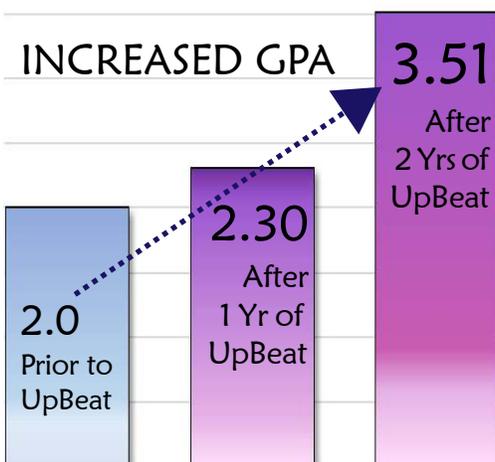


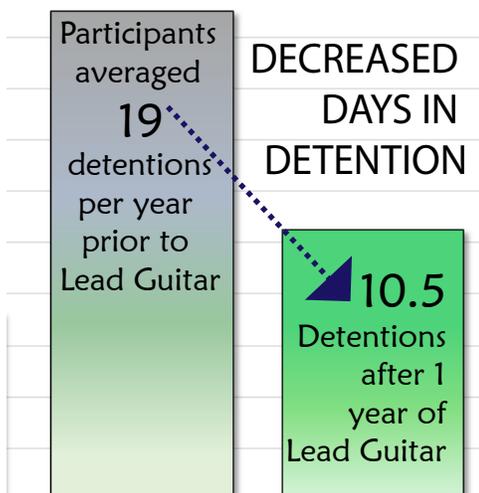
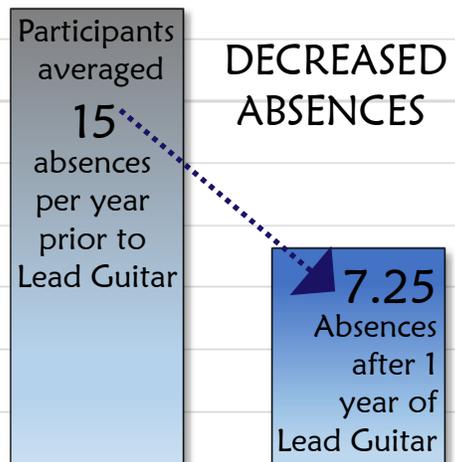
Report on Whole Child Outcomes of Lead Guitar & Arizona Arts in Schools Programs

by Dr. J. David Betts, Professor Emeritus, UA College of Education; Past-president of the Arts and Learning SIG of the American Educational Research Association

“The LEAD GUITAR and AZ ARTS in SCHOOLS programs, [showed] a pervasive positive influence on classroom learning activities and on teaching.”
 Dr. David J. Betts



100% of teachers participating in the MUSIC FIRST program at Craycroft Elementary saw positive carryover into core curricula.



80% of participating LEAD GUITAR high school students in Phoenix, AZ improved their GPA.

In the 2018-19 Academic Year, **4,470** students received direct instruction 2-5 times per week through LEAD GUITAR and AZ ARTS in SCHOOLS.

75% of STEP UP students at Amphitheater High School improved their score on the Rosenberg Self-esteem survey.



Arizona Arts in Schools

This research was made possible by a generous gift from
The David C. and Lura M. Lovell Foundation



<https://lovellfoundation.org/>

Lead Guitar and CFA in Schools Student Outcomes as Seen through Evaluations and Data Collected in the 2018/2019 Academic Year

A Report by Dr. J. David Betts

INTRODUCTION

In order to evaluate the effectiveness of Lead Guitar and Arizona Arts in Schools programs, we counted on the cooperation of the schools and school districts involved to allow us to have access to participating students and educators for their observations and reactions to the music and dance activities they undertook.

In order to execute the evaluation, we reached out to several participating school districts of various sizes. Students filled out pre- and post-surveys that registered changes in their self-esteem during the school year. These were distributed by the teaching artists in the classrooms. Through data-sharing agreements with the districts, we arranged to have data from the schools about students' grade point average, attendance, and disciplinary actions. We asked for data from the year before beginning the program and for two years as participants. We also asked participating educators to fill out reflective evaluations on the programs' perceived effectiveness with their students.

Parents were asked to sign a Parental Consent form for giving us access to the anonymized student data. We received approval for this work from the University of Arizona Institutional Review Board through the College of Fine Arts. The anonymized forms and data sheets were analyzed to determine the students' average GPA's, number of days absent, and number of disciplinary actions recorded by the school.

What follows is an overview of the program evaluations that were undertaken to learn what works and how to improve Lead Guitar and its sister programs at the College of Fine Arts: UpBeat, Step Up and Music First as well as to inform new programs using the Lead Guitar model as they develop.

SECTION 1. MUSIC FIRST CLASSROOM TEACHER SURVEY

Most of schooling is verbal, depending on language to impart knowledge and new ideas. However, it is important to note that language is processed predominantly in the brain's left hemisphere. There is considerable overlap, but the emphasis on language ignores the expressive forms - such as music and dance - which are processed mostly in the right brain. In the Music First classroom there is musical agency, performance mediating between the halves of the brain.

Making music part of the elementary school curriculum adds another semiotic tool with which students can mediate their environment. Like language, they learn music, then own it and use it to share ideas, express emotions, and engage in creative play. When music becomes part of the environment, these learned mental functions are integrated into earlier concepts and encourage development both biologically and culturally. As Vygotsky observed, "Environment is the source of development, not its setting." (1994)

In utero, babies react to environmental sounds. Once born, they respond well to "baby talk", the musical delivery of speech, which may well be the beginning of social interactions and the symbolic language of the unconscious mind. (Storr, 1992).

In our cultural history, music is part of social activities such as dancing, poetry and religious chant. Music is cultural participation "...using social processes and cultural resources to facilitate learning" (Moll, 2014). It is no wonder that the integration of music (and dance) into the school day – with accompanying right-left

brain activity, reinforcement of counting and body movement skills through rhythmic coordination – would result in improvements across other subject areas beyond the arts classroom.

After 20 weeks of having the Music First program in all K-2 classrooms at C.E. Rose K-8 and Craycroft Elementary, twenty-one classroom teachers at two participating schools took the time to fill out a questionnaire about their perceptions of the effects of the program. Teachers were asked if they noticed changes in various classroom behaviors, if those changes were sustained outside of music classes and carried over into other curricular areas, and how they felt about the experience. We wanted to know, among other things: Do they enjoy it? Does it help to promote improved relationships among classmates? When the teacher uses music to give instructions for transitioning between activities in song, do students pay attention more readily? Does adding Music First improve participation, teamwork, attitudes toward learning?

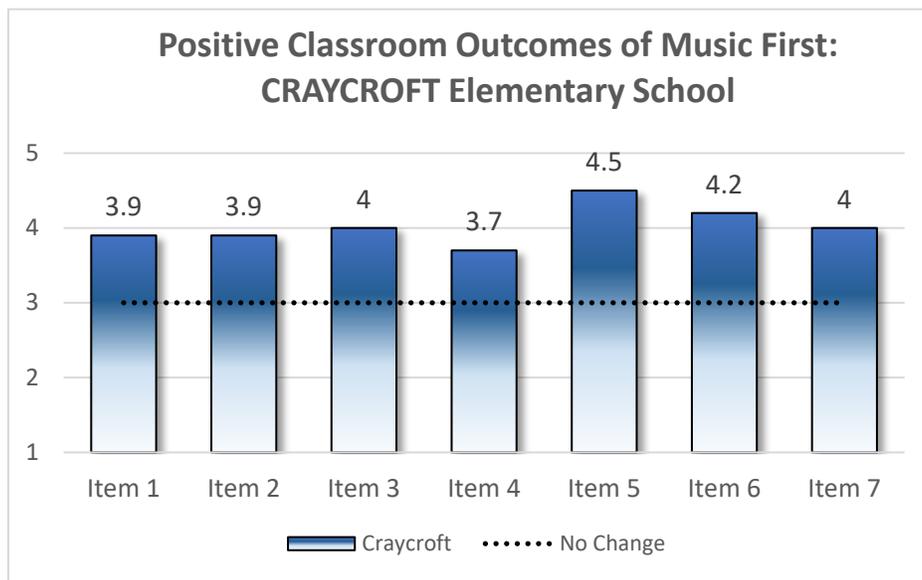
On the first portion of the questionnaire, classroom teachers responded on a five-point Likert scale; from Much Worse (1) to Greatly Improved (5). On the second section of the questionnaire, the teachers were asked to respond to four items with a “Yes” or “No” response. They were also asked to leave comments regarding their experience.

Example:

Much Worse	Somewhat Worse	No Change	Somewhat Improved	Greatly Improved
1	2	3	4	5

Results, CRAYCROFT Elementary School:

The averaged response of teachers from Craycroft Elementary show improvement in all seven areas studied, listed here from most to least impactful and including comments:



Item #5, Participation, (avg. 4.50)

Comments:

- “Students want to participate more for activities.”

Item #6, References to music during other activities, (avg. 4.20)

Comments:

- "Sometimes students will sing songs that we learned."
- "When we are using beats to tap out syllables they are referencing beats & rhythm."
- "They can't stop singing!"

Item #3, Interactions among classmates, (avg. 4.00)

Comments:

- "Students are interacting more with other students; with others they would not have."

Item #7, Have you seen any change in class teamwork, group cohesion? (avg. 4.0)

Comments:

- "They understand rotating to share and taking turns better."

Item #2, Classroom attitudes about learning, (avg. 3.90)

Comments:

- "Students were more aware of what learning will take place."
- "They are excited to go to music and when we incorporate music in classroom learning."

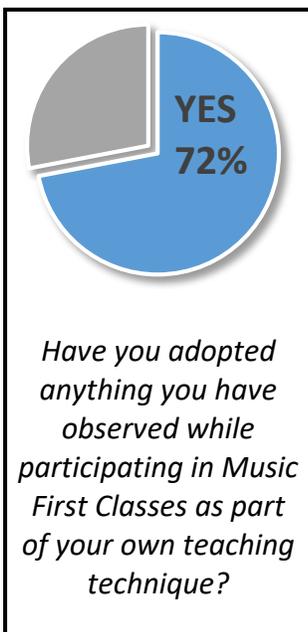
Item # 1, Ability to focus and listen as a group, (averaged 3.90)

Comments:

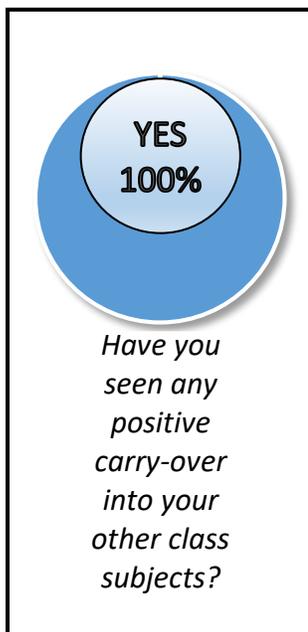
- "More focused during module when stories are read."
- "It's greatly improved if I sing."
- "I've tried what Mr. W. does with repeating his directions."

On the second section of the questionnaire the teachers at **CRAYCROFT** were asked to respond to four items with a "Yes" or "No" response, listed here from most to least impactful. Teachers left additional comments on this section.

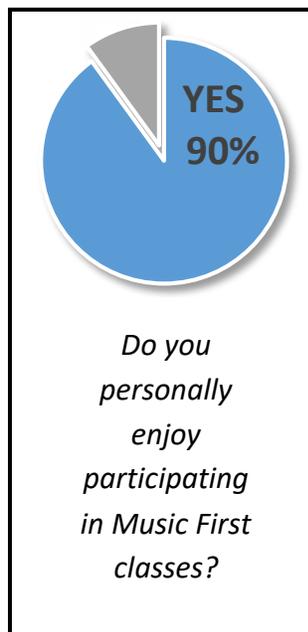
Item #8



Item #9



Item #10



Item #11



Item #9, Have you seen any positive carry-over into your other class subjects? (100% Yes)

Comments:

- "Students respond well when our curriculum ask (sic) them to add motions and songs."
- "More focused for stories that are read."
- "We read a poem and talk about beats and rhythm weekly. This program has had a positive impact on that aspect."
- "The students have been singing while working. When I sing for writing they like to participate and remember tapes faster."

Item #11, Can you tell us about any individual students in whom you have seen changes in areas described above or for whom participating in music has had other profound impacts? (100% Yes)

Comments:

- "I have a couple of students that have challenging behavior and can't work together. I notice that since they have been attending Music First, they work together more without getting in trouble like they do in music."
- "I have seen boys sing out and do rhythms that I would not have expected."
- "(a student) had hard time focusing in my music class. Over the course of the class he has learned to follow instructions so he can participate."
- "(four students), they have shown growth in keeping a beat and singing and rhythm since starting. (smiley face)"
- "One of my students doesn't like to participate in my class, but when it comes to participate in music class she enjoys it a lot."

Item #10, Do you personally enjoy participating in Music First classes? (90% Yes)

Comments:

- "Yes, it brings me back to when I was a kid and how much I relate to music."
- "Yes, and the students love it. They continue to sing the songs they learn."
- "When I can I do like to participate."
- "It gives me courage to try singing more in class to keep students engaged. It also gives me ideas of how to incorporate music in class."
- - "I love to see my students learn new things in music. I like the way that Mr. W conducts my class during music lessons."

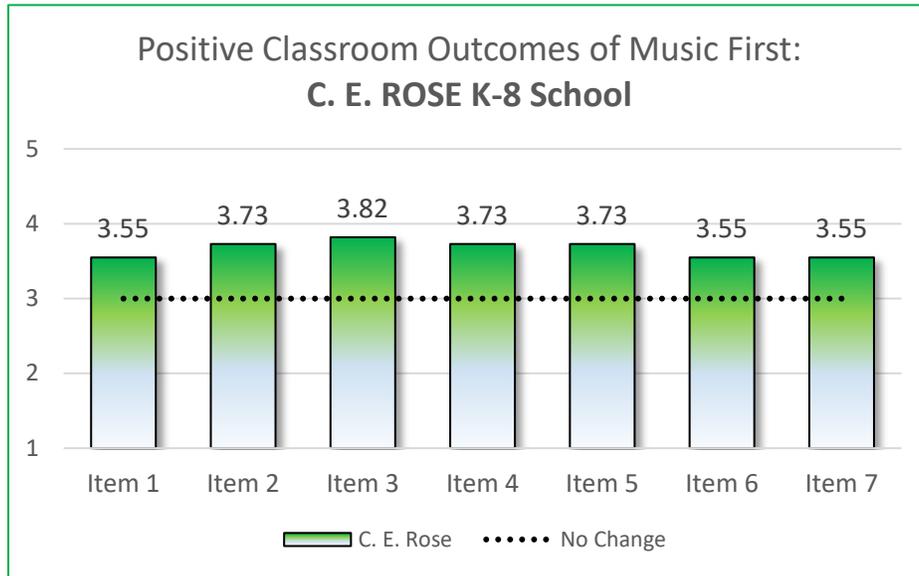
Item #8, Have you adopted anything you have observed while participating in Music First Classes as part of your own teaching technique? (72% Yes)

Comments:

- "I have sung to the class."
- "I have added singing to have students transition or to get their attention."
- "We use some of the songs as transition and play some of the games during free time."

Results, C.E. ROSE K-8 School:

The averaged response of teachers from C.E. ROSE show improvement in all seven areas studied, listed here from most to least impactful and including comments:



Item #3, Interactions among classmates, (avg. 3.82)

Comments:

- "Students are encouraged to have positive interactions."
- "Students sing together."
- "Students interact among themselves."

Item #2, Classroom attitudes about learning, (avg. 3.73)

Comments:

- "We focus on being proactive and being responsible for their own learning."
- "It has helped them with rhyming and phonemic awareness."
- "Improved when they are getting ready for music."
- "Students are more interesting (sic) in learning when they hear music."

Item #4, Classroom behavior, (avg. 3.73)

Comments:

- "Students look forward to music."
- "Students are much more well-behaved when they listen to music."
- "When the music teacher is teaching, they are confused by directions and don't really know the lyrics, so they are not participating as much and the teacher gets upset."
- "If I sing what I want them to do they repeat and follow directions."

Item #5, Participation, (avg. 3.73)

Comments:

- "Students are required to participate."
- "Songs not familiar to students."
- "I would like them to participate more, but it's the same ones who always do."
- "All students want to participate when they hear music."
- "They hum/mumble the words when they don't know the words."
- "Students enjoy the interaction of the games and songs."

Item #6, References to music during other activities, (avg. 3.55)

Comments:

- "Students like to sing the songs."
- "Yes, singing during work and on the playground."
- "During transitions."
- "I think this would be more effective if the songs related to the students' lives or things they are interested in. Vocabulary of some songs is challenging & not explained. Nursery rhymes, clean versions of popular songs might be more helpful."
- "I usually reference songs daily if I hear a familiar phrase."

Item #7, asked about Class teamwork, (avg. 3.55)

Comments:

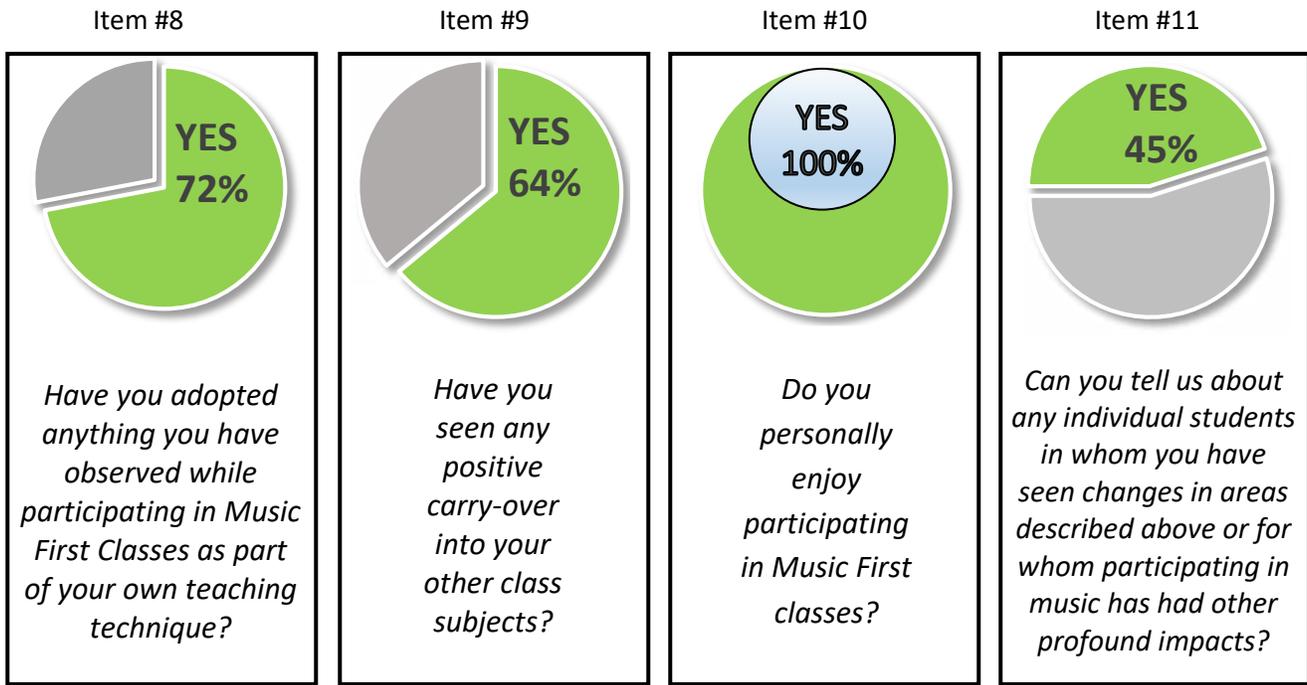
- "Students work together."
- "Yes. Students work together while singing."

Item # 1, Ability to focus and listen as a group, (avg. 3.55)

Comments:

- "Students are expected to focus and synergize as a group."
- "Students are pretty good with listening"
- "Students listen and focus more as a group."
- "When the music teacher is teaching (songs jump around, directions are not clear, they don't practice the same activity long enough to master) not consistent week to week."

On the second section of the questionnaire, the teachers at **C.E. ROSE** were asked to respond to four items with a “Yes” or “No” response, listed from most to least impactful. Teachers left additional comments on this section.



Item #10, Do you personally enjoy participating in Music First classes? (100% Yes)

Comments:

- “I find music to be very valuable.”
- “I enjoy singing songs with the class and students.”
- “It’s fun participating and singing with my kids.”
- “It is a great way to end the week.”
- “Yes!”
- “I enjoyed it and students enjoy seeing me participate.”
- “My students love music and singing, but I wish directions were given more clearly and there were more visuals so the students could learn the songs, since the vocabulary was challenging.”
- “I really think it is great! Students enjoy it for the most part.”
- “It is a good positive modeling (sic) for students to see.”

Item #8, Have you adopted anything you have observed while participating in Music First Classes as part of your own teaching technique? (72% Yes)

Comments:

- “I have used a few of the songs.”
- “We sing some of the songs during class.”
- “We occasionally sing the ‘Hello, Everybody’ song.”
- “Using music during transitions.”
- “Singing the song, ‘Yes Indeed’ to focus student attention on the carpet.”

- “Because the music teacher is not clear with her directions and the songs & activities change so much, they are not learning as much as they could because it is not consistent.”
- “I have tried singing transition commands and the students enjoy it.”
- “Sometimes I sing instructions or directions.”
- “Students enjoy having the teacher participating with them.”

Item #9, Have you seen any positive carry-over into your other class subjects? (64% Yes)

Comments:

- “Students look forward to music.”
- “Music is always right before math, and I’ve noticed they start math really positive.”
- “Students get excited for music and want to participate.”
- “Math, using the counting song.”
- “Following directions, enjoying more singing and dancing together.”

Item #11, Can you tell us about any individual students in whom you have seen changes in areas described above or for whom participating in music has had other profound impacts? (45% Yes)

Comments:

- “My class is an SEI class where students are developing English and the vocabulary incorporated thru singing helps them with language development.”
- “Some students like to express themselves through music.”
- “(a student) has opened up and is singing more.”
- “(No) But, students enjoy having the opportunity to play instruments, so they try to be on their best behavior.”
- “(No) However students really enjoy it and look forward to it every week.”
- “Some students are more focused during music because they want to participate.”
- “I have students with behavior problems enjoying and singing the songs. “

SECTION 2. LEAD GUITAR ADAPTIVE PROGRAM (LEAD GUITAR WITH CHORD BUDDY)

Program description

Chord Buddy is a device originally designed to help adults easily learn to play chords on the guitar. It has been adapted by Lead Guitar to allow children with a range of abilities to participate fully in guitar classes. The Chord Buddy device attaches to the neck of the guitar and, by pushing color-coded buttons, allows the user to play complete six-string chords. A curriculum has been devised by the Lead Guitar team to utilize Chord Buddy’s color-coded system to teach rhythmic patterns and song accompaniments that are in lock step with the learning goals in the standard Lead Guitar curriculum and can be tailored to a range of physical and cognitive skills. This curriculum is being refined based on lessons learned in three Tucson pilot schools.

Teacher evaluations

At three elementary schools where the **LEAD GUITAR ADAPTIVE PROGRAM** was piloted, the 2 teachers and 2 classroom aides who worked with the students were asked to respond to a questionnaire using a five-point Likert scale and were asked for comments. The Principal at one of the three schools (that which only had a

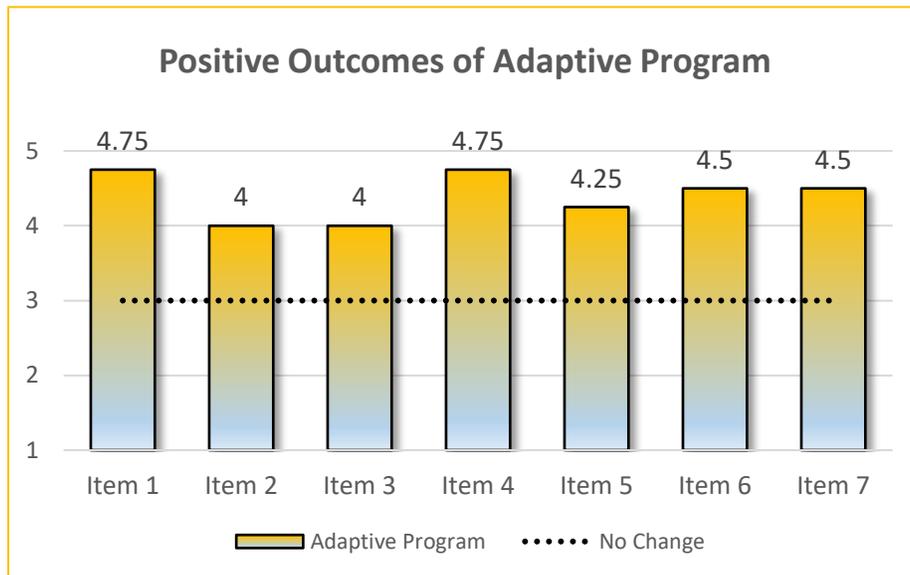
classroom aide participating) was also asked for comments. The new Lead Guitar Adaptive Curriculum itself is called “Lead Guitar with Chord Buddy” and is variably referred to in comments below as Chord Buddy or CB as well.

On the first section of the questionnaire, teachers and classroom aides responded on a five-point Likert scale; from Much Worse (1) to Greatly Improved (5).

Example:

<u>Much Worse</u>	<u>Somewhat Worse</u>	<u>No Change</u>	<u>Somewhat Improved</u>	<u>Greatly Improved</u>
1	2	3	4	5

Responses were very favorable - with the exception of the technical problems (fitting the ¾ guitars and breakable devices). The high scores on the responses and the comments showed that the Chord Buddy is a valuable tool for inclusion. Responses are listed from most to least impactful.



Question 1, Students’ ability to focus and listen with the group? (avg. 4.75)

Comments:

Teacher 1 – “A CB student announced as he was leaving, ‘That was fun.’”

Aide 1 – “Students fear not being able to hold down strings.”

Question 4, Behavior in the classroom? (avg. 4.75)

Teacher 1 – “Less frustration = less behavior issues.”

Aide 2 – “Students gain a sense of pride.”

Question 6, Class teamwork or group cohesion? (avg.4.5)

Comments:

Teacher 1 - “Sometimes it is better to separate Chord Buddies for extra practice, so they often get less interaction with the others, but the cohesion does happen when they are brought back together.”

Aide 1 – “There is less fear of not being able to follow with other classmates.”

Question 7, Have you seen any change in classroom inclusion of students with differentiated needs outside of music class? (avg. 4.5)

Comments:

Teacher 1 – “I notice a big difference from last year with no chord buddies to this year with them.”

Aide 1 – “The students have been given a confidence and sense of accomplishment with this “key” tool. A willingness to continue to harder patterns.”

Question 5, Participation..... (avg. 4.25)

Comments:

Teacher 1 – “At times, some of them need more of a challenge (Chord Buddy was too easy) but overall, participation with all of them improved with little and moderate frustration.”

Question 2, Students’ attitude towards learning? (avg. 4.0)

Comments:

Aide 1 – “Students are able to improve pattern memorization.”

Question 3, Interactions with classmates? (avg. 4.0)

Comments:

Aide 2 – “Students feel that they are able to be part of the music lesson.”

On the second section of the questionnaire, the **LEAD GUITAR ADAPTIVE PROGRAM** teachers and classroom aides were asked to respond to three items with a “Yes” or “No” response, listed from most to least impactful. They left additional comments on this section.

Item #8

Item #10



Is this adaptive programs an effective way to engage students with differentiated needs?



Can you tell us about any individual students in whom you have seen changes in areas described above or for whom participating in music has had other profound impacts?

Question 8, Is this an effective way to engage students with differentiated needs? Can you tell us about any individual students in whom you have seen changes in areas described above or for whom participating in music has had other profound impacts? (100-% Yes)

Comments:

Teacher – “Yes, for sure. Still struggle with some students with physical disabilities – and the larger guitars we had to use with the chord buddies made that a challenge too.”

Principal – “Yes – there were several instances I observed growth in small groups of students.”

Aide 1 – “One student would not even have the urge to try, with the “chord buddy” they can learn a pattern of multi-tasking using vision, hearing, and eye-hand coordination.”

Aide 2 – “Individualized strategies to support students’ needs resulted in increased confidence and a willingness to try new things.”

Question 9, What changes and improvements would you like to see in the delivery or materials of this program?

Comments:

Teacher 1 – “It would be very helpful to have [both] curricula combined to project for all students to see at the same time. It was hard on the teachers to constantly have to write in the colors on the regular music [when projected]. Also, my school had the ¾ guitars, so unfortunately the chord buddies do not fit them.” [Lead Guitar provided full size guitars as a work around.]

Teacher 2 – “Chord Buddies that fit the ¾ size guitars.”

Principal – “The inherent nature needed to work with ensembles helped. I saw marked improvement after rehearsals on many occasions, esp. regards to in-class behavior and peer to peer interaction.”

Question 10. Can you tell us about any individual students in whom you have seen changes in areas described above or for whom participating in music has had other profound impacts? (100-% Yes)

Comments:

Teacher 1 – “Yes, one student in particular complained all the time at the beginning that everything was too hard. By the last class, he was playing along with all songs, and exclaiming that he was having fun.”

Teacher 2 – “Yes, It has made a difference in many of the younger hearing-impaired students – it’s a quick, easy way to get them involved and engaged. One of my students this year – new to our school – was completely overwhelmed by the guitar and sat sullenly through a great many classes. After he started using the Chord Buddy, he has made up his own chord progressions, offered to be a mentor to other students – giant improvement in confidence and feeling a part of the class. (We had two CB’s break, I’m going to try to repair them with super glue.)”

SECTION 3. STUDENTS SELF-ASSESSMENT: THE ROSENBERG SELF-ESTEEM SCALE

A self-assessment instrument based on a slightly modified Rosenberg Self-Esteem Scale was used in our evaluation of the effectiveness of the Lead Guitar and Step Up programs in high schools in several school districts in Arizona and Illinois. The identification of self-esteem as a distinct psychological construct is thought to have its origins in the work of philosopher and psychologist William James (1892). James identified multiple dimensions of the self, and his view of self-esteem as the collection of an individual's attitudes toward

oneself remains relevant today. In the mid-1960s, social psychologist Morris Rosenberg defined self-esteem as a feeling of self-worth and developed the Rosenberg self-esteem scale, which became the most-widely used scale to measure self-esteem in the social sciences and remains in wide use today

Rosenberg Self-Esteem Survey. (*IMPORTANT: Items 2, 5, 6 and 8 are reverse scored upon conversion to a Likert scale so that a student's total score, when higher, is a reflection of higher self-esteem.*)

	Questions	Strongly agree	Agree	Disagree	Strongly disagree
1	On the whole I am satisfied with myself.				
2*	At times I think I am no good at all.				
3	I feel I have a number of good qualities.				
4	I am able to do things as well as most other people.				
5*	I feel I do not have much to be proud of.				
6*	I certainly feel useless at times.				
7	I feel that I am a person of worth, at least the equal of others.				
8*	I wish I could have more respect for myself.				
9	I take a positive attitude toward myself.				

Process:

Lead Guitar (LG) and Arizona Arts in Schools (AZAiS) sought to administer the Rosenberg Self-esteem evaluation to students who would experience two consecutive academic years of skill level-differentiated art classes in the LG/AZAiS system. While the original pre-test included several elementary and middle school classes it was later decided that only high schools should be measured in the post-test phase for two reasons: a general perception that the test was not taken seriously at those younger grade levels and because, with very few exceptions, only high schools in the system had truly “skill-level differentiated” second year classes.

The test was given only to beginning students prior to the first visit by an LG or AZAiS instructor to their school. While the results below are a useful reflection of year one changes pre to post among this cohort, it is the year two results that are the prime objective of this evaluation. These will be gathered in Spring 2020 from students who participate in LG/AZAiS arts learning programs for a second consecutive year. Due to the way the cohort is defined, it includes only Lead Guitar and Step Up students, since UpBeat and Music First do not serve high school ages.

The Rosenberg self-esteem pre-evaluation was given to beginning classes at eleven Lead Guitar and two Step Up high schools in August 2018. Identical instructions/prompts to students were given and followed at each site to help ensure similar conditions from school to school and on the pre- versus post- evaluation day. As of the writing of this report, post- results have been gathered from seven Lead Guitar schools and two Step Up schools. Among the Lead Guitar schools, Westwood High produced results from two separate beginning classes

while Baboquivari High School had only one student complete this interim post-exam due to extreme absenteeism in the last few days of school. That single student is included in statistics involving total individual students, but Baboquivari is not included as a comparison among school or class results.

Challenges:

Generally, the short time frame between the post-evaluation administration window and the last day of school (10 days or fewer, depending on class meeting times) made it extremely difficult to administer and collect exams from all schools and classes before school was out for the year. The administration of post-evaluations were planned to occur after the last LG/AZAiS Showcase Concert on May 14—performances which brought students onto a university campus—in order to encompass the entire LG/AZAiS academic year experience between the pre and post cycles. This timing error is easily fixed for next year's more important second post-evaluation for those beginning students who have continued into a second year. Among the four high schools for which we were unable to collect post-information, specific problems occurred as follows:

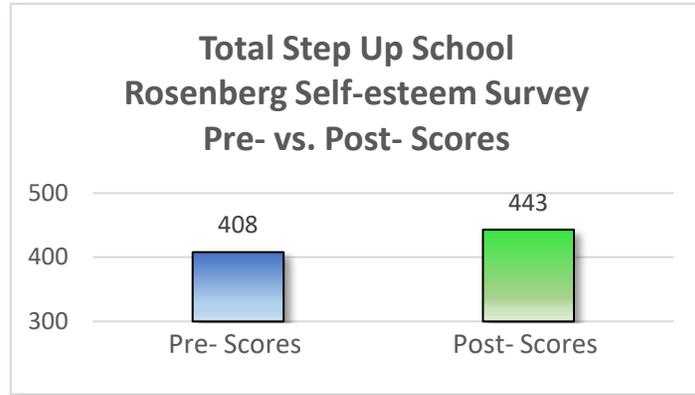
- Camelback High School: The LG instructor failed to distribute the post-evaluation before final exam week.
- San Carlos Secondary and Miami High School: Locations are remote enough from the LG Phoenix instructor pool that it was not possible for an instructor to visit before school ended.
- Muchin College Prep: The Teacher-of-Record gave the post-evaluation to two different classes other than those who took the pre-

Also of note among Lead Guitar High Schools were Queen Creek High School, whose teaching staff declined to have students take the evaluation due to sensitivity from having had four suicides at the school the previous year; and Metro Tech High School (PUHSD), whose teacher and administrators felt the questions were too invasive.

Results, Step Up:

Step Up, a program of Arizona Arts in Schools, brings the technical and pedagogical expertise of UA School of Dance teaching artists and alumni to Southern Arizona classrooms. Dance provides learners an avenue to experience creativity, technical discipline, and improved critical thinking skills, body awareness, and self-confidence. Sixteen students who took the beginning Step Up class at Amphi High School also completed both the pre and post self-evaluation survey.

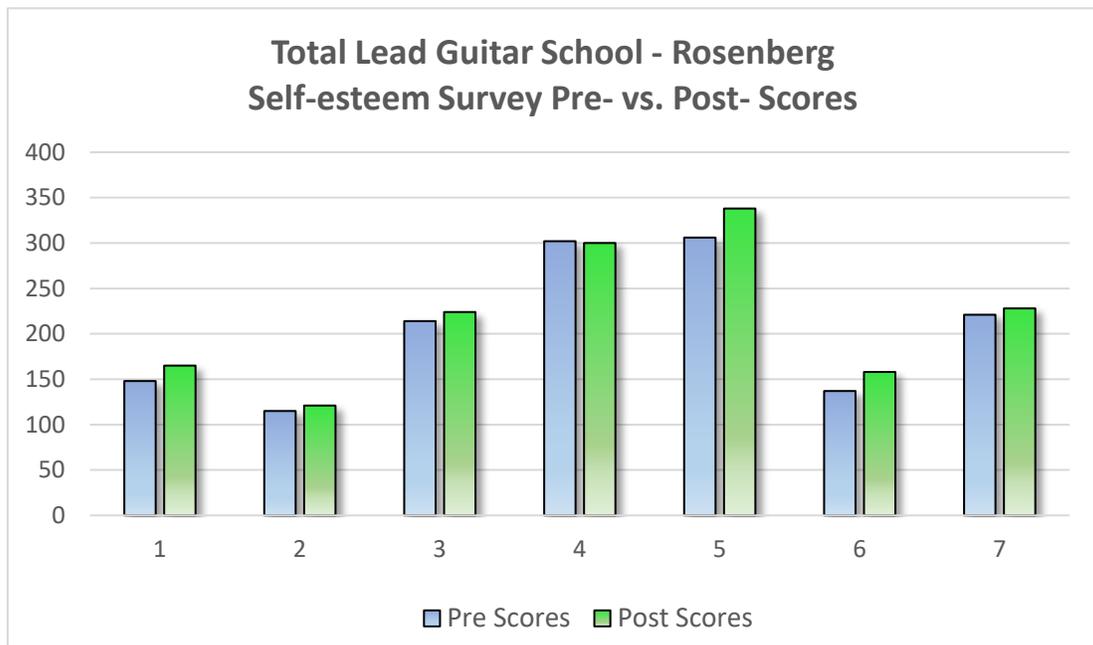
- % of individual students who improved their self-esteem score – 75%
- Average percentage improvement among all students – 8.6%



Results, Lead Guitar:

Sixty-five Lead Guitar participants from seven high schools filled out both Pre and Post ‘Self-esteem’ evaluation surveys. These are the results for all high schools from any of the Lead Guitar programs that filled out both Pre- and Post-.

- % of individual students who improved their self-esteem score – 63%
- Average percentage improvement among all students – 6.43%
- # of Schools that improved their total score – 6 of 7

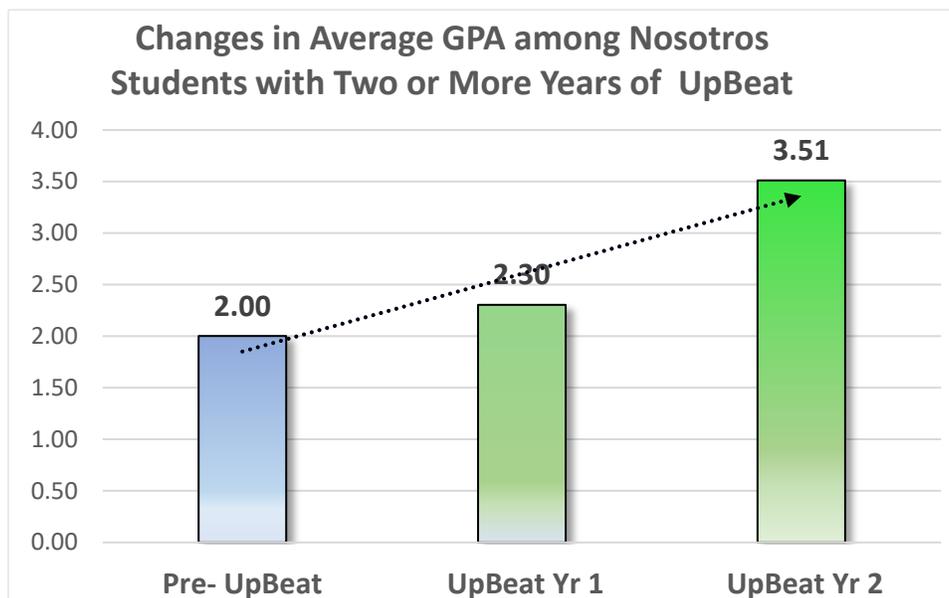


SECTION 4. GPA, ABSENCE AND DISCIPLINE DATA FOR UPBEAT AND LEAD GUITAR PARTICIPANTS

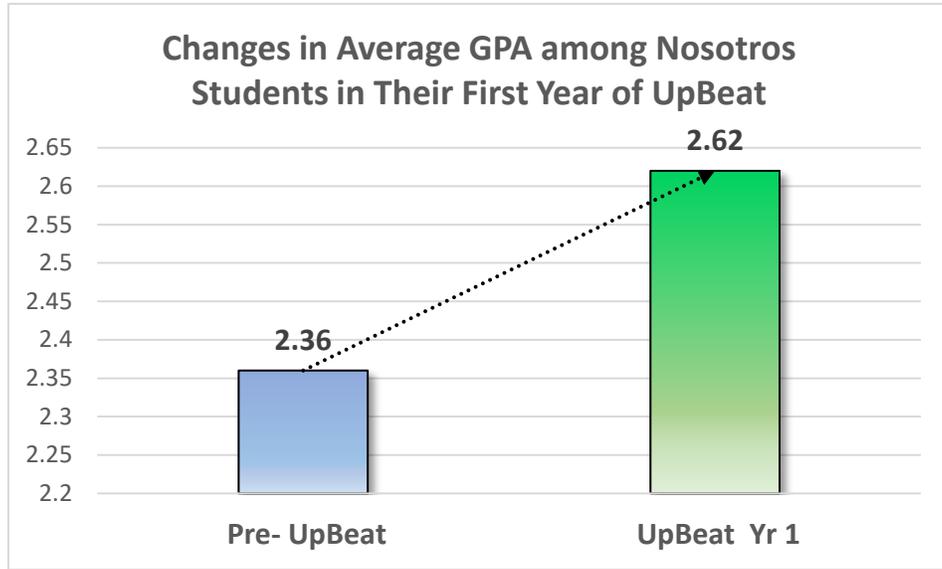
A recently published study titled, “A Population-Level Analysis of Associations Between School Music Participation and Academic Achievement” (Guhn, Emerson, and Gouzouasis), identified evidence of positive relationships between school music participation and high school exam scores in English, mathematics, and science using population-level educational records for over 110,000 students in British Columbia, Canada. The group differences observed were greater than average annual gains in academic achievement during high school. In other words, students highly engaged in music were, on average, academically ahead by one year of their peers not engaged in school music. (Guhn, et al.)

As with the Rosenberg evaluation, we were most interested in comparing outcomes from students in Lead Guitar and Arizona Arts in Schools programs that had participated for two years or more, since the majority of the innumerable studies that show improvements in academic achievement and brain development among in-school arts participants cited multiple years of involvement in arts learning. For this portion of our program evaluation, we chose three schools or districts that had already participated in Lead Guitar or UpBeat (both programs have multi-year curricula) for at least three years. Therefore, we could readily collect GPA, absence, and discipline data that included one-year prior to participating in the program through the end of the second year of participating in the program.

The first school in this study entailed analyzing data from 30 UpBeat students at Nosotros Academy in Tucson. UpBeat participants who completed two years of UpBeat classes ending in spring 2019 showed marked improvement in the overall class average GPA from the year before starting UpBeat until the end of the second year with the program.



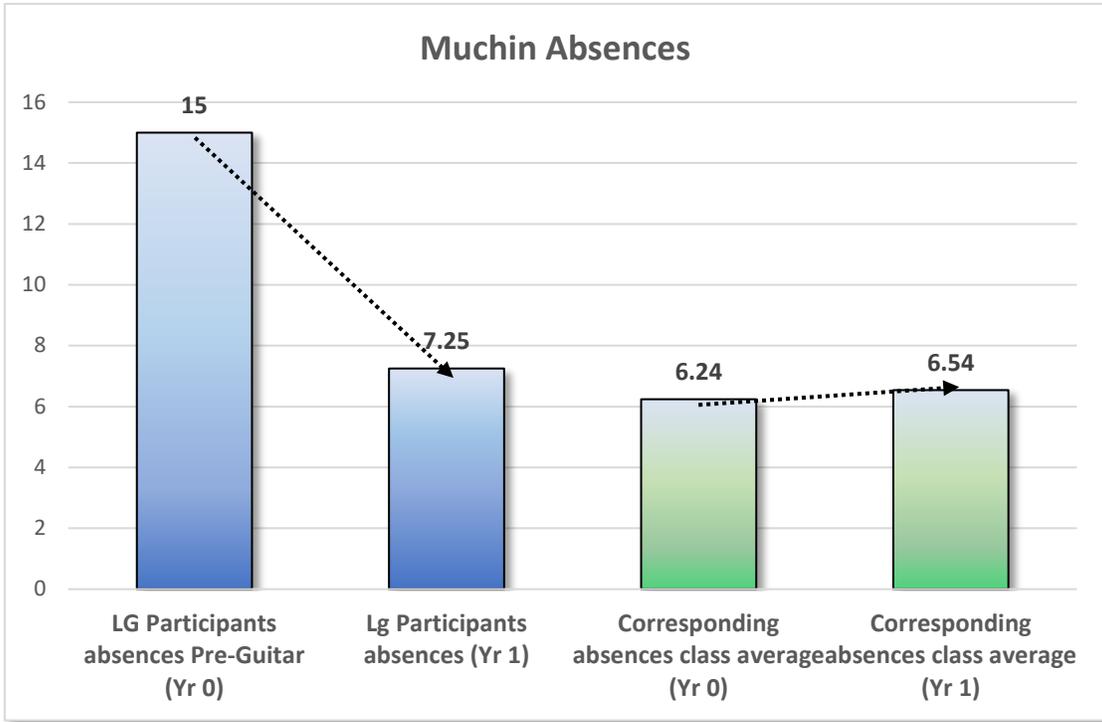
Mirroring the more modest change we see through one year of participation above, the graph below illustrates an increase in GPA for 21 students who completed one year of UpBeat in AY 18/19.



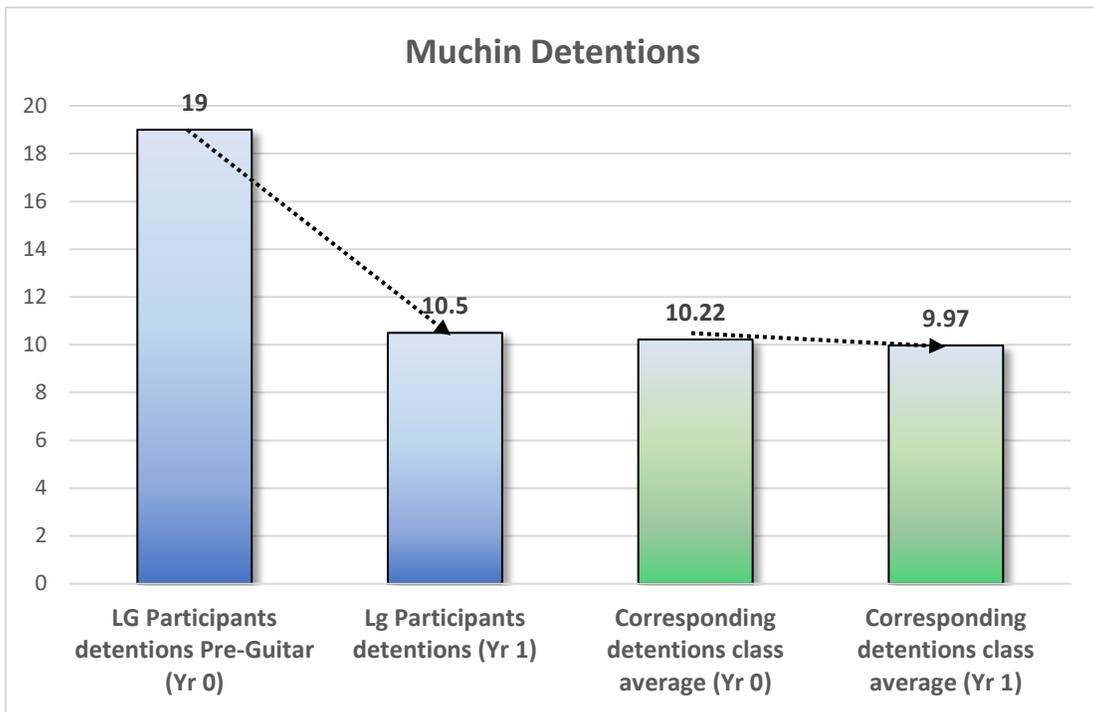
At-risk Lead Guitar Students Show Marked Improvement in GPA, Attendance and Discipline:

Muchin College Prep, located in Chicago’s downtown Loop district, enrolls students from 50 different zip codes throughout the city. While 84% of students qualify for Free and Reduced-Price Lunch (FRPL), the school defies the correlation between poverty and low academic performance boasting a 99% graduation rate. While that is impressive, that statistic is partially reliant on students who aren’t meeting the school’s academic standards or who have a history of absences and discipline issues to transfer elsewhere before graduation. For this reason, when Lead Guitar partnered with Muchin College Prep to measure effects of the program on at-risk students, senior staff selected a small cohort of Lead Guitar participants who had unusually high numbers of absences and discipline incidents and tracked them through a special Lead Guitar enrichment class. The students showed marked improvement in all categories measured after only one year of participation, particularly when compared to their graduating class averages.

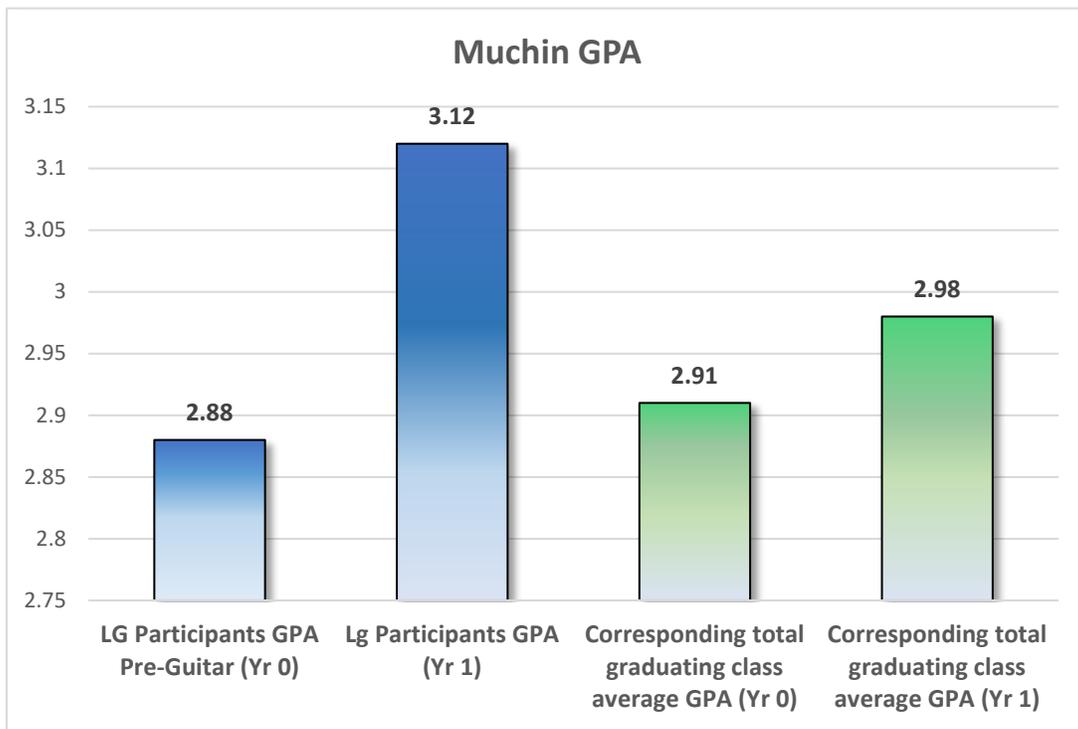
These Lead Guitar participants averaged 15 days absent in the year prior to starting Lead Guitar and reduced that by more than half to 7.25 after one year in the program. By contrast, the graduating class average increased slightly over the same time period from 6.24 days absent to 6.54.



Days in detention among this cohort decreased from an average of 19 in the year before taking Lead Guitar to 10.5 in their first year of participation, while the average detention days of the graduating class decreased only marginally from 10.22 to 9.97.



These Lead Guitar participants also improved their cumulative GPA, though less dramatically, which rose from an average of 2.88 before Lead Guitar to 3.12 after one year, while their graduating class average changed less – moving from 2.91 to 2.98.



Large Cohort of Phoenix Union High School Students Show Improved GPA

In the four Phoenix Union High School District schools participating in Lead Guitar in 2018-19, there were 59 students who began with Guitar 1 and took at least two years (or four semesters) of guitar. In asking the question: What is the effect of a Lead Guitar class after two years of exposure on those with no prior exposure? We found that 47 of 59 or **80% of students improved their GPAs** between Year 1 and Year 2 of participation.

SECTION 5. QUALITATIVE EVIDENCE OF WHOLE-CHILD BENEFITS

In this initial phase of our program evaluation, we did not include qualitative data other than the comments attached to the specific questions above. In other words, we did not conduct individual interviews with students, teachers, or administrators directly involved in Lead Guitar and Arizona Arts in Schools programming. However, it was years of qualitative data that originally led us to the supposition that these in-school music education programs do have positive carryover into the rest of the participants' school day.

The qualitative data that follows was not solicited by Lead Guitar or Arizona Arts in Schools as part of this program evaluation. Rather, many of the comments came from final reports to funders, in which the school reports directly to the funder and results are shared with the arts organization. Some of the comments also come from instructor surveys that we have implemented for the last few years in order to identify weak areas in our instructor pool so that we can design professional development to improve those areas.

The qualitative data has been organized by theme, rather than by program. Since all of the programs share a similar structure—year-long arts learning, teaching artists co-teach with certified classroom teachers, on-campus engagement, in-school assemblies from touring guest artists, and professional development for classroom teachers—the programs’ impact and benefits are quite similar.

Lead Guitar and Arizona Arts in Schools: Qualitative Data by Theme

Impact on Academics

One of the challenges in understanding studies that show a link between music study and elevated academic performance is not so much in showing *that* a link exists, but in *how* music study impacts academics. Some qualitative data points to indirect cause and effect as a major factor, and specifically self-confidence:

“One student who has struggled greatly in academics was in the guitar class. He gained a lot of confidence in the class. This year even though he is not playing guitar, he had the confidence and enthusiasm to choose to play a different instrument. He has shown excitement and has spent a lot of extra time practicing.”

- Third Grade Teacher in Lead Guitar

When a struggling student feels like a failure in most academic areas, arts classes can be a space in which students realize success for the first time. In the above example, the student is branching out within the discipline of the arts; we have known many other students who have seen success in the arts and their new self-confidence spilled over into other subject areas:

“Students appeared to be more responsible and were able to be more successful in their academic progress. Students demonstrated...leadership qualities through examples and by helping other students they saw struggling. Students also challenged themselves, working hard to make sure they were able to perform all of the skills provided by the Lead Guitar Program. Students did better throughout the year with their benchmark scores in reading and math. Students developed team building skills and learned to work with an ensemble in order to be more successful.”

- Middle School Teacher in Lead Guitar

Arts study is transformative precisely because students can start the year “not knowing anything about the guitar to being able to play in a concert at the end of the year,” explained the Third Grade teacher cited above. High school students in the Step Up dance program also identified this experience:

“This year our students saw the scope of what was possible with this program. At this age, they have a radar that’s sensitive to authenticity. Getting instruction directly from a faculty member at the nation’s 4th ranked School of Dance and hearing the ring of truth in what she had to say about discipline, focus, and effort changed the seriousness with which they took dance and may have positively affected the way they approach learning in general.”

- High School Teacher in Step Up

“ELL students increased their English language skills through the language used in Upbeat.”

-Elementary School Teacher in UpBeat

“Learning both language and music at the same time is extremely useful especially for our ELL students.”

-Middle School Teacher in UpBeat

“Each of the students has had personal and/or academic issues this year; nevertheless, in drum class, they come together as a team, across grade level, to love and support each other to achieve their best. I truly believe that without this dynamic they would not be mastering the pieces and performing as well as they are. In drum class, they have to listen to each other and rely on each other and I have seen the trust that they have established with each other extended outside of the 50-minute drum class period into all of their interactions with each other at school. They as a group and individuals are more confident in themselves; which for many of them has translated into improved academics.”

-Middle School Teacher in UpBeat

“This opportunity made performance a real life goal. Student Confidence in their ability to perform or interact with adults. The goal to provide a performance of learning to parents moved the responsibility of the content to the students. [Our school] has been engaged in a project around Student Agency. The [grant] helped us further our goals of academic identity, equity, student agency and academic culture.”

-Elementary School Principal in Music First

Impact on Behavior

Teamwork and cooperation are very difficult skills to improve in the traditional classroom setting, especially in schools where standardized testing is prioritized ahead of group projects or collaborative learning. Arts classes can often shake up social cliques as well as encourage cooperation and develop leadership:

“One afternoon during Step Up Dance Class, a third grade student was having some troubles executing a dance move that we had learned a few weeks prior. With no hesitation, 12 other students jumped in to help her remember the move, each providing encouragement and positive support through words and gestures. The next day, during a

school-sponsored dance event, that third grader taught the dance move to her entire class, mirroring the verbal support that she received in Step Up.”

- Elementary School Teacher in Step Up

“The UpBeat program allowed students to solidify their self-confidence. Solos and soli allowed everybody to participate in a collaborative effort to produce a product. Every student was able to perform a piece of music where they understood how to play it and in most cases volunteered to play it. The drums groups, which are separated by experience, understand that a unifying sound can be produce by all if ‘You can believe in yourself and the group.’”

- Middle School Teacher in UpBeat

“Three of our UpBeat students found acceptance through belonging to the drumming team. The shared respect was obvious across the group. We believe that this program actually helped several students stay in school.”

-Middle School Principal in UpBeat

Impact on Confidence

We argue that self-esteem and confidence are two areas in which arts study can have a direct impact on success in other academic areas.

“The students who participated in the Lead Guitar program developed stronger self-confidence as indicated in their final performances at the Fred Fox School of Music. Student participants shared that they had overcome personal psychological barriers to get on stage and play for an audience of people they did not know, outside their community.

Inability to formally read music is always a barrier for our students interested in music. This program strengthened students' abilities to read and strengthened their confidence in their ability to continue learning and improving.”

- High School Career Counselor in Lead Guitar

The latter comment on learning to read music is critically significant here. The career counselor teaches at a high school on an Indian Nation Reservation, and a teacher the previous year had commented offhand to our instructor that “*these* students can’t learn to read music.” In this case then, the fact that students could learn to read and performed among an auditorium of peers could have transformative impact on any academic area the students approach going forward.

“It was about a week ago I walked into the classroom and [the UpBeat instructor] was working with the kids. One of boys shared his composition with the class and everyone was learning it for the performance they had last Friday. They asked me to listen and I did. [The student] was so excited and he is not excited about anything regarding school. He has a pretty bad living situation. I was very proud to see him excited about his work.”

-Elementary School Principal in UpBeat

“Most often the students who come through this program choose to do 1 maybe 2 years just to get fine arts credit and do not pursue it any further. Due to the increased popularity and success of the program, I had several 2nd year students indicate that guitar was an avenue they wanted to pursue all through high school and into college. They began asking about scholarships and opportunities to further their music professionally which led us to offer advanced guitar beyond the second year to invite them to start guitar ensemble and be treated much like band and orchestra are.”

-High School Teacher in Lead Guitar

“One aspect of the course that was useful is that [the Step Up instructor] was able to engage the boys in learning more technical ballet skills. I noticed they were much more open to learning ballet technique from a male teacher than a female one. I also appreciated the connections he made to sports and other activities so the students could see how dance can help them improve in other aspects of their lives as well.”

-Middle School Teacher in Step Up

Impact on Focus

“Classroom teachers have commented on the way students have learned to focus better as a result of the guitar classes. Students have gained pride in what they have been able to accomplish. Students have gained confidence in their abilities to learn new things.”

-Third Grade Teacher in Lead Guitar

“Students appeared excited to participate in the Lead Guitar Program. They worked hard and were able to be focused in their music. Unexpectedly, many students who weren't very focused also appeared to work harder in the school work and achieved higher academic achievement than they had at beginning of the year.”

- Middle School Teacher in Lead Guitar

Lead Guitar is our first serious performing arts class (we've had keyboard and art classes in the past) and as such has shown our staff and students the process by which one begins to master an art form. We are learning that self-expression is more meaningful when it has the depth of knowledge, discipline and focus on detail that a program like Lead Guitar provides.

- High School Principal in Lead Guitar

“Many of our students were able to compare their previous performances. The UpBeat showcase performance allowed our students to view other drumming programs and compare their talents to other school's experience levels. This exposure really showed fruitage in beginning of the 2019-2020 school years. The returning students really want to learn new skills and perfect previously learned musical pieces.”

-Middle School Teacher in UpBeat

Impact on Community

Those that were part of the Showcase concert were especially proud and happy to share what they had learned with their parents and families. Families were able to be on the university campus, take pictures, and take joy in celebrating students' success. Students were able to enjoy their accomplishments in going from not knowing anything about the guitar to being able to play in a concert at the end of the year.

- Third Grade Teacher in Lead Guitar

“For the first time our Kinder through 2nd grade students had the opportunity to see and experience this incredible opportunity. Each day that Dr. Williams came to Craycroft he was touching the lives of students that had very limited exposure to music other than a TV, You Tube or a radio. The chance to observe 2nd grade students holding tambourines, wood blocks, marimbas, and the myriad of instruments that were supplied for students was incredible. The true delight were the faces of the parents during the performance day that Dr. Williams organized. Parents and family members truly were speechless. Students were the stars and they absolutely shined during the performance opportunity.”

-Elementary Principal in Music First

SUMMARY

Having analyzed data collected over the past year from a large, diverse, and dynamic population of students and teachers participating in the Lead Guitar/Arizona Arts in Schools programs, we saw a pervasive positive influence on classroom learning activities and on teaching.

"Students who learned to play a musical instrument in elementary and continued playing in high school not only score significantly higher but were about one academic year ahead of their non-music peers with regard to their English, mathematics and science skills," (Bergland 2019). The authors of this study sum up the educational significance of these findings to suggest that "...multiyear engagement in music, especially instrumental music, may benefit high school academic achievement."

Similar research shows that music study boosts listening skills, and it furthermore has a positive correlation with increased brain function: "Musically trained kids do better in school, with stronger reading skills, increased math abilities, and higher general intelligence scores. Music even seems to improve social development, as people believe music helps them be better team players and have higher self-esteem" (Skoe and Kraus, 2012).

Eisner describes music as crucial to an expanded view of knowledge; a unique and important mode of representation capturing experiences and meanings (1982). Researchers have long argued that the integration of arts in the curriculum offers students and teachers learning experiences that are intellectually and emotionally stimulating (Barrett 1997). Including music instruction across the school experience provides space "to share and listen to others' ideas, visions and commitments, and to build relationships in collaboration across disciplines" (Bresler 2003). More recent experiments in neuroscience have shown that "The way you hear sound

today is dictated by the experience with sound you've had up until today, ...musical training is akin to physical exercise...is a resource that tones the brain for auditory fitness" (Nina Kraus, 2012).

Dance is a fundamental form of human expression that likely evolved together with music as a way of generating rhythm, and hence, communication. Research has shown that dance has a strong capacity for representation and imitation, which suggests that dance may have further served as an early form of language. While investigations of the cognitive and neurological impacts of Dance Education have lagged behind music research, there is increased interest in the field as reflected in these excerpts from The Harvard Mahoney Neuroscience Institute Letter:

In a 2008 article in Scientific American magazine, a Columbia University neuroscientist posited that synchronizing music and movement – dance, essentially – constitutes a “pleasure double play.” Music stimulates the brain’s reward centers, while dance activates its sensory and motor circuits. A 2003 study in the New England Journal of Medicine by researchers at the Albert Einstein College of Medicine discovered that dance can decidedly improve brain health. Only one of the activities studied – dance – lowered participants’ risk of dementia. Other studies show that dance helps reduce stress, increases level of the feel-good hormone serotonin, and helps develop new neural connections, especially in regions involved in executive function, long-term memory, and spatial recognition.

Our work with the Lead Guitar/Arizona Arts in Schools programs over the past year supports and complements these example findings. Be it through dance, singing, drumming or playing guitar, our results showed that students grades improved, their absences were reduced, disciplinary incidents decreased, and self-esteem increased. Teachers noted increased participation, inclusion and focus, improved behavior, social interactions and attitudes towards learning and saw positive carryover from the arts classroom to core curricula.

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