

Sabbatical Leave Abstract

Susan Bruckner- Music Department

BACKGROUND

I have been interested in music and brain research for over twenty years. Having served on the Learning Theory committee for the National Conference on Piano Pedagogy in the 1990's, I still regularly attend workshops, read research papers, write and lecture on the intersection between music and the brain at workshops in the U.S. and abroad. I would like to use a one-semester sabbatical for a much more focused in-depth study of cutting edge research in the fields of Music and Health, Music and Neuroscience, and Music Education. More recent studies in these areas all point to a second look at the role of music in the evolution of the human brain and why music has been a pillar of education from ancient times forward.

OBJECTIVES

1. Enhance my knowledge of recent research and how it points to the evolutionary priority of music in the brain, thus making it a candidate for core curriculum.
2. Integrate this research into the community college music curriculum and for application in Creative Careers Certificate '79' course.
3. Develop workshops based on my findings to present to the Cabrillo community and at music education conferences nationwide.

ACTIVITIES

1. Visit eleven music research institutions in the U.S., Canada and England to learn about their work in the fields of Music Education, Music and Health, and Music and Neuroscience, all fields pertinent to career directions for Cabrillo students.
2. Collect a minimum of eleven research papers total from all sites visited for use in Cabrillo Music Lab.
3. Keep a journal of research outcomes, personal observations, and answers to fourteen interview questions for a minimum notebook total of 33-55 pages.

BENEFITS TO THE COLLEGE

1. Brain-based music research and materials will directly benefit students in their practice and performance efforts.
2. The majority of our music students go on to general music education and they will learn pedagogical techniques from the modeling of this research.
3. VAPA division faculty will benefit from sharing this scholarly research and discussing how it can be adapted to each artistic specialty.
4. This research will aid in substantiating the need for music and arts as an integral part of the core curriculum across our campus amongst faculty and administration.

OUTCOMES

1. A music research notebook.
2. Create new lesson plans within existing courses Mus 51, 22 and 23 by using the most applicable studies to outline new music and brain-based techniques.
3. A 10-page overview of the entire project.

SABBATICAL PROPOSAL NARRATIVE

Susan Bruckner- Music Dept. Cabrillo College

INTRODUCTION AND BACKGROUND

I am in my tenth year as full time faculty in the music department, having taught here for twelve years part-time prior to that. I teach the following courses:

Beginning through advanced piano classes:

Mus 51A,B,C,D 22A,B 23, 23L

Piano Ensemble Mus 68

Collaborative Pianist Mus 68CP

Chamber Music: Mus 40

OL Music Appreciation: Mus 10

My professional interests include piano pedagogy, learning styles and music and neuroscience. I am applying for a one semester sabbatical in the spring of 2018. There has been a great deal of research with the development of fmri (functional magnetic resonance imaging) and PET (positron emission tomography) scanning technology on musicians and how music is physically represented in the human brain in recent years. I am convinced that this field of research has many valuable implications for the future of arts education and its rightful place in the core curriculum. Neuroscientists are demonstrating in diverse ways the evolutionary priority of music, as witnessed by its unique presence throughout the whole brain. Compared to the core subjects of STEM, music is much less confined to discrete regions of the brain.

I attended the International Conference on Music Perception and Cognition in San Francisco in July 2016 and realized that I would need more focused time and energy to learn all that is happening in my field than I would be able to from just reading abstracts in my spare time. The purpose of my leave would be to see and discuss firsthand various brain-based music research projects going on around the globe in a one-semester sabbatical and bring my knowledge base up to a more current, in-depth, and cutting edge level than it is at right now.

I am interested in finding ways to incorporate these brain-based music findings in my work and sharing with others at Cabrillo College and beyond. I will apply what I learn to improve my teaching skills, and help students in turn learn how to practice and perform more effectively. For some students these skills are essential to their career, for others they will greatly enhance a feeling of personal achievement and mastery at various levels. I also see a potential in developing new curriculum in the music department and valuable applications to our new certificate area of Creative Careers in the VAPA division from these studies. I am expecting there to be overlap between this research, Creative Careers and the Guided Pathways that the campus is exploring.

I am mainly interested in Music Education, Music and Health, and Music and Neuroscience, but will be open to other topics if they are also pertinent to the Cabrillo mission statement of “helping students achieve their academic, career, and personal development goals.”

OBJECTIVES

1. Enhance my knowledge of recent research: I plan to acquire a greater, in-depth understanding of the mechanisms of neuroscience that have a bearing on music perception, cognition, pedagogy and performance by speaking firsthand with the researchers. I am interested in all aspects of research that demonstrate the need for music as a core subject. I will go prepared, having read the abstracts of their work and write a list of questions to ask and discuss at each institution. (See General Interview Questions on last page)
2. Integrate work into curriculum: I plan to organize this information into a workshop format so I will be able to pass it on to others through Cabrillo classes, amongst colleagues, and out into the wider music education community of the U.S. I will be working as I go to identify the most salient aspects of the work to develop new lesson plans for integration into the existing community college curriculum and the Creative Careers Certificate ‘79’ course which is being developed with Guided Pathways concepts in mind.
3. Develop workshops: I plan to develop a workshop with the material to present at a Cabrillo flex activity to either VAPA division faculty or any cross-campus faculty who shows interest. I will also use this workshop material to submit proposals to present workshops/lectures at various conferences such as Music Teachers National Association, Music Teachers Association of California, and the National Conference for Keyboard Pedagogy, all of which I have presented at in the past.

ACTIVITIES

1. Visit music research institutions: I plan to visit the following institutions, all of which I have identified as having music cognition and perception research on an ongoing, long-term basis. I have already been in contact with people at many of these departments and plan to visit their schools to learn more about their work. This would involve preparatory study of their work, preparing questions, and traveling to their location. The studies in parentheses are representative of the fields of research ongoing at each institution, but are not limited to these topics only.

2 Weeks at CA Institutions:

UCSF – (Assessment of rhythm abilities, executive function & memory)

UCSC- (Rhythm as an evolutionary conserved mechanism- Ronan the sea lion)

Andrew Rouse

UCSB – (Use of metaphor in skilled movement) Jake Pietroniro
Stanford University – (Sleep related plasticity after novel instrument learning- James Tobin) (Impact of music supported rehab in stroke cases)

2-3 days at:

University of Nevada, Las Vegas (Beat perception & developmental stages)

One week at Canadian Institutions:

McMaster University – Hamilton, Ontario, CANADA (External stimulus increases rhythmic accuracy) (Music performance anxiety) (Rhythmic variety & tempo correlations in Bach)

McGill University – Montreal, Quebec, CANADA (Neural changes after multi-modal learning in pianists- Ben Gold)

One month at Institutions in England:

Royal Northern College of Music – Manchester, England (Musical structure & memory) Ginsborg & Chaffin

Goldsmiths College – London, England (Stroke rehab.) (Music & intelligence)

Queen Mary University of London – (Analysis of Chopin mazurka recordings for dynamic outliers) (Cognitive bias of reading music reviews)

University of Oxford – England (Music and measures of empathy)

2. Collect a minimum of eleven one-page abstracts in total and whenever possible, full papers of any research I review for use in the Cabrillo Music Lab. This annotated bibliography will also include my notes and answers to the 14 General Interview Questions. In all, it should be between 33-55 pages long. These will become part of a permanent research section in the Music Lab Room 5131 at Cabrillo, available to faculty and students alike.

3. Keep a travel journal of my findings from each institution with a minimum of eleven total project overviews to document. Each project will result in a minimum one-page summary in accessible, layman's language of the importance of each study to the field of music education. These overviews will also contain any observations I might have on the possible direct use of the research in teaching classes at Cabrillo or elsewhere. For example, a study on rhythm exercises at McMaster University has shown that using drumsticks results in higher rhythmic accuracy than tapping rhythms with the hands alone. These will be compiled along with the original researcher's abstract, my one-page summary, and transcripts of the interview questions and answers into a music research bibliography notebook for use in the Music Lab. Each study should total 3-5 pages, depending on the length of answers to the fourteen questions, making a final minimum notebook total of between 33-55 pages. I am hoping to gain new insights as to the evolutionary role of music inhabiting the greatest number of structural areas of the brain by interviewing the people who are also interested in this question (as reflected in Interview Question #10: Why do you think so much of the brain's structure is involved in making music?).

4. Four to Six Weeks Post-Site Visits (April-May 2018)

- a. Review all data and notes, write overview summary.
- b. Compile Bibliography Notebook for Music Lab.
- c. Create lesson plans derived from research in areas of memory, sight-reading music, performance anxiety, and practice techniques. Examples might include cross-lateralization exercises before sight-reading piano music. Another example might be using recent brain chemistry findings to create exercises for performance anxiety. I plan to incorporate these new lesson plans within existing courses in the music department and possibly for the new Creative Careers Certificate in fields such as music therapy and music-related brain techniques for ameliorating cognitive decline in the aging population. These techniques will be documented as specific practice habits and performance skills that should be introduced or enhanced based on research I learn about in my sabbatical.

5. July 2018 – 5 Day Conference in San Diego CA

International Conference on Music Perception and Cognition

BENEFITS TO THE COLLEGE

1. Introduce latest brain-based teaching methods and materials to music students for both practice and performance. I will incorporate these teaching skills into existing curriculum and expand that curriculum to embrace new findings that point to novel methods of presentation and preparation of music for performance, such as the use of drumsticks rather than hands as mentioned above in Activities #3.
2. Students aspiring to become music educators or music and health care workers will benefit from experiencing these learning mechanisms and teaching methods for the future generations they will go on to teach or work with. For example, there is an enormous amount of research going on in the field of music therapy for seniors; both lifelong learners and those with moderate to severe dementia, Alzheimers disease, or strokes.
3. VAPA division faculty can learn these brain-based models and adapt them for use in their specialty arts area. The brain-based models I will learn about can be applied to Creative Careers course 79 curriculum being developed. I expect to also find some evidence that these brain-based models are in accordance with the Guided Pathways model. Due to the current and cutting edge nature of this research my sabbatical study will be relevant not only to the arts but also the sciences at Cabrillo.
4. Exploration of the ongoing necessity of music as an integral part of the curriculum. This research will aid in substantiating the need for music and arts as an integral part of the core curriculum across our campus amongst faculty and administration. This scholarly research also has potential to build bridges between the arts and science communities on campus.

OUTCOMES

1. A Music Research Notebook which would include an annotated bibliographical list and accompanying abstracts of a minimum of eleven research projects surveyed in my visits to research institutions. Each project should have an estimated 3-5 pages, totaling 33-55 pages in all, including answers to the 14 questions I will ask each researcher. I plan on compiling a bibliography that is divided into different categories of research such as Music Education, Music Performance, Performance Anxiety, Practice Techniques, Music and Health, and Music and Neuroscience so that students and faculty can find the research that is most pertinent to their own goals. This would be kept in the Music Lab for students and faculty to read.

2. Create new lesson plans within existing courses Mus 51, 22 and 23 by using the most applicable studies to outline new music and brain-based techniques that translate into effective teaching and learning strategies. This will include no less than five lesson plans and these will be derived from studies in areas of music and memory, performance anxiety, and music therapy. (see Activities: 4-6 Weeks Post-Site Visits #4.c)

3. A 10-page overview of the entire project based on my journal entries from eleven site visits. This will be the basis for the development of a workshop on the intersection of music and neuroscience. This will be used for a Cabrillo flex activity with possibilities for collaboration between the arts and science departments, and for general music pedagogy workshops locally and nationwide. This manuscript will also be used to add a chapter to my book *The Whole Musician* in a future edition. Portions of this can also be submitted as a journal article to various music education journals such as *Clavier Companion* and *The American Music Teacher*, in which I have published articles in the past. My over-arching goal is to learn as much as I can, document it carefully and thoroughly, and then disseminate the information as broadly as possible at Cabrillo and beyond through teaching, workshops, and writings.

GENERAL INTERVIEW QUESTIONS FOR RESEARCHERS

1. What inspired you to study music and neuroscience?
2. What inspired you to pursue this particular aspect of music research?
3. Do you have musical training in your own background?
4. If not, do you consult with a professional musician when designing a research project?
5. What difficulties did you encounter in this particular research project?
6. What outcomes did you expect to find?
7. Did the outcome differ from what you expected or did it match?
8. If you used musicians in your study, what was their experience level and specialty?
9. Do you think there is strong physical evidence for an evolutionary precedent for music over speech? Why?
10. Why do you think so much of the brain's structure is involved in making music?
11. What are some of the chief values of studying music and neuroscience?
12. What are some of the most useful ways this research might be put into practice?
13. What previous studies have provided some of the most ground-breaking findings in your opinion?
14. What other ideas for future projects might you have?