



Australian
Chamber
Orchestra



ACO FOUNDATIONS

Evaluation Report

2018 – 2022



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INTRODUCTION

ACO Foundations (ACOF) is an in-school program which uses music learning to improve the developmental and educational outcomes of children in low Socio-Economic Status (SES) schools.

The program is based on two key theoretical assumptions: the first is that students from low SES backgrounds have significant developmental and educational disadvantages (Bradley & Corwyn, 2002; Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013); the second is that music learning has been shown to have a positive effect on child development and academic outcomes (Dumont, Syurina, Feron, & Van Hooren, 2017).

As such, the program was created with two broad aims:

1. To positively impact the developmental and educational outcomes of students in low SES public schools.
2. To demonstrate how music learning can be integrated into the core curriculum for the benefit of all students.

Designed and implemented by the Australian Chamber Orchestra (ACO), the ACOF pedagogical model is based on research by Dr Anita Collins (2014) which shows that playing a musical instrument can make permanent changes to the structure and functioning of the brain. To see this effect, one must start before the age of seven, practice regularly and often, and continue for at least two years. On this basis, ACO Foundations sees students participate in an intensive instrumental program, commencing in Year One of school (6 years old), and continuing until the end of Year Three. It is particularly designed to be implemented in low SES public schools, and the pedagogical approach is tailored accordingly.

The ACO has invested significant budget, expertise, and resources in developing and implementing this expansive pilot program which has been running in St Marys North Public School (SMNPS) in Western Sydney since 2018.

This Evaluation Report demonstrates that ACO Foundations is a model of music education that generates positive and permanent change for students - musically, developmentally, and educationally – and has the potential to make a profound impact on education and performance in low SES schools. It outlines the opportunity for program expansion in a broader educational context, and the considerations and supports needed to facilitate it.



“The ACO Foundations program affords our students access to the highest quality music program that, quite simply, changes lives. Not only do we see the cognitive, social, and behavioural benefits of a daily music program, it is the access our students have to world class musicians that provides a level of equity and opportunity that I have rarely seen in my career as an educator. Our students do not see their level of disadvantage.... they see themselves as little musicians who have the world at their feet and can dream of being just like the ACO when they grow up.”

**LISA PARRELLO, PRINCIPAL,
ST MARYS NORTH PUBLIC SCHOOL**

This Evaluation Report is based on insights from the five-year pilot program at SMNPS. It outlines the ACO Foundations program model and its intended outcomes; the successes and learnings from the pilot; and highlights the benefits of this innovative approach for students, school staff, and the wider school community.

The report was written by Dr Anita Collins, Neuromusical Educator, and Tara Smith, Director of Learning & Engagement at the ACO, with evaluation data and analysis provided by Dr. Katrien Stevens and Associate Professor Marian Vidal-Fernandez from the University of Sydney Faculty of Arts and Social Sciences.

THE ACO FOUNDATIONS PROGRAM



PROGRAM OVERVIEW

ACO Foundations is a research-based program, pedagogically designed to improve cognitive, emotional, and behavioural development in children through quality music education. At the start of Year One, students are provided with a violin or cello and undertake an intensive, classroom-based music program which includes:

- **weekly instruction** with a specialist ACO instrumental teacher;
- **daily practice** sessions with the classroom teacher;
- **ensemble participation** and performance opportunities; and
- **regular visits from ACO musicians**, who practice with the children and inspire their development.

Students participate in ACO Foundations as a compulsory curriculum activity from the beginning of Year One until the end of Year Three and all activity takes place during classroom teaching time, supported by classroom teachers.

The co-teaching relationship between classroom teacher and ACO instrumental teachers is critical to the successful implementation of the program, as is the development of musical skills and understanding in generalist classroom teachers. Ongoing professional development, both formal and informal, is built into the program model.

HISTORY OF THE PROGRAM

The ACO developed ACO Foundations in consultation with Dr Anita Collins, neuromusical researcher and expert music educator, and in 2018 began implementing a pilot program in St Marys North Public School. SMNPS was chosen as the participating school because they have a very low Index of Community Socio-Educational Advantage (ICSEA) value as defined by the NSW Department of Education, and because the school principal has a genuine commitment to educational innovation and change. Prior to 2018 the school had no existing music program and very few, if any, of their young students had access to prior musical tuition.

The pilot program commenced with 25 Year One students who then participated in the program for two years. During this first pilot phase, the program model was tested and refined in preparation for phase two of the pilot which was the full roll-out across the school. From 2020, the expansion began with the entire Year One cohort participating in the program. In 2021, the new Year One cohort commenced, while the previous students continued in Year Two, and in 2022 the full program expansion was realised with all of Years One, Two and Three – approximately 150 students, four ACO instrumental educators, and six classroom teachers – participating in the program on a weekly basis.

Impacts of COVID-19

Delivery of ACO Foundations was severely interrupted by two lockdown periods during 2020 and 2021. The student program was paused while schools were closed, as students did not have their instruments at home to practice, and online learning was not possible for most of the families of SMNPS, due to lack of technology. Despite many setbacks and challenges, ACOF resumed in classrooms as soon as students were allowed back in school, after both the 2020 and 2021 lockdowns. While students experienced setbacks in their development of musical and general skills, the commitment of both ACO instrumental teachers and SMNPS classroom teachers resulted in students catching up to almost where they would have been if they had not had gaps in their learning. It should be noted that the 2022 Year One cohort will likely be the first cohort to experience the three-year program in full without interruptions, and by the end of 2024 will demonstrate the full potential and capacity of ACO Foundations.

The whole staff professional development program continued through 2020 – 2021 but due to COVID restrictions many sessions were held online. This format allowed for the continued development of teachers and was effective largely due to the relationships that Dr Collins and the teachers had established prior to the COVID restrictions. Professional development continued in a face-to-face format in 2022.

LITERATURE UNDERPINNING THE PROGRAM

Music and the brain

ACO Foundations is based on academic research which has explored the impact of music learning on brain development. Across the fields of neuroscience, education, and psychology, studies have provided convincing evidence that music training is unique in its capacity to enhance cognitive functioning and academic performance.

While the list of brain enhancements which have shown to be attributed to music training is long, a summary of the improvements that are most relevant to ACO Foundations are listed to the right. These findings have been found to be significant even when external factors such as general intelligence (IQ), socio-economic status, and parental education have been accounted for.

Music training:

- Trains the brain to use less, rather than more, activity to complete a given task (Münste, Altenmüller & Jäncke, 2002)
- Develops faster and more effective connectivity between the two hemispheres of the brain (Steele et al., 2013)
- Enhances the connectivity between brain structures including the auditory, motor and visual cortices (Gaser & Schlaug, 2003)
- Improves executive function skills including planning, attention, focus, and strategizing (Moreno et al., 2011)
- Increases levels of brain plasticity which impacts positively on learning capacity and long-term brain health (Moreno et al., 2009)
- Improves spatial awareness and non-verbal skills (Forgeard et al., 2008)
- Enhances empathy and the processing of external emotional meaning (Hannon & Trainor, 2007)
- Improves internal emotional regulation and control (Koelsch, 2010)
- Increases general health and wellbeing over the life span (Wan & Schlaug, 2010; White-Schwoch, 2013)
- Develops perseverance towards long term goals, including grit behaviours and growth mindset (Duckworth, Peterson & Matthews, 2007)

The impacts of low socio-economic status on learning and development

A wide body of research has shown that low socio-economic status, as measured by family income, parental education levels, and occupational status, can have a negative impact on a child's physical, cognitive, and socioemotional development (Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013). This is likely because children from low SES families can have less access to material resources (such as books and games), human resources (such as extra-curricular tuition), and social resources (such as the availability of engaged parents and grandparents). They may also lack access to cognitively stimulating materials and experiences which might enhance learning, motivation and engagement at school (Bradley & Corwyn, 2002).

Students who experience disadvantage and trauma due to low SES can often struggle to develop skills in persistence and resilience. This may be due to circumstances that can prevent the typical development of these skills, as well as lack of behavioural experiences that are vital in the development of some executive functions, including persistence and resilience.

Music learning is a uniquely effective tool in improving brain function and providing learning experiences that enhance executive functioning, specifically in resilience, also referred to as 'grit'. These skills form the foundations of effective learning and are essential in order to see academic improvements in subject areas such as reading and numeracy, and can have long lasting benefits into adulthood.



PROGRAM MODEL

ACO Foundations is founded on research which identified the critical factors of music learning required for notable and sustained musical and cognitive development. In an analysis of over three decades of research, Collins (2014) found that music learning needs to:

- commence before 7 years of age;
- involve music making through singing, moving and/or learning a musical instrument;
- take place in both group learning (ensemble) settings and individualised (small group or individual) music lessons;
- be undertaken regularly and continually (every week) for a minimum of two years and ideally for three to five years, for more sustained impact;
- follow a sequential and scaffolded curriculum;
- be delivered by teachers who are trained in teaching music; and
- include the reading of age-appropriate music notation.

These principles informed the development of the ACO Foundations program model, which involves each of these key elements.

PROGRAM ACTIVITIES

ACO Foundations has two broad strands: student participation in an intensive string playing program; and an ongoing teacher professional learning program.

Student instrumental program

All students in Years One, Two and Three are provided a string instrument (violin or cello) and take part in a three-year intensive music learning program which includes:

1. **Weekly class instruction and ensemble playing**, led by trained ACO instrumental teachers, involving singing, moving, and technical instruction on their instrument;
2. **Weekly small-group string lessons** with ACO instrumental teachers; and
3. **A daily practice session** led by classroom teachers, supported by video resources developed by the ACO.

A critical component of the program design is the **co-teaching partnership** between instrumental educator and classroom teacher. They meet regularly to plan lessons, share insights, discuss student progress, and find solutions to challenges, resulting in an ongoing feedback loop between program design and program delivery.

Teacher professional development program

Implementation of a successful music learning program would not be possible without ongoing professional development and support for school teaching staff. The ACOF professional development program was designed and delivered by Dr Anita Collins, in close consultation with the ACO and SMNPS principal, and has proven critical to the ongoing success of the program.

The first critical phase of professional development included sessions on the neuromusical research, designed to assist both class teachers and ACO instrumental teachers in understanding the underpinnings of ACO Foundations, and **why** music learning is beneficial for all students.

The second and concurrent phase of the professional development program is the training on **how** to implement practical music learning in the classroom. Through a series of practical workshops, teaching staff develop their own musical skills, understanding, and confidence in using music in the classroom. The curriculum is delivered in school stage groups and differentiated to cater for personal music skills and areas of interest. Ongoing training, support and feedback is built into the program through mentoring of teaching staff by both Dr Collins and ACO instrumental teachers. ACO instrumental teachers also participate in professional development sessions, developing and honing their classroom teaching skills and pedagogical understanding.

PROGRAM AIMS & OUTCOMES

Over the course of participating in ACO Foundations (1 – 3 years), it is the aim that the following outcomes will be seen in two key participant groups.

Participating students will show:

- the development of musical skills and abilities;
- improvement in cognitive development and educational achievement;
- improvement in physical development, including gross and fine motor skills;
- improvement in emotional and behavioural development; and
- increased engagement and motivation at school.

Participating teachers will show:

- development of musical knowledge, skills and abilities;
- increased confidence and use of musical activities in the classroom; and
- increased understanding of the links between music and learning.

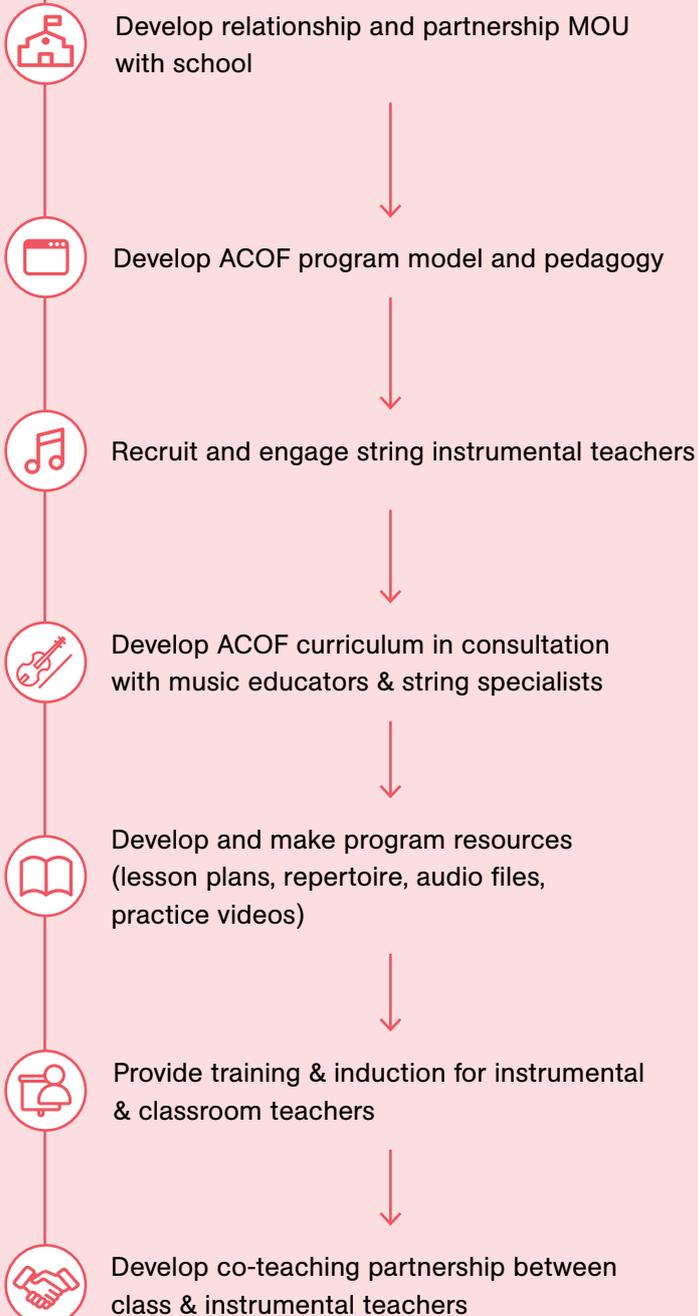
While not a key driver of ACO Foundations, it is also hoped that the program will result in positive benefits for the **wider school community**, as evidenced by:

- increased parental engagement in student learning;
- increased pride in learning and academic achievement; and
- increased interest in, and willingness to attend arts and cultural activities.

PROGRAM LOGIC MODEL

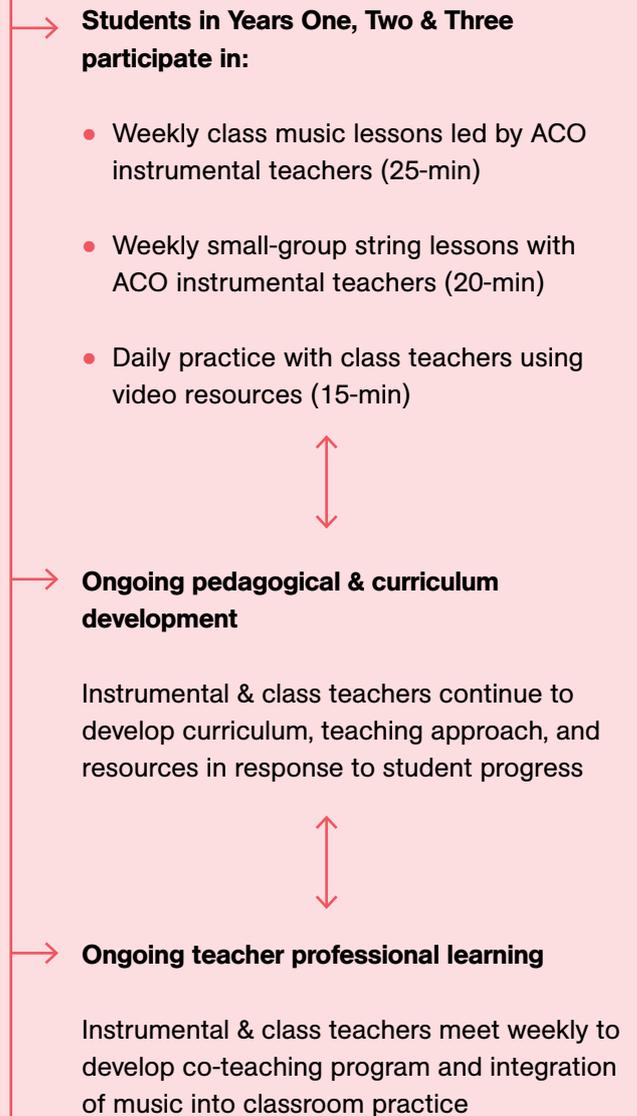
PRE-PROGRAM

PLANNING



PROGRAM IMPLEMENTATION

PROGRAM ACTIVITIES



ENTATION (1 < 3 years)

POST-PROGRAM (4+ yrs)

PROGRAM OUTCOMES

- **Students have improved:**
 - **Cognitive development & academic achievement** (auditory & visual processing, reading, spelling, numeracy, ability to learn)
 - **Physical development** (gross & fine motor skills, posture & muscle tone)
 - **Emotional & behavioural development** (focus & concentration, perseverance, self-regulation, motivation, engagement in learning)

- ↕
- **Students have developed musical skills & abilities** (aural awareness, rhythm, pitch, playing their string instrument, singing)

- ↕
- **Students, families & school community demonstrate:**
 - a love of and interest in music
 - pride in learning & achievement
 - willingness to engage in cultural activities

- **Teachers have developed:**
 - musical skills & abilities
 - confidence & ability to integrate music into classroom
 - understanding of the links between music & learning

IMPACTS

- **Compared to statistically similar peers, students have:**
 - More developed cognitive abilities & executive functioning
 - Better self-regulation & focus
 - Greater persistence towards difficult tasks
 - Higher motivation & engagement at school

- **Students & wider community demonstrate:**
 - a continued love of and interest in music
 - continued engagement in music making and cultural activities (music lessons, ensembles, attending concerts etc.)

- **Teacher participants:**
 - continue to integrate music into their curriculum
 - share their knowledge and experience of music with other teachers



PROGRAM EVALUATION

Program evaluation was embedded in the ACO Foundations pilot program, with a continuous feedback loop between program design and program delivery. As well as ongoing informal evaluation, data has been collected from several sources to inform this report. These include:

- **Quantitative research** conducted by University of Sydney Faculty of Arts and Social Sciences researchers Dr. Katrien Stevens and Associate Professor Marian Vidal-Fernandez;
- **Qualitative data** collected through interviews conducted by Dr Anita Collins; and
- **Analysis of school-based data** from St Marys North Public School, provided by principal, Lisa Parrello.

DATA SOURCES INFORMING THIS EVALUATION

Quantitative data collection

Dr. Katrien Stevens and Associate Professor Marian Vidal-Fernandez from the University of Sydney Faculty of Arts and Social Sciences were engaged to measure the impact of ACO Foundations on learning outcomes, behaviour, and self-perception in students. The researchers collected data from 50 Year One students at St Marys North Public School, 17 of whom were participating ACO Foundations, with the remainder of the cohort part of a comparison group. Standardised measures were collected through the Interactive Computer Adaptive System (InCAS) assessment which was developed by the Centre for Evaluation and Monitoring (Durham University, UK) to assess the learning gains of primary school children (Luyten, Merrell & Tymms, 2017). Measures tested included Reading, Spelling, Numeracy, Mental Arithmetic, Developed Ability and Attitudes, and data was collected onsite at SMNPS at the beginning and again at the end of 2018.

Qualitative interviews & case studies

Dr Collins conducted semi-structured interviews with two ACO instrumental teachers, three generalist class teachers, the school principal, and five students from the 2018-2020 cohort, to gather data on their experience of ACO Foundations, the changes they have observed in themselves and their students through the program, and to identify the critical factors to the success of the program. The results of these interviews have informed the measurement of program outcomes and provided three case studies which illustrate some of the successes of ACO Foundations.

Analysis of school-based data

The principal of St Marys North Public School provided analysis of school-based data for the ACO Foundations cohort, including attendance records, and teacher reported outcomes on reading levels and general academic progress.

Limitations

The intention for the ACO Foundations program evaluation was to collect data for the 2018 cohort throughout the three years of the program, with plans to repeat data collection measures at the end of 2020. Unfortunately, due to the interruptions to learning created by COVID-19, several of these evaluations could not be completed to their intended level. The University of Sydney data collection was not able to be repeated in 2020 and NAPLAN testing was not conducted in 2020 or 2021, and as such this qualitative data was not available for analysis. Despite these significant and unprecedented interruptions to the program delivery, the results show some very promising positive outcomes from ACO Foundations, worthy of discussion.

PROGRAM OUTCOMES

Outcome 1

Increased musical skill, including improved auditory processing, pitch awareness, and musical literacy

ACO Foundations is founded on best-practice music education pedagogy and delivers a curriculum of musical skill and knowledge development that is specifically designed for students who may have complex learning needs. While the inclusive and flexible teaching style of ACO instrumental teachers is adapted to suit the needs of students, overall expectations of their musical development are extremely high, and the program is delivered with rigour.

ACO Foundations students progress through a series of sequential learning steps starting with learning to sit and stand with correct posture, to holding their instrument and their bows, to plucking open strings correctly and confidently, to playing repertoire of increasing difficulty and musicality, and reading musical notation. The incorporation of singing as an essential tool to improve auditory processing and pitch awareness has worked very effectively. Scaffolding of skills from listening, memorising, and repeating (vocally and on instruments) in the early stages, through to reading and playing simple and then more complex written notation, has assisted students in fine-tuning their auditory and visual processing skills - the critical foundations required for strong spoken language and reading development.

ACO Foundations students' interactions and performances for and with ACO musicians has also greatly improved their musical development as they provide musical models to emulate and aspire to. The exposure to high pressure performance situations has also transferred across to improved public speaking and communication skills.

ACO Foundations is also designed to develop musical skills, abilities, and confidence in generalist classroom teachers. Prior to commencing the program, most staff at SMNPS classified themselves as "unmusical" and "unable to sing". On both counts they were proven

wrong, and slowly, over many sessions, they began to embrace their ability to participate in, and teach, music. Whether through learning a string instrument, singing, playing recorder, or learning rhythm patterns using disposable cups, SMNPS teachers' musical literacy and music-making skills have improved significantly. They can now read music, sing in tune, clap out a rhythm, and use their musical knowledge to design music learning experiences in their classrooms.

While no standardised measures of musical proficiency have been collected as part of the program evaluation, program evaluators, ACO instrumental teachers, and classroom teachers can confirm through observation and monitoring that every student and teacher in the program has undoubtedly developed musical skill and ability. According to Dr Collins, in comparison to other instrumental programs around Australia, ACO Foundations students display a comparable level of music literacy – a significant accomplishment in a cohort of students who have many challenges and barriers to learning, and generally don't come from families of musical background.

- ACO Foundations students developed better auditory and visual processing, improved pitch and rhythmic awareness, and the ability to play a string instrument with increasing difficulty.
- All teachers participating in ACO Foundations developed musical skills and abilities and were confidently facilitating daily practice and other musical activities in their classrooms.
- The interaction with professional ACO musicians provided ACO Foundations students with the motivation and the aspiration to develop their string playing and performances to a higher level.

Case Study

The story of Jaxson

Jaxson is a student currently in Year Six and was in the very first pilot cohort of ACO Foundations students. Jaxson is an energetic boy who bounds into school each morning with the knowledge that he is starting his day with his violin.

Many boys of this age might have a hero that is a superhero, like Spiderman. Jaxson's hero is Richard Tognetti, Artistic Director and Principal Violin of the ACO. When Richard visits the school, or the students get to perform alongside the ACO, Jaxson simply implodes with happiness. He plays with the same gusto and delight in his eyes as his musical hero and has said many times that he wants to be the next Richard Tognetti.

At a public performance with the ACO in early 2022, Jaxson felt inspired to turn to Richard Tognetti and proclaim "you guys are sounding really good. You sound like us now!". While this was a funny moment at the time, it points to a deeper impact that ACO Foundations has had on Jaxson. Here is a young student who has been able to see the possibility of a journey between himself and the likes of Richard Tognetti, with the knowledge that he is simply further back on that journey.

"Now the students have seen things, a part of the world they didn't know existed. There's this group called the ACO playing music like we do in a really special way. They didn't know that you could go and enjoy watching people play instruments. Their world is so much bigger now"

LISA PARRELLO, SCHOOL PRINCIPAL



Providing a student with this type of vision and purpose so early in their lives is incredibly important, and possibly even more important for a child who is living in challenging circumstances. The power of the ongoing interactions with ACO musicians lies in showing the young ACO Foundations students what they can be if they work and persist at something. The oft used adage of "you can't be what you can't see" is very apt in this situation. The role modelling that ACO musicians provide is invaluable to ACO Foundations students' self-image and self-belief.

This skill and belief can transfer to students applying themselves to their musical and classroom learning, to knowing that with effort and practice comes improvement, to sticking with problems when they can't see a solution, and for being open to new experiences and challenges. These traits are the basis for lifelong learning and success.

Outcome 2

Improvement in cognitive and academic ability, including verbal and written communication, and mathematical reasoning

Performance in cognitive ability

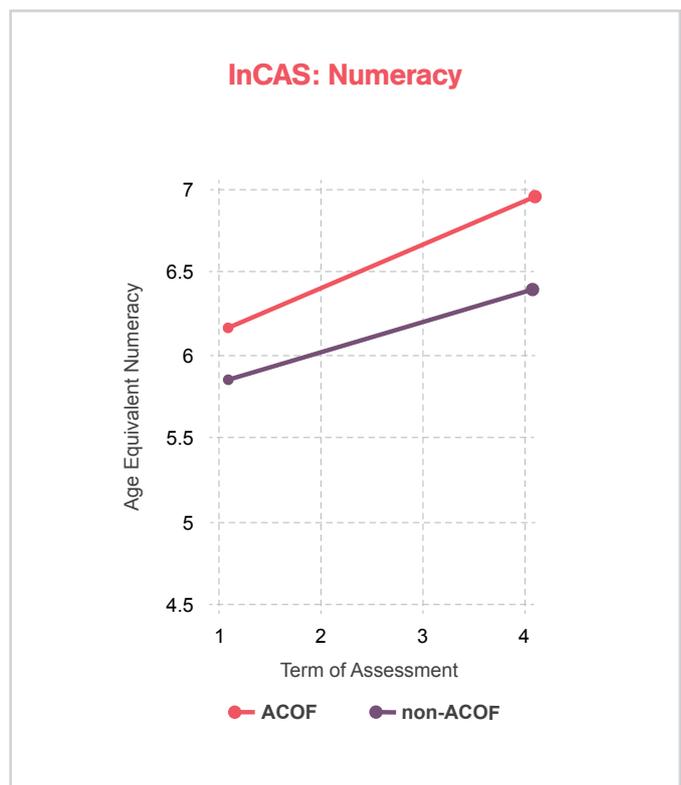
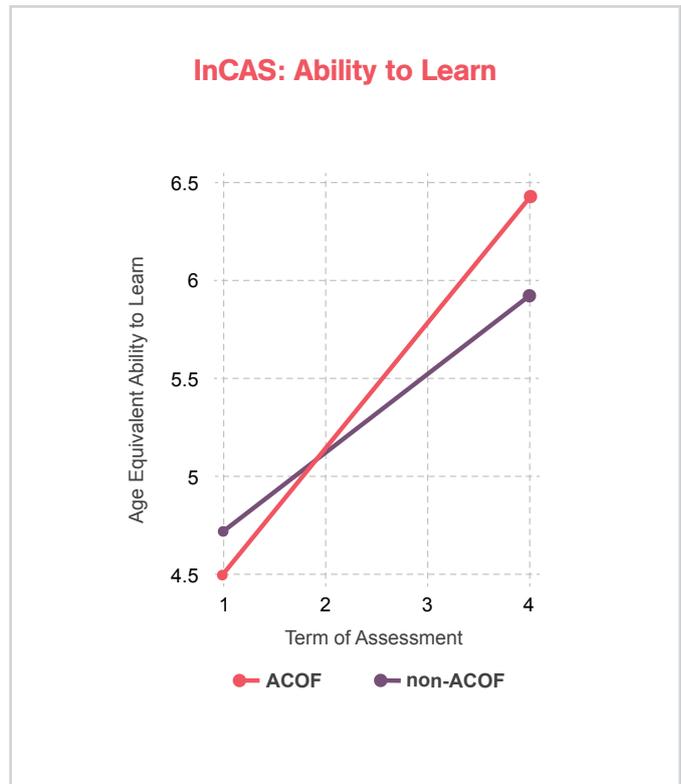
Using the InCAS measurement of **Developed Ability**, the performance of students in ACO Foundations was compared with students who were not involved in the program. The measure of Developed Ability is based on a combination of items which assess language acquisition and non-verbal ability. It captures understanding of increasingly difficult words and an ability to reason through increasingly difficult problems (INCAS, 2020, p.12, 25), and is used as an indicator of students' **ability to learn**. This ability is developed by children over their lifetime and is a critical foundation of learning and achievement.

ACOF students tested below the comparison group at the start of the year, with an average ability to learn of 4.5 years of age, but after involvement in the program their ability to learn had increased to an average age of 6.5 years – a developmental increase of two years, within a 12-month time frame. In addition, ACOF students were, on average, six months ahead of their peers in their ability to learn.

Performance in mathematical reasoning & numeracy

Using the InCAS objective measurement of **Numeracy**, the performance of students in ACO Foundations was compared with students who were not involved in the program.

Results showed that ACOF students started above the comparison cohort but also improved at a greater rate than the comparison cohort and by the end of the year were achieving at the expected age range (7 years) for their grade level. The comparison group did not reach the expected grade level (<6.5 years) and therefore commenced Year Two with delayed learning levels in numeracy.



Source: ACO Foundations Pilot Program Evaluation (Stevens & Vidal-Fernandez)

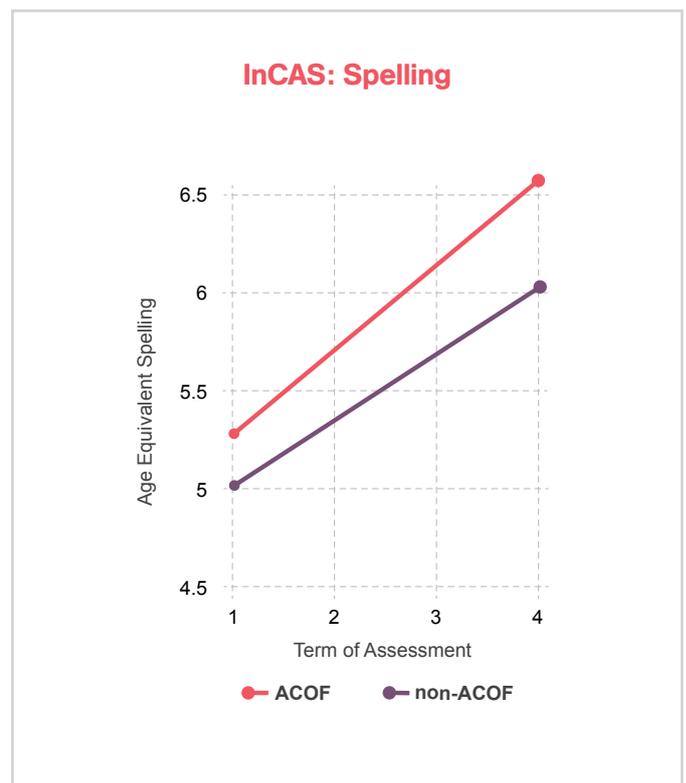
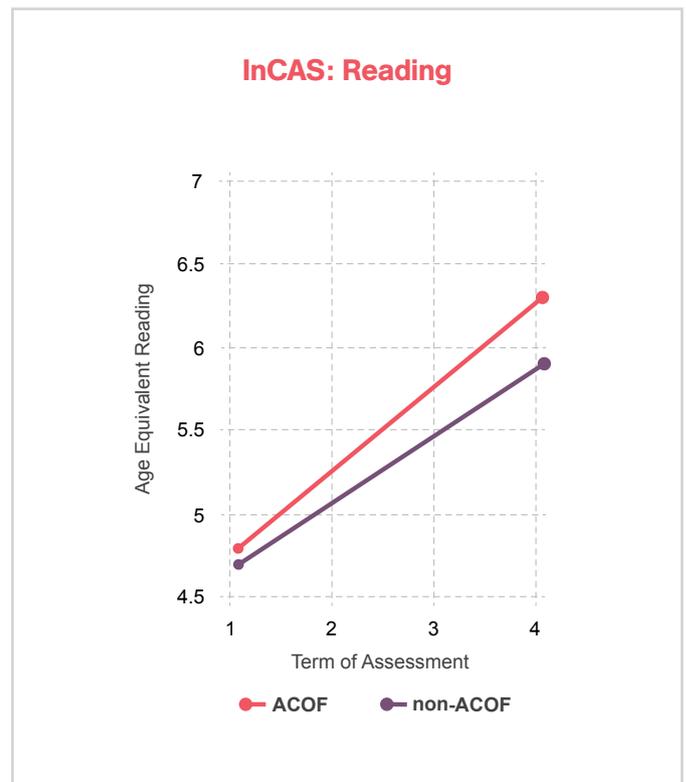
Performance in Reading and Spelling

Using the InCAS objective measurements of **Reading** and **Spelling**, the performance of students in ACO Foundations was compared with students who were not involved in the program.

The results showed that ACOF students started above the comparison cohort in both measures, but also improved at a greater rate than the comparison cohort, indicating that participating in ACO Foundations is contributing to the improved reading and spelling skills of students.

It should be noted, the rate of increase is only slightly higher in ACOF students compared with other students, and this may be supported by research which shows that significant improvements in reading and written communication only become apparent after two or more years of music learning. Further research would be needed to understand the nature of the improvement past the first year of learning.

- ACO Foundations students increased their performance in their ability to learn, numeracy, reading and spelling at a greater rate than students not participating in the program.
- The most significant increase was in ACOF students' ability to learn, with students showing a developmental increase of two years within a 12-month period.
- By the end of the year, ACOF students were achieving, or close to achieving, expected performance for their age in all areas, whereas students not participating in the program had not reached expected performance for their age.



Source: ACO Foundations Pilot Program Evaluation (Stevens & Vidal-Fernandez)

Outcome 3

Improved emotional and behavioural development

Music education has long been recognized as a valuable tool for the development of children's emotional and behavioural skills. Learning to play an instrument requires concentration, intense focus, and self-regulation, as students must pay close attention to the notes and rhythms, their posture, and listening to their peers and their teacher. This focused attention can transfer to help students concentrate better and to stay on task for longer periods of time in the classroom – essential skills for success in school and beyond.

As a result of participating in ACO Foundations, improvements in focus and concentration have been displayed in many ways. Hayden described his focusing processes: *“I just read [a new piece of music] first. And then I go over it in my head. And then I give it a try at the start. And then if I mess it up, I just keep going. And then keep trying until I nail it”*.



Liam describes how he maintains his concentration as: *“When we start a [new piece of music], like one of the songs at the start, we're like, oh, this is tricky. But I'm like, let's keep going. And it gets fun. I like a challenge”*. These two descriptions demonstrate that the music learning ACO Foundations students are undertaking is helping them maintain their focus for longer, to overcome frustration and initial setbacks, to develop grit and perseverance, and to see the learning journey as a positive challenge.

Music education has also been found to help children develop their self-regulation skills. Playing an instrument requires a great deal of self-control as students must learn to regulate their breathing, moderate their behaviour, and manage discomfort. Through practise and performance, students learn to regulate their emotions and responses to stress, which can help them manage their emotions more effectively in other areas of their learning. Ally has found safety and security in learning music with her classmates and managing her anxiety: *“If I were to play myself [in front of an audience] I would be too nervous. [When I play my cello] with my friends it is good because if I do make a mistake, they won't really be able to hear it”*.

Liam painted a picture of the sense of calm and balanced wellbeing he experiences when he plays his instrument: *“[When I play my violin] I imagine this nice grassy hill. Sometimes it's like a sunset. It looks really nice and makes me feel really calm. I just love playing the violin.”*

ACO Foundations students developed:

- better focus and concentration towards tasks;
- an increasing ability to persist at difficult tasks (grit); and
- better self-regulation and management of their emotional responses.

Case Study

The story of Jason

Jason is a student in Year Three who has been participating in ACO Foundations for 3 years. Jason is autistic and has several sensory processing challenges, meaning his participation in learning is highly influenced by the amount of sensory stimulus on any given day. As a result, his general learning is delayed, and he is significantly behind his peers in his reading levels.

Music learning has the potential to both challenge Jason's participation and significantly improve his learning capacity. The challenges come from the highly sensory nature of music learning; there is a great deal of sound, multiple physical and behavioural rules to adhere to, and motor control to master. These simultaneous sensory requirements can be overwhelming at first but, after consistent exposure and the use of adaptive approaches, these requirements can lead to improvements in a student's sensory processing.

Jason struggled to participate in ACO Foundations to begin with, often refusing to attend string lessons or enter the music classroom. ACO instrumental teachers and his classroom teacher worked hard to help him participate, using a set of headphones to help manage his sensory overload. After more than a year of participating the program, he is now an active and happy participant in group learning situations and can follow multiple instructions. Jason struggled with both skills prior to ACO Foundations, and they were the main barriers to his learning progression.

“Now Jason walks in, he gets his violin, he stands in his position. He's not too sure what he's playing but he stands there, and he has a go. He's really proud of himself.”

JASON'S CLASSROOM TEACHER

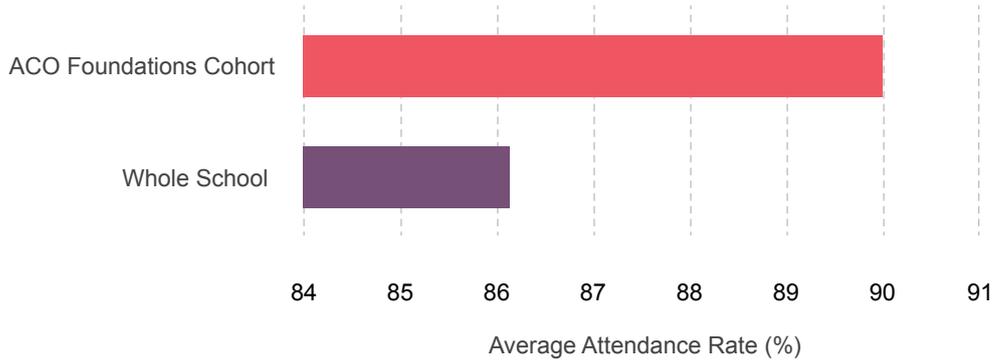
Jason still has his challenging days, but his learning is improving in multiple areas and most importantly his willingness to try, to attempt new tasks, and to self-regulate his own emotions and responses is improving steadily. He also exhibits a sense of pride in his achievements, and he and his younger sister, who is also in the ACO Foundations program have both been able to perform for their mother at concerts. His classroom teacher reflected on the positive behavioural changes in Jason as he has found a skill he can work and excel at: *“He stands there really proud to show [his learning aid and his mother] what he can do.”*

“We have no words for how the music program has changed Jason, it is just astonishing to see the positive change in him.”

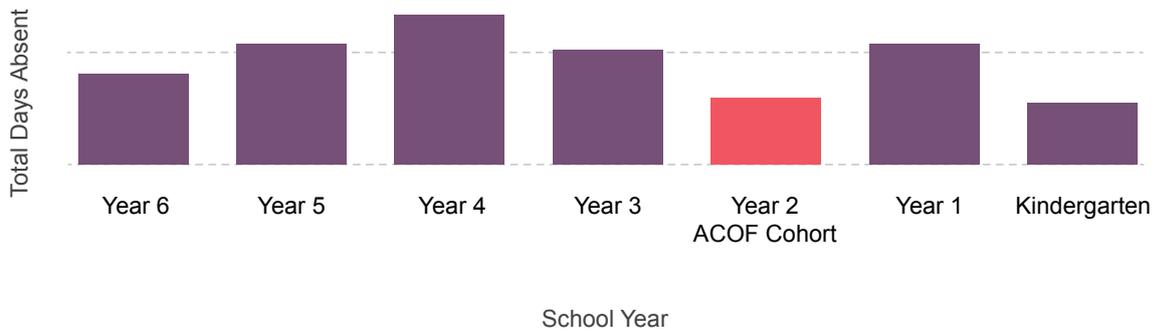
LISA PARRELLO, SCHOOL PRINCIPAL



St Marys North Public School, Attendance Rates (2018)



St Marys North Public School, Absences by Cohort (2019)



Source: School-based data (St Marys North Public School)

Outcome 4

Increased engagement and motivation at school

Using the InCAS measurement of **Attitude to School**, the performance of students in ACO Foundations was compared with students who were not involved in the program. Attitude to School is measured by asking students to rate various statements relating to their feelings about school on a sliding scale. The Attitude measures are reported as a continuous measure on a scale of negative through to positive (-100 to +100) (INCAS, 2020, p.13, 22).

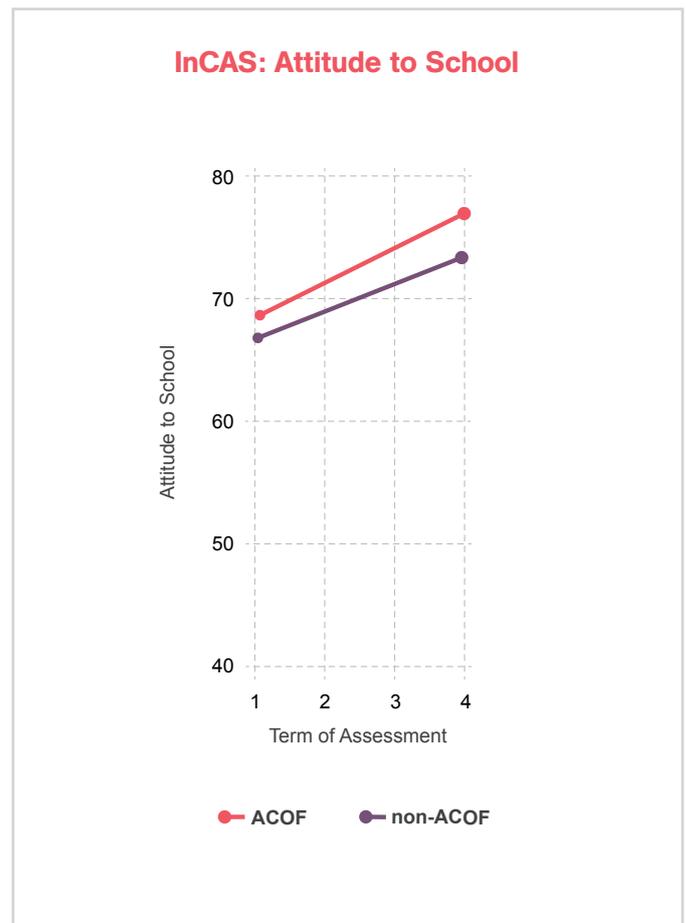
The results showed that while students in the ACO Foundations program started above the comparison cohort, their attitude to school also increased slightly further than the comparison cohort.

“We don’t need locked gates Mrs Parrello, who would ever want to leave our school? When I grow up, I am going to teach other kids how to play the violin. I am never leaving.”

JAXSON, STUDENT (2018 COHORT)

Using **school attendance** data as another indication of engagement and motivation towards school, the attendance of students in ACO Foundations was compared with attendance of students across the school.

In 2018, ACO Foundations students’ average attendance was four percentage points higher than whole school attendance average. Although this is a small percentage, the school principal reflected that this is a significant improvement when viewed in light of general school attendance. In 2019, once the ACOF cohort had moved into Year Two, this cohort had significantly improved attendance, as indicated by the lowest absentee level across Years One - Six.



Source: ACO Foundations Pilot Program Evaluation (Stevens & Vidal-Fernandez)

ACO Foundations students have better attendance and a more positive attitude towards school, indicating higher levels of engagement and motivation than students not participating in the program.

Case Study

The story of Meredith

Meredith is a student in Year Six who joined ACO Foundations when she was in Year Two in 2019. Meredith is a First Nations student who is a selective mute, meaning she does not often communicate verbally in class. She rarely engaged in conversation with teachers or her peers since she began school in kindergarten.

It seems the violin has changed Meredith's world. She has taken to the violin like a duck to water and her violin teacher reports that she has an incredible amount of natural talent. What is most interesting about Meredith's journey in the ACO Foundations program is that while she is in music class, she speaks freely and easily.

Once Meredith enters the music room each morning, she becomes a person who is brave enough to talk. The likely reason for this significant change in her ability to communicate is that music learning has allowed her to engage with sound differently and safely. Selective mutism can occur due to problems with sound processing, a speech or language problem such as stuttering, or an anxiety disorder. Music learning simultaneously challenges the auditory processing

system to become more attuned to sound and sound differences, while also lowering cortisol (stress hormone) levels and raising serotonin (connection and safety hormone) levels. This combination will be working to address the many underlying issues Meredith may be experiencing which are resulting in her selective mutism.

It is also likely that the positive effects of relational learning are at play. Safe, positive, encouraging longer-term relationships between students and their teachers have been shown to have a positive impact on learning and motivation. The relationship developed between Meredith and her violin teacher over time, through small group and private lessons, is likely to have helped Meredith develop the confidence and the motivation to speak more freely.

Meredith is the first person in her family to learn to play an instrument. She and her mum now search for classical music to listen to together. Without ACO Foundations, Meredith may never have been given the opportunity to find her voice through music. This is a gift that is simply priceless.



Outcome 5

Improved physical development

Music learning, particularly playing a string instrument, requires the progressive mastery of a significant number of motor skills, involving posture, gross, and fine motor skills. Research shows that students who experience socio-economic disadvantage and/or trauma can often have delayed motor development, among other developmental delays. This could point to music learning being a significant challenge for the students participating in ACO Foundations, however, this program has shown that music learning can act as a highly effective intervention to improve motor skills.

When the ACOF pilot program commenced in 2018, it was observed that students' posture and core strength was generally poor, with all students struggling to maintain the required posture (seated for cellists, standing for violinists) for more than a few minutes. This lack of posture fitness was contributing to loss of focus, difficulty taking in new information, and some behavioural issues. ACO Foundations instrumental teachers had to adjust their expectations of students and amend their teaching sequences to take the lack of posture fitness and poor fine motor skills into account.

By the end of the pilot year in 2018, and in every subsequent year, ACOF students' command of their motor skills and level of physical development has increased. They can now maintain their posture for a 45-minute rehearsal, they have improved their fine motor skills substantially so that their right and left hands work independently, and they can play more complex music in terms of fingering, hand position and bowing.

Improvements in students' gross and fine motor skills has transferred to their classroom learning in several ways. Students can maintain their attention on cognitive tasks for longer because they are no longer distracted by their poor posture fitness. Their handwriting skills have improved significantly, and they can maintain their focus and writing precision for longer. Their ability to maintain control of their bodies in focussed rehearsal sessions has transferred to their ability to use the classroom space effectively, leave space for students to move past them, and organise their own classroom equipment.



ACO Foundation students have significantly improved physical development as evidenced through improved posture, strength, and fine motor skills.

SUMMARY OF OUTCOMES

ACO Foundations has been found to:

- **Develop students' musical skills**, including improved auditory processing and pitch awareness, development of rhythmic ability, and increased musical literacy
- **Improve students' physical development**, including posture, gross and fine motor skills
- **Increase students' attitude, motivation and engagement** at school
- **Improve students' emotional and behavioural development** including focus, concentration, and self-regulation
- **Increase students' ability to learn**, which is likely to support their learning capacity throughout their schooling
- **Improve students' verbal and written communication** (reading and spelling) and **numeracy**



CRITICAL FACTORS FOR SUCCESS



While ACO Foundations is, at its core, a program that teaches students how to play string instruments, it is evident its benefits go far beyond that of a traditional instrumental music program. The program has had a profound impact at St Marys North Public School and enriched the outcomes and the outlook of the students, staff, school and wider community.

The success of ACO Foundations has been achieved through several deliberate, research-based, and educationally focused decisions and approaches. The unique and critical success factors of the program model are outlined in the following pages.

Music is for all, not for some

Embracing and embedding music learning across the school

While ACO Foundations began with a small pilot cohort in 2018, the vision was always to expand it to all students for three years of continuous, sequential learning. The underlying principle is that music making is essential to learning – not optional or extracurricular – embedded in the curriculum and completed during classroom time. Every student in Year One to Year Three participates in the program every day, regardless of their differing abilities or behavioural challenges. Successful delivery of ACOF is reliant on the daily commitment of both ACO instrumental teachers and classroom teachers, and to the rigorous implementation and setting of high expectations. The co-teaching relationship between instrumental teacher and class teacher, the continuous feedback loop, and adaptation and tailoring of teaching methods to suit individual students, means that no student is left behind, and all students experience the benefits.

Importantly, while the instrumental program is for all students, the professional development program is for all staff. For this program to work, all teachers needed training in how to use music learning in their classrooms as a tool for learning, and this required absolute commitment across the school.

Implementation of a compulsory music program in the classroom was initially met by teachers with some opposition. This was mostly rooted in a very common fear of learning a new skill that is more confronting than most, and a wariness about the pressures on time and a crowded curriculum. Over several years of consistent training and practice, teachers at SMNPS have fundamentally shifted their attitudes about music learning in the classroom and now see themselves, just like the students, as being on a journey of mastery. They understand the benefits of music education for other aspects of learning and child development, can design music learning experiences for their classrooms, and can identify when benefits are occurring in each one of their students.

As a result of ACO Foundations, music at SMNPS is no longer seen as ‘extracurricular’, but as a critical tool for delivering curriculum outcomes. Teachers have a deep-seated ownership of music learning in their classrooms, and they engage in powerful professional conversations and support each other to improve their skills.



Teachers as learners

Co-teaching embeds successful music teaching and learning in a school

One of the unique and innovative aspects of ACO Foundations is the co-teaching model between instrumental teacher and classroom teacher. The essential underlying principle of the program is that students learn weekly from trained instrumental experts and practice daily during class time. ACO instrumental teachers teach students in class and small groups once a week, and on every other day of the week the class teacher facilitates practice and guides student learning with the help of purpose made video resources. For this to work, the program relies on a co-teaching design which means that students see no division between the learning they do when the ACO instrumental teachers are leading and when their classroom teachers are leading.

To enable the successful development of the co-teaching partnership and to ensure generalist class teachers are equipped to facilitate daily string practice, the following activities are embedded into the program design.

- Instrumental and class teachers work together in facilitating weekly class string lessons – this is not ‘relief from face-to-face’ time for teachers, rather they are actively involved in team teaching all aspects of the program.
- Instrumental teachers introduce new material and techniques in the class instructional sessions at the beginning of every week and discuss and provide guidance on content, an outline of weekly lesson plans, and an overview of the practice video content to class teachers.
- Instrumental and class teachers communicate regularly throughout every week, discussing student progress, adapting the program as required for individual students.

- Instrumental teachers and class teachers meet formally as a group once a fortnight to work through the program content, discuss any concerns and ask questions of each other, and share tips and tricks for successful implementation.
- Classroom teachers become learners of string instruments themselves, learning to play either a violin or cello along with their students. They participate in professional learning sessions with ACO instrumental teachers in which they cover practical string playing skills as well as the teaching sequence for the following week’s lessons. This experiential approach means that class teachers are not teaching “about” music but they have a first-hand experience of exactly what their own students are going through as they learn.

Underpinning the delivery of ACO Foundations, and the investment in the professional development of the Year One to Three class teachers, is a whole-school commitment to an ongoing professional learning program which sits alongside the student learning program. Teachers across the school work with an expert music educator on a regular basis to develop their own musical knowledge and skills, building their confidence and ability to implement music learning activities in their day to day classrooms, even outside of the ACOF program.

Daily training for the brain

Intensive, regular practice as a non-negotiable

The fundamental principle underpinning ACO Foundations is that for any long-term impacts to occur, children must participate intensively and regularly in music making over a period of years. If students simply participate in an instrumental or general music lesson once per week, without regular or intensive practice, it is unlikely to yield any notable benefits – most certainly not the development of musical skills and abilities which form the foundation for broader impacts on learning.

To ensure that students are undertaking rigorous and regular daily practice, instruments are kept onsite in school classrooms, and students undertake a facilitated practice session, led by class teachers with supporting video resources, for 15 minutes every weekday. The unwavering commitment to regular practice, and to achieving small incremental gains with persistence and effort, also develops grit, perseverance towards learning, and a growth mindset (the understanding that with effort comes improvement) – all essential skills for lifelong learning and educational achievement.

Timing of the daily music practice is also important. It was hypothesised and proven through the ACOF pilot program that starting the day with music practice has many benefits.

- Scheduling music learning immediately before literacy learning improved students' performance in both areas. By starting the day with music, students' auditory processing is primed for language learning, their motor cortex is challenged to align fine and gross motor skills and the sensorimotor synchronisation is heightened, ready to be applied to their broader learning.
- An activity that has high cognitive demand focuses students' attention and allows them to leave concerns or experiences from their home environment behind, giving them an excellent start to the school day.
- Playing and making music at the start of the day lowers cortisol (stress hormone) levels, increases serotonin (connection hormone) levels, and activates dopamine (motivation neurotransmitter) production. This hormone and chemical balance is optimal for learning.
- Scheduling the highly valued activity of playing a musical instrument at the start of the day encourages students to want to get to school on time. Lateness and absenteeism is an ongoing problem in low SES communities like that of St Marys North, and implementation of ACOF has yielded these unexpected benefits.





Enabling three year groups to be able to practice their instruments every day, and have weekly lessons with instrumental teachers, requires a commitment to complex scheduling within the school timetable. For the program to work, timetabling must begin with the placement of the music lesson times for all classes, and then all other learning is worked around those times. The ACOF program schedule sees the Year One cohort, for whom bedding down their new daily practice routine is most critical, practice every day at 9am. Year Two practice before the morning break and Year Three practice after the morning break.

Developing a timetable that works within the school structure and allows every class group from Years One to Three to have access to the music room and instruments was one of the greatest challenges of developing the ACOF program model, however this commitment to ensuring daily practice happens during class time is possibly the most unique and important component of the program.

“My class love music. My timer goes off every day and the students say ‘Awesome, Yay, Cool, All right. Let’s go to music!’”

MARA, YEAR 2 CLASSROOM TEACHER.

Making space and making time

Dedicated music learning spaces are essential

St Marys North Public School principal, Lisa Parrello, says: *“without dedicated space and time, it doesn't work.”* While it must be acknowledged that St Marys North Public School are in the fortunate position of being able to have two dedicated music classrooms, each with a full class set of string instruments, it cannot be denied that dedicated music learning spaces are critical to the success of ACOF.

- A classroom set up for literacy or numeracy learning is very different to one set up for music learning. Trying to either make a multipurpose space or rearrange the space every day for string practice is ineffective and a waste of precious time.
- Musical equipment including instruments, music stands, and stools need to be stored in such a way that they can be accessed quickly and safely as well as used by numerous students in successive lessons.

- Efficient use of precious time is paramount, and the placement of the classrooms impacts travel time to and from the music rooms. The principal of St Marys North Public School considered the geography of the school in relation to the music rooms when locating classrooms and put all Year One to Three classes on the same side of the school as the music room, to maximise learning time.

The set up of dedicated music learning spaces is also important. An ACO Foundations music classroom has a clear floor space with directional markings for students to know where to stand and sit, instrument storage and labelling that allows three different classes to share instruments and students to locate their instrument and bows quickly and easily. The orderly and focussed fashion in which students enter the music classroom and get set up for learning quickly and calmly is a contributing factor to the success and effectiveness of each lesson.



Technology helped make it possible

Daily practice videos provide continuity and direction

In conjunction with the co-teaching innovation, the production of ACOF specific resources, videos, and website used in the daily practice sessions has been crucial to maintaining the continuity of learning for both students and classroom teachers. The high-quality curriculum planning and video production that has been put into this resource by the ACO is vital to the success of the program.

“The videos are awesome, they just go through everything so smoothly and effortlessly”

MADISON, YEAR 2 CLASSROOM TEACHER



The right teachers with a shared vision

It is not just about teaching music

Teaching string instruments to children is a centuries old tradition and has a generally agreed upon sequence and approach to learning. However, teaching students from challenging or disadvantaged backgrounds in a classroom context adds a significant layer of additional challenge to this well understood path. If the particular needs of these students, the school and the parent community is not taken into account, the music learning can be less effective and rewarding for all concerned.

Throughout the five-year pilot program, it has become clear that ACOF instrumental teachers need to have empathy and cultural understanding of the worlds that their students come from, and they need to treat every student as an individual. If an instrumental teacher is focused solely on the musical development of each student, the journey can be slow and frustrating, and some of the critical learning benefits may be overlooked.

To be successful, instrumental teachers require a keen sense of observation of each individual student's development, and patience for the potential lack of linear development that will occur in each student. Students will not always improve every week and there may be consecutive weeks when a student will appear to be stagnating or even regressing in their development. Instrumental teachers need to identify where each student is in their music learning journey and have confidence in the fact that every student will improve when the circumstances and their cognitive development will allow that to happen.

“I see a shift, I see how kids connect. And I know it's the music, there's nothing else that has changed in the school over their time, the only thing that has changed is the music.”

NELL, YEAR 1 CLASSROOM TEACHER.

The ACO has kept this unique issue in mind as it has recruited, engaged, and trained instrumental teachers to deliver the program. ACOF instrumental teachers need to be highly trained string teachers, but also cognisant of the interplay between the musical and cognitive development of every child. This is a very special and often rare trait in an instrumental teacher and therefore seeking out, supporting, and celebrating these teachers is a vital aspect of ACO Foundations.

You need to see it to be it

Interaction with ACO musicians provides the inspiration everyone needs

There is a profound difference for a young person in seeing a professional musician perform on a concert stage and seeing them playing the same piece in their own classroom. While both experiences can be powerful and life-changing, the experience of having ACO musicians visit and interact with students in their own space has been a powerful tool for impacting ACO Foundations students' music learning journey. In the context of the ACOF program, ACO musicians are not distant or elite experts that are out of students' reach. They become flesh and blood to them, real people who have reached their goals and, in many cases, they become people that the young students want to model themselves upon.

“They need to hear the music, they need to see somebody perform it, whether it's somebody as old as them or a bit older, a child or an adult who's playing their instrument, who's making it sound so beautiful. That's what they want to be able to do.”

NELL, YEAR 1 CLASSROOM TEACHER

At the beginning of the ACO Foundations program, almost none of the SMNPS students had seen a string instrument in real life and were equally as unlikely to have heard it played live by a professional musician of the calibre of ACO musicians. When coupled with the daily experience of learning how to master playing string instruments, this up close and personal experience of where hard work and dedication can lead has been world-shifting for both students and classroom teachers.

The openness and generosity of ACO musicians when they have visited St Marys North Public School has been a contributing factor to the success of ACO Foundations. It shows students what they can achieve with opportunity and dedication, and shows classroom teachers what they can guide their students towards.



Leaders need leaders too

Ongoing support is key to success

One of the critical factors that has been identified in the success of ACO Foundations is having a supportive and committed school leader. As SMNPS principal Lisa Parrello has noted, the school leader who wants to make a program like this work in their school needs to stay the course, even when it gets really hard. Delivery of the ACO Foundations pilot program and the subsequent full school expansion has not been easy – bringing teachers on board, finding time and budget in an ever-crowded school curriculum, dealing with setbacks and challenges – have required grit and determination to make the program work. Without the school principal's full commitment and leadership, the implementation of ACO Foundations would almost certainly have failed.

One of the essential elements that Lisa Parrello has identified is the support that she herself was given in the development of the program. Dr Anita Collins acted as a critical friend, music learning expert and sounding board for Lisa to navigate the various challenges; the Director of Learning & Engagement at the ACO has been an ally, equally as committed to the success of the program, and meets regularly with Lisa to discuss and find solutions to challenges; ACO instrumental teachers provide expert musical advice and support on a daily basis. These leaders in their fields have been critical in assisting the school leader in the successful and considered implementation of ACO Foundations across the school.

“Leaders know that getting staff to commit to change is not easy, and it is not as simple as giving a direction. Change processes are layer upon layer, and as a leader you need to invest for the long haul, commit and stick to the path, and when it gets hard, come back to the research and to why we are doing this.”

LISA PARRELLO, SCHOOL PRINCIPAL



CRITICAL FACTORS AT A GLANCE: THE SUCCESS FACTORS OF ACO FOUNDATIONS

- The **equity factor** which sees all students in Years One to Three, regardless of interest or ability, participating in ACO Foundations every day.
- The **integration of music learning into the core curriculum** which ensures program activities take place entirely within classroom teaching time and reaps benefits for broader learning.
- The **tailored and scaffolded music curriculum** which provides learning support for all students in the form of the integration of singing, movement, memory aids, and significant repetition, to cater to the needs of students who come from challenging backgrounds.
- The **daily practice** which takes place under the guidance of classroom teachers, which ensures that all students make progress on their instrument, and develops grit and perseverance towards a challenging goal.
- The **highly skilled string teachers** who understand the musical and non-musical outcomes that ACOF is aiming to achieve.
- The **co-teaching model** which sees classroom teachers developing musical skills and understanding, and learning a string instrument alongside their students.
- The **dedicated spaces** which allow for effective music learning to occur, as well as safe and secure storage of instruments and music equipment.
- The **commitment by school leadership** to make structural, physical, and staffing modifications across the school to support the successful implementation of the program.
- The **whole-school approach** which sees the classroom teachers and leadership team upskilled and supported in the development of their own musical literacy, musical skills, and music teaching practice.
- The **collaboration with a professional performing ensemble** which allows for role modelling, both musically and personally, as well as extraordinary performing experiences in professional music venues.
- The **education of parents** in the benefits of music learning for their children and how they can support them.
- The **support for the school leader** to implement the program in a way that is most effective in their school environment, taking into account the complex interplay between students, music and non-music teaching staff, and the parent community.

FUTURE POTENTIAL & SCALABILITY

ACO Foundations is an educational model which has proven that music learning in a child's early years has positive impacts on their cognitive and physical development, wellbeing, engagement at school, ability to learn, and educational achievement.

The aim of the ACO Foundations pilot program was to test the pedagogical theories the program is based on; solve the implementation issues and refine the program design; evaluate the successes and consider challenges; and identify the essential elements of the program model with a view to considering how ACO Foundations might be effective and scalable across a wider Australian education context.

ACO Foundations is unique in that no other known music education program in Australia has modelled and proven the significant benefits of music learning amongst students who are experiencing disadvantage, and how these benefits can reach children across multiple years of learning in a school context.

The leadership and innovation of the ACOF model, involving the ongoing collaboration between the school and the ACO, has revealed the critical factors required to sustain and grow the program into the future. The ACO has invested in developing these key elements, which can be replicated on a larger scale. These include:

- a tailored curriculum and educational resources in the form of weekly lesson plans and practice videos which underpin the daily learning experience;
- knowledge of how to recruit, train and support a team of instrumental educators working in a school context; and
- understanding of how a professional arts organisation can work in collaborative partnership with a school.

The future potential of the ACO Foundations program is significant, and with this proven and effective model in place, this Evaluation Report proposes that ACO Foundations be expanded and scaled across a wider Australian education context.

CONSIDERATIONS & RECOMMENDATIONS FOR EXPANSION

- Department of Education support would be needed to recognise the fundamental underpinnings and outcomes of ACO Foundations for low SES schools. This support would need to be administrative, strategic, and financial.
- Capital investment funds would be needed for the initial purchase of instruments and music equipment, and an ongoing fund for maintenance and replacement would need to be established for each school.
- School leaders would need to be supported, mentored, and educated in the powerful benefits of music education, and committed to the practical and logistical requirements of implementing the program in a consecutive multi-year timeframe.
- The ACO or similar professional music organisations would need to agree to support and, in some capacity, facilitate the program delivery.
- Formal teacher professional development programs would need to be designed and delivered to upskill teaching staff at each school.
- Dedicated music learning spaces would need to be identified and set up in each school, equipment and instruments would need to be purchased, and school timetables rearranged to make time in the curriculum for music.
- An instrumental teacher recruitment and professional development program would need to be designed to maintain the approach to teaching and learning which has been successful in the pilot program, and to ensure the ongoing training and retention of high-quality teachers.
- Standardised and formalised measurements of change over time across student, staff and school community would need to be built into the program design from the commencement of each program.
- Key people involved in the ACO Foundations pilot program, at both the ACO and SMNPS, would need to be involved in the scaling process to maintain quality and continuity of the program across other schools.



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Dr Anita Collins, Neuromusical Educator & Education Consultant

Dr Anita Collins has been an advisor on ACO Foundations since 2018, working closely with the ACO and St Marys North Public School to design and evaluate the program. She has also worked closely with the school principal, Lisa Parrello, to promote the development of the whole-school music education curriculum and delivered the professional development sessions to SMNPS staff throughout this program.

Dr Collins has been involved in ongoing evaluation of the ACOF pilot program since its inception and was responsible for much of the evaluation data collection, conducting interviews with staff and students, and developing case studies. She is co-author of this Evaluation Report.

Dr. Katrien Stevens & Associate Professor Marian Vidal-Fernandez, Faculty of Arts and Social Sciences, University of Sydney

Dr Stevens and Associate Professor Vidal-Fernandez have supported the ACOF pilot program since its beginnings in 2018. Their professional interest in the program led to them being engaged to undertake data collection for the pilot program, and they have provided data analysis and insight for this Evaluation Report.

Tara Smith, Director of Learning & Engagement, Australian Chamber Orchestra

Tara Smith has been Director of Learning & Engagement at the ACO since 2018 and has been instrumental in the development and delivery of ACO Foundations. She has over 20 years' experience in music education in both school and professional settings, and completed a Master of Educational Psychology in 2020 with her dissertation titled 'Music & its impact on early childhood development: The case for music training in the classroom'. She is co-author of this Evaluation Report.

Lisa Parrello & St Marys North Public School Staff

Lisa Parrello, Principal of St Marys North Public School, is an educational leader who is deeply committed to educational innovation and to ensuring the highest quality of teaching and learning for her students and teachers. She has been instrumental in the development and success of ACO Foundations, committed to finding solutions to the challenges that come with implementation of such an intensive program. Lisa has led a team of dedicated classroom teachers, many of whom have also been deeply involved in the program for over five years. The success of ACO Foundations would not have been realised without their commitment and dedication to delivering the best possible education for their students.

ACO Foundations Instrumental Teachers

The success of ACO Foundations would not have been possible without the team of dedicated and passionate string players and educators who have worked on the program since 2018. A special mention to Frances Firth, Nicole Forsyth, Beth Condon, and Anton Baba who have been particularly involved and invested in the development of the program over the past six years.

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