

**A PROPOSAL TO THE BAKER FUND COMMITTEE**

TITLE OF PROJECT: **The Effect of the Music-Based 'Keep a Beat' Intervention On Off-Task Behaviors of 3-5 Year Old Children in a Group Setting at a Public Preschool**

NAME OF APPLICANT: Kamile Geist

STATUS: \_\_\_\_\_ Asst. Prof.  Assoc. Prof. \_\_\_\_\_ Prof. \_\_\_\_\_ Full-Time Admin.

CAMPUS ADDRESS: 551 C Glidden Hall, Athens Campus

E-MAIL ADDRESS: [geistk@ohio.edu](mailto:geistk@ohio.edu)

RE-SUBMISSION: \_\_\_\_\_ YES (Original Submission Date \_\_\_\_\_)  
 NO

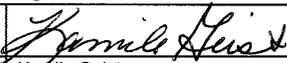
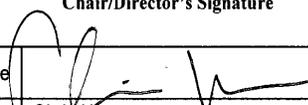
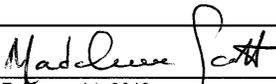
BUDGET: Total Request **\$10,583.00**  
(May not exceed \$12,000)

**IRB AND IACUC APPROVAL:**

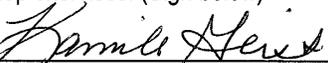
To ensure that the University is in compliance with all federal regulations, complete the checklist below. Note: your proposal can be approved prior to IRB or IACUC approval, but funding will be withheld until notification of approval or exemption.

Yes	No	Office of Research Compliance	Policy #
<input checked="" type="checkbox"/>		Human Subjects in Research (including surveys, interviews, educational interventions): Institutional Review Board (IRB) Approval #: Expiration Date:	19.052
		Animal Species: Institutional Animal Care & Use Committee (IACUC) Approval #: Expiration Date:	19.049

**SIGNATURES**

Applicant's Signature		Chair/Director's Signature	
Signature		Signature	
Name	Kamile Geist	Name	Chris Hayes
Dept/School	Music Therapy	Unit	Music
Date	February 14, 2013	Date	February 14, 2013
Dean's Signature			
Name	Madeleine Scott	Signature	
College	Fine Arts	Date	February 14, 2013

**Optional:** If selected for funding, I give permission to the Office of the Vice President for Research and Creative Activity to use my proposal as an example during training and workshop exercises. (Sign below)

Signature:  Date: Feb. 14, 2013

**BAKER FUND  
APPLICATION CHECKLIST**

Applicants **must** complete and sign the checklist. The checklist should be included as the second page of the application (following the cover page).

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Cover page   | use Baker form  |
| <input checked="" type="checkbox"/> Checklist  | use Baker form  |
| <input checked="" type="checkbox"/> Abstract*  | 1 double-spaced page  |
| <input type="checkbox"/> NA Introduction ( <i>For Continuations or Re-submissions Only</i> )*          | 1 double-spaced page  |
| <input checked="" type="checkbox"/> Discussion   | 10 double-spaced pages  |
| <input type="checkbox"/> NA Glossary/Definition of Terms* ( <i>Not required</i> )                      | 2 double-spaced pages   |
| <input checked="" type="checkbox"/> Bibliography ( <i>Not required</i> )                               | 3 pages   |
| <input checked="" type="checkbox"/> Biographical information ( <i>Applicant(s) and key personnel</i> ) | 3 pages per person  |
| <input checked="" type="checkbox"/> Other Support ( <i>Applicant(s) and key personnel</i> )            | 1 page per person   |
| <input checked="" type="checkbox"/> Budget and Justification   | no limit specified  |
| <input checked="" type="checkbox"/> Appended Materials   | 10 pages  |
| <input type="checkbox"/> NA Appended Electronic Materials  |   |
| <input checked="" type="checkbox"/> Recommended Reviewers  | 5 required  |
| <input checked="" type="checkbox"/> Electronic copy of proposal  | Single Acrobat file, containing entire proposal and required signatures |

\* These sections should be written in language understandable by an informed layperson to assist the committee in its review.

**Please Note: Proposals that do not conform to these format and section requirements will be returned without review by the committee.**

Applicant signature: 

### 3. Abstract

Young children, ages 3-5 from low socioeconomic status homes who exhibit early behavioral problems, are at higher risk of school failure. The literature suggests that while group instruction in preschool is necessary to teach social skills and academics, it can be an extremely stressful time for teachers when dealing with obtrusive off-task behaviors of students. Preschool teachers typically use music during group time instruction to teach academic tasks (e.g. Greeting songs, Weather songs, Abc song, etc.). Music is enjoyable and developmentally appropriate for children and leads to a reduction in off tasks behaviors. There is, however, a lack of evidenced-based evaluation on how this occurs and what music strategies are the most effective. Recent music neuroscience literature supports that the musical element ‘rhythm’ can have a positive effect on attention behaviors in very young children. Therefore, using music-based strategies, specifically rhythm-based, potentially could increase attention behaviors inversely reducing off-task behaviors. The goal of the *Keep a Beat (KaB)* program is provide early childhood teachers, at a school where the majority of the students are from low socio economic status homes, with an effective easy-to-learn music-based rhythmic teaching strategy when faced with inattentive behaviors during group instruction. From previous and current work, the researcher has developed a teacher-centered training module that includes repeated on-site demonstration and immediate feedback for teachers. This project proposed for this award is the final phase of development of the strategy. Objectives for the project include (1) implement a teacher-training program for the *KaB* intervention, (2) evaluate the impact of the intervention through a single-case ABAB research design, and (3) disseminate results via website, publications, and presentations.

4. Introduction (Not Applicable as this is not a continuation or re-submission.)

5. Discussion

A. Specific Aims

This project is the final phase of the teacher training of Keep a Beat (KaB) (see Table 1).

**Table 1 – KaB Phase Objectives/Setting/Funding Support/Dissemination**

<b>PHASES and OBJECTIVES</b>	<b>Setting</b>	<b>Funding</b>	<b>Dissemination</b>
<p><b>Phase I; Summer 2011 – Spring 2012</b>                      Objectives: Purchase audio and visual equipment for website development; create training curriculum; implement a pilot training at a Head Start school; begin to develop observation protocol.  <b>Outcomes:</b>                      Summer 2011 – Purchased equipment, developed curriculum (see appendix)                      Fall 2011 – Began website work                      Spring 2012 – Implemented Development Training at Head Start Preschool (See publication)</p>	<p>Head Start Preschool, Athens, OH                      1 classroom                      2 hours per week during spring quarter.</p>	<p>OURSP, COE, and COFA                      Total:                      \$5000.00                      Purchased audio and visual equipment                        COFA:                      \$2440.00                      Instruments for School and Researcher; paid graduate assistant to collect data at school</p>	<p>Journals:                      Imagine                      Music Therapy Perspectives                      AMTA National Conference                      Mexico Teacher Training                      (see Author’s CV)</p>
<p><b>Phase II; Spring 2013 – Summer 2013</b>  <b>Objectives in Progress:</b>                      Implement pilot training for 1 preschool teacher at a private preschool; Solidify music-based strategy; Solidify observation protocol; Produce training videos and educational materials</p>	<p>Sycamore Run Preschool, The Plains, OH                      1 classroom,                      2 hours per week during spring semester.</p>	<p>No funding; currently using equipment from start up funds. 2 Graduate students volunteer their time 2 hours per week.</p>	<p>To Be Submitted:                        Journal article to early childhood journal.                        Presentations at Early Childhood and Music therapy conferences.</p>
<p><b>Phase III; Final Expected Spring 2014 –Fall 2014</b>  <b>Objectives:</b> Implement teacher training; evaluate intervention; disseminate through website, presentations, and publications</p>	<p><b>Early Learning Center, Athens, OH</b>                      Multiple classrooms                      5 mornings each week for semester.</p>	<p><b>Baker Funds</b></p>	<p>Publish training website for other school district use; Present at Early Childhood Conferences; Publish results in Music Therapy and Early Childhood journals</p>

The teacher-training portion of Phase III is expected to take about 3 months total to implement (See Table 2 for timeline for project objectives.). Once the training is completed, evidenced by the teacher demonstrating competence, the evaluation of the music-based rhythmic strategy portion will begin (See methods section for details).

**Table 2 – Timelines for Objective Tasks For Baker Funding**

Objective Tasks				
	Aug. – Dec. 2013	Jan. 2014	Feb. – Mar. 2014	April 2014
<b>Objective 1.</b> Implement a teacher-training program for <i>KaB</i> intervention,				
Produce Training Materials; Website Development				
Conduct initial meeting with possible participants, gain informed consent, complete teacher interviews and initial classroom observations, and conduct full day KaB training				
Implement teacher-training at school				
Train graduate student on data collection methods for intervention				
<b>Objective 2.</b> Evaluate the impact of the intervention through a single-case multiple baseline research design				
Implement KaB protocol				
Analyze results				
<b>Objective 3.</b> Disseminate results via website, publications, and presentations.				
Meet with teachers to present results.				
Write research findings for presentations and articles submissions. Place results on website for dissemination.				
Produce Manuals for dissemination				
<b>Submit final report to the Baker Fund committee by the end of July 2014.</b>				

**B. Significance and Research Questions.**

The link between low socio-economic status and low achievement is well documented. In general, the lower the family income, the lower the achievement (Jordan, Kaplan, Oláh and Locuniak, 2006; Stipek & Ryan, 1997). Table 3 summarizes family poverty in the county as compared to the state and U.S. statistics. A quick glance shows the county being serviced having significantly higher rates of poverty than the state or nation.

**Table 3 – 2012 Family Poverty in Region**

<b>Region</b>	<b>Total Population</b>	<b>Families with Children under 18 Living in Poverty</b>	<b>All Families Living in Poverty</b>
Athens County	64,757	28.5%	18.3%
STATE	11,536,504	17.8%	10%
US		20.7%	11.1%

**Source: US Census Bureau 2012.**

**Significance for Collaborating School**

The Athens City Schools Early Learning Center serves approximately 100 preschool students, 75% of whom are at risk due to low socio-economic status homes. About 40% of the students receive special education services. All 4 teachers have a Master’s degree and total at least 30 years of experience as early childhood teachers. In spite of their training and expertise, the teachers voice concern about the stress of leading groups and teaching students with behavioral concerns (see letter of support in Appendix I).

**Significance of Music-Based Intervention**

Leading researchers in music neuroscience are providing preliminary evidence on how music and rhythm can improve brain process by affecting various brain structures (Conway, Pisoni, & Kronenberger, 2009; Bengtsson, Ullen, Ehrsson, Hashimoto, Kito, Naito, Forssberg, & Sadato, 2008, Patel, 2009, Thaut, 2005). The evidence is also emerging on what brain structures

are affected when humans listen to rhythmic stimuli such as steady beat (Patel, 2008; Grahn, & Brett, 2007, Zentner & Eerola, 2010). As more research evidence on how the brain of a young child responds to rhythm emerges, this knowledge has the potential to inform us on how rhythm affects attention in young children.

Recent music neuroscience research indicates that rhythm, specifically a steady beat, does affect engagement behaviors in children. Zentner and Eerola (2010) found that 120 infants, ages 5-24 months, were more engaged with rhythm only stimulus (e.g. dry steady beats) vs. speech only stimulus. They spontaneously moved to the rhythm and smiled more when they were in synchrony with the steady beat. The results of this study indicate that children have the potential to be more rhythmically engaged when listening to steady beats rather than when listening to verbal only instructions. Therefore, it is conceivable that when listening to a steady beat rhythmic pattern during teaching activities in the early childhood classroom, children most likely will be more engaged, more specifically show increased levels of focused attention.

Based on this literature on the need for teaching strategies that help with behavioral problems and the music neuroscience research that supports that music can help with attention, the researcher poses the following questions for this final phase of the study. 1) Does a rhythm-based music therapy intervention (*KaB*) delivered during group-time instruction by a classroom teacher decrease off task behaviors of children ages 3-5 in a public preschool classroom?, 2) How do teachers utilize the web-based resources for the *KaB* project?, and 3) What are the teachers' attitudes toward and evaluation of the *KaB* program?

### **Statement/Plan for Dissemination**

Due to its simplicity, the *Keep a Beat* protocol can be adaptable to and replicable in many different regional and socio-cultural settings and with different teacher styles. The dissemination

plan will include producing professional training materials (training video and manual), creating sample curriculum plans and activities, and producing collections of music and demonstration videos available for public preschool teachers via website. For efficiency and cost effectiveness at reaching a wide spread rural population of teachers, the researcher plans to rely on website and Internet delivery of materials and demonstrations. The website will not only be critical during training and implementation stages as a resource for teachers, it will allow for updated material to be distributed to future interested parties quickly and efficiently. Current research findings, activities and photo and video examples, brochures, training manuals and curriculum can also be shared on the website. The website has the potential to provide interactive areas for discussion and questions.

Research results and findings will be disseminated through regular publication of research results in peer reviewed early childhood (e.g., *Young Children*) and music therapy journals (e.g., *The Journal of Music Therapy or Music Therapy Perspectives*) and through presentation at national conferences for NAEYC (National Association for the Education of Young Children) and AMTA (American Music Therapy Association).

**Preliminary Study of *KaB* Intervention of Applicant.**

In a qualitative study conducted by the research and colleagues (see article in the Appendix II), three and four-year old children at a university laboratory school were observed to exhibit more engagement during mathematics lessons that incorporated steady beat in the instruction as compared to direct teaching strategies during math lessons without music (Geist, Geist, and Kuznik 2012). The steady beat protocol was defined as the teacher starting the group by chanting “Let’s keep a beat” and then patting her lap to the beat. When all children were tapping the beat or looking at her, she would then begin the activity. While tapping the steady

beat on her lap, she would then chant or sing the words created for the activity. The study included 30 children (two classes with 15 students in each) and five teachers (two for each class and one instructional assistant for a student with special needs). Engagement was evaluated through documentation of observed behaviors via video analysis. The length of math or math/music lessons varied, from five to 20 minutes. Thematic analysis indicated that students showed more active engagement during the math/music activities as compared to math only instruction. These results lead the primary investigator of the *KaB* study to ask, “Why was a teacher who had minimal training and who showed limited expertise with the protocol still able to evoke an engagement difference using the steady beat technique? What might the results be if the teacher training was more involved? Would the protocol be more effective?” This led to the Keep a Beat project where considerable time and energy was devoted to developing a teacher training module that would be more than just a professional development workshop but a method that can be replicated but effective when the teachers implemented the strategy in the classroom to be evaluated.

#### **D. Methods**

##### **Participants**

Participants will include four teachers who will all receive the Keep a Beat training. This school serves eight classes, an am and pm class for each teacher. Each class has 1 teacher servicing 6-17 children per class ages three to five. All teachers from this school will be allowed to participate in the training, although evaluation will ultimately be delivered by two of the teachers chosen. The criteria for selecting classrooms for the evaluation phase will depend on which teachers are proficient on the intervention and which classrooms present with behavioral needs. All teachers will be able to keep the music instruments and be allowed to practice the

intervention with their afternoon classrooms even if their classroom is not chosen to be evaluated for the intervention effectiveness.

### **Teacher Training**

The teacher training portion of the study will include one informational session, an interview with each teacher (4), an on-site classroom observation for each teacher, a full day training workshop, weekly practice assignments for each teacher, and on site classroom demonstrations and feedback from the researcher daily during the final month of the teacher training. During training, a website will be made available only to the teachers. The teachers will simply log on to the server, using a log in designed for community access, 24 hours a day.

**Informational session.** During the informational session held during the first month of the training, the teachers will learn about the need for the project, their role in the project, expectations, and time commitment. The consent to participate will be distributed at this meeting. Once the consent is given, the teachers will be given the access login and password for the website.

**Interviews and classroom observation.** In order to effectively train teachers with different musical backgrounds, the researcher will spend time talking with the teachers about their music background and observing them interact with their class prior to the full day *KaB* training. Questions will be posed to the teachers about their experience and comfort level with music, what types of musical teaching strategies they currently use (if any), how often they use these strategies in the classroom, and what if any musical instruments they currently use. The researcher will then observe each teacher during group instruction during both of her classes prior to the full day training noting style of teaching, typical routine, and noting general engagement in the classroom.

**Training workshop.** Once the interviews and the initial classroom observations are complete, the researcher will prepare for the full day training workshop for the teachers at the training site at the school. It is expected that the training will take place at the end of the second month. At this time the researcher will present the *Keep a Beat* protocol following the outline of the *KaB* training manual developed for the project (see Curriculum in Appendix III). Teachers will have access to the Internet during the full day training and at their school throughout the program. If they have a computer and Internet access at home, they will be able to access the website.

**Weekly assignments and daily direct teaching/modeling and supervision.** The researcher will continue to train teachers by observing and helping deliver the intervention to one of their two classes for the last 2 months of the teacher training every day during the week. During this time, the teachers will be asked to NOT use strategies they have learned with their other class. It is expected that the researcher will run most of the group experiences for the first two weeks and ask the teacher to prepare at least one experience each week to implement during group time. The assignments/strategies will be available in the training materials and on the *KaB* website. The music-based assignments will be designed to be teacher centric, as the researcher hopes that this will intrinsically motivate the teacher to be prepared. Over the 8-week period of classroom modeling and supervision training, the teacher will gradually take over the group using the intervention.

### **Intervention/Evaluation**

**Keep a Beat intervention.** Strategies will be delivered during a 20-minute group instruction (3-5 year old students in the same class) one time per day during the implementation stage. Teachers will be trained to implement the following strategies: 1) *keep a steady beat by*

*either marching, patting their lap, or clapping or playing the steady beat on an instrument (rhythm sticks, drum, shaker); 2) chant or sing during a lesson or a transition between lessons while keeping a steady beat (see example below) and/or; 3) redirect off task behavior by chanting or singing while keeping a steady beat.* The intervention will be defined as beginning when the first steady beat is used and ending when the group is completed at 20 minutes.

Keeping in mind that all academic content and length of group lesson decisions will be made by the teacher, one example of implementing the intervention Strategies 1 and 2, would be the following:

- Environment: Circle Time, one teacher is sitting in front of the class.
- Activity: Calendar.
- Educational Objectives: Learn the month, the day, and the year.
- Materials needed: Calendar visuals posted.
- Steady Beat Intervention Strategy: Chanting instructions while keeping a steady beat when playing a drum.
- Procedures: The teacher will begin the lesson by playing the drum for eight steady beats.
- The teacher then taps the beat while chanting the following  
“What month is it? (Allow 4 beats for the answer.) “October, October. What day is it?” (Allow 4 beats for the answer.) “Monday, Monday. What year is it?” (Allow four beats for answer.) “2013, 2013!! We have learned the month, day, and year. And (tap) we (tap) stop.”

The music-based strategies will be created by the researcher and taught until minimal proficiency is attained by two of the teachers. At the time of implementation of a strategy, the teacher will have predetermined what, if any, musical instruments could be used based on what he/she has learned during training.

**Observation scheme.** Data will be collecting using a time sampling technique to collect full class data (see data collection form in the appendix). The A and B phases of the design refer to baseline (A) and intervention (B). These are each repeated to yield an ABAB design. Each classroom will have about 17 children. During each baseline phase, the teacher will verbally cue the observer when group time has begun. At that point the observer will start the digital stop

watch and will count off task behaviors during 1 minute. At the end of the minute, the observer will count how many off task behaviors occurred during that minute and record it. This will be done to allow time for accurate recording. This same procedure will occur at minutes 5, 10, 15, and 20 to generate representative samples of time. The total of off task behaviors will be averaged to get a data point mean for that day. During intervention, the cue to start the timer will be the first time the teacher starts keeping a steady beat. Off task behaviors will be defined in consultation with the teacher.

**Training of observers.** The frequency of disruptive behavior will be the primary outcome variable of interest of the study. Reliability will be established by measuring inter-observer agreement (IOA) between two different observers: the graduate students. The graduate students will continue to complete paired observation training until at least a 0.80 Inter-Observer Agreement (IOA) rate has been established, as determined by the co-investigator, across at least ten practice observations. During implementation the graduate students will observe 20% of the baseline observations and 20% of the intervention phase observations to ensure data are reliably collected and coded. Any instances where IOA drops below 80% will be cause for re-training of the graduate students.

**Analysis.** Analysis will be done visually, as the data chart involves “interpretation of the level, trend, and variability of performance occurring during baseline and intervention conditions” (Horner et al., 2005, p. 171). Teachers will initially need to withhold the treatment so a baseline of behavior can be established. To promote implementation fidelity, the researcher will be present for each observation and will give feedback to the teacher during treatment phases of the study. If, for example, the protocol is not being delivered properly, the researcher will intervene and insure quality of intervention before next group session.

## 6. Glossary/Definition of Terms (No definitions needed.)

## 7. Bibliography

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## 8. Biographical Information

Kamile Geist, MA, MT-BC  
Associate Professor of Music Therapy  
Neurologic Music Therapist  
Board Certified Music Therapist (1998-present)

### *Academic Positions*

Associate Professor (Tenured) – 2010 – Present  
Chair – 2011 - Present  
Assistant Professor – 2003-2010  
Department of Music Therapy, School of Music  
Ohio University, Athens, Ohio  
Robert Glidden Hall, 551B, Ohio University, Athens, OH 45701  
Cell Phone: 740-707-6267, Office Phone: 740-593-4248  
Home Address: 5 York Drive, Athens, OH 45701  
Email: [geistk@ohio.edu](mailto:geistk@ohio.edu)

Music Therapy Instructor - 2001-2003  
Meadows School of the Arts, Southern Methodist University – Dallas, Texas

### *Relevant Academic Preparation*

Neurologic Music Therapist – Trained at Colorado State 2011-Present  
PhD Student, Curriculum and Instruction – 2010 - Present  
College of Education and Human Services, Ohio University, Athens, Ohio  
**Cognate Areas: Educational Research Methods**  
Doctoral Coursework Completed: *Theories of Curriculum Change, Advanced Dynamics of Human Learning, Regression Analysis in Education, Introduction to Educational Statistics, Research Methods in Education, Introduction to Qualitative Methods in Education, Program Evaluation*  
Master of Arts in Music Therapy – MA received 1998  
Texas Woman's University – Denton, Texas  
Thesis Title: *Creating Internal Structure in the Client – Centered Music Therapy Environment: The Play Experiences of a Nine-Year-Old Boy With Autism*  
Internship: Waco Independent School District, Special Education Services  
Result: MT-BC Credential Certification, U.S. #05511, 1998 - Present  
Bachelor of Music Education – BME received 1990  
Baylor University – Waco, Texas  
Primary Instrument: Clarinet  
Student Teaching: Waco Independent School District, Wiley Middle School  
Result: All-Level Music Education Certification – Texas, 1990 – Present

## **RESEARCH AND SCHOLARLY ACTIVITY (Relevant to KaB Project)**

### *Refereed Journal Publications:*

Geist, K. (in Press). Bridging Music Neuroscience Evidence to Music Therapy Best Practice in the Early Childhood Classroom: Implications for Using Rhythm to Increase Attention and Learning. *Music Therapy Perspectives*.

- Geist, K., Geist, E., and Kuznik, K. (2012). The patterns of music: Encouraging mathematical development through music. *Young Children*.
- Geist, E., & Geist, K. (2009). In service training of Head Start teachers to overcome early risks of mathematics failure: The MathSTAAR program. *College Student Journal*. 43:4.
- Geist K. & Geist E. (2008). Do re mi, 1,2,3: That's how easy math can be. Using music to support emergent mathematics. *Young Children*. 63:2.

*Invited Publications:*

- Geist, K., Geist, E. (2012). The patterns of music: Encouraging mathematical development through music. *NAEYC Young Children Study Guide*.
- Geist, K. (2010). The power of the beat: Ideas to use music to promote increased academic engagement in K-6. *Focus on Elementary*. 23:1.
- Geist, K. (2010). Patterns of Music. *Imagine Music Therapy Online Journal*. Issue 1. Podcast submission.
- Geist, K. (2009). The Color Train song: Teaching patterning to 3 and 4 year old children. *Early Childhood Newsletter*.
- Geist, E., & Geist, K. (2009). The beat goes on: Mathematics and music with young children. *Early Childhood Today*. March 2009 issue.

*Featured Publications:*

- Perspectives (April/May, 2010). Ohio University Research Publication  
Featured on Math and Music research conducted in collaboration with Dr. Eugene Geist entitled: *Playing the Numbers: Music beats math anxiety studies find*.

*Invited and International Presentations:*

- 2011 Chicago, Illinois, "Stimulating the Brain and Math Learning Through Music". 29<sup>th</sup> Learning and Brain Conference, Scheduled for May 6, 11:00 a.m.
- 2010 Cartagena, Colombia, South America, "La Música Como Apoyo en el Aprendizaje" Translation: Music to Support Learning. II Congreso Internacinal De Educacion Infantil, October 12-13.
- 2010 Cartagena, Colombia, South America – "Ritmo y Música, Fundamentos en el Aprendizaje Matemático." Translation: Rhythm and Music, Mathematical Foundations of Learning. II Congreso Internacinal De Educacion Infantil, October 12-13.
- 2010 Columbus, Ohio, "The Patterns of Music: Supporting Patterning & Algebra in Infants and Toddlers" Child Development Council of Franklin County Head Start Centers. September 1.

*Refereed Presentations:*

- 2011 Geist, K. & Geist, E. "Using music and rhythm to enhance child development and learning: Keep the beat." National Association for the Education of Young Children National Conference. Orlando, FL.
- 2010 Geist, K. & Geist, E. "Hitting the Right Note" National Association for the Education of Young Children. Anaheim, CA.
- 2010 Geist, K. & Geist, E. "Patterns of Music" National Conference of Teachers of Mathematics, New Orleans, LA.
- 2010 Geist, K. & Geist, E. "Patterns of Music: Supporting Patterning & Algebra in Infants and Toddlers" Ohio Association for the Education of Young Children, Columbus. OH.
- 2008 Geist, E. & Geist, K. "Do Re Mi – That's How Easy Math Can Be – Extending the Math and Music Experience with MathSTAAR". National Association of Educators of Young Children's Annual Conference and Expo. Dallas, TX.

**9. Other Support**

*Grants Related to KaB Project*

- 2012 Ohio University College of Fine Arts Research and Creative Activity Award  
 Amount Awarded: \$2,440.00  
 Geist, K. “The Effect of the Music-Based *Keep a Beat* Intervention On Off-Task Behaviors of 3-5 Year Old Children in a Group Setting at a Head Start Rural School”  
 Development of observation protocol and teacher training with one Head Start School.
- 2010 Ohio University – Research Challenge Funds  
 Amount Awarded: \$5000.00  
 Amount Requested: \$2500.00 with matching of \$2500.00 (Matching funds provided by the OU College of Fine Arts and the OU College of Education and Human Services)  
 Geist, K. and Hitchcock, J. “Evaluating the Impact of Keep a Beat on Academic Engaged Time of Children At-risk for Being Classified as Having an Emotional Disturbance in Select Head Start Preschools.”  
 Funding supports Phase I of the “Keep a Beat” study, development of the teacher training DVD/CD manual.
- 2010 Ohio University College of Education and Human Services – Graduate Student Research Grant  
 Amount Awarded: \$1000.00 (Included in matching funds for Research Challenge Funds)  
 Geist, K. “Evaluating the Impact of Keep a Beat on Academic Engaged Time of Children At-risk for Being Classified as Having an Emotional Disturbance in Select Head Start Preschools.”  
 This is partial funding for Phase I of the “Keep a Beat” study, development of the teacher training DVD/CD manual.

**10. Budget and Budget Justification**

<i>Description</i>	<i>Category</i>	<i>Approximate TOTAL Cost</i>
<i>Djembe Drum Bag (4) (1 per class)</i>	<i>Equipment</i>	<i>\$ 400.00</i>
<i>Djembe Drum (4) (1 per class)</i>	<i>Equipment</i>	<i>\$ 150.00</i>
<i>Egg Shakers (72) (24 per class)</i>	<i>Equipment</i>	<i>\$ 100.00</i>
<i>Gathering Drum (4) (1 per class)</i>	<i>Equipment</i>	<i>\$ 400.00</i>
<i>Shipping</i>	<i>Equipment</i>	<i>\$ 50.00</i>
<i>Production of Training Manual</i>	<i>Other</i>	<i>\$ 200.00</i>
<i>Dissemination of Training Manual</i>	<i>Other</i>	<i>\$ 200.00</i>
<i>GA Compensation (2)</i>	<i>Wages</i>	<i>\$6000.00</i>
<i>Travel to School (for 3 people)</i>	<i>Travel</i>	<i>\$1683.00</i>
<i>Training Refreshments</i>	<i>Other</i>	<i>\$ 400.00</i>
<i>Web Design</i>	<i>Wages</i>	<i>\$1000.00</i>
	<b><i>TOTAL</i></b>	<b><i>\$10,583.00</i></b>

**A. Consumables**

**No funds for consumables are being requested.**

**B. Travel**

**Mileage**

The Researcher and two graduate assistants will need to travel by car to the Early Learning Center. The total number of trips expected from all is 20 in the Fall 2013 and 90 for Spring 2014. Average round trip mileage is 10 miles at \$.51 for a total of 110 trips X 10 miles X \$.51 X 3 people = \$1683.00

**C. Wages**

**Graduate assistants.** Each graduate assistant will be paid \$10.00 per hour with a total of 300 hours of work to total \$6,000 for both graduate assistants. The GA in consultation with the researcher will have the following duties: meeting with researcher as needed, attending data collection training sessions as needed, collecting data at school sites as needed, and assisting with data analysis as needed.

**Web Designer.** The researcher would like to hire a web designer, desirably an OU faculty or staff or experienced graduate student to design and launch the Keep a Beat training site. The website will be an integral part of the training as well as is tied to research questions about the training. The researcher is asking for \$1000 to pay someone to set up the website in consultation with the researcher. This is a short-term employment as the researcher does not have the expertise in web design.

**D. Equipment**

**Musical Instruments**

*Keep a Beat* intervention strategies will require the teacher to use a djembe drum and 2 dozen egg shakers that the teacher and children can play that can sound a steady beat. The researcher will provide each teacher with a bag for carrying the drum and egg shakers. T

**Shipping Costs**

The researcher is estimating shipping and handling of the musical instruments at \$50.00.

**E. Faculty Stipend**

No stipend is being requested. The researcher will be on Faculty Fellowship at this time and will be conducting this study as part of her ongoing research endeavors.

**F. Other**

**Copying/Printing**

The researcher is requesting \$200 for copying/printing for training manuals to be distributed at the teacher training. The school of music has limited budget for printing and charges for more for professors whose copies are not related to teaching classes. The printing will be for the original training manuals and for any other printing costs that may arise such as resources, etc. The Early Learning Center also has limited funds for copying as well.

**Dissemination of Manual**

The researcher is estimating costs to professional print 20 Keep a Beat training manual at \$200, sending with Audio/DVD resource with training strategies demonstrated to Preschool Centers in the state's surrounding area. This will not only promote the intervention but will also create possible future training sites if intervention is found effective in this study.

**Other Training Expenses**

The researcher is requesting a total of \$400 for refreshments for 2 staff meetings and 1 full day training session where lunch will be served.

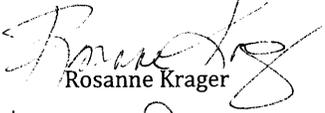
**11. Appended Materials**  
**Letter of Support from Early Learning Center**

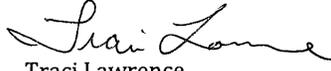
Athens City Schools Early Learning Center  
21 Birge Drive  
P.O.Box 40  
Chauncey, Ohio 45719-0040  
(740)797-4589

The Athens City Schools Early Learning Center in Chauncey, OH strongly supports the funding of "The effect of the music-based Keep a Beat intervention on off task behaviors of 3-5 year old children in a group setting at a public preschool" as proposed by Kamile Geist.

Our children face many stressors and frequently have difficulty focusing on tasks. Teachers in our program have identified dealing with children with behaviors issues as their number one concern. Training provided through the project will provide staff with the tools necessary to improve the classroom environment in a developmentally appropriate and intrinsically motivating way. We believe this partnership will greatly increase the overall attentiveness of our children and lessen the need for intervention because of behavioral issues.

As a new school in Athens, our resources are limited and welcome Kamile to bring innovative but necessary strategies for our teachers and students. Our hope is that the data collected from this study will help us make a case for hiring a music therapist to continue working with our students once the study is completed.

  
Rosanne Krager  
  
Kim Roback

Respectively yours,  
  
Traci Lawrence  
  
Laura Bennett

Appendix II – Publication of Previous Study

# The Patterns of Music

## Young Children Learning Mathematics through Beat, Rhythm, and Melody

Kamile Geist, Eugene A. Geist, and Kathleen Kuznik

**R**esearch on music and music therapy suggests that math and music are related in the brain from very early in life (Burack 2005). Musical elements such as steady beat, rhythm, melody, and tempo possess inherent mathematical principles such as spatial properties, sequencing, counting, patterning, and one-to-one correspondence. Music also seems to be related to very primal parts of the brain (Hudson 2011). Our bodies cannot help but react physiologically to musical input (Thaut & Kenyon 2003; Hasan & Thaut 2004). This implies that even the youngest children have the potential to inherently respond to music and the mathematical constructs it contains.

Recent music neuroscience research indicates that steady beat does affect attention behaviors in humans. We typically process steady beat in the premotor cortex of the brain, an area

also related to attention (Bengtsson et al. 2008). Zentner and Eerola (2010) found that 120 infants, ages 5–24 months, were more engaged with rhythm-only stimuli (for example, a steady drum beat) than with speech-only stimuli. The results of this study indicate that children have the potential to be more engaged when listening to steady beats than when listening to verbal-only instructions. Therefore, it is conceivable that listening to a steady beat pattern during mathematics teaching activities in the early childhood classroom could promote better attention and increased engagement in young children.

Everyday learning experiences, such as listening to music, are especially important in supporting developing mathematics concepts in children from infancy to 5 years old (Linder, Powers-Costello, & Stegelin 2011). Music is made up of rhythmic patterns and can be structured to make the patterning simple or complex, depending on the activity. Zentner and Eerola (2010) suggest that infants and toddlers have an innate capability to not only see patterns but also hear them in music. Reinforcing these capabilities by teaching patterns through music at an early age may benefit children's cognitive abilities (Bell et al. 2009; Meltzoff et al. 2009).

Teaching patterns to very young children is also a key to the concept of *emergent mathematics*, which parallels the idea of emergent literacy. As with literacy, emergent mathematics suggests the following:

- Mathematical learning begins very early in life.
- Mathematics is related to many other developmental milestones.
- Mathematics develops from real-life situations in which the child is an active participant.

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**Kamile Geist**, MA, MT-BC, is an associate professor and program coordinator of music therapy in the College of Fine Arts at Ohio University, Athens. She specializes in early childhood and special education music therapy. Her current research focuses on how children attend to and learn academic tasks better when a musical stimulus, such as a steady beat, is presented. [geistk@ohio.edu](mailto:geistk@ohio.edu)

**Eugene Geist**, PhD, is an associate professor of early childhood education in the Gladys W. and David H. Patton College of Education and Human Services at Ohio University, Athens. He conducts research on how children develop mathematical understanding and how technology will change the learning environment for future generations. [geist@ohio.edu](mailto:geist@ohio.edu)

**Kathleen Kuznik**, an Ohio University student, assisted in conducting the study, including collecting and analyzing data presented in this article.

A study guide for this article is available through [www.naeyc.org/memberlogin](http://www.naeyc.org/memberlogin).



- Children learn mathematics through actively engaging their minds in as many different ways as possible.
- Thinking about relationships, such as bigger, smaller and faster, slower, and especially about pattern relationships, plays a special role in young children's mathematical development.
- Learning mathematics is a developmental process influenced by the child's physical, social-emotional, and cognitive learning and development, and nurtured by a stimulating mathematical environment (Geist 2009).

### Everyday patterns for infants

Many good hands-on patterning materials are available for teachers of young children. Walk down an exhibit hall at any education conference to see the various choices. These materials tend to be mostly visual/spatial in nature, such as colored blocks or tiles. They are meant to be perceived by the eyes. However, one of the first patterning experiences that children encounter as early as infancy is through their sense of hearing or touch (Meltzoff et al. 2009).

Steady beats and rhythms that parents use to soothe their infants or rock them to sleep and the songs they sing to their children contain many complex patterns. For example, when an infant is distressed, a caregiver instinctively rocks or pats the baby in a rhythmic way, using a musical pattern. The caregiver may even sing an improvised lullaby that has a repeated musical pattern (for example, *abab*) in the lyrics:

(Sung to "Hush, Little Baby")

Verse 1: Little baby, *don't you cry*, little baby, *don't you cry*,

Pattern:        *a*                *b*                *a*                *b*

Verse 2: Mama loves you, *don't you cry*, mama loves you, *don't you cry*.

Pattern:                *c*                *b*                *c*                *b*

In this song, the words themselves present a pattern. While rocking and singing this lullaby, the caregiver can gently pat a repeated steady beat, or even a 1, 2, 3, rest pattern, on the child's back. Patterns inherent in the music are heard and felt simultaneously. If the child looks up at the singing caregiver, the child will see the movement of the singer's mouth. The child may then stop crying and begin a steady pattern of breathing, possibly sucking a finger, thumb, or pacifier (Standley 2003).

The pattern is processed in various parts of the brain as the child listens to, feels, watches, and then finally internalizes the pattern. The child moves from relying on the caregiver to provide the musical structure to calm her, to internalizing the pattern and calming herself by sucking to the rhythm and closing her eyes. This early exposure to patterns is not intended to teach mathematics, although the caregiver is introducing the building blocks of mathematical understanding (Clements et al. 2011; VanDerHeyden et al. 2011).

Music brings order to disorder. Teachers can demonstrate patterns without using any materials. All that is necessary is the presence of the caregiver offering an instinctive gift of rhythm and music to comfort the child.

These and other patterning and mathematical experiences that are easily and naturally part of an infant's everyday routine can support the future learning of mathematics and literacy, and of other more formal learning. However, especially in the early years, an emphasis on learn-

**Steady beats and rhythms that parents use to soothe their infants or rock them to sleep and the songs they sing to their children contain many complex patterns.**

ing through play and other everyday experiences is the most developmentally appropriate way to promote important mathematical concepts such as patterning (Phillips-Silver, & Trainor 2005).

### Patterning in the preschool and kindergarten classrooms

As children develop and learn, their understanding of patterns becomes more complex. Patterning is a key benchmark for the National Council of Teachers of Mathematics (NCTM) and part of many states' preschool learning standards (NCTM 2000, 2006;



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NAEYC & NCTM 2002/2010; Papp, Mulligan, & Mitchelmore 2011).

Patterning activities in the preschool classroom help children create and repeat relationships and even use rudimentary number concepts. To create patterns with blocks or beads, a child must understand and then create specific relationships between the objects. For example, a child might alternate colors (red, blue, red, blue), sizes (large, small, small, large), or numerical patterns (1 block, 2 blocks, 1 block, 2 blocks).

As children move into the preschool and even kindergarten years, they can recognize, describe, extend, and create patterns (VanDerHeyden et al. 2011). They make patterns that are more complex and more numerical, and they develop the ability to create and use three types of patterns:

**Repeating patterns** are virtually the same patterns the children created as infants and toddlers: repeating sequences such as red, blue, red, blue. However, in preschool, the children are more intentional about patterning, and their repeating patterns become more complex. They may use three or more colors in their sequence and they may add mathematical elements to the repeating pattern (Seo & Ginsburg 2004).

**Growing patterns**, such as 1, 2, 3, 4 or 2, 4, 6, 8, comprise numbers as the central element. Growing patterns can be demonstrated with numerals or with groups of objects. With these patterns, there are numerical or mathematical rules that govern the growing relationship of the groups. It can be “add one more” for 1, 2, 3, 4 or “count by twos” for 2, 4, 6, 8 (Geist 2009).

**Relationship patterns** link two numbers by using some sort of function. For example, one box of crayons contains 8 crayons, 2 boxes of crayons have 16, so the pattern could be 1, 8, 2, 16, 3, 24. Generally, this type of patterning is not seen until second or third grade, due to the multiplicative properties of the patterning sequence (Geist 2009).

### Children’s reactions to music and mathematics

Music plays an important role in patterning experiences at home and at school. Music activities and materials are excellent for promoting patterning and emergent mathematics (Geist & Geist 2008; Southgate & Roscigno 2009). Music keeps children engaged in a mathematical activity for long periods of time. Such experiences promote positive attitudes toward mathematics and support the construction of mathematical concepts in a developmentally appropriate way for infants and toddlers. Edelson and Johnson (2003) found that music enriches the mathematical learning environment for children because such activities are infused with a degree of pleasurable intensity, promote the fun of learning, and allow the child to be an active participant.

Keeping mathematics learning natural and comfortable should be the goal of all teachers, whether they are teaching infants or college students. In our study of 3- and 4-year-old children, conducted at the Ohio University Child Development Center in Athens, Ohio, we interviewed the children about the math activities in their classrooms (some with and some without music). All but one of the children commented on the activities that included music, and these children used music in some way to explain the math concept to the interviewer. Many times the children did not recognize the activity as mathematics. The children who did not have the musical experiences along with the mathematics had trouble recalling any of the concepts that were discussed in the lessons.

**Kamile:** I’ve been asking everyone this question. What is math?

**Janey:** (She says nothing, shrugs her shoulders, and shakes her head.)

**To create patterns with blocks or beads, a child must understand and then create specific relationships between the objects.**



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**Kamile:** Okay, here are pictures of some activities that you've been doing in class. Here are some ducks, and here are some shirts.

**Janey:** *(Interrupts)* Oh, I know. *(She begins tapping her knees to a steady beat and singing one of the patterning songs developed for her classroom.)* Here comes the color train, here it comes. / Here comes the color train, here it comes. / The color train is here to stay, we line up, line up on the way. / Here comes the color train, here it comes.

**Kamile:** Wow, what is that song about?

**Janey:** Patterens.

**Kamile:** Patterns?

**Janey:** Yeah!

**Kamile:** What are patterns?

**Janey:** Patterns are where you have a red shirt, then a blue, then a red and a blue shirt all in a row. *(Janey starts tapping her knees to a steady beat and again begins to sing.)* Looking for a red shirt, red shirt, red shirt, / Looking for a red shirt, come line up. / Looking for a blue shirt, blue shirt, blue shirt, / Looking for a blue shirt, come line up. / Red . . . Blue . . . What's next? *(She stops singing.)* See? Red, blue, red, blue. See, it's a pattern.

**Kamile:** Oh, a pattern.

The second song in the interview with Janey is "The Color Train" (Geist 2009). It is a musical teaching activity created to support development of early patterning by using repeated rhythmic beats within the song and creating a structured activity in which the children repeat color patterns. When singing this song, teachers can use drums or other instruments to emphasize patterns in the song to encourage children to imitate different beats on drums or replicate an action. The words teach repeated color patterning, but the music itself is filled with simple and complex repeated patterns.

There are math opportunities and interactions all around young children, which often are not recognized

### "The Color Train"

The teacher begins by keeping a steady beat and encourages the children to keep a beat as well.

*Chorus (To the tune of "This Train is Bound for Glory." Can be sung or chanted.)*

Here comes the color train, here it comes. (Choo choo)  
 Here comes the color train, here it comes. (Choo choo)  
 The color train is here to stay; we line up, line up on the way.  
 Here comes the color train, here it comes. (Choo choo)

**Chant**

Looking for a PINK shirt, PINK shirt, PINK shirt.  
 Looking for a PINK shirt, come line up, come line up.  
 Looking for a RED shirt, RED shirt, RED shirt.  
 Looking for a RED shirt, come line up, come line up.  
 PINK . . . RED . . . (What's next?) PINK!  
 Looking for a PINK shirt, PINK shirt, PINK shirt.  
 Looking for a PINK shirt, come line up, come line up.  
 PINK . . . RED . . . PINK . . . (What's next?) RED!  
 Looking for a RED shirt, RED shirt, RED shirt.  
 Looking for a RED shirt, come line up, come line up.  
 PINK, RED, PINK, RED.

**Repeat chorus**

The line of children can then follow the leader, pretending to be a train. The other children sitting in the group keep the beat, sing the chorus, and observe the pattern.

as mathematics by the children or their parents or teachers. In fact, some children even added math to the Color Train activity where none was intended. Here is part of Michael's interview about another musical activity created to promote mathematical understanding.

**Kamile:** Tell me about the ducks.

**Michael:** Well, did you know the mother duck lost her babies?

**Kamile:** Really?

**Michael:** And do you know how she called them back into line?

**Kamile:** No, tell me.

**Michael:** Well, she would quack so that all the baby ducks could hear and then the little ducks heard and then they went back into line. And you know what?

**Kamile:** What?

**Michael:** Well, the mother duck would quack as many times as there were baby ducks.

**Kamile:** Really?

**Michael:** Yeah. So, if there were five ducks, she would quack five times, like "Quack, quack—quack, quack, quack." *(Michael represented this quacking example in a rhythmic pattern, like 1, 2, 1, 2, 3, and used his fingers to count up to 5 as he was quacking.)*

**Kamile:** So you counted the quacks.

**Michael:** Yes, the momma quacked five times, five baby ducks!

The quacking part of the activity that Michael referred to was only in the musical activity. In fact, Michael only talked about activities that involved music and did not specifically

refer to the math-only activities. Other children chose different methods, such as singing, humming, tapping a beat, or talking about what happened in the musical activity and naming the song to explain the mathematical concept to the researcher. All of the children's explanations included more mathematics explanations and understanding than were directly taught in the lessons.

### "How Many Ducks?"

(Sung to the tune of the theme from "The Addams Family")

How many ducks? (clap clap)  
 How many ducks? (clap clap)  
 How many ducks? How many ducks?  
 How many ducks? (clap clap)

Chant

What does mother duck do to get her ducks in line?

Quack, quack—quack, quack, quack.  
 Let's count together (children count the five ducks while the teacher keeps a beat)

Sing again

How many ducks? FIVE!  
 How many ducks? FIVE!  
 How many ducks? How many ducks?  
 How many ducks? FIVE!

### Conclusion

With new understanding about the nature of everyday learning experiences, the key role of patterns in the development of literacy and mathematics, and the need for a stimulating environment in the very early years, the importance of music in the home and in the classroom is becoming

**Music is a highly social, natural, and developmentally appropriate way to engage even the youngest child in math learning.**



By Michael J. Rosen / © NAEYC

clear. Music is children's first patterning experience and helps engage them in mathematics even when they don't recognize the activities as mathematics. Music is a highly social, natural, and developmentally appropriate way to engage even the youngest child in math learning.

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**Appendix III**

The curriculum below is an overview of what will happen during the full day training.

<b>SUBJECT: “Keep a Beat” Curriculum</b>	<b>4 Teachers at a Athens Early Learning Center Preschool in a rural area will participate in a full day training on the intervention.</b> (see curriculum grid for details)
<b>Teacher Resources:</b> Teachers will be provided with a training manual. During the training, the trainer/researcher will show video, have power point slides for presentations, and use the pre created website to facilitate learning. The teachers will have musical instruments to use during the training and a set to take back to their classrooms.	

<b>Topics Correspond with Training Manual Sections</b>	<b>Teacher (Learner) Goals and Objectives</b>	<b>Trainer/Researcher Instructional Strategies</b>	<b>Evaluation Strategies</b>
<b>8:00 – 8:30</b>	GOAL: To get to know each other’s musical history	Ice Breaker Game (During coffee and breakfast.)	Large Group Questioning Listing on Board different interests.
<b>8:30 – 9:30</b> <b>I. Overview of Program</b>	GOAL: To gain knowledge about the <i>Keep a Beat</i> research project and the teacher’s expected role in the project. 1) Teachers will be able to articulate the phases of the program. 2) Teachers will be able to articulate the purpose of the program. 3) Teachers will be able to articulate their expected role in the project and how they can seek support if needed. 4) Teachers will participate in musical imitation experience to recorded music.	Video of <i>Keep A Beat</i> Protocol Being Used With Preschool Children During Group Instruction  Lecture/Discussion  Direct Teaching  Cooperative Small-group learning Beginning Level Demonstration (Teacher will imitate trainer during musical experience with large group.)	Large Group Questioning Writing and Reporting to Group
<b>9:30 – 10:30</b> <b>II. What are the barriers to education do your students face? What do you define as off-task behaviors?</b>	GOAL: To learn about the barriers of education for children from low Socio Economic Status homes. 1) Teachers will be able to list at least 3 barriers that Head Start children have as compared to their peers who are not in low socioeconomic status homes. 2) Teachers will articulate to their peers how these barriers affect their classroom by providing examples of	Lecture/Discussion  Direct Teaching  Cooperative Small-group learning  Mid-Level Demonstration (Imitating a peer in a small group as directed	Peer Tutoring Questioning Report to group

Baker Fund Application 2013 Kamile Geist

	<p>learning barriers. 3) Teachers will participate in Small Group music/movement experience led by trainer.</p> <p>GOAL: Teachers will learn about definitions of off-task behaviors 1) Teachers will be able to articulate what off task behavior is to them. 2) Teachers will be able to recognize on and off task behaviors.</p>	<p>by trainer)</p> <p>Learning Centers (There will be 4 centers placed around the room with varying tasks related to AET and recognizing AET that the group must accomplish.) Learning Activity Packets (These are made for the Learning Centers) Role Play (Some role playing will be involved in the learning centers.)</p>	<p>WHAT DO YOU KNOW ABOUT off task behaviors? Pre test</p> <p>WHAT DO YOU KNOW ABOUT off task behaviors? Posttest</p>
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<b>MORNING BREAK</b> 10:30 – 10:45	MORNING BREAK
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<b>10:45 – 11:15</b> <b>III. How does music support learning?</b>	<p>GOAL: To learn about the neurologic basis of music and the current research on how it can influence learning and attention. 1) Teachers will learn about the current music neuroscience research with children and attention. 2) Teachers will learn about the current music therapy research with early childhood education.</p> <p>GOAL: Teachers will learn about the theoretical basis of the <i>Keep a Beat</i> protocol and the need that it addresses. 1) Teachers will be able to articulate why the protocol is important for their classroom.</p>	<p>Videos of Music Neuroscience Research Educational Application Discussion</p> <p>PPT overview of literature</p> <p>Lecture Video of Child Interviews from ----- 2009 <i>Keep a Beat</i> study.</p>	<p>After lunch assessment (see below)</p> <p>Small group discussion and report back to group.</p>
<b>11:15 – NOON</b> <b>IV. Here we go... Let's Keep a Beat</b>	<p>GOAL: To apply what is learned in previous chapters. 1) Concepts/practice will include learning effective steady beat techniques to gain attention.</p>	<p>Mid-High Level Demonstration (Having small group imitate each teacher with objectives listed.</p>	<p>Observational assessment if teachers can keep a beat, meet objectives. I'll</p>

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	<p>2) Basics of adding musical elements (steady beat, tempo, and dynamics) to a lesson plan.</p> <p>3) Teachers will learn how to give typical learning activities musical structure through keeping a beat.</p> <p>4) Teachers will learn basic ways of changing the tempo and dynamics based on careful observations of the children's behaviors.</p>	<p>Trainer provides demonstration of technique and the groups perform together for each teacher.)</p>	<p>have a check sheet for each teacher. Peer Evals.</p>
<p><b>BREAK</b> Noon – 1:30</p>	<p>LUNCH BREAK</p>		
<p><b>1:30 – 2:30</b> <b>V. Let's Add Chanting</b></p>	<p>GOAL: To learn how to chant instructions while keeping a steady beat.</p> <p>Same learning objectives as previous session which will provide time for review from before lunch except adding chanting to each of the objectives.</p>	<p>Video examples and live music making examples will be given. Beginner level demonstration (Large group imitating trainer) THEN Mid Level demonstration (Imitation in small groups) Once the teachers feel comfortable with the protocol... Begin Role-playing in classrooms Small Group discussion and feedback.</p>	<p>Evaluate Morning Concepts Questionnaire</p> <p>Provide answers to group. Facilitate Discussion. Clarify questions and provide transition to Advanced application techniques for the afternoon sessions.</p>
<p><b>2:30 – 4:00</b> <b>VI. Ok... How does this work with my class in group?</b></p>	<p>GOAL: To learn how to use steady beat for needs of group.</p> <p>1) Transitions between activities,</p> <p>2) During key educational activities in circle time</p> <p>3) To redirect inappropriate behavior with a steady beat.</p> <p>4) To manipulate the tempo and dynamics to help children focus during group time.</p>	<p>High Level Demonstration (leading and changing based on group behaviors unknown to the leader)</p>	<p>Observational Assessment of tasks demonstrated.</p>
<p><b>4:00 – 4:30</b> <b>VII. How is this research? What am I supposed to do?</b></p>	<p>GOAL: Teachers will learn the details of the process of the research study including and what their specific role would be.</p> <p>1) Review of Research Process</p> <p>2) Review of Role</p> <p>3) A Walk through of the website for other resources.</p>	<p>Lecture with Discussion Questioning Evaluation of Training</p>	

**Appendix IV Sample Data Collection Form of Observations During Group Intervention**

**Data Collection for Each 20 minute Group Lesson**

Teacher \_\_\_\_\_

# of students \_\_\_\_\_ Date \_\_\_\_\_

Time Beginning: \_\_\_\_\_ Time Ending: \_\_\_\_\_

Observer: \_\_\_\_\_

Behaviors Observed: The number of group off task behaviors.

Operational Definition: Although off task behaviors are defined in the literature, the specific behaviors will not be defined until the researcher meets with the teacher. A definition of off-task to one teacher is different from another AND off task in group could be different than in an individual direct teaching environment, therefore the off task behaviors will be defined in consultation with the teacher prior to practice and implementation.

Off task behaviors will be tallied during each minute indicated.

Day	Min 1	Min 5	Min 15	Min 20	TOTAL
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—					
—					
—					

## 12. Recommended Reviewers

There are limited number of professors who research early childhood music therapy. Also, music therapy is a very small community therefore, I know all of these people. I have not participated on projects with them. The people that I have chosen are prominent music therapy clinicians with many years of experience in early childhood and research. I've indicated the ones that do not wish to have their phone numbers or addresses publicized by providing their email addresses. They will at that point give you their contact information.

1) Dr. Petra Kern, [petrakern@musictherapy.biz](mailto:petrakern@musictherapy.biz), is a clinician, researcher, and educator in music therapy. She is board certified in the U.S., Canada, and Germany and earned her doctorate in music therapy from the School of Medicine at the University of Witten-Herdecke. Dr. Kern is the Past President of the World Federation of Music Therapy (WFMT), editor of *imagine*, and owner of the California-based company Music Therapy Consulting.

I know Dr. Kern from being a member of the Early Childhood Network in music therapy. She is an expert in early childhood and research methods. She prefers to not give her address and phone number.

2) Angie Snell, MT-BC, [snell@chartermi.net](mailto:snell@chartermi.net), (734) 457-4229 – prefers to not give her address.

Angie is a practicing early childhood music therapy clinician and well versed in appropriate music therapy practices and strategies.

I know Angie from being a member of the Early Childhood Network in music therapy. She is an expert in early childhood and research methods.

3) Marcia Humpal, MT-BC holds dual certification in music education and music therapy. She is a graduate of Baldwin-Wallace College and Cleveland State University where she obtained her masters degree in special education and an early intervention specialist credential. Since 1986 she has been a music therapist for the Cuyahoga County Board of Mental Retardation and Developmental Disabilities in Cleveland, Ohio, USA. Currently she works exclusively in the Early Childhood Division. She is co-chair of the Early Childhood Network of the American Music Therapy Association and is on the editorial board of *Music Therapy Perspectives*. Contact Address: Marcia E. Humpal, 26798 Mangrove Lane, Olmsted Falls, OH 44138, USA. She prefers to not give out her phone number. Her email is [mehumpal@ameritech.net](mailto:mehumpal@ameritech.net)

I know Marcia from being a member of the Early Childhood Network in music therapy. She is an expert in early childhood and research methods.

4) **Elizabeth K. Schwartz** is the senior music therapist at Alternatives for Children in Suffolk County, New York where she specializes in Early Intervention and preschool treatment. Through Alternatives, Beth also provides staff development for local public schools on music therapy, music and special education and music education. She is an adjunct instructor in the graduate program in Music Therapy at Molloy College and a site supervisor for internship

and fieldwork students. She prefers not to give an address or phone number public and her email is [schwartz781@optonline.net](mailto:schwartz781@optonline.net)

I know Elizabeth from being a member of the Early Childhood Network in music therapy. She is an expert in early childhood and research methods.

5) Ronna Kaplan, Director of the Department of Music Therapy since 2004, has been a music therapist at The Music Settlement since 1988, serving clients ranging from premature infants to adults through the age of 103 years with varied disabilities and levels of functioning. She has conducted research on the effect of music on premature infants in the Neonatal Intensive Care Unit at the Cleveland Clinic and on music therapy program goals and outcomes for clients with autism spectrum diagnoses at The Music Settlement. Her special interests are young children and individuals with diagnoses on the autism spectrum, language delays and/or problems in the area of social skills, as well as teen parents or those with mental illness. She has supervised many music therapy interns at The Music Settlement and was instrumental in developing the department's Outcomes-Based Measurement tool and program. She served as Interim Co-Executive Director of The Music Settlement and as Acting Director of the Performing Arts Department/Music School for several months in 2007. Ronna also taught Music Therapy Practicum and Adapted Percussion classes part-time at Baldwin-Wallace College for 14 years. E-Mail [rkaplan@themusicsettlement.org](mailto:rkaplan@themusicsettlement.org)  
Direct Phone ,(216) 421-5806, ext. 142; Address 11125 Magnolia Dr Cleveland, OH 44106

I know Ronna from being a member of the Early Childhood Network in music therapy and she supervises some of our music therapy student interns. She is an expert in early childhood and research methods.