


11-21-2022

## Medieval Methods: Guido D'Arezzo's Innovative Approaches to Music Education

Lydia C. Kee  
*Cedarville University*

Follow this and additional works at: <https://digitalcommons.cedarville.edu/musicalofferings>

 Part of the [Art Education Commons](#), [Composition Commons](#), [Early Childhood Education Commons](#), [Fine Arts Commons](#), [Medieval Studies Commons](#), [Music Education Commons](#), [Musicology Commons](#), [Music Pedagogy Commons](#), [Music Performance Commons](#), and the [Music Theory Commons](#)

[DigitalCommons@Cedarville](#) provides a publication platform for fully open access journals, which means that all articles are available on the Internet to all users immediately upon publication. However, the opinions and sentiments expressed by the authors of articles published in our journals do not necessarily indicate the endorsement or reflect the views of [DigitalCommons@Cedarville](#), the Centennial Library, or Cedarville University and its employees. The authors are solely responsible for the content of their work. Please address questions to [dc@cedarville.edu](mailto:dc@cedarville.edu).

### Recommended Citation

Kee, Lydia C. (2022) "Medieval Methods: Guido D'Arezzo's Innovative Approaches to Music Education," *Musical Offerings*: Vol. 13: No. 2, Article 1.

DOI: 10.15385/jmo.2022.13.2.1

Available at: <https://digitalcommons.cedarville.edu/musicalofferings/vol13/iss2/1>

---

# Medieval Methods: Guido D'Arezzo's Innovative Approaches to Music Education

## Document Type

Article

## Abstract

Music education has been influenced by many people throughout history, but arguably none of them have done so as much as the monk, Guido D'Arezzo. His teaching methods have been embraced and developed by music educators throughout the centuries. For example, it is recorded that Guido was the first to use the five-line staff as we use it today. This was especially groundbreaking in a world of rote memorization. Today it is used globally in music education. The roots of solfege are also found in Guido's writings; his syllables have been adapted by Zoltan Kodály. Not only that, but John Curwen's hand signs are derivative of the so-called Guidonian Hand. Guido's writings also provide ideas on including composition in teaching music. These ideas have been adapted by John Feierabend, a proponent of improvisation in the music classroom. Therefore, many of our modern practices can be traced back to the roots of Guido's ingenuity.

## Keywords

Guido D'Arezzo, Guido of Arezzo, Music, Education, Music Education, Medieval, Middle Ages, Notation, Music Staff, Composition, Solfege, Johannes Tinctoris, John Curwen, Kodaly, John Feierabend

## Creative Commons License



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 4.0 License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

## Medieval Methods: Guido d'Arezzo's Innovative Approaches to Music Education

Lydia Kee  
*Cedarville University*

Music teachers have been developing creative and effective means of teaching their students for hundreds of years. However, they did not produce their ideas in a vacuum. It may surprise readers to find that some of today's most accepted methods find their origin in the writings of eleventh-century monk and music teacher Guido d'Arezzo. Living from about 995 to 1050, his developments have proven to be timeless and useful in the classroom.<sup>1</sup> His contributions include the five-line musical staff, which is standard in both professional and educational settings. He also proved how far ahead of his time he was by using composition in the classroom, encouraging his students and other teachers of music to create their own melodies. His clearest impact on music education was in the solfege system's first iteration of syllables. Later, medieval and modern figures in music education, such as Johannes Tinctoris, Zoltán Kodály, and John Curwen, adopted and improved upon techniques often attributed to him. Guido d'Arezzo's influence on the staff, composition in education, and solfege created breakthroughs in the western world of music education.

The written musical staff, as Guido described in the *Micrologus* (c. 1026–1032), has arguably made the largest impact on all of western music. Without it, musicians and singers spent (and in some cultures, still spend) much more time transmitting music orally.<sup>2</sup> Churches in the Middle Ages faced this same issue when trying to teach Gregorian chant to singers. Guido was disgusted with the inefficient way monks memorized lines of Gregorian chant. He wrote, “Marvelous singers, and singers’ pupils, though they sing every day for hundreds of years, will never sing one antiphon, not even a short one, of themselves, without a master, losing time enough in singing to have learned thoroughly both

---

<sup>1</sup> Miller, “Guido,” 240.

<sup>2</sup> Palisca, 50.

sacred and secular letters.”<sup>3</sup> He also famously quipped: “In our time, of all men, singers are the most foolish.”<sup>4</sup> According to the *Dialogus de musica*, some singers would “devote fifty years of their lives to the practice and study of singing.”<sup>5</sup> Those who worked the hardest to learn and memorize music would gain the least and neglect other studies, such as the study of scripture, in the process. While some forms of notation did exist before Guido, such as heightened neumes, John of Affligem, a fan of Guido’s work, said in his *De musica* (written c. 1090–1120), that they were unhelpful in teaching music and would actually “promote error rather than knowledge.”<sup>6</sup> Up to this point, learning music was all by ear, and visual learning tools were not accurate enough to be helpful to those who did not already know the music.

Thus, Guido’s invention of the staff provided a precise method of learning music. His notation put into use both the lines and spaces of the staff; in the past, lines had been used as a type of tablature, found in earlier Carolingian treatises, but not the spaces. Guido placed letter names on the left of each line and space, and each line and space would indicate the same pitch every time. Lines for F and C were also colored red and yellow, respectively.<sup>7</sup> The use of an x-axis for time and a y-axis for pitch gave a stable and visual reference for the music that was difficult to learn aurally.

This invention affected the music world profoundly, as Guido’s *Epistola ad Michahalem* (probably written shortly after the summer of 1032) explains.<sup>8</sup> It describes the usefulness of the staff as well as Pope John XIX’s (served 1024–1033) excitement and approval at seeing the system and how he even attempted to learn a song using it.<sup>9</sup> Guido was also invited to teach the Roman clergy how to read from the staff.<sup>10</sup> He argued that melodies could be taught faster using this method. As a result, monks would have more time to spend on prayer, reciting psalms, and other studies.<sup>11</sup> When John of Affligem used Guido’s method, he noted that it enabled students to do what they could not do on their own before:

---

<sup>3</sup> Guido, “Prologus,” quoted in Miller, “Guido,” 243.

<sup>4</sup> Pesce, 407.

<sup>5</sup> Page, 444.

<sup>6</sup> John of Affligem quoted in Page, 467.

<sup>7</sup> Page, 455.

<sup>8</sup> Pesce, 2.

<sup>9</sup> Pesce, 1.

<sup>10</sup> Page, 459.

<sup>11</sup> Page, 445.

learn a melody without a teacher. Not only that, but the notated music could easily put to rest disputes over the correct way to sing a chant. He also asserted that this would make music available not only to a small “circle” of people who studied and practiced music, but also those in the congregation of a church.<sup>12</sup> When put into practice by Rudolf of Sint Truiden (c. 1070–1138), Abbot Theuderic was impressed.<sup>13</sup> He wrote that although this music teacher did not have an excellent voice and did not even speak the language of his students, he was able to teach them how to sing “straight away, only by looking, with art and yet with a silent master, what they had never learned by hearing.”<sup>14</sup> Guido describes the written score as a teacher, which he employed to teach a new chant to choirboys in three days or less.<sup>15</sup> This highly effective method of learning music is still used to this day, not only to encourage memorization, or to teach students in school, but also to develop complexity in compositions.

While Guido encouraged the use of the five-line staff, his focus was always on the creation of music itself. Today, the use of composition in the classroom is finally being acknowledged as a valuable method of learning music. Guido sought to use composition to encourage students’ musical intuition.<sup>16</sup> In one chapter titled, “That anything that is spoken can be made into music,” Guido explains that it is possible to begin an original composition based on a text if one assigns a note name to each of the five vowels. He admits, however, that this hardly creates a well-developed tune, as it only uses five notes.<sup>17</sup> Guido elaborates by saying that to add complexity to the piece, one could assign another possible note for each vowel. Beyond this, the composing student, when writing cadences, “should shake himself free from rules learned, and before everything should consult his ear and thus suit the cadence to the melody.”<sup>18</sup> Through this exercise, the student has the opportunity to

---

<sup>12</sup> Page, 467.

<sup>13</sup> Anderson, n.p.

<sup>14</sup> Page, 478.

<sup>15</sup> Pesce, 463.

<sup>16</sup> Van Waesberghe, 58. This idea is outlined in the seventeenth chapter of the *Micrologus*, which is a chapter that has created much confusion, since many original transcripts are difficult to read and the content does not fully align with its title.

<sup>17</sup> Guido, “Micrologus,” 75. The author would like to note that Guido’s guidelines are not unlike what teachers of music composition might do to help students begin their projects today.

<sup>18</sup> Van Waesberghe, 60.

exercise every aural skill he has learned and compose something tuneful and beautiful, with guidance from a teacher. Earlier in the *Micrologus*, Guido gives guidelines for how to write a good melody, addressing rhythm, pitch movement and cadences. He also gives instructions pertaining to phrases of text aligning with melody.<sup>19</sup> However, despite the guidelines, Guido notes that composing should allow a student to express his own creativity:

In accordance with the diversity of people and minds, what displeases one is cherished by another; and, anon, things that blend together delight this man, whereas that one prefers variety; one seeks a homogeneity and blandness in keeping with his pleasure-loving mind; another, since he is serious-minded, is pleased by staid strains; while another, as if distracted, feeds on studied and intricate contortions; and each proclaims that music as much the better sounding which suits the innate character of his own mind.<sup>20</sup>

Music teachers in church or public-school contexts historically have not emphasized composition—that was left to the elite, private students of music who were taught individually. However, the importance of using composition in music education has slowly but surely emerged in the United States since 1959 when the Ford Foundation created the Young Composers Project to encourage arts appreciation in the US.<sup>21</sup> Yet for much of America’s history music educators have not been taught how to teach composition, or even composed music themselves. Elizabeth A. Menard writes, “Colleges and universities tend to emphasize performance, and most do not offer teacher training in music composition instruction.”<sup>22</sup> Yet in recent years, music teachers have been recognizing the importance of composition in the classroom as the idea has gained credibility nationally.

Guido’s innovative use of composition in music education has been applied to younger students by pedagogue and music education researcher Dr. John Feierabend. Young children, with whom Feierabend specializes, are still in the beginning stages of developing their aural and singing skills, distinguishing between singing and talking. He uses the

---

<sup>19</sup> Guido, “*Micrologus*,” 71–72.

<sup>20</sup> Guido, “*Micrologus*,” 76–77.

<sup>21</sup> Menard, 115.

<sup>22</sup> Menard, 116.

word “arioso” for an exercise that he does with young students, in which they are encouraged to improvise a tune themselves. “The highest form of . . . musical thinking is original thought,” said Feierabend in an interview in 2019.<sup>23</sup> He compares improvisation and composition to spoken language and written language. If students can speak and “improvise” sentences, they will eventually be able to write the words. In the same way, encouraging students to improvise tunes now will give them the creative skills to write their ideas down in composition later.<sup>24</sup> Some young students will simply alternate between two pitches (Feierabend calls this recitative), but encouraging them to sing more pitches than two develops their ability to compose more complex melodies. This can be encouraged by introducing students to more and more songs, which give them patterns to imitate in their own compositions. Ultimately, this approach to music adds a new dimension to learning music—namely the creative dimension—thus enriching a student’s musical education.

Composition is also deeply enriching for older students of music. In Menard’s 2015 study, two high school classes implemented a compositional aspect to their curriculum. The teachers and students involved greatly appreciated the experience and attested that it added much value to their understanding of music. Although the band director and his students both worried that taking time out of band class would hinder them, the results of the study showed that “students’ comments relating to thinking differently about the music they perform after composing lend support to the idea that adding composition instruction to the curriculum may not diminish a group’s performance but might actually enhance it.”<sup>25</sup> For many students, Menard writes, composing also revealed gaps in their “fundamental musical knowledge”:

Band students commented in journals and interviews that they had “musical ideas in their heads,” but they seemed challenged by how to get those ideas on to the paper. . . . I believe this lack of fundamental music knowledge reflects a need for development in both aural skill and notation ability. Providing this knowledge for our students is critical to musical literacy.<sup>26</sup>

---

<sup>23</sup> Hawley, 6:42–6:47.

<sup>24</sup> Hawley, 8:06–8:46.

<sup>25</sup> Menard, 131.

<sup>26</sup> Menard, 133.

Thus, composition involves very important musical skills that any student of music should attain, making them better musicians overall.



Figure 1. A manuscript of the hymn “Ut queant laxis.”<sup>27</sup>

Not only that, but it gives weaker performers the opportunity to have meaningful musical experiences. One surprising finding of Menard’s study was that “success in composition did not always relate to high levels of skill in performance, identifying students with exceptionally creative ideas as not always their ‘top performers.’”<sup>28</sup> Often many of the best composers were only average performers, revealing how composition tapped into the creative minds of students who otherwise may not have even considered it. Menard writes, “this implied a responsibility for music educators to provide a variety of musical opportunities in order to reach more students.”<sup>29</sup>

Guido’s ideas are finally coming to recognition in America—and even if his name is not acknowledged, his spirit is. In the National Association

<sup>27</sup> Ostrowski, n.p.

<sup>28</sup> Menard, 131.

<sup>29</sup> Menard, 131.



for Music Education 2014 Music Standards, composition is included as an important part of the national music curriculum for students in kindergarten through eighth grade.<sup>30</sup> The recent recognition of the great potential of composition in the classroom reveals how far Guido was ahead of his time. Not only that, but he even provided other tools to help music teachers in the future.

Guido unintentionally invented one of today's most popular ways for students to learn the pitches of the scale when he created solfege. While he did not invent the term, nor are we sure that he intended it to become so widespread, the origins of it are nevertheless found in his *Epistola*.<sup>31</sup> Initially, his instruction was to commit each note of the scale to memory by "[marking] off that pitch or neume at the beginning of some very familiar melody, and to retain any pitch whatsoever in your memory, you ought to have readily at hand a melody of this kind which begins from the same pitch."<sup>32</sup> Guido's example of choice was the hymn "Ut queant laxis," (see Figure 1) in which each phrase of the short hymn began on a successive note in the six-note scale (or the notes of the hexachord).

The Hymn was composed by Paul the Deacon, monk of Monte Cassino (740-801) for the patronal feast of his monastery. Another Italian monk, Guy of Arezzo (995-1050) noticing, that the initial syllable of each half-line was one degree of the scale higher than that which preceded it, gave these degrees the names of the corresponding syllables : **Ut, ré, mi, fa, sol, la**; completing them with **si (Sancte Joannes)**. Hence the present sol-fa scale.

Hymn. II  $\text{C}$

**U** **T** qué-ant laxis **re**sonáre

i. O for thy spirit,  
holy John, to chasten  
lips sin-polluted, fetter-

ffbris **Mi**-ra gestó-rum **fa**mu-li tu-ó-rum, **Sól**-ve pollú-

ed tongues to loosen;  
so by thy children  
might thy deeds of  
wonder meetly be  
chanted.

ti **la**bi-i re-átum, **S**áncte **J**o-ánes.

**Figure 2.** A transcription of *Ut queant laxis*. Here the syllables used are clearly indicated for reference.<sup>33</sup>

<sup>30</sup> National Association for Music Education.

<sup>31</sup> Pesce, 19.

<sup>32</sup> Pesce, 465.

<sup>33</sup> Ostrowski, n.p.

These syllables were: *ut, re, mi, fa, sol, and la* (see Figure 2).<sup>34</sup> Since the *Epistola's* writing, manuscripts of this hymn have been found to use solfege in a number of ways, such as one from the late eleventh/early twelfth century laying them out before a piece on a staff next to letter names, according to Dolores Pesce.<sup>35</sup> So although it is not clear whether this was Guido's intention, the impact of this never left music education and has been employed in many new ways.

Guido's syllables were later leveraged for an elementary learning environment to further aid in learning music both visually and kinesthetically. Though the name is misleading, as it appears Guido did not invent it himself, the Guidonian Hand (see Figure 3) was a mnemonic device about which Tinctoris wrote in his *Expositio manus*.<sup>36</sup> The Guidonian Hand served as a "cognitive map" on which students could trace scales and intervals.<sup>37</sup>

Each note on the hand was called by its letter name, its possible solfege syllables, and by its octave.<sup>38</sup> Each joint and tip of the fingers became shorthand for a series of overlapping hexachord scales (see Figure 4) which moved upwards counterclockwise.<sup>39</sup> This method made memorizing chants not only an exercise in the mind, but also created a physical association whose principles we still use today. If a choir leader pointed to a joint or the tip of a finger on the hand, the students would see the device and remember in their voices the note they were to sing. Tinctoris, by expanding upon Guido's work, was able to extend his goal of teaching aural memorization.<sup>40</sup>

---

<sup>34</sup> Pesce, 466–467.

<sup>35</sup> Pesce, 20.

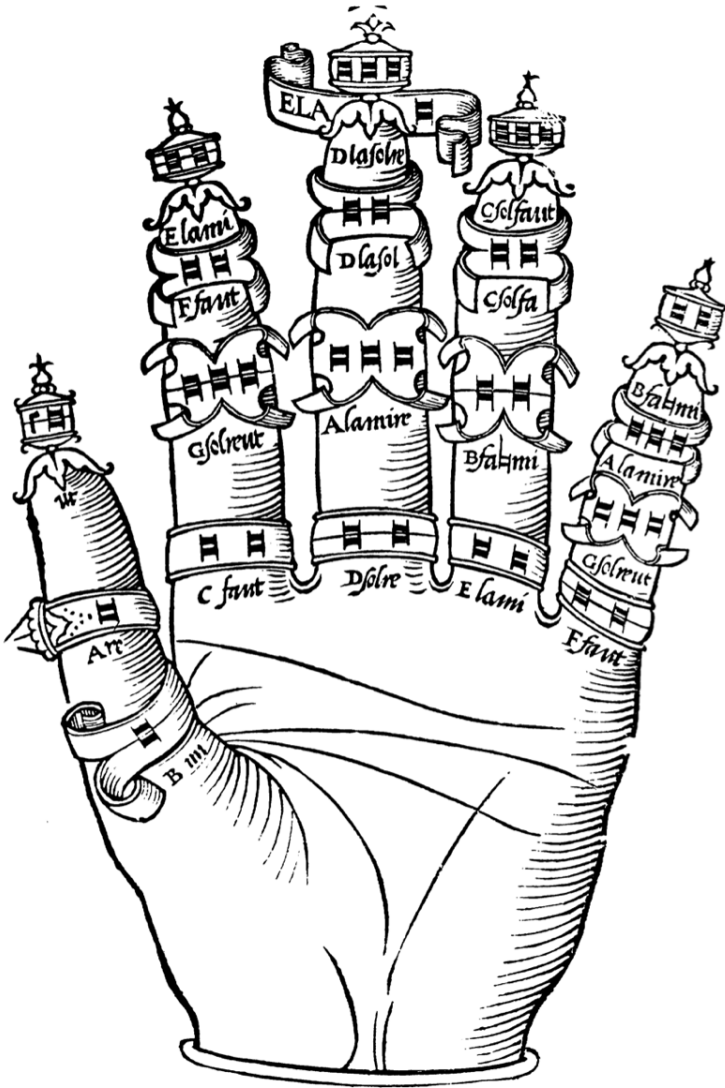
<sup>36</sup> Seay, 196. Tinctoris did not add much to the conversation on musical learning during the time that he wrote the *Expositio*, but the author regards his "rearrangement" of the work of others as valuable to this conversation.

<sup>37</sup> Weiss, 38.

<sup>38</sup> Seay, 202.

<sup>39</sup> Seay, 190.

<sup>40</sup> Pesce, 463.



**Figure 3.** The Guidonian Hand as illustrated in Seay’s edition of Tinctoris’ *Expositio manus*.<sup>41</sup>

---

<sup>41</sup> Seay, 203.

**GUIDO'S OVER-LAPPING HEXACHORDS.**

Super-Acute	{	e* .....	la
		d .....	la sol
		c .....	sol fa
		b $\natural$ .....	mi
		b $\flat$ .....	fa
		a .....	la mi re
		g .....	sol re ut
		f .....	fa ut
		e .....	la mi
Acute (middle C)	{	d .....	la sol re
		c .....	sol fa ut
		b $\natural$ .....	mi
		b $\flat$ .....	fa
		a .....	la mi re
		G .....	sol re ut
		F .....	fa ut
		E .....	la mi
Grave Octave	{	D .....	sol re
		C .....	fa ut
		B .....	mi
		A .....	re
(Gamma)	{	$\Gamma$ .....	ut

**Figure 4.** The overlapping hexachords of the Guidonian Hand.<sup>42</sup>

Both Zoltán Kodály and John Curwen likewise made changes and improvements to Guido's solfege system that were implemented in American schools in the 1960s.<sup>43</sup> Kodály has often been quoted saying, "There is no good musician who does not hear what he sees, and does not see what he hears."<sup>44</sup> Thus, Kodály shares Guido's appreciation of both visible and aural music. Learning music is not only an exercise of one's ears, but also of one's eyes. Kodály's movable *do* solfege (this time including *ti*), and hand signs build on Guido's ideas for the benefit of the young musician.<sup>45</sup> In the movable *do* system, each interval between syllables remains the same, enabling students to memorize intervals the more that the scale is practiced.<sup>46</sup> Curwen's hand symbols, each associated with a solfege syllable, were combined with Kodály's method. Like the Guidonian Hand, using them creates a physical and

<sup>42</sup> McNaught, 37.

<sup>43</sup> McClung, 256.

<sup>44</sup> Demorest quoted in Bowyer, 70.

<sup>45</sup> *Ut* was replaced with *do* by Giovanni Battista Doni before 1669 because the syllable *ut* was not comfortable to sing. See McNaught, 43.

<sup>46</sup> Bowyer, 71.

visual connection to an abstract, aural concept. To enhance the physical associations, the hand symbol system also applies the concept of climbing a “tone ladder” as the hand moves up and down with each ascending syllable.<sup>47</sup> This integrates nicely with teaching students the direction of pitch when reading sheet music.

The physical associations inspired by the Guidonian Hand and extended through Curwen’s hand symbols have proven to be highly effective for today’s students who memorize and read music. In a study performed with eight classes of fourth- and fifth-graders, students who learned solfege with hand levels (including signs) performed better than students who learned solfege without Curwen hand symbols hand signs or by moving their hands up and down with the pitch, but without symbols.<sup>48</sup>

The world of music education has greatly benefitted from the writings of Guido d’Arezzo and others who built on his foundation. In the five-line staff, progress toward using both lines and spaces not only became an educational tool, but also became significant in how the western world would organize and communicate its music. From Bach, Beethoven, and Brahms to Britten and Barber, from art songs and chamber music to symphonies and operas, the five-line staff has created opportunity for sophisticated music-making that Guido perhaps never could have imagined. Composition in the classroom continues to gain credibility as a valuable method in teaching music both to young children as well as adolescents. It allows students to practice their own creativity, exercises their aural skills, and helps them to think about performing music from the composer’s perspective. Solfege became one of the most-used methods in teaching students how to remember intervals and pitch. Recent developments and integration into the regular elementary and choral music curricula are a testament to just how powerful this tool is to students. Without Guido d’Arezzo, today’s music classroom—and western music at large—might look very different indeed.

## Bibliography

Anderson, Gordon A., and C. Matthew Balensuela. "Rodolfus of St Truiden." *Grove Music Online*. 2001.  
<https://www.oxfordmusiconline.com/grovemusic/view/10.1093>

---

<sup>47</sup> Bowyer, 72.

<sup>48</sup> McClung, 257.

- [/gmo/9781561592630.001.0001/omo-9781561592630-e-0000024085](https://gmo.9781561592630.001.0001/omo-9781561592630-e-0000024085).
- Bowyer, James. "More than Solfège and Hand Signs: Philosophy, Tools, and Lesson Planning in the Authentic Kodály Classroom." *Music Educators Journal* 102, no. 2 (2015): 69–76. <http://www.jstor.org/stable/24755663>.
- Demorest, Steven M. *Building Choral Excellence: Teaching Sight-Singing in the Choral Rehearsal*. New York: Oxford University Press, 2001.
- Guido of Arezzo. "Micrologus." In *Hucbald, Guido, and John on Music: Three Medieval Treatises*, edited by Claude V. Palisca, translated by Warren Babb, 57–83. New Haven and London: Yale University Press, 1978.
- . "Prologus antiphonarii sui." In *Source Readings in Music History from Classical Antiquity through the Romantic Era*, edited by Oliver Strunk, 117–120. New York: W. W. Norton and Co., 1950.
- Hawley, Tom. "Arioso: Just do it!" FAME Podcast. Podcast audio, October 10, 2019. <https://www.feierabendmusic.org/arioso-just-do-it-s2e03/>.
- John of Affligem. *De musica cum tonario*. Edited by J. Smits van Waesberghe. Rome: American Institute of Musicology Hanssler Verlag, 1950)
- McClung, Alan C. "Sight-Singing Scores of High School Choristers with Extensive Training in Movable Solfège Syllables and Curwen Hand Signs." *Journal of Research in Music Education* 56, no. 3 (2008): 255–66. <http://www.jstor.org/stable/40204930>.
- McNaught, W. G. "The History and Uses of the Sol-Fa Syllables." *Proceedings of the Musical Association* 19 (1892): 35–51. <http://www.jstor.org/stable/765441>.
- Menard, Elizabeth A. "Music Composition in the High School Curriculum: A Multiple Case Study." *Journal of Research in Music Education* 63, no. 1 (2015):114–136. <https://www.jstor.org/stable/43900283>.
- Miller, Samuel D. "Guido d'Arezzo: Medieval Musician and Educator." *Journal of Research in Music Education* 21, no. 3 (1973): 239–45. <http://www.jstor.org/stable/3345093>.
- . "Time, Space, and the Music Educator." *The Bulletin of Historical Research in Music Education* 13, no. 1 (1992): 19–32. <http://www.jstor.org/stable/40214784>.

- National Association for Music Education. "2014 Music Standards." Accessed June 10, 2022. <https://nafme.org/my-classroom/standards/core-music-standards/>.
- Ostrowski, Jeff. "Where Did 'Do-Re-Mi' Come From?" Corpus Christi Watershed (website). Corpus Christi Watershed, June 7, 2019. <https://www.ccwatershed.org/2019/06/07/origins-of-do-re-mi-fa-sol/>.
- Page, Christopher. *The Christian West and Its Singers: The First Thousand Years*. New Haven and London: Yale University Press, 2010.
- Palisca, Claude V. "Introduction." In *Hucbald, Guido, and John on Music: Three Medieval Treatises*, edited by Claude V. Palisca, translated by Warren Babb, 49–56. New Haven and London: Yale University Press, 1978.
- Pesce, Dolores. *Guido d'Arezzo's Regule Rithmice, Prologus in Antiphonarium, and Epistola ad Michaelem: A Critical Text and Translation*, 1–38. Ottawa, Canada: The Institute of Mediæval Music, 1999.
- Seay, Albert. "The Expositio Manus of Johannes Tinctoris." *Journal of Music Theory* 9, no. 2 (1965): 194–232. <http://www.jstor.org/stable/843161>.
- Selfridge, Cecil Blanchard. "The Singer's Repertoire." *American Music Teacher* 2, no. 1 (1952): 2–3, 14. <http://www.jstor.org/stable/43531387>.
- Van Waesberghe, Joseph Smits. "Guido of Arezzo and Musical Improvisation." *Musica Disciplina* 5 (1951): 55–63. <http://www.jstor.org/stable/20531825>.
- Weiss, Susan Forscher. "*Disce manum tuam si vis bene discere cantum*: Symbols of Learning Music in Early Modern Europe." *Music in Art* 30, no. 1/2 (2005): 35–74. <http://www.jstor.org/stable/41818774>.