal

…a crucial element in setting and attaining objectives; fuels competition and sparks social connection.

Intrinsic and extrinsic values (motivation)

Intrinsic: valued for own sake, inherently rewarding (personal growth; knowledge, skill, purpose, meaningful relationships)

Extrinsic: leading to an outcome or benefit (external factors or validation; wealth, status, image, power, influence, promotion)

…intensity, direction, persistence.

[Recognition and appreciation; meaning and purpose; professional development opportunities – catalyst, desire, encouragement, impetus, incentive, inclination, interest]

… the 3 motivators: achievement, affiliation, power

Pedagogy:

…the method and practice of teaching, especially as an academic subject or theoretical concept

...the study of how knowledge and skills are imparted in an educational context

…the art, science, or profession of teaching

…the study of teaching methods, including the aims of education and the ways in which such goals may be achieved

…education, the profession and science of teaching (pedagogue = teacher)

If *teaching* is the act of encouraging learning activities through discovery and acquired knowledge, *pedagogy* is the method of teaching, both as an academic subject or theoretical concept.

Entrepreneurship:

…the ability and readiness to develop, organize, and run a business enterprise, alongside any of its uncertainties, in order to make a profit. Most prominent example – starting a new business.

… a tendency to be creative and a wish to work for yourself in your own ventures. The process of setting up a business.

…commonly seen as an innovator, a source of new ideas, goods, services, and business/or procedures.

Four core **Learning Profiles**:

-Auditory learners benefit from listening to the information presented. They learn orally from both listening to instruction from the teacher and audio recordings.

-Tactile/kinesthetic learners absorb knowledge through touch and movement. They prefer to work with hands-on devices and learning aids.

-Visual learners prefer to see information in order to visualize the relationship between ideas and concepts to understand them.

-Reading and writing learners prefer to take on information by reading texts. They can further absorb information by condensing and rephrasing it.

Foreign Language:

Italian terminology regarding speed in music

- *Accelerando* (accelerating): accelerating
- *Accompagnato* (accompanied): the accompaniment must follow the singer or instrumentalist who can speed up or slow down at will
- *Adagio* (at ease): slow and easy (but not as slow as largo)
- *Allegro* (joyful): lively and fast
- *Allegretto* (a little bit joyful): slightly less joyful than allegro
- *Andante* (walking): at a walking pace, moderately slow tempo
- *Andantino* (a little bit walking): less of a walking pace than andante
- *Grave* (grave, solemn): slow and solemn tempo

- *Lento* (slow): slow tempo
- *Moderato* (moderate): moderate tempo
- *Mosso* (moved): agitated
- *Rallentando* (slowing down): decelerating
- *Tempo* (time): the speed of music, e.g. 120 BPM (beats per minute)
- *Tenuto* (sustained): holding or sustaining a single note
- *Vivace* (vivacious): fast and lively tempo (quicker than allegro)

Dynamic terminology with unique abbreviations

- *Pianissimo* (very soft) ***pp***
- *Piano* (soft) ***p***
- *Mezzo piano* (moderately soft) ***mp***
- *Mezzo forte* (moderately loud) ***mf***
- *Forte* (loud) ***f***
- *Fortissimo* (very loud) ***ff***
- *Crescendo* (gradually louder) ***cresc.*** or <
- *Diminuendo* (gradually softer) ***dim.*** or >
- *Fortepiano* (loud, then immediately soft) ***fp***
- *Rinforzando* (reinforced) ***rfz*** or ***rf***

Terminology related to performance techniques

- *Arpeggio*: chord notes played in succession rather than simultaneously
- *Glissando*: a continuous slide from one note to another
- *Legato*: notes played with a smooth connection between them
- *Mano destra*: right hand
- *Mano sinistra*: left hand
- *Pizzicato*: plucked with the finger rather than bowed
- *Portamento*: a smooth slide from one note to another
- *Staccato*: shortened and distinctly separated notes
- *Staccatissimo*: shortened and extremely separated notes
- *Vibrato*: a rapid, repeated slight change in the pitch of a note

Frequently used Italian musical terms for mood

- *Agitato* (agitated)
- *Animato* (animated, lively)
- *Cantabile* (in a singing style)
- *Con amore* (with love)
- *Con brio* (with spirit, with vigor)
- *Con fuoco* (with fiery manner)
- *Dolce* (sweet)
- *Doloroso* (sorrowful)
- *Energico* (energetic, forceful)
- *Grazioso* (graceful)
- *Leggero* (light, nimble)
- *Maestoso* (majestic)
- *Risoluto* (decisive, strong)
- *Scherzando* (playful)
- *Tranquillo* (calm)

Some Italian music terms, such as *tempo*, *adagio*, *allegretto*, and *rallentando*, are solely used when writing or reading music. However, other Italian terms, such as *concerto*, *piano*, *soprano*, and *opera*, were so prevalent that the terms earned currency within the English common musical lexicon.

Italian Musical Terms (internet search)

Musical Term	English	Information; Examples of Usage
a	at; to; by; for; in	e.g. *a tempo* = in time (back to the previous speed)
a capella	unaccompanied	Usually found in choral music
a piacere	at pleasure	The performer is not bound to follow the given rhythm exactly
accelerando	gradually getting faster	An increase in the speed of the music
ad libitum	at choice; freely	1) A passage may be performed freely 2) An instrument in a score may be omitted
adagio	slowly	Often indicates a speed somewhere between *andante* and *largo*
agitato	agitated; restless	
al; alla	in the manner of	e.g. *alla marcia* = in the style of a march
alla breve	with a half-note beat	
allargando	broadening	
allegretto	fairly quick	Faster than *Andante* and usually slower than *Allegro*
allegro	fast	
alt	high	"in alt" is used in vocal music to refer to notes in the octave above the treble stave. *Altissimo* = highest register
amabile	amiable; pleasant	
amore	love	
andante	walking speed	Moderately slow
andantino	like walking speed	Either slightly slower or slightly faster than *andante*. It is ambiguous.
anima	soul; spirit	e.g. *con anima* = with spirit
animando	becoming more lively	
animato	animated; lively	
appassionato	with passion	
arco	with the bow	
arioso	like an aria	Play in the style of an *aria* (singing)
assai	very	e.g. *allegro assai* = very fast
attacca	go straight on; without pause	Indicates an immediate move to the next section of music
ben	well	e.g. *ben marcato* = well marked
bis	twice	Indicates the repetition of a short passage
bravura	skill; brilliance	
brio	vigor	e.g. *con brio* = with vigor
calando	getting softer; dying away	Usually includes slowing down
cantabile	in a singing style	
cantando	singing	
capriccioso	in a whimsical or fanciful style	
col; *colla*; *colle*	with	e.g. *colla voce* = with the voice
come	as; similar to	e.g. *come prima* = as before
comodo	convenient	e.g. *tempo comodo* = at a comfortable speed
con	with	e.g. *con moto* = with movement
crescendo	gradually getting louder	
da capo	from the beginning	An instruction to repeat the music from the beginning
dal segno	from the sign	An instruction to repeat the music from the sign
deciso	with determination	
decrescendo	gradually getting softer	
delicato	delicate	
diminuendo	gradually getting softer	

dolce	sweetly	e.g. *dolcissimo* = as sweet as possible
dolente	sad; mournful	
dolore	grief	e.g. *doloroso* = sorrowful
doloroso	sorrowful	
doppio movimento	twice as fast	
e; *ed*	and	
energico	energetic	
espressivo	expressive	
facile	easy	
felice	happy	
fermata	pause	
feroce	fierce	
fine	the end	Often used in conjunction with “da capo” or “dal segno” to indicate where to end the piece after repeating. e.g. *al fine* = to the end
forte	loud; strong	
fortepiano	loud then immediately soft	
fortissimo	very loud	
forza	force	e.g. *forzando* (*fz*) = strongly accented
fuoco	fire	
furioso	furious	
giocoso	playful; humorous	
giusto	proper; exact	
grandioso	grandly	
grave	very slow; solemn	
grazioso	graceful	
impetuoso	impetuous	
incalzando	getting quicker	
lacrimoso	sad	
largamente	broadly	
larghetto	rather slow	Slightly faster than *largo*
largo	rather slow; stately	
legato	smoothly	Indicates no break between notes, connected
leggiero	light; nimble	
lento	slow	
liberamente	freely	
l'istesso	the same	e.g. *l'istesso tempo* = at the same speed
loco	at the normal pitch	Used to cancel an 8va direction. Also used to confirm that 8va is not intended.
lunga	long	e.g. *lunga pausa* = long pause
ma	but	e.g. *allegro ma non troppo* = quick but not too quick
maestoso	majestic	
marcato	emphatic; accented	
marziale	in a military style	
meno	less	e.g. *meno forte* = less loud
mezzoforte	moderately loud	
mezzopiano	moderately soft	
misterioso	mysterious	
misura	measure	e.g. *alla misura* = in strict time; *senza misura* = in free time
moderato	moderate speed	e.g. *allegro moderato* = moderately fast
molto	very; much	e.g. *allegro molto* = very fast

morendo	dying away	
mosso	movement, moving	
moto	movement, moving	
niente	nothing	
non	not	
ossia	or; alternatively	Often used to indicate a simpler or altered version of a difficult passage
ostinato	persistent	Generally refers to a persistently repeated rhythmic or melodic figure
parlando	speaking	A direction for a singer to sing in a conversational style
patetico	with deep feeling	
pausa	pause	
per	by; for; to	
pesante	heavy	
pianissimo	very soft	
piano	soft	
piú	more	e.g. *piú forte* = louder
pizzicato	plucked	An instruction to pluck the strings, rather than bow them
placido	calm; peaceful	
poco	a little	e.g. *poco a poco* = little by little
presto	very fast	
prima	first	(Prima; Primo) e.g. *prima volta* = first time; *tempo primo* = revert to the speed at the beginning
quasi	as if; resembling	e.g. *quasi recitativo* = like a recitative
rallentando	gradually getting slower	
rigoroso	strict	
rinforzando	reinforcing	
risoluto	bold; strong	
ritardando	gradually getting slower	
ritenuto	held back	
ritmico	rhythmically	
rubato	with some freedom of time	
scherzando	playful; joking	
scherzo	joke; jest	A movement in a full work, generally light and humorous in nature
seconda	second	
sempre	always	e.g. *sempre staccato* = always detached
senza	without	e.g. *senza misura* = freely (not in time; without measure)
segue	go straight on	
sforzando	forced; accented	
simile (*sim.*)	in the same way	
smorzando	dying away	Both tone and speed
solenne	solemn; grave	
sonoro	resonant; with rich tone	
sopra	above	
sospirando	sighing	
sostenuto	sustained	
sotto	below	e.g. *sotto voce* = in an undertone (half voice)
spirito	spirited	
staccato	detached	
stretto	quickening the speed	Also means overlapping entries of a fugue subject
stringendo	gradually getting faster	

subito	suddenly	
tacet	silent	A direction: a particular part has nothing to play in a section of music
tempo	speed	e.g. *a tempo* = return to the previous speed, after a slowing down or speeding up
tenuto	held	
tranquillo	calm	
triste	sad; sorrowful	
troppo	too much	e.g. *allegro ma non troppo* = fast, but not too fast
tutti	all; everyone	
veloce	swift	
vigoroso	vigorous; strong	
vivace	lively	
vivo	lively	
voce	voice	
volante	flying; fast	
volta	time	e.g. *prima volta* = first time

Foreign Terms – instrument specific (percussion example):

COMMON FOREIGN PERCUSSION TERMS*

ENGLISH	ITALIAN	FRENCH	GERMAN
Antique Cymbals	Crotali	Crotales	Antiken Zimbeln
Anvil	Incudine	Enclume	Amboss
Bass Drum	Gran Casse	Grosse Caisse	Grosse Trommel
Castanets	Castagnetta	Castagnettes	Kastagnetten
Chimes, (Tubular Bells)	Campane, (Campanelle)	Closhes	Glocken
Orchestra Bells	Campanelli	Jeu de Timbres	Glockenspiel
Cowbell	Cencerro	Cloche a'Vache	Almenglock, Amglock.
Cymbals	Piatti, Cinelli	Cymbales	Becken, Tellern
Field Drum	Tamburo Militare	Tambour Militare	Militar Trommel
Guiro (Gourd)	Raspe	Rape	Raspel
Timpani, (Kettledrums)	Timpani	Timbales	Pauken
Marimba	Marimba	Marimba	Marimbaphon
Percussion	Percussione	Batterie	Schlagzeug
Snare Drum	Tamburo	Caisse Claire	Kleine Trommel
Tambourine	Tamburo Basco	Tambour de Basque	Tamburin, Schellentrommel
Tenor Drum	Tamburo Rullante	Caisse Roulante	Ruhrtrommel
Whip	Frusta	Fouet	Holzklapper
Woodblock	Cassa di Legno	Bloc de Bois	Holztrommel
Xylophone	Xylofono	Xylophone	Holzharmonika, Strohfidel

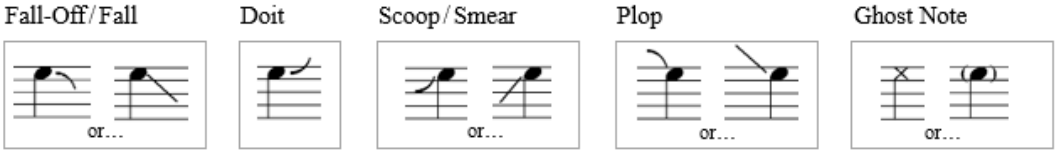
MISCELLANEOUS FOREIGN TERMINOLOGY

ENGLISH	ITALIAN	FRENCH	GERMAN
Suspended Cymbals	Piatto sospeso	Cymbal suspendue	Becken hangend
2 Cymbals	a 2, a due due piatti	a l'ordinaire, avec plateaux	gewohnlich, mit tellern
hit with ...	colpo con ...	frappee avec ...	mit dem ...
Mallet	Mazza	Mailoche	Klopper
Stick (or) Wood Stick	Bacchetta Bachetta di Legno	Baquette Mailoche de Bois, Tampon	Schlagel Holzschlagel
Brush (Wire)	Verge Scovolo	Brosse	Stahlburste
Timpani Mallet	Bachetta di Timpani	Mailoche de Timbales	Paukenschlagel
hard	dure	dur	schwerer
soft	molle	douce	weicher
Let Ring	Lesciare Vibrare	Laissez Vibrer	Klingen Lassen
dampened	secco	etouffe	dampfen
muffled	con sordino coperto velato	sons voiles sourdine voilee	abdampfen bedeckt gedampft
muffle off	modo ordinario senza sordino	naturel sans sourdine	gewohnlich dampfung ab
at the edge	all' estremita	au bord	Am rand

* For further information: Lang, Morris and Spivack, Larry. Dictionary of Percussion Terms.

Jazz-/Commercial Music-Related Terminology

- *Fall-Off* / *Fall* / *Bend*: a falling (or lowering) of pitch after the written note is sounded
- *Doit*: a rising of pitch after the written note is sounded
- *Scoop* / *Smear* / *Lift*: approaching the written note from below (the pitch rise must occur before the written note's rhythmic placement)
- *Plop*: approaching the written note from above (the pitch fall must occur before the written note's rhythmic placement)
- *Ghost Note*: a note with rhythmic value, but little discernible pitch; rhythmic sounds that are very soft (almost inaudible)—muted, dead, or false—adding a sense of groove, texture, or rhythmic flow



Theory of Multiple Intelligences

Intelligence: the mental capacity to learn, understand, reason, make judgments, and form opinions that are based on reason; aptitude in comprehending truths, relationships, facts, meanings.

Howard Gardner (b. 1943, Harvard educated and faculty member, psychologist-education researcher) proposed the theory of multiple intelligences [MI] which gained wide acceptance in the education world. In 1983, he published his book, *Frames of Mind: The Theory of Multiple Intelligences*.

MI theory proposed that intelligence is made up of at least eight distinct kinds of intelligence, each mixed within the individual to a greater or lesser degree. These types help determine a person's problem-solving capabilities.

- Musical-Rhythmic
- Visual-Spatial
- Verbal-Linguistic
- Logical-Mathematical
- Bodily (Body)-Kinesthetic
- Interpersonal (Social)
- Intrapersonal (Self)
- Naturalistic

[Intelligences added later: Existential (profound humanistic questioning); Moral (ethical concepts)]

Musical intelligence is a discrete kind. Artistic learning (music and other arts) can be divided into four essential roles (every student should experience and develop these skills). These roles are distinct and complementary – a series of activities for fully rounded learning: creator, performer, audience, and critic.

Creator – in music, the composer. (There exits creativity in music performance also.) As a primary creator, the composer focuses on choice processes and kinds of cognitive tasks engaged in that are different from the performer.

Performer – beyond interpretative work, the role includes personal courage, technical skills, inner communicative capacity, effective use of rehearsal, stamina and focus.

Audience – beyond knowing when to clap, skills include the ability of the heart to set aside preconceptions and prejudices and to encounter something new with openness and a healthy curiosity regarding differences. Also included here: making personally relevant connections, skills of the spirit and of emotional memory and attention.

Critic – skills apply previous knowledge, placing the work under focus in relation to history and knowledge of the art form. The critic observes details and compares with accuracy, illuminating the work through a variety of analytic processes.

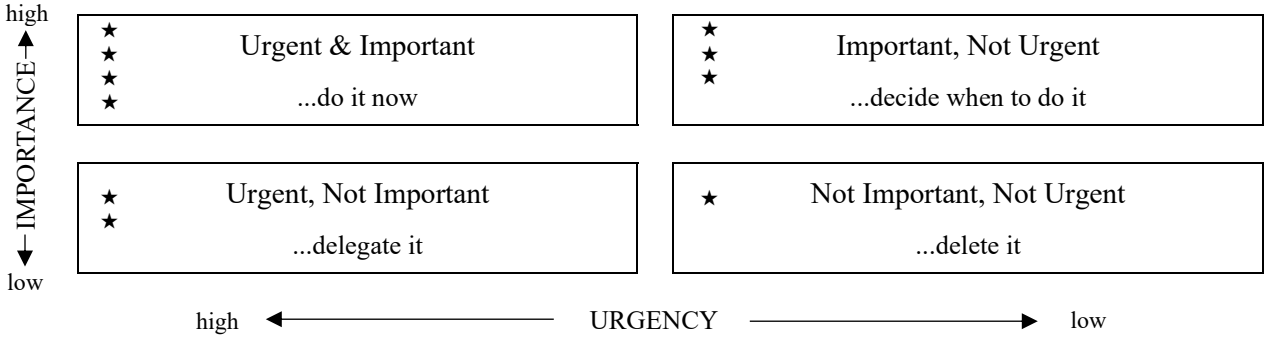
Problem-Solving

Three approaches to general problem solving techniques (among many) include:

a) 4 stages:
   1) understanding
   2) brainstorming
   3) strategy selection
   4) solution implementation

b) 5 stages:
   1) list obstacles
   2) find opportunities
   3) reverse engineer
   4) open-minded exploration
   5) uninterested observer

c) Eisenhower matrix (time management; deadlines, consequences, long-term, short-term):



Four Angles of Arts Learning

The "Four Angles of Arts Learning" typically refer to the four key aspects of studying and practicing art, which are: Creating, Responding, Connecting, and Presenting; essentially encompassing the process of making art, interpreting and analyzing art, understanding the social context of art, and sharing one's artistic work with others.

The Four Angles:

- **Creating**: hands-on production of art, including developing technical skills, experimenting with materials [repertoire, genre], and exploring different artistic processes.
- **Responding**: analyzing and interpreting existing artworks, considering elements such as composition, color, and subject matter, and forming personal responses to what is seen (heard).
- **Connecting**: exploring broader social and cultural context of art, historical influences, artist intentions, and the relationship between art and society.
- **Presenting**: sharing artistic work with others through exhibitions, performances, or presentations, possibly accompanied by artist statements or explanations.

Version 2: Demonstration/Lecture, Students-at-Work, Critique, and Performance/Exhibition

- **Demonstration/Lecture**: teacher provides models, explanations, information
- **Students-at-Work**: students engage in the art-making process
- **Critique**: reflecting on work, feedback, revising work
- **Performance/Exhibition**: showcasing student work; performance, display, or presentation

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20th and 21st Century Approaches to music education, learning, movement, posture

Dalcroze method (eurhythmics) in music education (Émile Jaques-Dalcroze, 1865-1950; Swiss): developed in the early 20th century – learning and experiencing music through movement and

kinesthetic concepts.

Kodály method (Zoltán Kodály, 1882-1967; Hungary) in music education: emphasizes physical instruction and response to music (child experiences: listening, singing, or movement).

Orff Schulwerk (Carl Orff, 1895-1982; German) in music education: combining music, movement, drama, and speech; exploration and music making through a child's world of play – learn by doing (solo and group) with use of melodic and rhythmic percussion instruments.

Suzuki method (Shinichi Suzuki, 1898-1998; Japan) in music education: creating music-learning environment similar to learning a native language ("mother tongue" philosophy), primarily with violin – starting very early, learning by ear and imitation, scaled-down instrument sizes, repetition, mimicking (listening), memorization, activity with adult. No reading of musical notation.

Gordon Music Learning Theory in music education: provides teachers with a method for teaching musicianship through *audiation* (comprehension and internal realization of music – "audiation is to music what thought is to language"), including concepts of discrimination and inference learning (learning based on behavioral and cognitive psychology).

Solfège (solfeggio): an historic system of mnemonic devices (syllables; do-re-mi-fa-sol-la-ti – a naming of the notes of the scale) used for musical audiation of pitches, teaching specific relationships between notes, and for training aural skills and sight-singing (sight-reading) of Western music.

Kindermusik: an early childhood music program (or movement) to help children develop social, emotional, and cognitive skills.

Alexander Technique: learning body awareness, improve posture and enhance movement efficiency, establish mindfulness of body relationships, unlearning "poor" habits.

Ergonomics (human factors): the science of designing and applying principles concerned with interactions between humans and the physical aspects of processes, products, or systems – in order to optimize human well-being and performance.

Manhattanville Music Curriculum Project (MMCP, 1970) – alternative educational model (grades 3-12)
…artistic relevance; personal relevance; social relevance / acting as musicians, not just as spectators

The four behavioral objectives, through "doing" in performing and creating music (presenting music as changing and evolving rather than "static"), aligned with the MMCP process of learning are:

- Cognitive – using knowledge to solve problems
- Attitudinal – students excited about their own creative musical potential and their aesthetic sensitivity to music
- Skill - *Dexterous* movement behaviors in performing on instruments
  - *Translative* notational skill to perform music
  - *Aural* music listening behaviors
- Aesthetic – understanding intrinsic meaning in music

Grading Calculations (common terms in education): Average (Mean) / Median / Mode

When tests or test scores are returned to students in a classroom, following a course-wide assessment, students may benefit from knowing their statistical status within the particular framework of the assessment exercise (perhaps indicating to each student a relatively high achievement, a middle-ground standing, or a need to re-focus their efforts toward an improving success rate in the class).

Median vs. Average – tools to look for the "central tendency" of a set of statistical scores

The **average** (also known as "mean") is calculated by adding up all of the individual values and dividing this total by the number of observations. The **median** is calculated by taking the "middle" value (arranging numbers from smallest to largest), the value for which half of the observations are larger and half are smaller.

The **median** is the exact middle value, which separates lower and higher values into two groups. The **average** is the sum of all the values, divided by the number of values.

While an average has traditionally been a popular measure of a mid-point in a sample (when the data is fairly uniform), it has the disadvantage of being affected by any single value being too high or too low compared to the rest of the sample (the data is skewed or there are outliers). This is why a median is sometimes taken as a better measure of a mid-point. (The average/mean is not a robust tool since it is largely influenced by outliers.)

Examples:

Ten student grades on a given test are as follows: 55 78 82 86 86 89 92 94 99 100

Median (exact middle):

55 78 82 86 **86 89** 92 94 99 100

[86 + 89 = 175; 175 ÷ 2 numbers = 87.5 is the *median*]

Average (or Mean):

55 + 78 + 82 + 86 + 86 + 89 + 92 + 94 + 99 + 100 = 772

[772 ÷ 10 = 77.2 is the *average*]

Mode is the value that occurs most often (most frequently repeated) in a set.

In the example above, 86 is the *mode*.

Average	= 77.2	(all 10 test scores added together and divided by 10)
Median	= 87.5	(the middle value of all test scores, from lowest to highest)
Mode	= 86.0	(most frequently repeated score on the test)