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Enhancing Sight-Singing Skills Through Reflective Writing: A New Approach to the Undergraduate Theory Curriculum

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Fragments of Lizst's B minor Sonata thunder from under the doors in the piano department, trombones attack their opening solo in Ravel's Bolero over and over, clarinets repeatedly caress the lyrical slow movement of the Brahms E-flat major sonata: knowing-in-action abounds all day long. Teaching and learning at a conservatory are unique and special experiences.

Undergraduate music students begin their training with a high degree of skill and experience in musical performance, but little patience for learning that does not directly involve their instruments. In fact, many students come to a conservatory specifically to avoid 'academic' approaches to learning. Many teachers are quite aware of the difficulty of getting students to think about and broaden their understanding of performance skills. As a result, performance classes and lessons often do not promote learning that is self-directed, enduring, or applicable to diverse contexts in the future. Too infrequently does teaching encourage students to question what, when, how, or for what purpose learning takes place.

A Curriculum Based on Reflective Understanding

Reflecting on what occurs in performance, on one's grasp of skills, and on making connections is closely linked to understanding. How do we construct a pedagogy that provokes reflection and encourages multiple points of view?

What follows is an account of a theory curriculum and faculty committed to addressing this question. This commitment took the form of developing continuous and challenging reading and writing assignments while maintaining strict performance standards. Needless to say, a theory curriculum that stresses reflective writing assignments in tandem with performance skill development represents a departure from traditional approaches.

Many entering students are pleasantly surprised when they discover they will be required to take an intensive course in sight singing as their only theory requirement during their first semester at New England Conservatory. The seeming emphasis on performance skills in a theory class matches their expectations, because it supports their instrumental and vocal practice very well. Imagine their dismay when they find that this beginning solfège course also includes required readings and journal assignments that cover an array of topics not normally associated with musical training and certainly not with solfège: articles on cognitive development, skill acquisition, and reading theory! In addition, each student writes four papers in conjunction with these readings after extensive class discussions.

"We came to a music conservatory, not a liberal arts college!" is a typical first reaction to this curriculum. They need to be persuaded. They are reluctant to purchase the readings, engage in class discussions or write in their journals. However, once the semester is underway, and students are continually encouraged to write about their own skill development, to document, follow, and develop their insights as they progress through the course, they begin to change. By the end of the first semester, these same students may:

- discover how they are learning to sight sing in terms of qualitatively different stages of development;

  If, as Robert Trotter's article 'The Mystery of Mastery' suggests, learners pass through five stages of skills acquisition and facility in their progress towards expertise, these steps must necessarily have their cognates and correspondents in any disciplinary field. In the area of music, the steps are as clear and delineated as in any other discipline, even though the nature of musical production and performance may require that a musician exist simultaneously at multiple levels of expertise (JB, mezzo soprano)

- comment on the changing relationship between solfège skills and instrumental performance;

  I thought Dandelot's Manuel Pratique was merely a book for learning fluency of syllables in different clefs. . . . Later I began to see these exercises as sight reading drills, tools for pattern reading skills, new practice techniques and occasionally as a guide to phrasing. (MS, trumpet)

- argue articulately for connections between language and music reading;

  Schemata [from E.D. Hirsch's view] are necessary for making what we read connect with background knowledge. There are several parallels between integrating schemata in a literary sense and integrating schemata in a musical sense, such as solfège. (JC, pianist)

- and observe learning and demonstrate music reading processes at high levels of proficiency and comprehension.

  The core of solfège lies within the internal thought process. . . . Putting solfège on a musical line . . . serves to identify it for someone else or to further understand it yourself. (CF, flute)

There are more pressing reasons for this approach than to reintroduce students to academic skills. A course where students have to learn new musical skills 'from scratch' offers a unique opportunity for thinking about 'how' and 'for what purpose' one learns. The commitment to reflective writing in the basic skills courses in the New England Conservatory's curriculum has, in turn, supported new levels of understanding of the cognitive nature of basic musical skills. Teachers are more aware of the range of students' understanding, while students, through their own practice and reflective efforts, learn to use and expand their notions of the new performance skills.

Integrating reflective writing into a performance curriculum did not come easily. These changes at New England Conservatory involved developing a rationale based on recent research in education and cognitive psychology, creating vehicles for writing based on language arts research, and looking carefully at examples of student work to analyze, verify, and adjust the results of the approach.

> The educator who helps learners arrive at a more and more critical view of their reality is a knowing subject, face to face with other knowing subjects. He can never be a mere memorizer, but a person constantly readjusting his knowledge, who calls forth knowledge from his students. For him, education is a pedagogy of knowing. (Friere, 1970)[1]

At the New England Conservatory, the basic music reading course, Solfège 1, provides an important opportunity for adult students to learn to read music with 'silent comprehension', i.e., without the use of their instrument. These students may be able to learn music on their instrument from notation, but through this course of study they learn new literacy skills in order to free themselves from rote instruction. For musicians this process can be seemingly redundant and frustrating, analogous to acquiring fluency in a second language (Davidson and Scripp, 1988; Scripp, 1990). It is clear that it demands considerable thoughtfulness on the part of the learner, as well as the instructor. This thoughtfulness is a critical component in effecting change.

Reflective Thinking: Views on Learning from Cognitive Science

Research in cognition places reflective thinking in the foreground of educational theory and practice. In creativity studies, for example, the central role of journal keeping and sketching is clearly evident in the working methods of mature writers, artists, and scientists (John-Steiner, 1985; Perkins, 1989). For creative artists, keeping 'notebooks of the mind' provides a resource for collecting ideas and working out pre-production processes.

> Most composers keep a notebook in which they put down germinal ideas that occur to them. I think composers will tell you that they get ideas when they can't possibly work on them. They put them down where they can find them when they need to look for ideas and they don't come easily. (Copland in John-Steiner p. 152)

What about music theory students? How can we insure that a significant amount of reflective work accompanies the development

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[1]References to the sources cited in this article are given at the end.

of new reading skills? Although a minority of music students study composition, all students need to be equally concerned with reflecting on their work in relation to music reading skills. Knowledge of goals, how they change, and where one stands in relation to them are important for musical development. Evidence for this comes not only from cognitive psychologists, but also from current practices in assessing learning in the arts (Davidson and Scripp, 1990). In cognitive psychology reflective intelligence can be considered a separate and indispensable kind of intelligence. Some writers, for example, emphasize the possibility of 'learnable intelligence' and posit three specific intelligences: neural, experiential, and reflective intelligence.

While some kinds of skills are *neurological* in nature (e.g., skills related to reaction time), *experiential intelligence* depends upon vast periods of time spent finding and solving problems within a particular domain. *Reflective intelligence* provides an arena for developing skills that are not necessarily bound to the context of a set of experiences in a specific domain. Reflective intelligence, metacognitive awareness, and general thinking strategies suggest ways that practitioners and learners monitor their work in ways that enhance development. This becomes even more relevant for musicians when we acknowledge that reflection occurs not only as words, but in graphic representations and also in the context of performance. Metaphors, gestures, and practice strategies all serve to illuminate the work of productive musicians (Davidson, 1989).

Reflective activity makes perhaps the greatest impact in learning. While little can be done to alter oneself neurologically, or make up the critical ten years of experience required for substantial mastery in a domain, considerable change in learning may occur as a result of reflecting about how one learns, redirecting efforts when initial strategies fail, or revising learning goals in the course of acquiring new skills and concepts.

This view of reflective intelligence has specific meaning for musicians. They practice it in a variety of ways. Music students typically begin studies at a very young age, and so are continually refining skills and revisiting literature as they mature. Learning to read music when first fingering an instrument is a very different thing from using notation to interpret a piece of music afresh after

many years of performing experience. In addition to taking private lessons for many years, music students typically engage in continuous dialogue about their work and their development, making recordings of the performances for critique and participating in ensembles that encourage social interactions when reviewing performance experiences and evaluating one's own work. But reflecting on a work by revisiting it perhaps years later is very different from using immediate reflection as a conscious strategy for learning. The cognitive-developmental model of learning that stresses self-directed productivity—composition, improvisation and personal interpretation guided by instruction—is different from a behaviorist or 'cultural transmission' model which stresses learning to perform repertoire by rote (Davidson and Scripp 1989). In a cognitive-developmental model of learning, reflection plays a much larger role.

For cognitive psychologists of music, reflection holds an essential role in the development of cognitive skills. Furthermore, research suggests that, without including reflection in educational practice, musical development may become suspect because of the lack of coordinated cognitive skills expressed through production or perception tasks (Davidson and Scripp 1992). Interpretative skills may be informed by perception, but they rely on reflective thinking to create new levels of meaning. Jeanne Bamberger (1991) for example, finds that untrained children and adults represent familiar tunes 'note by note', whereas more experienced children and adults represent the tune in terms of a configuration within a tonal system. On the other hand, conservatory students who have not coordinated notational skills with performance skills may be surprisingly unable to create or verify notations of simple tunes (like 'Happy Birthday') without the use of a musical instrument (Davidson, Scripp and Welsh 1988).

Tools for Reflective Thinking in Music

Some music educators have recently tried to introduce 'reflection tools' into the ensemble and general music classroom assessment as a major feature of portfolio assessment. Arts PROPEL music classrooms in many states, for example, feature self-reporting projects that stress peer critique, and interviews designed to rein-

vestigate learning over time with teachers, peers, and parents (Davidson and Scripp, 1990; Davidson et al., 1993; Davidson, 1993). In the context of Arts PROPEL portfolios, reflection, along with production and perception, is an essential component of learning that must be documented and assessed over time.

What are the tools for promoting reflective thinking? Three are especially productive in music: questionnaires, journals, and writing about relationships between the reading assignments and their practice sessions. Taken together these tools form the basis for tracing the path of skill development in solfège classes. They reveal the students' perspectives as they emerge from self-assessment, imaginative thinking, and the application of emerging skills.

Questionnaires

At the beginning, middle, and end of the semester questionnaires can be used to give students an opportunity to think about the goals of the course, how these goals will apply to musical life after the course, and opinions about assessing learning in the course, e.g., "Do you think grades in this course should be awarded primarily according to achievement or improvement?"

What is particularly revealing to the student as well as the teacher is the change in how these questions are answered during the two-year program. First-year students typically are more apt to be local in their perspective. In terms of the goals of the course, for example, first-year students typically reply 'to teach students how to sight read music better,' 'to hear or identify intervals accurately,' and to be a 'more marketable musician.' Later on, the perspective is enlarged with responses less likely centering on skills for their own sake, but on skills for changing the process of music learning and standards of understanding in the future. Often the role of the conductor is kept in mind as an end state model:

> To assist us in becoming expert musicians keeping the highest goals in mind, that is the goals of a conductor, that is, not only becoming proficient sight readers but also not treating sightreading as the end, but as the means to the end.... Thus, by practice and by applying it to pieces we can grow musically. (JT, soprano)

Why are questionnaires important? For teachers, the information gained through questionnaires helps document the changing perspectives of the learner. Instruction in skills should not be taught in a vacuum, nor should students miss important opportunities to reflect on their perception of the course and its potential in their future. Also, everyone can learn much from each other's point of view, whether musical novice or expert. For example, a student's answer to the question on class evaluation can influence the whole structure of grading for the class. One student writes:

> Without achievement you cannot have improvement. What I think would be the answer is gearing achievement and improvement on an individual basis. (second-semester student)

Journals

With questionnaires, the process of reflective thinking begins with personal goal statements and opinions. Journals, i.e., reflective writing about class experiences as well as practicing, provide a very different opportunity for reflection. Here, the dialogue that develops between the instructor and the learners can be consistently supported for the benefit of both (Berthoff, 1988). What happens in class as well as in students' individual work outside of class can be summarized in journals to be read and commented on later by the student. Equally important, it can be reviewed by the instructor repeatedly throughout the year as well.

Ann Berthoff, a nationally known consultant on writing, gave our faculty a series of workshops on techniques of journal writing and its integration into the effective teaching of music theory (as distinct from effective teaching of writing). She helped the solfège teachers prepare students to read and write as a natural extension of the course work.

Students learn how to use a journal as an heuristic device to record and guide their thinking. They use a variety of journal strategies: lists, guiding questions, and double-entry notebooks: At the same time, a supportive process has begun in the form of discussions about sight singing based on class experiences. Questions are offered as devices for stimulating journal entries:

- What kind of skill is it?
- Is it acquired gradually through exposure to repertory, so that the student one day realizes the extent of his or her new ability, or does one master it all at once?
- What stages might this learning process entail?
- What stages of development are represented by students in the class?

Berthoff prefers the term "dialectical notebook" to "journal," as students are apt to regard a journal as a kind of unfocused diary. These notebooks are intended to encourage and reflect an orderly process of thinking (see Fig. 1).

Figure 1. Journal entry format

The left side contains a record of thoughts, reactions, lists, questions in reaction to the reading assignments. These are the raw material of statements, not necessarily expressed in careful grammatical fashion, but demonstrating a concern for capturing students' thinking with precision and vividness.	The right side contains a synthesis of ideas presented on the left, a refinement of categories, an opposition of arguments, a joining of debate.

From this material, students may be ready to create a convincing paragraph or two to use as a springboard for the next class discussion. This will be the basis of their first more extended writing assignment.

For many students, learning is supported and expanded by writing journals. In the following example, the student approaches

the utility of journal writing from a very personal point of view. At first, her journal entries focus on problems. Her first step is to speculate on her current difficulty in learning solfège.

> Part of what makes our teachers and critics so powerful is the total responsibility we give them for our development. All semester long I kept hearing the same things from my solfège teacher in our tests: "Recover on your hand, not your voice," "When are you going to take your syllables seriously?" "Subdivide!!" and I always left feeling as though I had been given a taste of some very bitter medicine. Yes, I know all these things were going wrong. Yes, I'll work harder! In fact, I developed such an aversion to my solfège "problems" that I put less time into practice. I didn't see the point of pursuing something that caused me such agony and discomfort. This is when I became a solfège victim. (SJL, soprano)

For SJL, finding the problem was the beginning of an effort to identify a course of action:

> I set out after Spring break ended to close the gap between knowing what my solfège problems were and knowing them for themselves .... The idea of keeping a journal struck me as a friendly and familiar way to mark my progress in solfège. I could use it as a second self with whom I would discuss my observations and discoveries. (SJL)

But what goes into a journal at later times? Using a double-entry format, she notes which strategies she intends to enact in a practice session,

> Sing only the beginnings of note patterns in musical passages.
>
> Practice saying syllables [note names] separate from their rhythms.
>
> Practice a scale with different accidentals.

followed by comments that reflect the effect of the various strategies:

> My tonality improved with a stronger focus on patterns.
>
> My rhythm is pretty confident when I take the time to practice syllables first, just in the way that my sight singing rhythms are ok when I am secure with the key signature.
>
> Exploring the effect of different placements of half steps helps me modulate more effectively.

The journal is also a place for the unexpected. Creating a column "Discoveries I make through the day" allows consideration of surprising events which lead to further discovery. For example re-

experiencing the feel of scale steps on the violin led to further reflection on the shaping of tonal relationships through the use of half steps:

> Today I picked up Clayton's violin while he was waiting for his violin class to begin and I rediscovered the closeness of 1/2 steps. I hadn't touched a violin in at least 4 years (I studied violin from age 10-15) and when I first tried to play a C major scale I sharped the C. With a violin the closeness of 1/2 steps is so physical - two fingers touching! I will have to bring out my violin and experiment with how different keys feel. (SJL)

In the final analysis it is hard to judge the worth of reflective thinking without looking for transfer of this thinking into specific practice. In this case, SJL decides to employ a tape recorder to continue monitoring the effect of her work. Taping the preparation of class assignments is a surprisingly rare occurrence, but when done, it serves well to focus the journal on the question of assessment. She reflects on using the double-entry journal method as she develops a strategy for using the tape recorder:

> Toward the end of this four-week period before school ended I finally began to tape my sight singing, something I had not been at all eager to do.... For the first taping I stuck to very simple exercises and wrote down my comments once after each exercise was finished, and again later after listening back to what I had done. I concluded with overall comments. I taped myself twice, each time filling my journal with comments. (SJL)

and then adds annotative remarks:

> Listening to my warm-ups was enlightening! And soon I isolated what made a good warm-up and a bad one and developed some schemes to use on the departmental test. Listening to my rhythm errors was also useful—just being able to catch them by conducting along showed me exactly when and where my hand went off. Unfortunately, my singer's desire for the right notes and intonation distracted me from developing a rhythm warm-up which is something that would be very useful in the upcoming departmental exam. (SJL)

Her final journal entries occurred after the final class and final exam. True to the spirit of reflectivity, she cannot resist adding comments about her final sight reading performance in relation to her prepa-

ration and, more importantly, her plans for working further on remaining problems in rhythm in the coming summer months:

> My progress, which was marked in the Departmental [examination] and in my final, was a result of more focused and specific practice. Looking back in the journal I can see that when I isolated a problem and worked on developing schemes for change, I made progress. Likewise, in the areas which I had neglected, I did poorly in both the class final and the departmental. (SJL)

> Now I have a clear solfège diagnosis for the summer and if I continue to work during the vacation I will make conducting Bona [rhythmic exercises] in bass clef a priority and also try to develop a rhythm warm-up which I can use when I sightsing. (SJL)

Reflections on Assigned Readings

At the New England Conservatory, assigned readings provide a particular focus for class discussion. Figure 2 outlines a specific set of readings all students use to reflect on their progress in their music theory skills. These readings are chosen to help focus on three areas central to developing fluency in reading: the difference between novice and expert behaviors in various domains, the comparison between music and language reading subskills, and the role of schema in reading comprehension. As class discussion broadens to reveal students' notions of skill in general and how sight-singing skills are acquired, papers are assigned. Note that, with each reading, the purpose of the reading is closely tied to the goals of the class. The writing assignment encourages the students to declare their understanding of the article in their own words, helping them bridge the concepts in the article and their application in music theory skills.

The first reading is "The mystery of mastery", by Robert J. Trotter. In this reader-friendly article, Trotter illustrates the issues of skill development with examples drawn from chess and basketball. Students have a lively time relating these to their own expertise as performers and their sometimes frustrating steps as sight singers. Their assignment is to write an exposition of Trotter's stages of mastery and suggest how they might apply to music reading.

An assignment schedule for solfège essays was developed so that each faculty member had the same objectives. These guide-

Figure 2. Sight singing and reflections on readings

READING	*PURPOSE*	*WRITING ASSIGNMENT*	*APPLICATION THEORY SKILLS*
Trotter (1986), "Mystery of mastery." (pp. 32-38)	Provide a developmental framework for complex skill acquisition in any domain	Explain the framework in the article including examples from a chosen domain	Describe a framework by which learners can map their own stages in music reading skill development
Downing & Leong (1982), "Reading as a skill." (pp. 13-28)	Reflect on language reading skill processes by way of providing a list of important reading subskills	Select three language reading subskills: compare and contrast with other language or music reading subskills	Reflect on specific analytic components of reading process in music reading skills in solfège class [provide specific musical examples]
Hirsch (1987), "The Discovery of the Schema." (pp. 33-69)	Provide perspectives on the role of background knowledge in reading	Describe the concept of schema in reading	Describe the role of schema in reading music [provide specific musical examples]
Self-Selected	Synthesize views from all three articles, revisit a single reading in more depth, begin a new line of inquiry based on a previous reading	Self-selected	Self-determined

lines proved to be very useful as an integrating tool. They were developed through collaboration among the faculty. Those for the Trotter article were:

A. Proposed essay topics:

1. How do we acquire musical skills? In answering, use both Trotter's theory of skill development and the lessons from your own experience.
2. Describe your acquisition of a nonmusical skill and then compare it to that of a musical skill.
3. What kinds of abilities do you think are innate, and what kinds are acquired?
4. Can we apply Trotter's idea of a five-step development (from novice to expert) to acquiring proficiency in sight singing? What do you think will be your own development in that skill?

B. Teacher aims:

1. Determine whether or not the students have actually read Trotter's essay (a small but valuable step).
2. Alert students to the ways in which Trotter's theoretical understanding parallels (or contradicts) their own development.
3. Present students with the idea of simple, individual, comparisons and contrasts.
4. Help students organize such comparisons and contrasts into coherent arguments.
5. Encourage students to further refine such arguments into overarching theses about their own skill development.

The first writing exercise is due a week after these first discussions of the Trotter article. The teachers review the papers for persuasiveness and clarity; when possible, individual conferences may be held to show students how to be as convincing as possible. Then the papers are read with an eye to content as it relates to music reading. These drafts become the basis for a more focused class discussion. Particularly useful papers are those which illuminate the idea of developmental stages of expertise and how that concept can be seen clearly from personal experience:

> The second stage begins the long process of refinement. The student now begins to gain fluency and ability to deal with the basic rudiments in a larger musical context. . . . Where a novice might have looked at the notes d F# A D and read them all separately, an "advanced beginner" might read those notes as a D major arpeggio. This sort of recognition is considerably more sophisticated in its capacity to recognize symbols in groups or units (sets) having a separate meaning as a whole from the individual symbols. (JB, soprano)

Also, students' criticisms of the article serve to elucidate criteria that may be used to define expertise:

> There are a few issues discussed that I would like to question. . . . To begin with, can a job be done effortlessly or does it only appear to be that way? Trotter also stated they (experts) almost never make mistakes. . . . Is it that they almost never make a mistake, or is it that the performance level is so high that they 'cover up' or compensate for a mistake in such a way that it appears to have never happened? (TK, music education)

By questioning the definition offered by Trotter, the class, working together, learns to interpret the article in terms of musical values. For musicians, expert performance indeed concerns many aspects of "virtual" rather than absolute perfection.

To help students become aware of the various subskills valued in music reading, we assign a second reading. 'Reading as a skill' from the *Psychology of Reading* by Downing and Leong challenges students to review and select the characteristics of language reading skill as a source for observations on music reading. They must refine their understanding of the process of sight reading in order to discern its similarities to and distinctions from general reading. The teacher guidelines for shepherding students through the Downing and Leong chapter include:

A. Proposed essay topics:

1. Is your own method of acquiring reading skills on your instrument similar to acquiring skills in sight singing? In what ways is it similar or different?
2. Can we compare language reading skills with music reading skills? Use three of Downing and Leong's defined skills to explain your argument.

3. Select three of Downing and Leong's language reading skills that you think are important, and three that you think are not as important to your music reading or sight singing. Explain what these examples show.

B. Teacher aims:

1. Determine whether or not the students have actually read Downing and Leong (still a valuable goal, even at this late stage).
2. Show students how to select, use, and illustrate examples from their reading(s).
3. Teach students ways in which to organize and develop those examples into ideas and arguments about the work they are reading or doing.
4. Encourage students to develop clear, cogent, and compelling theses from the examples and arguments they have fashioned.

At first, students find that this reading provides a 'compare and contrast' exercise in describing reading skill components. But they quickly discover that novices at music reading need to conceive of reading skills in some hierarchical fashion.

> Sight singing courses are set up in a way that teaches a hierarchy of subskills: first demonstrating and using only syllables, then adding rhythm to the syllables, and eventually combining syllables, rhythm and singing. Each part can be practiced individually and then when fluent alone, brought together. (LL, French horn)

Students are also encouraged to identify certain language reading traits that may be most useful in music reading skills:

> *automaticity*: In solfège, the performer can execute a pattern subconsciously while attempting to concentrate on a subsequent pattern, that is, it automatically enables him to look ahead in the music and prepare for a more difficult passage.

> *anticipation*: In general performance, observing only the measure being performed is a well known *cardinal sin*.... If the expert is able to combine his 'anticipation and feedback' skills he may very well be able to see a mistake and correct for it *before* it occurs. (JB, woodwind)

In this case, not only are students suggesting useful analogies between language and music reading skills, but they are also selecting criteria for developing more expert levels of these skills.

"The Discovery of the Schema" from *Cultural Literacy* by E.D.Hirsch is the third reading. This chapter, whose polemical nature and political subtext give some teachers plenty to talk about, is useful from a sight singing point of view for its exposition of the concept of schema and the role schema play in reading comprehension.

The teacher guidelines for guiding the students through the Hirsh reading include the following:

A. Proposed essay topics:

1. "For readers to integrate phrases into comprehensible meanings, they must already possess specific, quickly available schemata" (p. 60). Does Hirsch's belief in the importance of schemata apply to learning music? If so, how? If not, why not?
2. "Once the relevant knowledge has been acquired, the skill follows" (p. 61). Based on your own experience in acquiring musical knowledge and reading skill, what do you feel to be the interaction between acquiring relevant knowledge and reading skills?
3. Hirsch develops a model for cultural literacy. Can we do the same for musical literacy? What schemata would we need, and how would they be applied to the reading, study, and performance of music? Describe two kinds of performance(s): one where musical literacy is needed, and one where it is not.

B. Teacher aims:

1. Determine whether or not the students have actually read the Hirsch chapter (thus preventing an attack of irony).
2. Emphasize the ways in which examples create the models in Hirsch's writing and teach students the difference between arguing over examples and arguing about the model being constructed.
3. Show students ways to recognize, consider, and criticize Hirsch's schemata.

4. Encourage students to recognize the role and value of such schemata in argumentative writing.
5. Accentuate the need for a clear and relevant thesis in support of, or critical of, Hirsch's ideas.

At this point, class discussion focuses on the theory of reading. Students whose sight reading is beginning to develop in complexity of clef, meter and key make observations about the use of patterns and their own predictions and intuition in a dynamic, expressive solfège performance. The nature of grouping, creating organization and order based on experience, is fundamental to successful sight reading. Many student sight readers have little control over the process of "chunking," which is so crucial to successful reading. This article and the writing which follows from it lead students to a better understanding of their own schemata.

Typical responses to this assignment reveal that the understanding of a music reading schema can be seen in at least three distinct ways. Students write about *decoding or technical schema* (pattern reading in relation to the page and the instrument), *background literature as schema* for understanding (knowing about Mozart's first four violin concertos before tackling the fifth), and an *'interpretive' schema* (tools for making interpretive decisions based on structural or theoretical knowledge not directly stated in the music). The following excerpts suggest how students struggle with all three perspectives in building a more comprehensive understanding of music reading skill development:

> To gain literacy, one must also recognize basic patterns and their function before drowning in the details of a piece. Intervals must be recognizable and retrievable at the speed of a reflex, patterns containing them must be grouped, and sounds united by key, and patterns by rhythms. Hundreds of notes will be given a purpose and a role in a larger schema that is more comprehensible and manageable. (JB, soprano)

> Artistic schemata must also be used when learning music. It is absolutely necessary that one "infer meanings not directly stated" and "apply relevant background knowledge". Inferred meanings could involve the use of dynamics when they are not directly stated, the artist's subtle change in a phrase when it is repeated more than once, or even the ability to recognize the climax of a phrase and to apply the appropriate stress. . . . Thus far, the acquisition of technical schemata

> has been essential in our solfège course. Pattern reading has been a primary aspect of the course, and I suspect that recognition of chord progressions and resolutions will become standard, later in the course. . . . However, we are beginning to experiment with phrasing, and I predict that as our sightreading skills become more finely tuned, we will begin to look for deeper meanings and interpretations for the notes on the page. (FK, soprano)

The fourth paper grows out of the previous three, either as an extension or a reaction, depending on the issues a student identifies as important in his or her continuing development. A student's work may suggest further reading, and the last paper will be an exploration of this new text. Alternatively, a student may want to refine or elaborate ideas from one or more of the earlier papers. For still other students, issues may have been raised which suggest further exploration by interviewing each other, students in other teachers' sections, upperclassmen, faculty, or previous teachers to gather information critical to their understanding of learning processes. In these last papers, students are able to focus on issues that have developed from the earlier semester work as well as develop a deeper level of inquiry. Sometimes, serious questions are raised about the differences between the development of reading skills in children and adults.

> Does solfège come more easily to children than it does to adults? Adults definitely have more readily available schema in terms of music theory, for they have been studying music and their instruments for many years. Does the availability of theory schema make solfège easier to learn? After observing (solfège) classes (ages 8-16) at the Longy school of Music in Cambridge, I discovered the answer wasn't a simple one. (CB, soprano)

Do conservatory students learn to read differently from children because of the different levels of conceptual understanding? The level of reflection is often most impressive. Not only is the music student reflecting on past work shared in class papers and discussions, but is building a new research agenda about extremely important issues for music education. We suggest that answers to these kinds of questions will come from creating a stronger role for reflective writing not only within this solfège course, but also in other courses concerned with literacy skills at the conservatory level.

Pros and Cons for Reflective Writing in Performance Skills Classes

It is useful to anticipate arguments against the re-formation of the basic skills curriculum. Certainly at the New England Conservatory there were many concerns that had to be considered: lack of time, irrelevance of the course of study, and a narrow view of what learning entails.

Music students never have enough time. They need to be disciplined and efficient in order to practice. Consequently, some faculty ask, "Why engage students in time-consuming reading and writing which is not obviously a critical aspect of a class?" For others, learning to play and read music is a simple, intuitive process that is assumed to accompany learning to play an instrument. Still other instrumentalists take another stance, "What can learning about basic concepts of learning and cognitive psychology have to do with students' music studies?" These faculty narrowly assume that learning how to play an instrument is what a music school is all about. In their view, developing such proficiency is a task that does not depend on knowledge of theories of cognition, nor does learning to articulate the components of reading skills require writing papers. After all, who among the faculty learned to read music through this process?

These issues trouble some faculty members more than others. Nevertheless, they are issues we have to consider. As usual, the students cleared the way for this approach once they realized its impact on their own musical development.

The theory faculty did not carry out the entire new educational thrust without help. It soon became apparent that simply assigning readings and attempting classroom discussions were not the most effective means of developing an understanding of the value of reflection or of the core of concepts learned in class. We needed some help with structuring and carrying out writing assignments. After we initiated the program, we established a two-year collaboration with the teachers of the basic writing skills program in the Liberal Arts department.

The teachers of the basic writing program welcomed our proposal. They had a problem of their own: how to get students engaged in writing and thinking about topics which were important

to them and not merely fulfilling requirements to gain course credits. The solfège I class is a high stakes course during which all incoming undergraduates must demonstrate fluency reading diatonic music before they are allowed to take any other theory course. The design of the course places it between performance on the one hand and academic courses on the other. Because of that, the writing teachers decided to add the requirements of the theory department to their course schedule.

Our students, who often are not experienced with critical reading, needed a structure to deepen their reflection about the articles and about the readings' relation to their own experience. We began to work out writing assignments, journal questions and pre-writing exercises to focus and amplify students' reading and discussion. As a result of intensive, music-focused work in their solfège class, students became observers of, as well as participants in, their own learning and the learning processes of others. Almost immediately they reported connections between theory classes and their private studio instruction, and began to understand how to diagnose problems which they encountered in various other musical contexts. They could now see the relevance of their writing classes.

For our part, the collaboration was very helpful. The writing teachers helped us develop central questions for each reading, counseled us that we would get better results if we gave a bit more time for the writing, and helped us learn about the role and power good questions play in reflective thinking. After the collaboration was over, we had learned how to use questions, organize assignments, and sustain the work within the context of the solfège curriculum.

How did this relatively quick turn-around occur? First, our own faculty members began to realize that students learn best if they are treated not as children beginning to learn a difficult set of theoretical drills but as adults beginning to coordinate a complicated matrix of skill and knowledge. We made them apprentices in the trade of interrelating music reading, hearing, and imagining rather than holding them accountable to the tasks of the textbook. Of course, teachers who construct adequate drills and run a good class will significantly increase the competence of their students to execute patterns skillfully. But is that enough? Is this the most effective or efficient way to learn or improve a skill? Does it support working

beyond the textbook and the specific examples studied in class? Does it provide students with generalizable information and technique? What level of engagement does it generate for the student whose other musical work is being carried out on a much higher plane of interest? Does it lead to understanding and independence?

In the past, theory teachers observed that the skills they foster in their students do not necessarily last very long beyond the conclusion of the course. The knowledge which seems secure in the theory classroom is unavailable in the teaching studio or in the ensemble rehearsal; even last term's understanding of voice leading cannot be summoned in this term's work on part writing. It is hard for students to generalize from what appears to them to be a very narrow, highly specific body of theoretical knowledge and technique.

Now, we see the transmission of a view of theory intrinsically related to music making as perhaps the most important part of our teaching. A student who sees music as sets of discrete knowledge, as drills to be done, as requirements to complete, will never really use theory skills in a musical way or develop the rounded view essential for a musician. The students who understand the nature of the process they have begun are more likely to know how to continue in that process. The students who, after one semester, make observations like those quoted above are students whose minds are ready to think about music.

As a result of generative discussions and reflective writing about their work, students engage real problems in the use of scores and in their own repertory, as well as in carefully selected material from the standard sight reading sources. They do more than solve problems; they pose problems for themselves, and engage in problem finding in a problem-solving context. Learning the importance of problem analysis and diagnosis in developing skills and teaching, they confront the concept of the schema in reading comprehension. For the faculty, there are broad changes as well. As teachers who deliberately planned to share the essential tools of learning with students, we found ourselves discussing principles of cognitive development and skill acquisition in solfège classes.

We also had to consider the influence of reflective writing on performance standards. The time taken from class to carry out these discussions and assignments could seriously lower the level of students' achievement. Fortunately, at NEC we have a system of stan-

dardized departmental exams which establish benchmark criteria for completion of the theory requirement (Davidson, Scripp and Meyaard 1988). Twice each semester, all solfège students take these performance exams. Over a number of years we have been able to track patterns of growth, compare various approaches to sight singing, and observe the effects of curricular changes and refinements. The exams show conclusively that the substantial amount of time spent on reading, writing and discussing skill development does not have a negative impact on students' scores. Although students certainly have much less in-class drill work, their skills continue to progress. Even more convincing, there are strong positive correlations between the quality of work on performance exams and the quality of reflective thinking (not necessarily spelling or grammar) in their written papers and journals. That is, the students who are highest achievers in their sight singing exams tend to be also the students who do the most reflective writing.

It appears that developing reflective writing habits in the course of building sight singing skills provides students with a way to

- develop ideas about skill acquisition,
- think critically about progress with their course work,
- develop and monitor practice strategies,
- continually update personal goals,
- develop a framework for progress beyond issues of accuracy,
- create a context for comparing instruction and pedagogy within and across sections of the course, classes, schools and even countries,
- generalize from sight singing to other musical skills, and
- draw new conceptual distinctions that differentiate craft and artistry, innate and acquired skills, process and result.

Although we were not sure of what we were doing at the outset, our work has transformed our understanding of teaching and learning. We developed a reflective curriculum through a process of intensive experimentation and documentation of student learning within the theory program at the Conservatory. This curriculum development was the result of step-by-step research taken by the faculty; the progress of our research plan can be summarized as follows:

- Theory teachers decided to share essential concepts and tools of learning with their students. This meant developing courses which added a focus on reflection, in addition to performance and listening activities, thus rounding out the three ways of knowing, i.e., production, perception, and reflection.
- Experimentation with reflective thinking led to the formation of a collection of assigned readings drawn from a variety of sources in music, psychology, and educational theory.
- Students were encouraged to become observers of, as well as participants in, their own and others' learning processes through reflective writing.
- During the changes within the course, performance standards could not be sacrificed. Somehow, they had to be maintained throughout the course of these experiments. Results from our work show that 1) although under this program students certainly had less in-class drill work, there was no decrease in the level of quantitative scores in standardized departmental performance exams and 2) strong positive correlations were evident between the qualitative aspects of performance (e.g., type of comments during exams and the range of reading strategies employed).
- As a result of this program, faculty members report dramatic changes in their classroom culture as well. The standards of reflective writing, level of classroom inquiry, the quality and clarity of discussions, and the degree of interaction among students have all changed. In summary, quality of work on performance exams as well as the quality of reflective thinking as seen in questionnaire responses, journals, and papers have all improved.

Retrospections and Conclusions

In retrospect, developing a reflective writing component in the theory curriculum has served to support and further the goals of a musical education. Taking a controversial subject usually treated as an afterthought in music programs, we have made solfège a course that requires critical and reflective thinking in a context of skill de-

velopment. Students who make writing a habit have a way to form and develop their ideas, think critically about course work, develop practice strategies, and continually update personal goals. These young musicians have a better chance of using their newly acquired skills in the service of broader musical understanding and goals.

Writing gives room for individual thinking (until now not a prominent aspect of solfège instruction) and develops a framework that extends performance skills beyond mere accuracy. As teachers become sensitive to the information students are conveying, this framework becomes a more powerful tool in the classroom. Reasons why some students succeed while others stagnate become clear to the teacher as well as to the student.

There is now a context for comparing pedagogy within and across sections of the course, classes, schools and even countries. This issue is not trivial at NEC, which has a very great diversity of cultural background and preparation in terms of musical experience, writing skills, and orientation to learning. We find that the lively participatory classroom we are developing, with a strong emphasis on students' individual understanding and responsibility, is particularly productive for all students when there is time allotted for dialogue and self report in individual assessment.

What about the extra work this program generates for teachers? Do teachers welcome the extra time it takes to respond to and assess writing in the performance classroom? At NEC, yes. Our faculty see positive results in students' attitudes to the course and in their willingness to give attention to their work. The nature of the classroom experience for teacher and student has produced a changed and enlarged view of solfège itself. By understanding the components of skill development and the kind of process involved, students resist less the necessity of learning to sight sing and the highly formal techniques and learning strategies we emphasize (Scripp and Davidson, 1988). Their increased understanding of, and participation in, the pedagogy gives them a greater ability to generalize from sight singing to other musical issues, and they begin to integrate their musical experiences in ways more typical of experienced artists than students. They are provided with a means of differentiating craft and artistry, innate and acquired skills, and process and result; and they have a vocabulary with which to express themselves.

The context of teaching changes as wider issues are brought in to the classroom. The role of the instructor has expanded; the teacher continues to work like a coach, but the role of discussion leader and facilitator is added. The classroom becomes much more interactive as students accept responsibility for the plan of their progress. At the same time that more focus is placed on student instruction, more input is sought from students.

Valuing reflective writing in music theory classes fosters a surprising level of powerfully charged writing and descriptions. Journals are introspective in nature. Keeping a regular journal often leads to a quality of lucid self discovery that can create new avenues of understanding particular to the class experience and the curriculum.

A potent illustration of this resulted from the unusual experience of having a senior faculty member from a large mid-western university join one of the beginning solfège classes. This French professor, an amateur singer who wished to incorporate the study of chanson into his classes, took his sabbatical year at the New England Conservatory. His participation allowed us to see our concept of the reflective curriculum in a new way. In addition, his comments provided us with a control condition that enabled us to look even more closely at the impact of a reflective curriculum. How would our reflective curriculum play for this experienced teacher?

The comments that have been cited previously in this paper were those of average music students of 18 to 21 years in age, beginners in the deliberate use of reflective thinking as a tool in learning a skill. The comments below are those of a person well experienced in reflection, a seasoned teacher who was some thirty years their senior. His participation illustrates even more dramatically the potential and scope of a reflection-based approach to college-level musical skills courses.

He summarizes his journal entries from his first-semester work by writing about the "Geography of solfège" as his fourth paper assignment. In creating a map of the course, he provides a vivid description of what students experience in the course: the problem of proceeding to work with what at first seems utterly unfamiliar, inscrutable, unfathomable:

> During the course of the semester it has become increasingly evident to me that I was passing into a wondrous land whose contours I was only barely discerning. In the beginning . . . there was chaos and confusion. The place I had landed certainly seemed inchoate and I did not know how to find, discern, recognize or name landmarks that would begin to outline a path. From this perspective I am reminded of one of the examples in Trotter's "Mystery of Mastery" article. Trotter, citing research by others, mentioned that when individuals were shown a picture of a basketball game in which the players were placed randomly, the individuals could not recall many of the individual items in the picture. If the same individuals, however, were shown a picture of a specific play in formation—that is to say a picture in which the players had a structured relation to each other—many more details could be recalled. It is now clear that I was in an analogous situation. While the landscape that was presented to me did eventually turn out to have structure I was unable to perceive it. I was faced with thousands of stimuli and possessed no mechanism or code for perceiving or giving them a structure which would allow me to understand what I was seeing. (PR, voice)

Later in his summary he writes about the nature of discovery of new structures and relationships in music. In his writing the excitement of intimate knowledge of scale structures is palpable and illuminating at the same time:

> If the cycle of sounds were to repeat itself regularly, it would be impossible to have a sense of anything other than repetition. If the cycle is altered slightly, however, with the addition for instance of a different size step—one could call it a turn or potential turn rather than half a step—closure is possible. That is to say one can use the half-step difference to signal an end, to make the beginning a final point. Moreover, and even more exciting, one can create innumerable possibilities of difference by moving the location of the half step, thus changing the notion of where one is ending and thus where one is going. (PR, voice)

In terms of understanding the act of generating tonal relationships he reports, "some kind of vast consciousness into which I am stepping, a space unknown to me . . . [where] one is participating rather than controlling, in tune with rather than mastering;" and he struggles to understand music in terms of literary devices, for example, irony as a metaphor for modulation. Summing up his journal review, he offers an image of exactly where the first semester ends—on the brink of learning to control modulations. Without his

words, however, we might not understand the visceral difference between the structure of the pedagogy of what is to be learned and the experience of self discovery that we suspect occurs in different ways or varying degrees with each individual student.

> The temporality of the space is also complicated. Past, present and future must be almost simultaneously present. The tonic, whether sounding or not, must always be there. If its literal, external sound has passed, the mind keeps it in the space, always in play. With modulation, the future must also be actively engaged. While changing keys, a new future/past memory tone arises. In very effective ways, then, what is in the mind is brought into consonance with what lies outside it. Imagined time and real time flow together, imagined sound and real sound are the same, the world within and that without are brought together. One is simultaneously acutely aware of self and has lost it in a world which flows over and through everything, one is in control—and helpless. This, then, is where I presently find myself—at the edge of a center. By various stumbles and false paths, by lucky leaps and solid direction my sense of the territory over which I have come is more secure. While earlier the new caused panic, now it raises a sense of anticipation and eagerness. I want to step into that center and look around. (PR, voice)

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