

# Part Writing, Prose Writing: An Investigation of Writing-to-Learn in the Music Theory Classroom

Bruce C. Kelley

## I ntroduction

In the last twenty years, educators have advanced the premise that writing, in various forms, can foster learning in every class in every discipline. While we routinely use writing in many ways to communicate, define a position, or make new connections, some forms of writing, such as lists, reminder notes, and diaries, tend to be mental scribbles indecipherable to all but the writer. These scribbles constitute one of language's most private forms: writing for the purpose of bringing personal meaning to a situation that previously had none.

If writing-for-oneself can be intricately bound with clarifying or remembering ideas, might this type of writing be used in the college classroom? In what ways might the use of language promote the learning of particular ideas or subjects—in this case, music theory? Since the 1970s, these questions have been underscored by a growing body of work that has discussed the impact of writing on learning, and turned attention to classroom writing in college curricula. Two major educational movements, writing-across-the-curriculum (WAC) and writing-to-learn (WTL), have evolved into philosophical and political rallying points for those who believe that writing is a necessary component of every academic course.

Focus on the pedagogical importance of writing has led to ground-breaking research on the writing process<sup>1</sup> and on the ef-

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<sup>1</sup>See especially Emig, J. (1971). *The Composing Processes of Twelfth Graders*, Research Report no. 13. Urbana, IL: National Council of Teachers of English; and Britton, J. *et al.*, (1975). *The Development of Writing Abilities* (11-18). London: Macmillan Education Press.

fects of various forms of writing in the classroom.<sup>2</sup> These studies assume that writing can play an important role in a variety of disciplines, at all levels of schooling. The writing-to-learn philosophy has even been applied to learning music theory and aural skills in the last few years.<sup>3</sup> Rarely, however, has rigorous investigation been applied toward determining the effectiveness of writing-to-learn, especially in an essentially non-linguistic subject such as music theory. While many hypotheses have been formulated, few empirical studies have carefully measured writing's effects on learning, and none have examined the role that writing can play in the music theory classroom. In my own classes, I have discovered that certain writing exercises help students grasp new concepts. This experience has led me to explore more formally the effect of writing-to-learn on learning music theory constructs.

This article investigates the theories and claims of the writing-to-learn movement, and their effectiveness in the music theory classroom. The psychological roots of writing-to-learn are examined, as are some current theories about how and why writing helps students learn across all disciplines. The article then explores the results of an investigation at the Ohio State University that compared

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<sup>2</sup>See especially Emig, J. (1977). *Writing as a Mode of Learning*. In D. Gaswami & M. Butler (Eds.), *The Web of Meaning: Essays on Writing, Teaching, Learning, and Thinking* (pp. 122-131). Upper Montclair: Boynton/Cook Publishers; Applebee, A. (1984). *Writing and Reasoning*. *Review of Educational Research* 54 (4), 577-596; Newell, G. (1984). *Learning from Writing in Two Content Areas: A Case Study/Protocol Analysis*. *Research in the Teaching of English* 18 (3), 265-287; Langer, J. A., & Applebee, A. (1987). *How Writing Shapes Thinking: A Study of Teaching and Learning*. Research Report no. 22. Urbana, IL: National Council of Teachers of English; Tierney, R. et al. (1989). *The Effects of Reading and Writing Upon Thinking Critically*. *Reading Research Quarterly* 24 (2), 134-173; and Menon, R. (1992). *Writing to Learn Mathematics: Student Journals and Student-constructed Questions*. (Doctoral dissertation, The University of British Columbia, 1992). *Dissertation Abstracts International*, 54, 2872A.

<sup>3</sup>See, for example, Davidson, L., Scripp, L., & Fletcher, A. (1995). *Enhancing Sight-Singing Through Reflective Writing: A New Approach to the Undergraduate Curriculum*. *Journal of Music Theory Pedagogy* 9, 1-30; and McGee, D. (1993). *The Power of Prose: Writing in the Undergraduate Music Theory Curriculum*. *Journal of Music Theory Pedagogy* 7, 85-104.

short, ungraded writing-to-learn exercises with creative part-writing exercises and visual error-detection exercises. Writing has been used in the music theory curriculum to record thoughts and communicate information, but the use of short, ungraded writing assignments, addressed primarily to the writers themselves, is relatively unknown. This specialized kind of writing is most favored by educators interested in using writing in all the disciplines because it creatively engages the students' thought processes. Part writing exercises required the student to notate an original setting that illustrated a specific problem or concept. Error-detection exercises required the student to circle errors or star correct solutions.

The investigation into these varied exercises showed that part writing, but not prose writing, was a significant factor in learning theory constructs, as measured by the pre- and post-tests. This article concludes by re-examining writing-to-learn theory and drawing some conclusions about writing and the process of learning music theory.

## Instructional Paradigms

Writing prose does not often play an important role in the music theory classroom, where notes and the symbols of analysis provide the focus of communication. Typically the classroom teacher relies on the short analytical exercise and the workbook composition. Little emphasis is placed on prose writing except as a means of relaying information in analytical essays.

But might writing—specifically the short, ungraded writing assignment—help solve some of the challenges that face music theory pedagogy? Are prose writing exercises as effective for learning as exercises which involve written notation? Michael Rogers states that

Theory, then, is not just something to learn but is also something *to do*. It represents not just a cluster of answers but a range of options for thinking about and listening to music. Music theory, in my opinion, is not a *subject* like pharmacy with labels to learn and prescriptions to fill, but is an *activity*—more like composition or performance. The activity is *theorizing*: i.e., thinking about what we hear and hearing what we think about—and I would include even thinking about what we think.<sup>4</sup>

Certainly there are times when workbook exercises are vitally necessary, and when lecture and example are more efficient than any prose writing assignment could be; but there may also be times when short writing assignments are the most efficient way to teach music theory. Psychologist Howard Gardner claims that:

Much of the teaching and learning occurs through language—at one time, principally through oral instructions, employing verse, collections of adages, or simple explanations; and now, increasingly, through the word in its written form. A compelling example of this aspect can be found in the sciences. Despite the evident importance of logical-mathematical reasoning and symbol systems, language remains the optimal means for conveying the basic concepts in textbooks. In addition, language supplies the metaphors that are crucial for launching and for explaining a new scientific development.<sup>5</sup>

Prose writing may be especially relevant to helping students understand the philosophical side of the theoretical equation, and may also prove potent at helping students understand how they think about music theory itself. Paul Connolly, an advocate of writing-to-learn, states that the primary source of constructed knowledge, regardless of the discipline, is language—spoken or written:

While musicians may speak to one another through their notes or mathematicians may spring to a blackboard to talk in numbers, natural language remains the most important mediator of concepts we do not yet fully hold. It negotiates all the necessary integrations between the experiences we have stored in our personal stories and the more abstract lessons that are filed in a culture's various systems of thought.<sup>6</sup>

Language is integral to the learning process. According to Connolly, "local" symbol systems, such as notation and numbers,

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<sup>4</sup>Rogers, M. R. (1984). *Teaching Approaches in Music Theory*. Carbondale and Edwardsville, IL: Southern Illinois University Press, p. 7.

<sup>5</sup>Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books, Inc., p. 78.

<sup>6</sup>Connolly, P. (1989). Writing and the Ecology of Learning. In P. Connolly & T. Vilardi (Eds.), *Writing to Learn Mathematics and Science* (pp. 1-14). New York: Teachers College Press, p. 4.

are, for learning, subordinate to language, which is the primary conveyor of meaning. Does prose writing, an exercise completely separate from the activities commonly used to learn basic concepts of music theory, actually provide a new, more effective way to teach? Does the written “language” of music—notation—help students learn more effectively than written prose, or is the reverse true? At a deeper level, there lies this fundamental question: Just how do students best learn music theory constructs?

### Writing-to-Learn: A Psychological Background

The writing-to learn-movement is based heavily on the learning theories of Russian psychologist Lev Vygotsky. Vygotsky’s most influential work, *Language and the Mind*, examined the potential relationship between language and cognitive development in great detail. Vygotsky suggested that language was not just a window on the thought process, but an integral component of the thought process itself, a tool that actively influences cognition. There is a constant interaction between thought and language, the two becoming intricately and inexorably linked:

Schematically, we may imagine thought and speech as two intersecting circles. In their overlapping parts, thought and speech coincide to produce what is called verbal thought.<sup>7</sup>

The space shared in common between the two circles represents what Vygotsky termed the *inner speech*, where thought and speech activity meet.

Vygotsky’s description of inner speech was influential to later researchers, for it delineates the interaction of language and thought. Inner speech is more than just an internalized form of external speech; it is unique, with a special relationship to the other speech formations. It has a syntax that is disconnected and incomplete when compared to external speech:

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<sup>7</sup>Vygotsky, L. (1992). *Thought and Language* (A. Kozulin, Trans.). Cambridge, MA: The MIT Press. (Original work published 1934), p. 88.

It [inner speech] still remains speech, i.e., thought connected with words. But while in external speech thought is embodied in words, in inner speech words die as they bring forth thought. Inner speech is to a large extent thinking in pure meanings. It is a dynamic, shifting, unstable thing, fluttering between word and thought, the two more or less stable, more or less firmly delineated components of verbal thought.<sup>8</sup>

Vygotsky observed that inner speech is a distinct plane of verbal thought. As inner speech becomes uttered speech, a complex transformation occurs. Inner speech must be syntactically reinterpreted and organized before it can be understood as external speech.<sup>9</sup> Inner speech is the translator between thought and word, between outgoing and incoming messages. It becomes a tool that one uses to bring words to a thought, or thoughts from another's words. Vygotsky assumed that language, translated through the processes of the inner speech, becomes the means through which we learn.

Writing as a specific form of language is an important cognitive agitator in Vygotsky's theories. The relationship between writing and inner speech is in many ways a study in contrast:

Inner speech is condensed, abbreviated speech. Written speech is deployed to its fullest extent, more complete than oral speech. Inner speech is almost entirely predicative because the situation, the subject of thought, is always known to the thinker. Written speech, on the contrary, must explain the situation fully in order to be intelligible. The change from maximally compact inner speech to maximally detailed written speech requires what might be called deliberate semantics—deliberate structuring of the web of meaning.<sup>10</sup>

The “web of meaning” is a description of how word and thought interact continually to produce a network of ideas and feedback:

The relation of thought to word is not a thing but a process, a continual movement back and forth from thought to word and from word to thought. In that process, the relation of thought to word undergoes changes that themselves may be regarded as developmental in the

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<sup>8</sup>Vygotsky, 249.

<sup>9</sup>Vygotsky, 249.

<sup>10</sup>Vygotsky, 182.

functional sense. Thought is not merely expressed in words; it comes into existence through them. Every thought tends to connect something with something else, to establish a relation between things.<sup>11</sup>

Conceptualizing, creating meaning, constructing reality: these are all facilitated by the word, especially in its written form. The idea that writing interacts strongly with the inner speech to create meaning is one of Vygotsky's greatest contributions; it is an idea that polarized an educational movement dedicated to improving student's learning through writing.

### Writing-to-Learn

The writing-to-learn movement began in the early 1970s as educators gained access to the first English translation of Vygotsky's *Language and the Mind*. The studies of Janet Emig,<sup>12</sup> James Britton *et al.*,<sup>13</sup> and Douglas Barnes,<sup>14</sup> initially described what was known then as the Writing-Across-the-Curriculum movement.<sup>15</sup> In the early

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<sup>11</sup>Vygotsky, 218.

<sup>12</sup>Emig, J. (1971). *The Composing Processes of Twelfth Graders*. Research Report no. 13. Urbana, IL: National Council of Teachers of English.

<sup>13</sup>Britton, J., Burgess, T., Martin, N., McLeod, A., & Rosen, H. (1975). *The Development of Writing Abilities* (11-18). London: Macmillan Education Press.

<sup>14</sup>Barnes, D. (1976). *From Communication to Curriculum*. London: Hazell Watson & Viney Limited.

<sup>15</sup>The historical development and spread of the Writing-Across-the-Curriculum movement is best presented in the following articles: Freisinger, R. (1980). Cross-Disciplinary Writing Programs: Beginnings. In T. Fulwiler & A. Young (Eds.), *Language Connections: Writing and Reading Across the Curriculum* (pp. 3-14). Urbana, IL: National Council of Teachers of English; Maimon, E. (1982). Writing Across the Curriculum: Past, Present and Future. In C. W. Griffin (Ed.), *Teaching Writing in All Disciplines* (pp. 67-74). New Directions for Teaching and Learning, no. 12. San Francisco: Jossey-Bass; Petersen, B. (1982). Additional Resources in the Practice of Writing Across the Disciplines. In C. W. Griffin (Ed.), *Teaching Writing in All Disciplines* (pp. 75-82). New Directions for Teaching and Learning, no. 12. San Francisco: Jossey-Bass; and Tchudi, S. (1986). *Teaching Writing in the Content Areas: College Level*. Washington, DC: National Education Association of the United States.

1980s the movement shifted focus from curricular change to describing how writing affected learning, and adopted the following basic theoretical tenants:

- (1) Writing can help students learn and think about content in any discipline, thus helping to achieve the goals of the instructor.
- (2) Writing used for learning does not require explicit *teaching* of writing—only use of writing as a pedagogical tool. . . . This model highlights not writing for its own sake, but writing for the discipline's sake, i.e., writing for content mastery.<sup>16</sup>

In other words, the instructor of history or mathematics or music has no obligation to teach students how to write, but only to use writing as a tool for learning.

Many hypotheses of how writing—the symbolic representation of language—might enhance learning have been proposed. Some have claimed that writing manifests and enlarges the capacity to discover connections,<sup>17</sup> or that writing and learning share similarities because both are multifaceted, may be enriched by self-provided feedback, serve an analytical and connective function, and engage and commit the mind in their own particular rhythm.<sup>18</sup> Writing forces students to organize, to look for patterns, and to explain how and why things work.<sup>19</sup> The physical limitations on thinking required by writing force the writer to concentrate on a subject: reviewing, revising, and actively participating in the communication process itself.

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<sup>16</sup>Kurfiss, J. (1985). Do Students Really Learn from Writing? *Writing Across the Curriculum* 3 (1), 3-4. (ERIC Document Reproduction Service No. ED 293 123)

<sup>17</sup>Knowblauch, C., & Brannon, L. (1983). Writing as Learning Through the Curriculum. *College English* 45: 473.

<sup>18</sup>Emig, Writing, 5-6.

<sup>19</sup>Boone, B. (1983). Great Teaching Ideas: Writing to Learn. *Virginia English Bulletin* 33 (2), 32-36.

The research of authors such as Emig,<sup>20</sup> Dowst,<sup>21</sup> Boone,<sup>22</sup> Applebee,<sup>23</sup> Gere,<sup>24</sup> and Archambeault<sup>25</sup> provides a basis for estimating writing's potential impact on learning music theory. The writing-to-learn principles emphasize teacher and class participation in a shared exchange of ideas so that students will gain a deeper understanding of topics than the simple lecture format can provide. Students learn through writing because they are forced to manipulate information in a personal context:

Writing requires a high level of active processing of information. Unless students are merely copying word for word from printed text, they are translating the new information into their own words, forming connections with previously learned information, interpreting and applying it in new contexts. Writing is also the concrete visualization of content material. The learner is not only making connections, but creating new connections while developing a personal organizational schema.<sup>26</sup>

Creating new connections, constructing meaning and knowledge, and exploring implications are ways to describe writing's effect on learning. These ideas are important to the theory of writing-to-learn, for it seems plausible that writing, which is the most specific form of language, can enrich learning in every discipline. Writing, in general, enables students to grasp new concepts, and the short, personal, writing exercise, specifically, seems to show the most peda-

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<sup>20</sup>Emig, Writing (1977).

<sup>21</sup>Dowst, K. (1987). The Epistemic Approach: Writing, Knowing, and Learning. In T. R. Donovan & B. W. McClelland (Eds.), *Eight Approaches to Teaching Composition* (pp. 65-85). Urbana, IL: National Council of Teachers of English.

<sup>22</sup>Boone, Great Teaching Ideas (1983).

<sup>23</sup>Applebee, A. (1984). Writing and Reasoning. *Review of Educational Research* 54 (4), 577-596.

<sup>24</sup>Gere, A. R. (Ed.). (1985). *Roots in the Sawdust: Writing to Learn Across the Disciplines*. Urbana, IL: National Council of Teachers of English.

<sup>25</sup>Archambeault, B. (1991, November). *Writing Across the Curriculum: Mathematics*. Paper presented at the 81st Annual Meeting of the National Council of Teachers of English, Seattle, WA.

<sup>26</sup>Archambeault, 3.

gological promise.<sup>27</sup> Written language can increase the number of strands in the web of meaning (to use Vygotsky's analogy). How, then, could writing be used in the music theory classroom? A study that I conducted at the Ohio State University attempted to answer this question.

## The Investigation

This investigation examined the effectiveness of the writing-to-learn strategy in the music theory classroom, and compared it to traditional exercises that also engage the students' thought processes. Three paradigms were used as treatments: a) short writing-to-learn exercises; b) part writing exercises; and c) visual error detection exercises. These exercises were chosen for comparison because each involves the physical act of putting pencil to paper. Quantitative and qualitative data were gathered from the sophomore music theory class through a series of in-class treatments, pre-, and post-tests. The treatments were administered through a crossover design with the intervention based on an a mixed effects model. Factors analyzed included treatment mode (error detection, part writing, and writing-to-learn), student grade history for the freshman music theory courses (in GPA, 0.0-4.0), student's musical instrument (instrumentalist, keyboardist, or vocalist) and gender, resulting in a 3.4.3.2 factorial design. The qualitative data were subjected to a protocol analysis. Part writing and error detection activities are common teaching tools in the music theory classrooms while writing-to-learn activities are not. This study explored the efficiency of each treatment in an effort to determine whether or not the short writing-to-learn exercises compared favorably with the traditional classroom practices.

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<sup>27</sup>See, for example, Applebee, A. (1984). Writing and Reasoning. *Review of Educational Research* 54 (4), 577-596; Marshall, J. D. (1987). The Effects on Writing on Students' Understanding of Literary Texts. *Research in the Teaching of English* 21(1), 30-63; and Durst, R. K. (1987). Cognitive and Linguistic Demands of Analytic Writing. *Research in the Teaching of English* 21(4), 347-376.

Data on the three types of in-class treatments were collected to assess their effect on learning three harmonic constructs (the Neapolitan sixth chord, the augmented sixth chords, and the common-tone diminished seventh chord), specifically to see if any of the treatments generated either (1) higher improvement scores (post-test minus pre-test), or (2) higher post-test scores than the others. Performance instrument, music theory GPA, race, and sex were also examined to see if these factors interacted with the treatments.

A mixed-effects general linear model served as the means to analyze improvement and post-test scores. Since this study used a cross-over design, multiple responses (one set for each treatment) were collected from each subject. The effect of using multiple responses was included in the analysis to discover if responses from the same subject were similar. The analytical model had to account for missing data, and this was accomplished by using the following model from Milliken and Johnson's *Analysis of Messy Data*:<sup>28</sup>

$$y_{ijkm} = \mu + \rho_{im} + \Pi_k + \tau_j + \lambda_{i(k-1)} + \varepsilon_{ijkm}$$

Throughout this analysis, a factor was considered significant if its p-value (denoted  $\Pr > F$ ) was less than 0.05.

The pre- and post-tests for each topic were identical, and measured the students' knowledge of a specific topic before and after it was taught in the classroom (Figure 1).

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<sup>28</sup>Milliken, G. A. & Johnson, D. E. (1984). *Analysis of Messy Data*. Belmont, California: Lifetime Learning Publications, p. 446-448.

**Figure 1:** Sample of Pre/Post Test (Subject: Augmented Sixths)

Augmented Sixth

Code Name \_\_\_\_\_

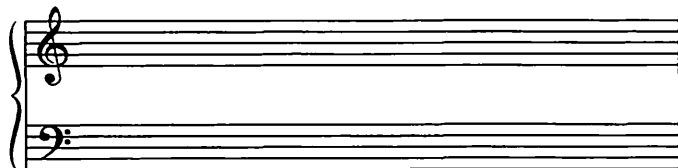
Teacher \_\_\_\_\_

1. Describe the augmented sixth chords in as much detail as possible.

2. Provide a Roman numeral analysis for the following progression:



3. Create a four-voice progression in g minor that starts and ends on I and includes an augmented sixth chord:



The pre- and post-tests included three independent tasks: a part-writing exercise, a prose writing exercise, and a short analysis exercise. The pre- and post-tests were analyzed through a point system developed for each of the harmonic constructs. Generally, the tests measured whether a student could a) recognize the specific concept in an analysis, b) discuss the concept in his or her own language, and c) create the concept in the context of a four-part voice-leading example. Specific grading rubrics were designed for each test (Figure 2).

**Figure 2: Scoring rubric for augmented sixth chords**

**Analytical Identification:**

|                                                                                                                                                       |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Did the student recognize the chord in a musical context?<br>(Two examples @ 1 point each—student must have labeled as some sort of augmented chord.) | 2 pts. |
| Did the student identify the chord appropriately?<br>(Two examples @ 1 point each.—student correctly identified chord as German, French, or Italian)  | 2 pt.  |

**Description of Chord**

|                                                                                                                               |        |
|-------------------------------------------------------------------------------------------------------------------------------|--------|
| Is the Chord construction explained?<br>(list three types, mention +6, mention root, mention additional notes—.5 points each) | 2 pts. |
| Is the voice leading explained?<br>(Augmented sixth resolving—.5, other voices—.5)                                            | 1 pt.  |
| Is context explained?<br>(Preparation and resolution, .5 each.)                                                               | 1 pt.  |

**Four-part harmonization:**

|                                                                                           |       |
|-------------------------------------------------------------------------------------------|-------|
| Is the chord approached correctly in context?<br>(Chord selection, voice leading .5 each) | 1 pt. |
| Is the chord built correctly in context?<br>(Augmented sixth, other voices—.5 each)       | 1 pt. |
| Are special voice leading concerns taken into account?<br>(#4, b6 .5 each)                | 1 pt. |
| Are the rest of the voices resolved correctly?<br>(.5 each for other two voices)          | 1 pt. |

These tests were analyzed in several ways. First, each of the three independent tasks was individually analyzed for significance. The tests were then examined in total to see if any of the variable factors had an effect on the overall score. Each analysis was conducted twice, once using the improvement scores (the difference between each student's pre- and post-tests), and once using just the scores generated by the post-test (ignoring the student's performance on the pre-test). This process generated eight separate analyses (Figure 3).

**Figure 3: List of Analyses**

Improvement Scores:

Part-writing Task

Writing Task

Analysis Task

Total Test Score

Post-Test Scores:

Part-writing Task

Writing Task

Analysis Task

Total Test Score

The full statistical analysis examined the following variables: time period of the treatment, the treatment itself, order effect, instrument, treatment as it interacted with instrument, GPA, treatment as it interacted with GPA, sex, and sex as it interacted with GPA. If the full statistical analysis showed that a factor was significant at the .05 level in the full model, a reduced model of variables was run for computational ease. This model included only the following variables: time period of treatment, treatment, order effect, instrument, GPA, and sex. If a factor was still significant in the reduced model, Bonferroni multiple comparisons were performed to determine which factor levels were different.<sup>29</sup>

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<sup>29</sup>Readers interested in greater detail of this investigation are referred to Kelley, B. (1997). *Part Writing, Error Detection, and Writing-to-Learn: Three Strategies for Learning Music Theory Constructs* (Doctoral dissertation, The Ohio State University, 1997). Dissertation Abstracts International, UMI Number 9721115.

## Statistical Implications

Statistical analyses of data indicated that significant factors influenced students' scores. These include music theory GPA, performance background, and treatment. Perhaps to no one's surprise, GPA in music theory was a significant factor. Students with a higher GPA scored better than students with a lower GPA.

The student's applied background was a significant factor in the statistical analyses. Several different analyses showed that musical instrument was a significant factor (see Table 1):

**Table 1:** Musical instrument as a significant factor

Key to identification numbers:

1 = woodwind, brass, and string players

2 = piano and percussion players

3 = vocalists

| Analysis:                         | Average Improvement:*          |
|-----------------------------------|--------------------------------|
| <b>Improvement Score Analyses</b> |                                |
| Analysis of Writing Task**        | 1 scores higher than 3 by 0.55 |
| <b>Post-Test Score Analyses</b>   |                                |
| Analysis of Writing Task          | 1 scores higher than 3 by 0.66 |
| Total Post-Test Scores            | 1 scores higher than 3 by 1.68 |
| Total Post-Test Scores            | 2 scores higher than 3 by 1.73 |

\*The average improvement is a measure of how test results compare between two variables. The analyses of independent tasks show average improvement out of a total of four points, while the analyses of the total test scores show average improvement out of a total of twelve points. Thus, the very first line indicates that woodwind, brass, and string players scored an average of .55 (out of four) points higher than did vocalists on the writing task.

\*\*Significant at the .06 level rather than the .05 level.

Wind and string players were able to answer the prose writing task on the pre- and post-tests (note that this is different from the writing-to-learn treatment) more effectively than vocalists, regardless of treatment.

Vocalists also scored significantly lower on the total scores when compared to the other instrument groups. These results indicate that vocalists represent a population of special concern for the music theory teacher. This may be an artifact of earlier training. Because vocal education at the high school level seems not to focus on good music reading skills, many vocalists come to the college level with an underdeveloped understanding and comprehension of music fundamentals. While there are certainly exceptions to the rule, it seems that the average vocalist needs an extra push to learn the concepts of music theory.

The statistical analyses failed to indicate conclusively which treatment helps vocalists learn most easily, but the post-test analysis of the analytical task provided a possible answer. Instrument and treatment are intertwined for significance in this statistical measure, which showed that vocalists who received the writing-to-learn treatment scored an average of 1.57 units *lower* on the analysis task than vocalists who received the part-writing treatment, and that vocalists receiving the writing treatment scored 1.24 units *lower* than vocalists who received the error-detection treatment (see Table 2).

Table 2: Treatment as a significant factor for vocalists

Key to treatment numbers:

1 = writing

2 = error detection

3 = part writing

Analysis:

Average Improvement per unit:

*Analytical Task*

treatment 1 to treatment 2

1 scores lower than 2 by 1.24

treatment 1 to treatment 3

1 scores lower than 3 by 1.58

This is a rather remarkable disparity, considering there is only a range of four units total. It reveals that analysis was learned more readily with notational exercises (part writing and error detection) than with writing exercises. Vocalists did better with the part writing and error detection treatments than with the writing-to-learn treatment, and this may indicate that they simply need more time "in the music" than their counterparts in the instrumental world. Treatment was also a significant factor for all groups in this study when considering the post-test scores only (see Table 3).

Analysis of post-test scores for the writing task showed that students receiving the part writing treatment scored 0.53 units higher than students receiving the error detection treatment. In the analysis of total post-test scores, treatment was again a significant factor, showing that students that received the part writing treatment scored 1.11 units higher, on average, than did the students receiving the writing-to-learn treatment. For teaching harmonic constructs, part writing was clearly the most effective of the three treatments. This finding raises interesting issues in light of the fact that the writing-to-learn movement has shown promise in almost every field. Why is it that prose writing did not help students as readily as part writing did?

The writing-to-learn philosophy is based on the idea that "inner speech," the mechanism that translates innate knowledge into active vociferation, is activated most readily by the written word. The process of writing words slows the learner, so that communication can be clarified. Music, however, is basically non-linguistic,

**Table 3: Treatment as a significant factor**

Key to treatment numbers:

1 = writing

2 = error detection

3 = part writing

Post-Test Score Analysis:

Average Improvement per unit:

Analysis of Writing Task

3 scores higher than 2 by 0.53

Analysis of Total Post-Test Scores

3 scores higher than 1 by 1.11

even music that accompanies text. According to Serafine, music is cognition “in which the artform is not considered a clearly specified external object, but rather an internal, subjective entity springing from mental operations.”<sup>30</sup> The most essential manner of learning music, then, may be purely through the medium itself. Part writing is, after all, a form of writing, and the many benefits of writing words may also be derived from “thinking” with notation. Perhaps writing-to-learn principles did prove valid, but in writing *notation*, rather than in prose.

### Notation as Language

As a subject, music theory has unique characteristics that set it apart from other fields, even those such as mathematics that use symbolic language. The discipline focuses on notation, yet that notation is not music. Rather, it is a written representation, much the same as written prose can serve as a symbolic representation of spoken language. Many elements of writing-to-learn theory are applicable to music—but the writing involved concerns notation rather than language. The role of notation in learning music can be re-examined by returning to the theories of Vygotsky and the writing-to-learn proponents.

Vygotsky focused on language as a fomenter of learning with his paradigm of inner speech. His model of the interaction between language and thought allows for non-linguistic experiences in learning:

Schematically, we may imagine thought and speech as two intersecting circles. In their overlapping parts, thought and speech coincide to produce what is called verbal thought. Verbal thought, however, does not by any means include all forms of thought or all forms of speech. *There is a vast area of thought that has no direct relation to speech.*<sup>31</sup> (Emphasis mine.)

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<sup>30</sup>Serafine, M. L. (1988) *Music as Cognition: The Development of Thought in Sound*. New York: Columbia University Press, p. 233.

<sup>31</sup>Vygotsky, 88.

The inner speech that Vygotsky modeled forms a direct link between speech and thought. Might there be an area of pure thought not covered by inner speech that translates between thought and music—an “inner music”? Inner music would be condensed and abbreviated, just like inner speech. The act of transferring musical thought from the maximally compact inner music to the intricately detailed written notation might create what Vygotsky called “deliberate semantics”—the web of *musical* meaning. A musical web of meaning could describe how notation and thought interact continually to produce a network of ideas and feedback. Perhaps music is learned through an inner pool of thought that is intricately linked to the musical process, a process that creates musical meaning for each of us. Serafine describes this type of musical cognition as “the activity of thinking temporally with sounds, both simultaneous and successive.”<sup>32</sup> Musical cognition does not just follow sensory input, but actively constructs musical events.<sup>33</sup>

“Inner music,” like inner speech, would necessarily be dynamic, shifting, and unstable. Perhaps, as inner music becomes perceived music, a complex cognitive transformation occurs as the inner music is syntactically reinterpreted and organized. An inner music modeled on Vygotsky’s inner speech would continuously and spontaneously engage with the music we hear and perform. Understanding harmonic functions, a goal of music theory, would then be facilitated by stimulating the interaction between thought and the musical phenomenon. Part writing, using the representational system of music, appears to help create a web of meaning needed to learn and understand the fundamentals of what is heard.

Vygotsky laid a foundation for exploring why notation, as the physical, symbolic representation of music, is an effective mediator for learning the concepts of music theory. The interaction between pure thought and musical action, as represented by an inner music, may explain why writing notation proved more effective than the other treatments. This effectiveness may also stem, however, from qualities that part writing shares with the writing-to-learn exercises.

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<sup>32</sup>Serafine, 72.

<sup>33</sup>Serafine, 73.

## Notation: The Written Sound

The writing-to-learn theorists claimed that writing prose influenced learning for a variety of reasons, most of which also seem applicable to writing musical notation. Writing notation, like writing prose, forces students to sharpen their focus to successfully resolve problems and to seek out and organize patterns. The factors that contribute to the positive role of prose writing in thinking may also apply to writing music: the permanence of the product, allowing revision and review; the explicitness required to maintain meaning; the facilitation of organization; and the active nature of the process.<sup>34</sup> The act of writing notation forces students to engage in the very activities that writing-to-learn proponents advocate. The benefits of writing prose can be directly applied to writing notation. Unless students are simply copying music, they are being forced to create new connections with what they have previously known. Part writing and prose writing share many of the same relationships to learning.

Recent cognitive research supports the idea that part writing is an important cognitive agitator in music. The cognitive theory of multiple intelligences<sup>35</sup> maintains that intelligence is multifaceted; rather than a single base intelligence, humans have a number of differing kinds of intelligences: mathematical, musical, linguistic, social, physical, etc. Diana Deutsch's research supports this hypothesis. In 1973 she investigated different types of interference patterns on her subject's musical memory, and found that non-musical interference patterns had less effect on musical memory than did musical interference patterns. Her research implies that musical memory is more dramatically influenced by musical events than by non-musical events.<sup>36</sup> David Marr suggested that the different in-

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<sup>34</sup>Applebee, 577-596.

<sup>35</sup>See especially Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books, Inc.; and Gardner H. (1985). *The Mind's New Science: A History of the Cognitive Revolution*. New York: Basic Books, Inc.

<sup>36</sup>Deutsch, D. (1973). Octave generalization of specific interference effects in memory for tonal pitch. *Perception & Psychophysics* 13 (2), 271-275.

telligences, or “modules,” operate according to their own principles, and have little interaction with the other intelligences.<sup>37</sup> Marr’s theory implies that musical intelligence—in this case the recognition and construction of certain constructs—is aided through musical exercises that specifically activate the musical intellect.

### Writing-to-Learn in Music Theory Instruction

The question remains: is prose writing a viable alternative in the music theory classroom? My answer is a cautious yes, but not in the role initially envisioned in this study. Music is different from other disciplines because it incorporates a language unique to itself. As Barrow states, “Just as there appears to be a universal genetic programming of humans that endows linguistic skills, so there might be a *universal musical grammar* that plays the same role for sound patterns.”<sup>38</sup> (Emphasis mine.) Writing-to-learn theory holds that verbal language remains the most important mediator of concepts, even in symbolic fields. While for most music students this holds true, some students intuitively learn the grammar of some styles of music simply by listening to the music itself. There are too many examples of talented self-taught musicians who have a thorough aural grasp of advanced harmonic constructs to claim that verbal language is *necessary* for learning music. Musical genius aside, the normal music theory course can probably benefit from the use of writing in the classroom.

Borrowing from the studies in mathematics, this study examined writing as a primary pedagogical tool for learning specific music concepts. Writing was not as successful in this role as part writing. Prose writing may have a place, however, in helping students when the music itself is ambiguous, where context is ill-defined, and where students must think critically to make the appropriate decisions. As Rogers states:

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<sup>37</sup>Marr, D. (1982). *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information*. San Francisco: W. H. Freeman.

<sup>38</sup>Barrow, J. (1995). *The Artful Universe*. Oxford: Clarendon Press, p. 194.

The natural inclination to weight those aspects of musical experience that are the most “teachable” and “testable” should be carefully examined. Theory teachers, too often, tend to overstress topics or questions that permit only clear-cut right or wrong answers while avoiding those gray areas of ambiguity that can be so treacherous. Channeling of the thought process into black-and-white categories is important at a beginning stage so that basic concepts can be established, but eventually a theory program must move ahead to create tolerance and enthusiasm for the discovery, exploration, and comparison of a wide range of differing musical ideas and must promote the ability to back up decisions and judgments with logic, consistency, and imagination. In the long run, most questions that do have unequivocal answers turn out to be insignificant, whereas those that allow a variety of interpretation have the power to kindle real musical insight.<sup>39</sup>

Writing may be a way to find answers to interpretive situations, not by defining an augmented sixth chord, for example, but by helping a student decide if a particular sonority is functioning like an augmented sixth or something else. This study provided situations that were very clear for the students; little ambiguity was thrown at them in terms of context. If samples of real music had been used, however—samples that provided confusing situations—prose writing might have had a greater impact. Different learning goals may have also resulted in different outcomes for the study. If the investigation had measured how students grasped the concepts of dominant preparation or harmonic prolongation, or the idea of musical tension, then the writing-to-learn exercises may have had a greater impact. This is an area of research that should be explored in the near future.

## Conclusion

This study examined the effect of three types of exercises on learning music theory. Of the three—part writing, error detection, and writing-to-learn—part writing was the most effective. The creative

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<sup>39</sup>Rogers, 5.

openness of the exercise, and the musical literacy it required made it the most efficient way to help students learn the selected harmonic constructs. Prose writing may have a useful role in the music theory classroom, but not as a primary method of instruction for tasks such as these. Writing's role may be of more limited value in the music theory classroom than the writing-to-learn advocates anticipated.

The tools we bring to the pedagogy of music theory can include a variety of tasks, but exercises that engage the students in the notational system work best for the constructs examined in this investigation. Future curricular development should recognize this, and create for students an environment that facilitates their learning efficiently and well.

