



EDUCATION

THE WIGGLE JIG EVALUATION REPORT

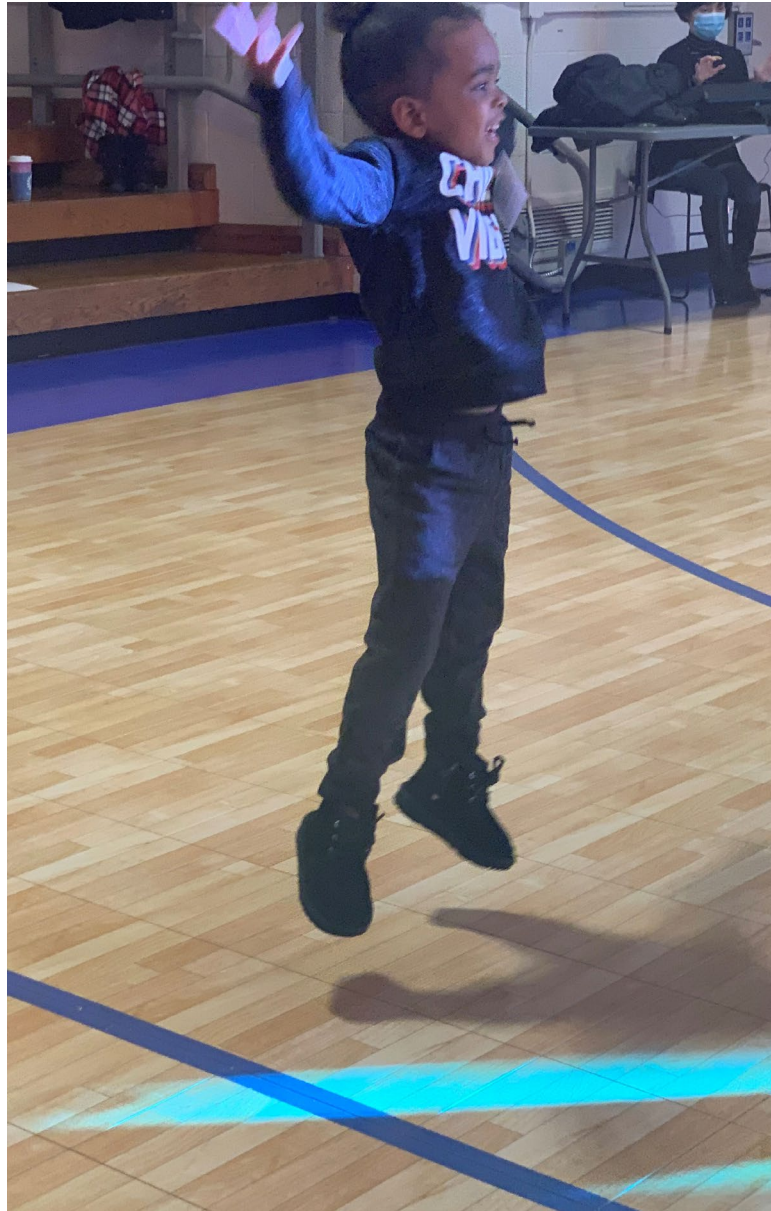
EVALUATING THE IMPACT OF BALLETMET'S COMPREHENSIVE PRE-K
PROGRAM (2022-2023)

EXECUTIVE SUMMARY

BalletMet's *The Wiggle Jig* program is a 10-week creative movement program that aims to improve children's physical, cognitive, and social emotional skills.

Data from the program's beginning in 2009 until now consistently shows that for children participating in *the Wiggle Jig* program:

- Preschoolers significantly improved their motor skills
- Preschoolers significantly improved their executive function skills
- Preschoolers significantly improved their social-emotional skills

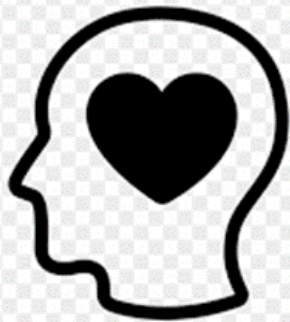


KEY RESEARCH FINDINGS



- **CHILDREN SHOW MAJOR IMPROVEMENTS IN MOTOR SKILLS AFTER PARTICIPATING IN *THE WIGGLE JIG*.** Students showed great improvement, with 96% improving in at least one of the six measured motor concepts, and 40% showing improvement across all ten categories. Additionally, every concept showed improvement by at least 74% of children. Together, this suggests that *The Wiggle Jig* is a comprehensive movement curriculum, and that improvement in one facet supports improvement in others.
- **CHILDREN INCREASE THEIR ABILITY TO SUCCESSFULLY ENGAGE EXECUTIVE FUNCTIONING SKILLS AFTER PARTICIPATING IN *THE WIGGLE JIG*.** The dance instruction emphasizes the ability to plan, remember, and execute multiple, connected motions, as well as shift and inhibit behavioral responses by experimenting with movement and taking turns. Teachers took note of this, reporting significant improvement over time in the ability of preschoolers who participated in *The Wiggle Jig* to employ executive function skills.

KEY RESEARCH FINDINGS



- **CHILDREN INCREASE THEIR SOCIAL-EMOTIONAL SKILLS AFTER PARTICIPATING IN *THE WIGGLE JIG*.** The dance instruction emphasizes the ability to understand and communicate with others, and preschoolers taking part in *The Wiggle Jig* showed significant improvement over time in their ability to express and respond to their own and others' emotions.
- **OVERALL, TEACHERS FIND VALUE IN INCORPORATING DANCE/MOVEMENT IN THEIR CLASSROOM AND WANT TO DO THIS AGAIN.** Classroom teachers commented equally on the emotional impact of the program: helping the children express themselves and gain confidence, and the physical and cognitive impact of the program: improving children's motor skills, coordination, self-control, focus/attention, and ability to follow multi-step instructions.



OVERVIEW OF THE 2022-2023 IMPACT EVALUATION

OVERVIEW OF THE WIGGLE JIG PARTICIPATION IN 2022-2023

ABOUT THE ANALYTIC APPROACH

KEY PROGRAM IMPACT QUESTIONS

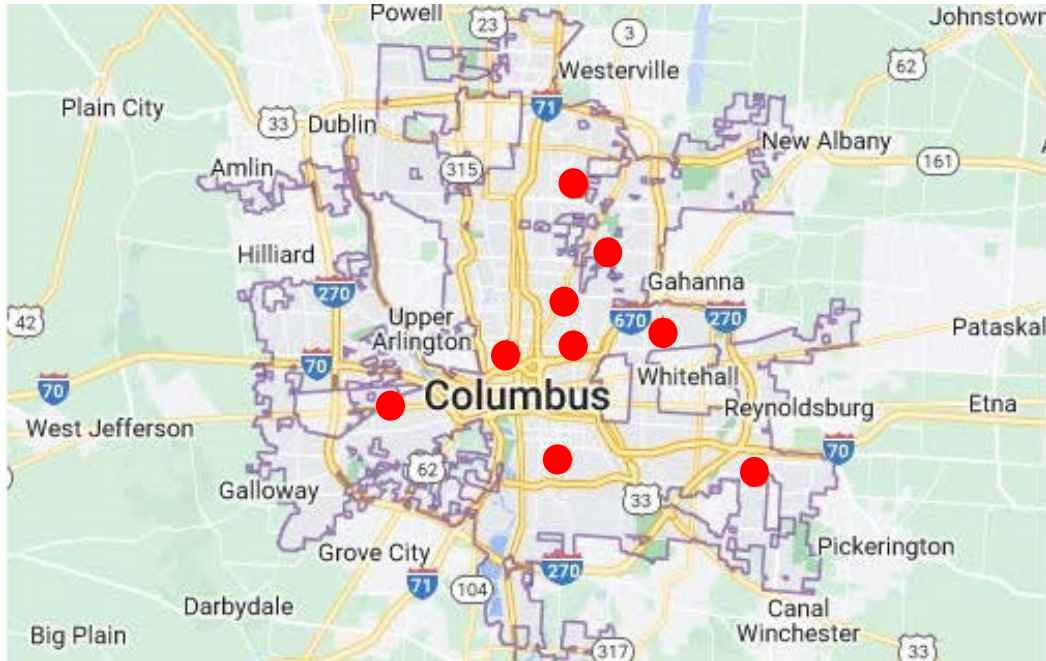
WHAT IS *THE WIGGLE JIG*?



BalletMet's *The Wiggle Jig* is a comprehensive dance program for early childhood students ages three to five. Created in 2009 with help from PNC's Grow Up Great® program, *The Wiggle Jig* promotes children's motor/movement development, social/emotional skills, and executive functioning/cognitive skills, all in the context of supporting healthy childhood development.

Aided by generous financial support from various funding sources, BalletMet works with a variety of organizations to bring *The Wiggle Jig* to the community. The comprehensive programming brings two dance educators and an accompanist into each classroom for ten weeks, with one 30-minute class per week. BalletMet also provides professional development for teachers, the literacy companion book *Leap and Twirl* written specifically for the program, and an evaluation protocol. Prior to COVID, students were also offered the opportunity to tour BalletMet's dance center; BalletMet hopes to bring tours back in the future but was unable to do so for the 2022-2023 academic year.

THE WIGGLE JIG PARTICIPATION: 2021-2022



- Over the 2022-2023 school year:
 - *The Wiggle Jig* was delivered in 10-week blocks over four educational sessions: Summer 2022, Fall 2022, Winter 2023, and Spring 2023.
 - During that time, a total of **20 preschool classes** at **9 sites across central Ohio** received *The Wiggle Jig* program. These sites included early childhood programs at YMCAs, Columbus City Schools, SproutFive Early Learning, and The Childhood League Center.
 - In total, **307 preschool children** participated in a 10-week *The Wiggle Jig* session during the 2022-2023 time period. Though the number of participants is slightly higher than last year, this number is lower than in previous years partly because of limited funding, and partly because we are still rebuilding from the effects of COVID. BalletMet hopes to increase participation and expand programming in the coming years.

ANALYTIC APPROACH: RESEARCH METHODS

To measure *The Wiggle Jig's* impact on students, we use a mixed-methods approach blending behavioral observations and subjective ratings.

- **BalletMet's Movement Rubric:** Based on research related to the neuromotor developmental pathways, this tool measures children's ability to control their breathing and body movements as they express themselves and communicate through dance.
 - Across the four sessions, BalletMet instructors completed 283 rubrics at the session start (i.e., the "pre" measurement) and 253 rubrics at session end (i.e., the "post" measurement).
 - Overall, 252 students had both pre and post movement rubrics completed.
- **Student Survey (completed by the classroom teacher):** This tool measured the extent to which children were able to express and respond to their own and others' emotions (socio-emotional development), follow multi-step directions, shift between tasks, and plan ahead, and demonstrate restraint/self-regulation (executive function).
 - Across the four sessions, classroom teachers completed 260 surveys at session start (i.e., the "pre" measurement) and 289 surveys at session end (i.e., the "post" measurement).
 - Overall, 244 students had both pre and post student survey data.

ANALYTIC APPROACH: RESEARCH METHODS

- Data analysis for this evaluation focuses on students for whom we have both pre and post data. Tracking the same child over the 10-week period allows a more accurate and sensitive measurement of program impact on student motor development, social-emotional skills, and executive functioning.
- Ideally, a perfect evaluation would compare motor skills, social-emotional skills, and executive function of children who receive *The Wiggle Jig* to children who did not (i.e., a control group). Unfortunately, that was not possible to do based on the available population as there was no opportunity for random assignment. Thus, we cannot say that *The Wiggle Jig* caused changes in developmental skills – only that the program may have contributed to such changes.

KEY PROGRAM IMPACT QUESTIONS



*Did participating children
increase their motor
development skills?*



*Did participating children
increase their executive
function skills?*



*Did participating children
increase their social-
emotional skills?*



*Did classroom teachers
find value in the
program?*



THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

DID PARTICIPATING CHILDREN INCREASE THEIR MOTOR DEVELOPMENT SKILLS?

THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Description of BalletMet's "Movement Rubric"

BalletMet's *The Wiggle Jig* uses an adapted version of Dr. Martha Eddy's pre-K animal moves rubric to detect changes in children's motor skills. This instrument measures the extent to which each child successfully completes actions representing the concepts below. This year, the rubric was expanded to address both stationary and locomotor movements in four of the six categories, which resulted in a total of 10 measurable categories within motor development.

Categories

BREATH

- Action example: relaxed breathing, belly breathing // Jellyfish

CORE DISTAL (WHOLE BODY)

- Action example: open-close // Starfish

HEAD-TAIL (SPINAL)*

- Action example: flexion and extension of the spine // Snake

SYMMETRICAL UPPER-LOWER BODY HALVES*

- Action example: same action with both arms or both legs // Frog

RIGHT-LEFT BODY HALVES*

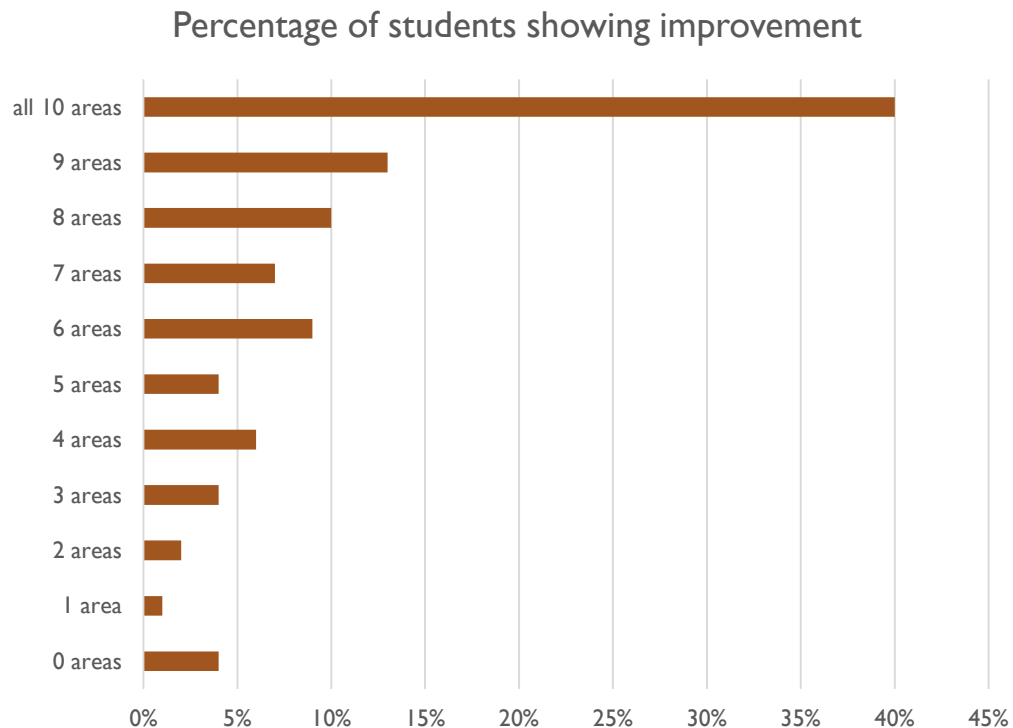
- Action example: same side arm and leg movement // Lizard

CROSS-LATERAL OPPOSITION/DIAGONAL*

- Action example: opposite arm and leg // Monkey

*Includes both stationary and locomotor components

THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT



Major Improvements in Motor Control after Program Participation

- Students showed great improvement, with **96% improving in at least one** of the ten different developmental motor areas; 40% showed improvement in all ten areas. Additionally, every concept showed improvement by at least 74% of children.
- Overall, these findings suggest that this is a comprehensive movement curriculum, and that improvement in one area supports improvement in others.

THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

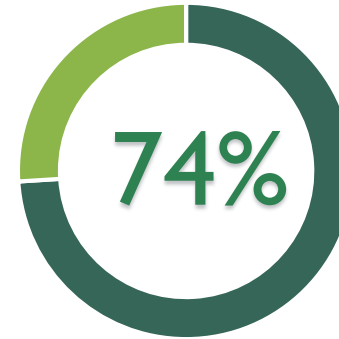
Breath

The “Breath” component focuses on the developmental motor skill of relaxed breathing and self-regulation of emotional state. (Movement example: jellyfish)

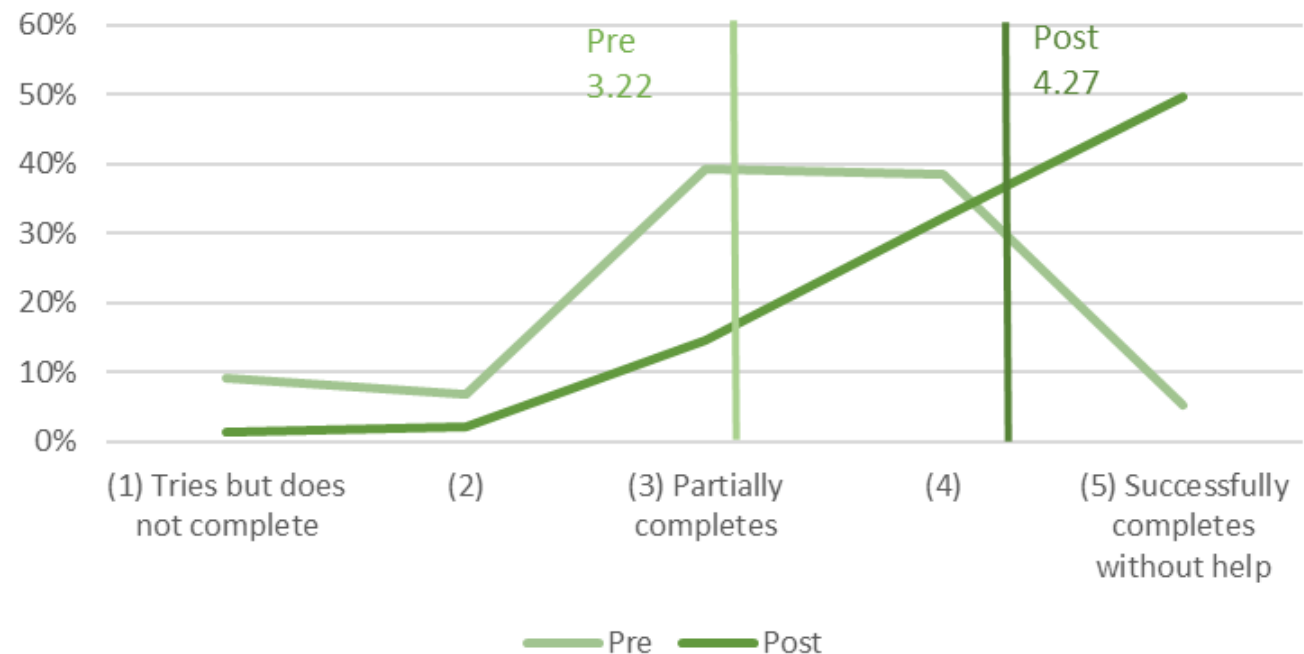
The graph to the right shows the distribution of average ratings for the overall Breath rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” – for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=232

Percentage of preschoolers who improved (overall) on measures of Breath:



Pre-Post Improvement: Breath



THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

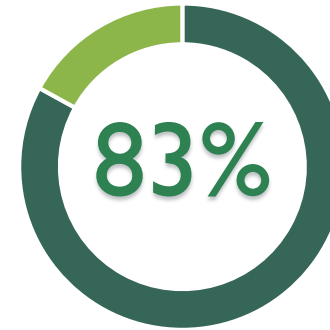
Core-Distal (Whole Body)

The “Core-Distal” concept focuses on the developmental motor skill of opening and closing actions using the whole body (movement example: starfish).

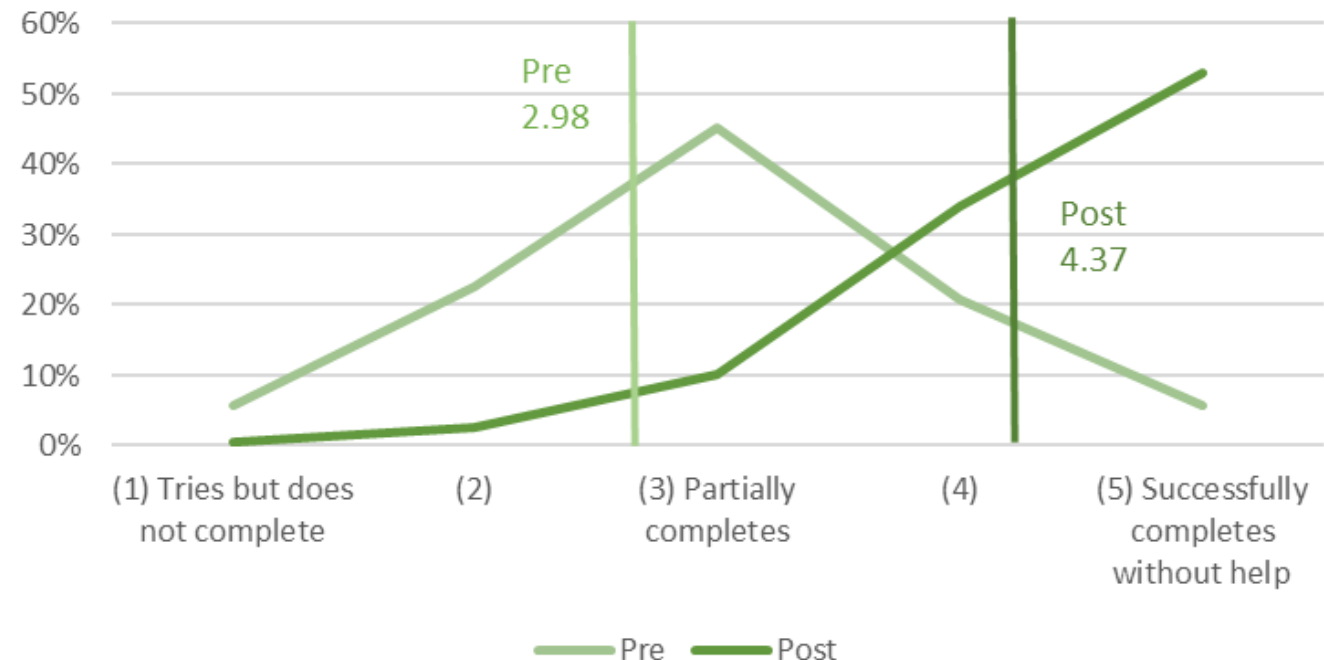
The graph to the right shows the distribution of average ratings for the overall Core-Distal rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” – for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=230

Percentage of preschoolers who improved (overall) on measures of Core-Distal (Whole Body):



Pre-Post Improvement: Core-Distal



THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

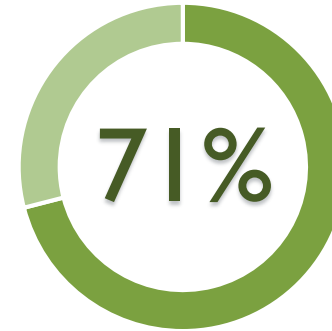
Head-Tail (Spinal)

The “Head-Tail” concept focuses on the developmental motor skill of spinal flexion and extension (movement example: snake). This year, we broke the Head-Tail category into two sections: locomotor and stationary.

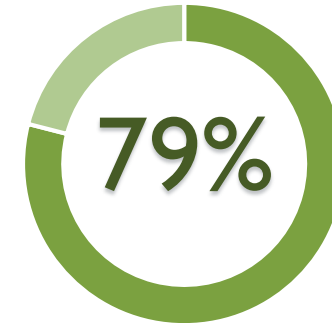
Locomotor head-tail movement articulates the spine while traveling through space, while stationary movement remains in one spot.

$$N_{\text{locomotor}} = 207 / N_{\text{stationary}} = 218$$

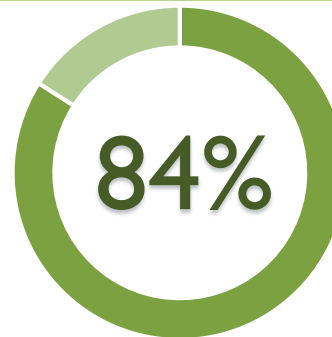
Percentage of preschoolers who improved (overall) on **BOTH*** measures of Head-Tail (Spinal):



Percentage of preschoolers who improved (overall) on **locomotor measures of Head-Tail (Spinal)**:



Percentage of preschoolers who improved (overall) on **stationary measures of Head-Tail (Spinal)**:



*This percentage reflects students who had participation recorded for *all four data points* – pre/post locomotor *and* pre-post stationary; n=194

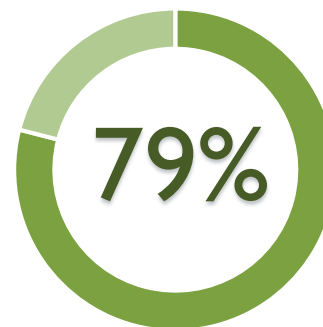
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Head-Tail (Spinal) - Locomotor

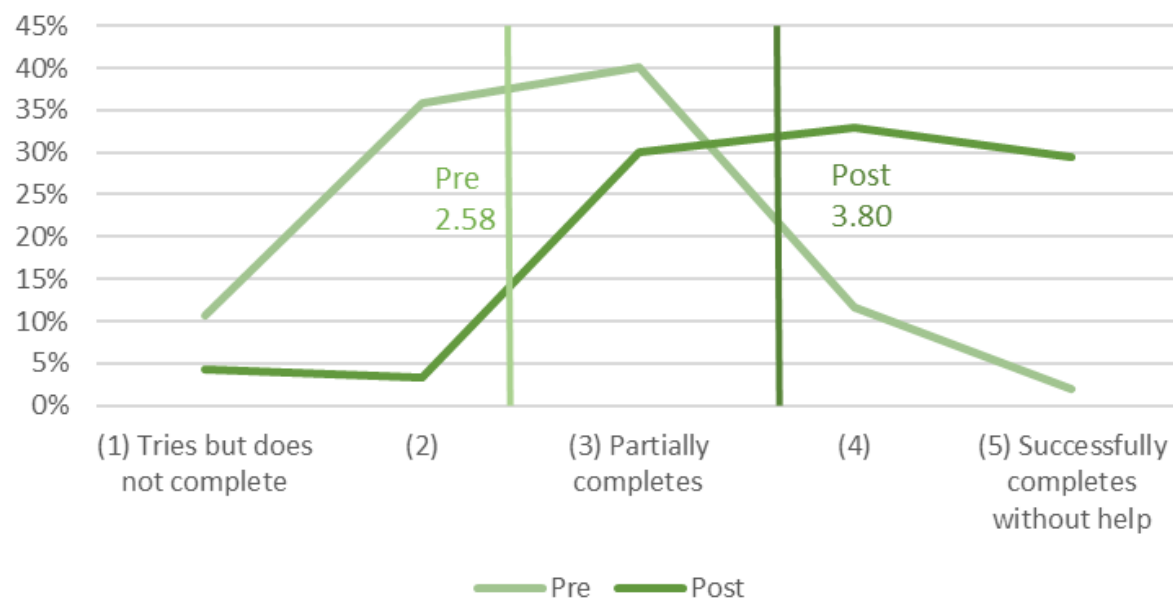
The graph to the right shows the distribution of average ratings for the locomotor Head-Tail rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” – for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=207

Percentage of preschoolers who improved (overall) on locomotor measures of Head-Tail (Spinal):



Pre-Post Improvement: Head Tail - Locomotor



THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Head-Tail (Spinal) - Stationary

The graph to the right shows the distribution of average ratings for the stationary Head-Tail rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” – for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

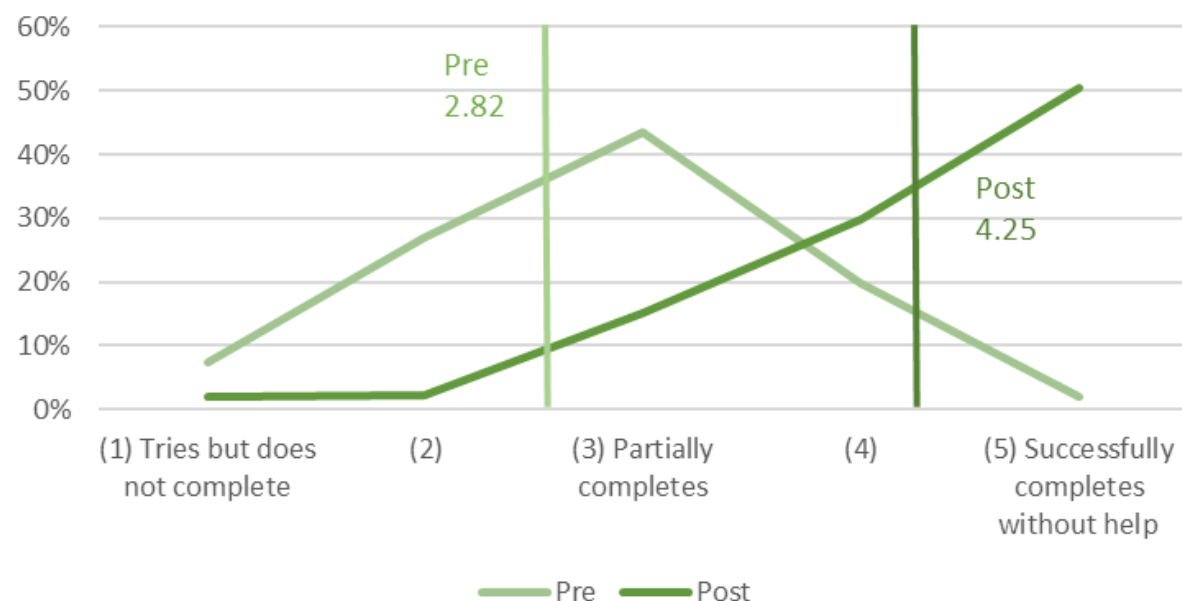
N=218

Percentage of preschoolers who improved (overall) on stationary measures of Head-Tail (Spinal):

84%



Pre-Post Improvement: Head Tail - Stationary



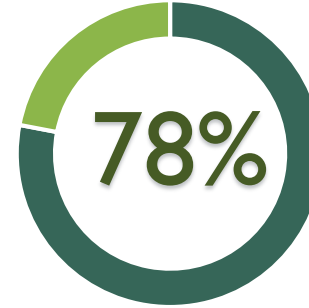
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Symmetrical Upper-Lower Body Halves

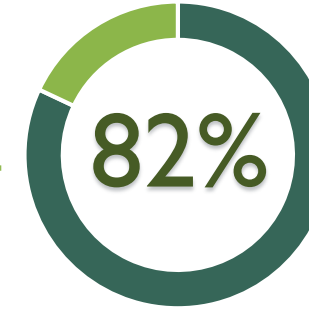
The “Upper-Lower” concept focuses on the developmental motor skill of completing the same action with both arms or both legs (movement example: frog). This year, we broke the Upper-Lower category into two sections: locomotor and stationary. Locomotor upper-lower movement isolates upper body and lower body traveling through space, like in successive jumps, while stationary movement remains in one spot.

$$N_{\text{locomotor}} = 199 / N_{\text{stationary}} = 219$$

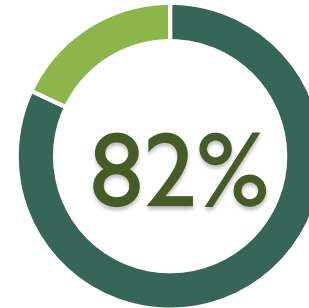
Percentage of preschoolers who improved (overall) on **BOTH*** measures of Upper-Lower Body Halves:



Percentage of preschoolers who improved (overall) on **locomotor measures of Upper-Lower Body Halves:**



Percentage of preschoolers who improved (overall) on **stationary measures of Upper-Lower Body Halves:**



*This percentage reflects students who had participation recorded for *all four data points* – pre/post locomotor *and* pre-post stationary; n=183

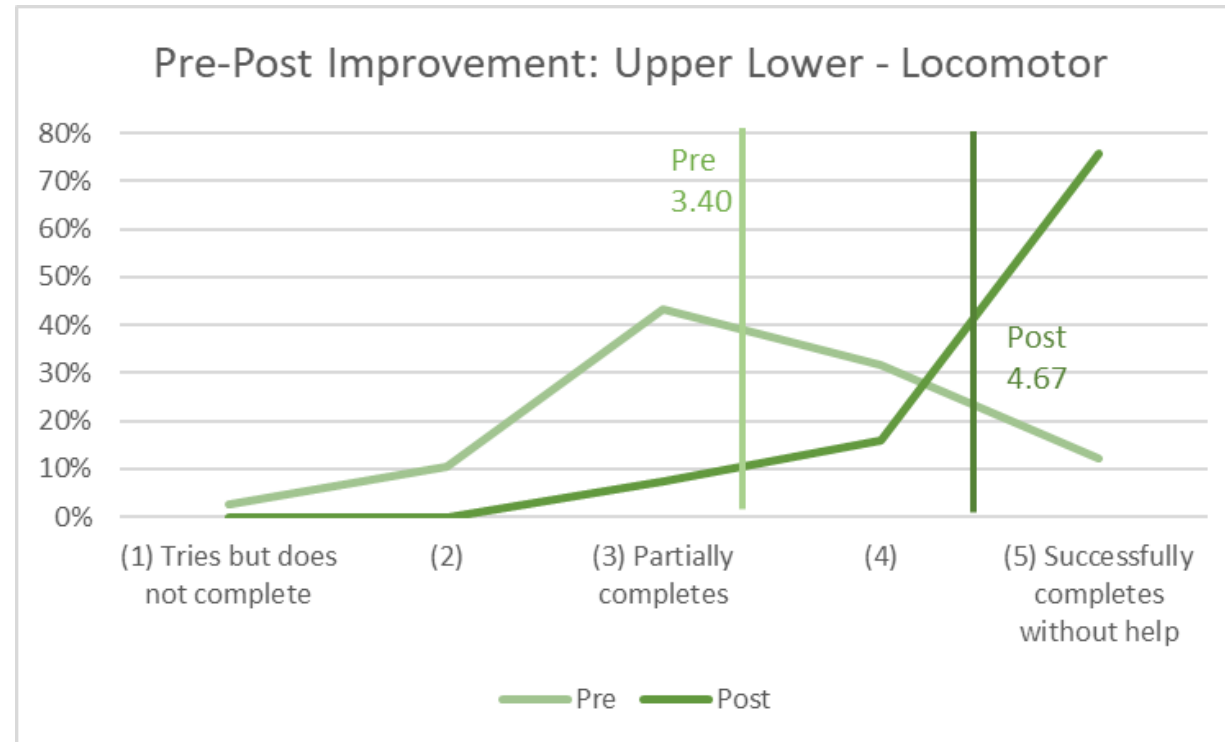
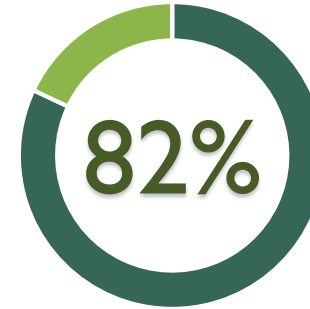
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Symmetrical Upper-Lower Body Halves - Locomotor

The graph to the right shows the distribution of average ratings for the locomotor Upper-Lower rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” –for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=199

Percentage of preschoolers who improved (overall) on locomotor measures of Upper-Lower Body Halves:



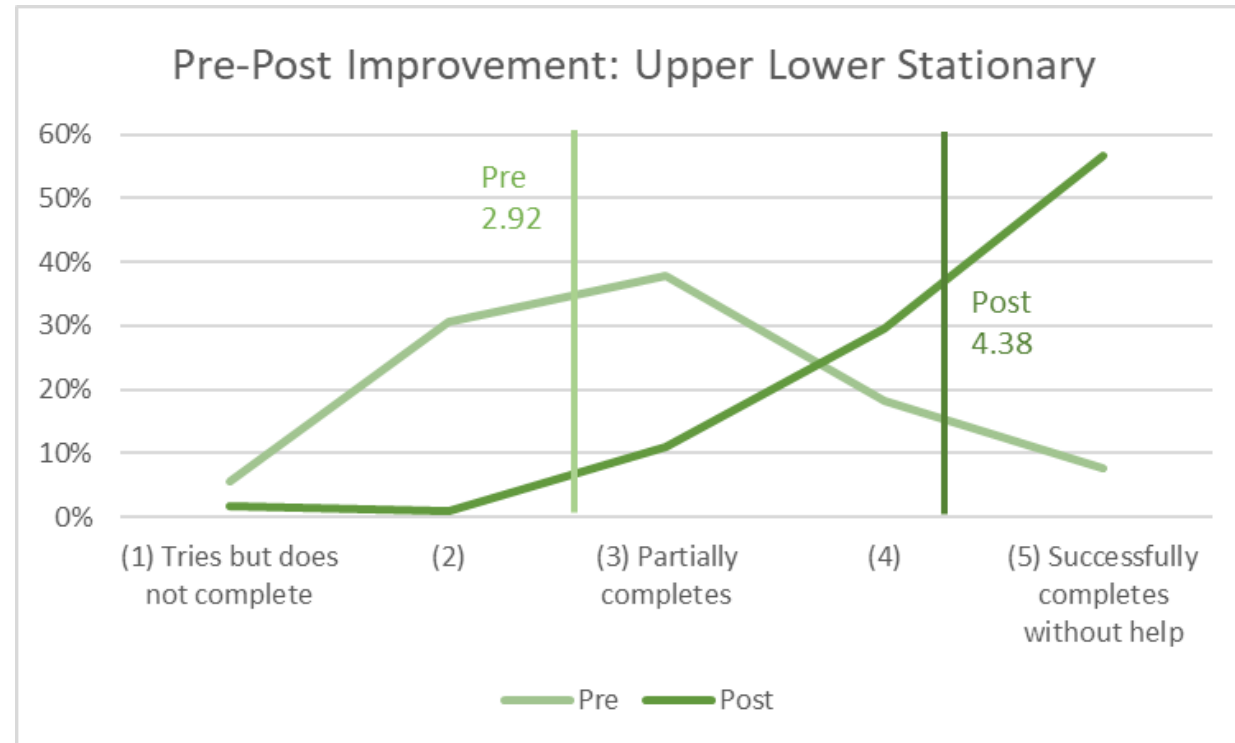
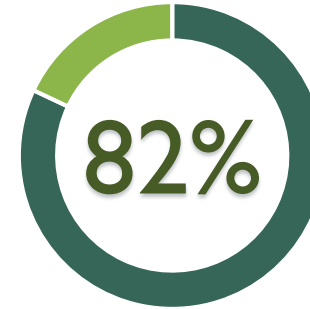
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Symmetrical Upper-Lower Body Halves - Stationary

The graph to the right shows the distribution of average ratings for the stationary Upper-Lower rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” –for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=219

Percentage of preschoolers who improved (overall) on stationary measures of Upper-Lower Body Halves:



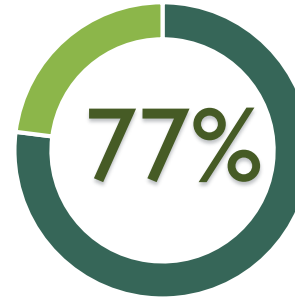
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Right-Left Body Halves

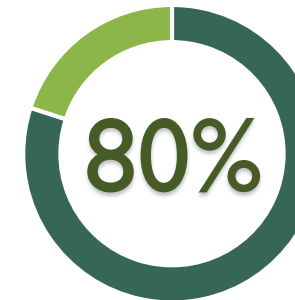
The “Right-Left” concept focuses on the developmental motor skill of using the same side arm and leg (movement example: lizard or bear). This year, we broke the Right-Left category into two sections: locomotor and stationary. Locomotor right-left movement isolates the right side body and left side body traveling through space, such as in bear walks (moving right arm and right leg together, then left arm and left leg together), while stationary movement remains in one spot.

$N_{\text{locomotor}} = 218 / N_{\text{stationary}} = 209$

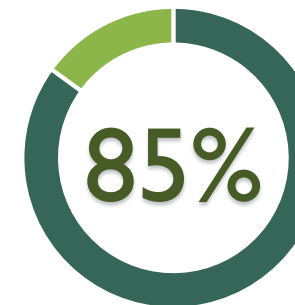
Percentage of preschoolers who improved (overall) on **BOTH*** measures of Right-Left Body Halves:



Percentage of preschoolers who improved (overall) on **locomotor** measures of Right-Left Body Halves:



Percentage of preschoolers who improved (overall) on **stationary** measures of Right-Left Body Halves:



*This percentage reflects students who had participation recorded for *all four data points* – pre/post locomotor *and* pre-post stationary; n=193

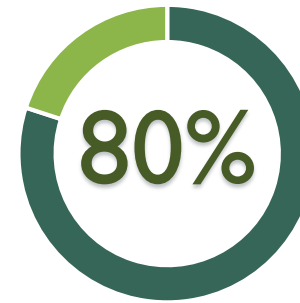
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Right-Left Body Halves- Locomotor

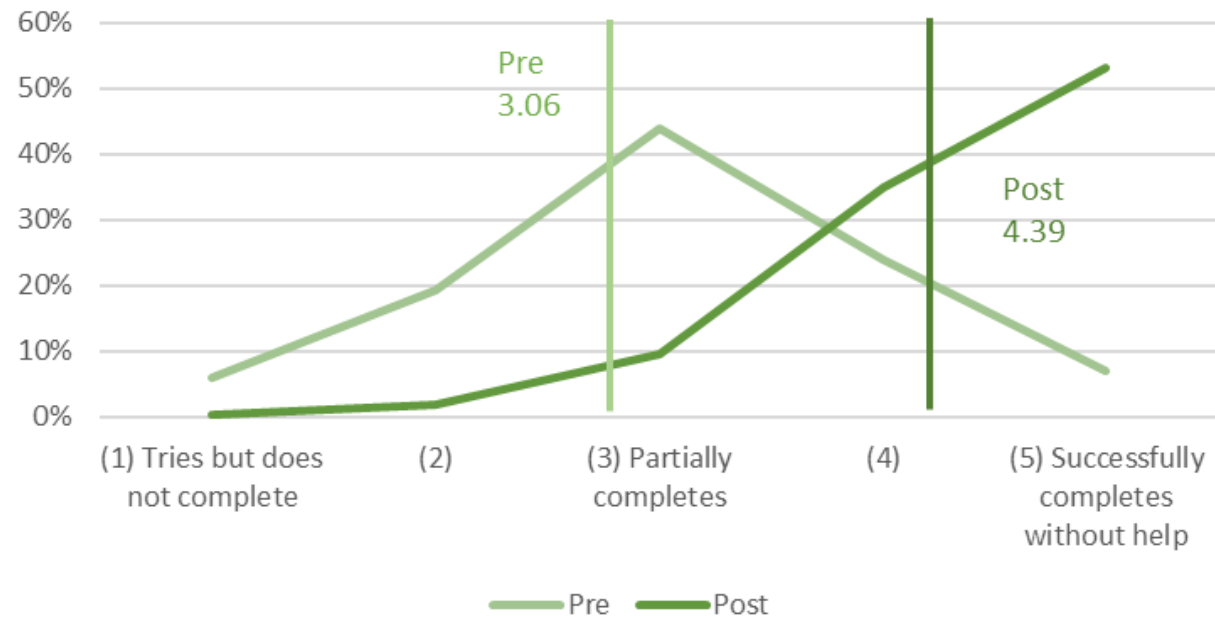
The graph to the right shows the distribution of average ratings for the locomotor Right-Left rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” –for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=218

Percentage of preschoolers who improved (overall) on locomotor measures of Right-Left Body Halves:



Pre-Post Improvement: Right-Left Locomotor



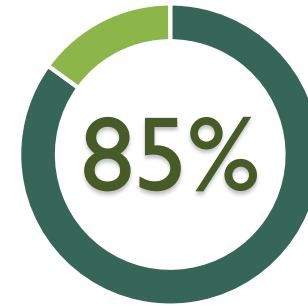
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Right-Left Body Halves - Stationary

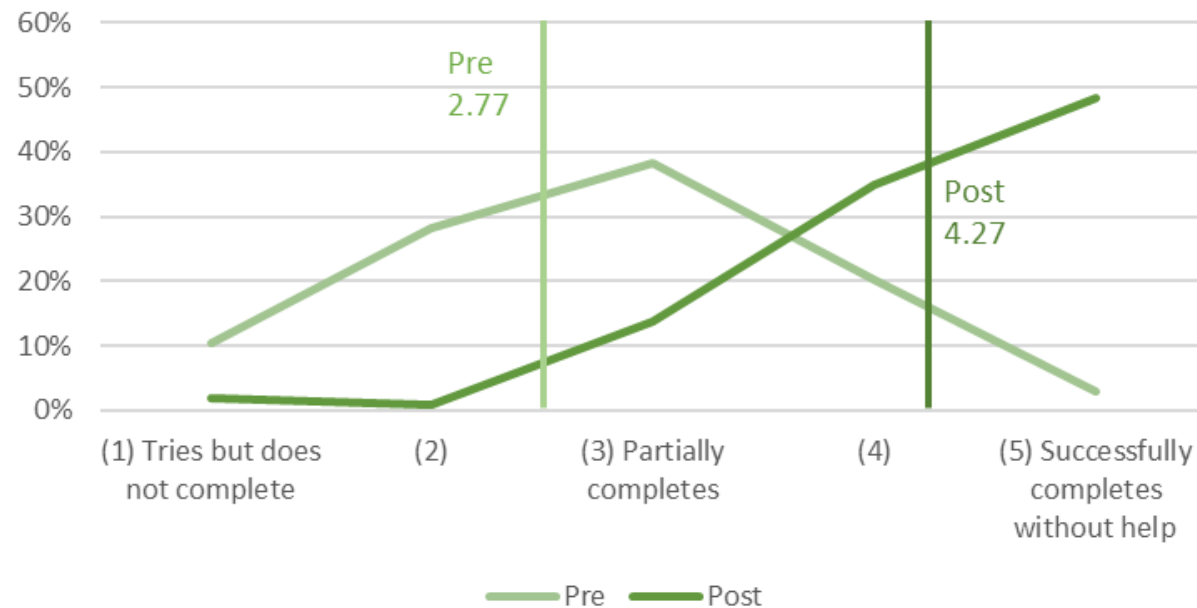
The graph to the right shows the distribution of average ratings for the stationary Right-Left rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” – for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=209

Percentage of preschoolers who improved (overall) on stationary measures of Right-Left Body Halves:



Pre-Post Improvement: Right-Left Stationary



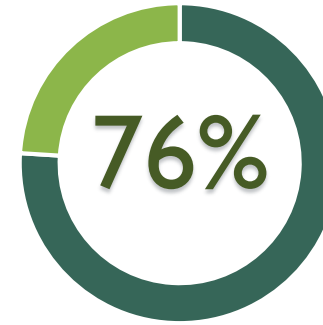
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Cross-Lateral Opposition / Diagonal

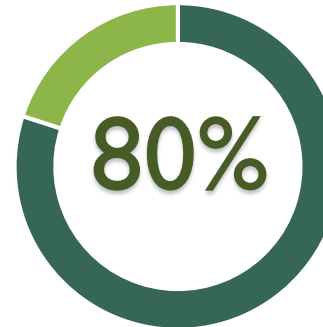
The “Cross-Lateral” concept focuses on the developmental motor skill of using opposite sides of the body to work together (movement example: monkey). This year, we broke the Cross-Lateral category into two sections: locomotor and stationary. Locomotor cross-lateral movement utilizes diagonal limbs (i.e., right arm and left leg or left arm and right leg), such as when marching and tapping one's knee with the opposite hand, while stationary movement remains in one spot.

$N_{\text{locomotor}} = 208$ / $N_{\text{stationary}} = 215$

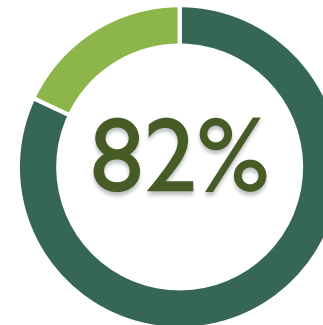
Percentage of
preschoolers who
improved (overall) on
BOTH* measures of
Cross-Lateral
Opposition:



Percentage of
preschoolers who
improved (overall) on
locomotor measures of
Cross-Lateral
Opposition:



Percentage of
preschoolers who
improved (overall) on
stationary measures of
Cross-Lateral
Opposition:



*This percentage reflects students who had participation recorded for *all four data points* – pre/post locomotor *and* pre-post stationary; n=193



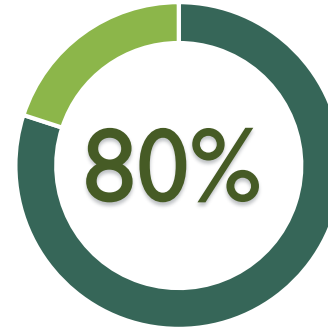
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Cross-Lateral Opposition / Diagonal - Locomotor

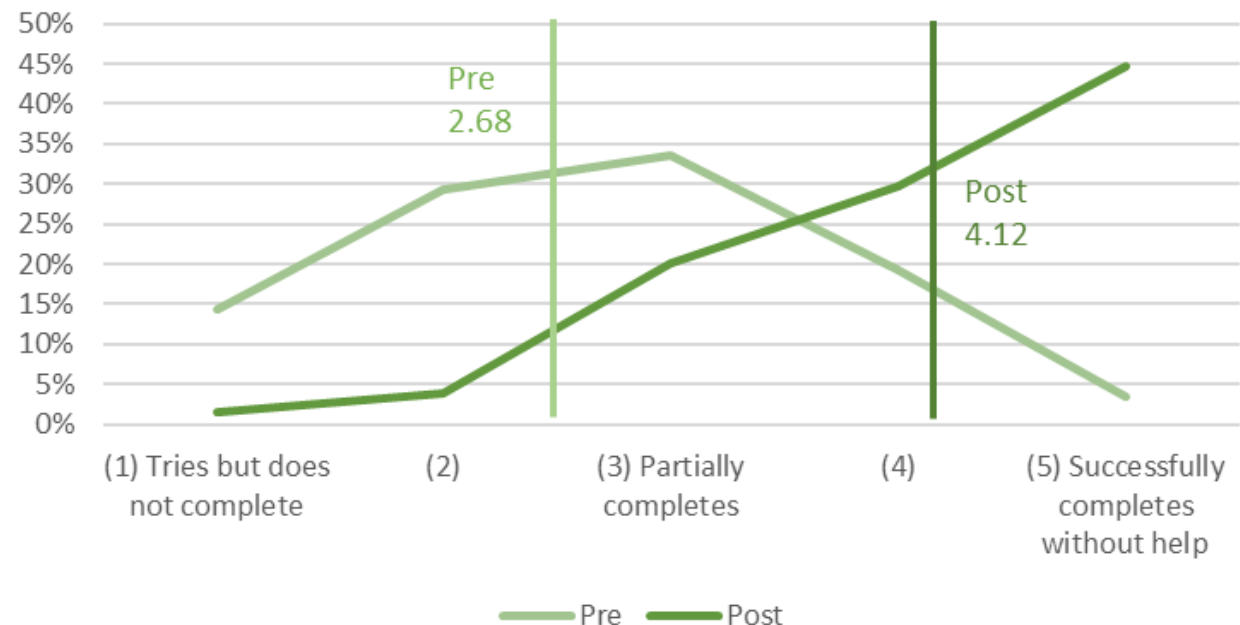
The graph to the right shows the distribution of average ratings for the locomotor Cross-Lateral rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” –for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=208

Percentage of preschoolers who improved (overall) on locomotor measures of Cross-Lateral Opposition:



Pre-Post Improvement: Cross-Lateral Locomotor



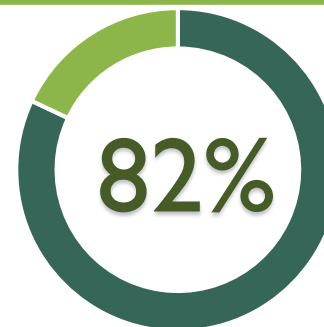
THE WIGGLE JIG'S IMPACT ON CHILDREN'S MOTOR DEVELOPMENT

Cross-Lateral Opposition / Diagonal - Stationary

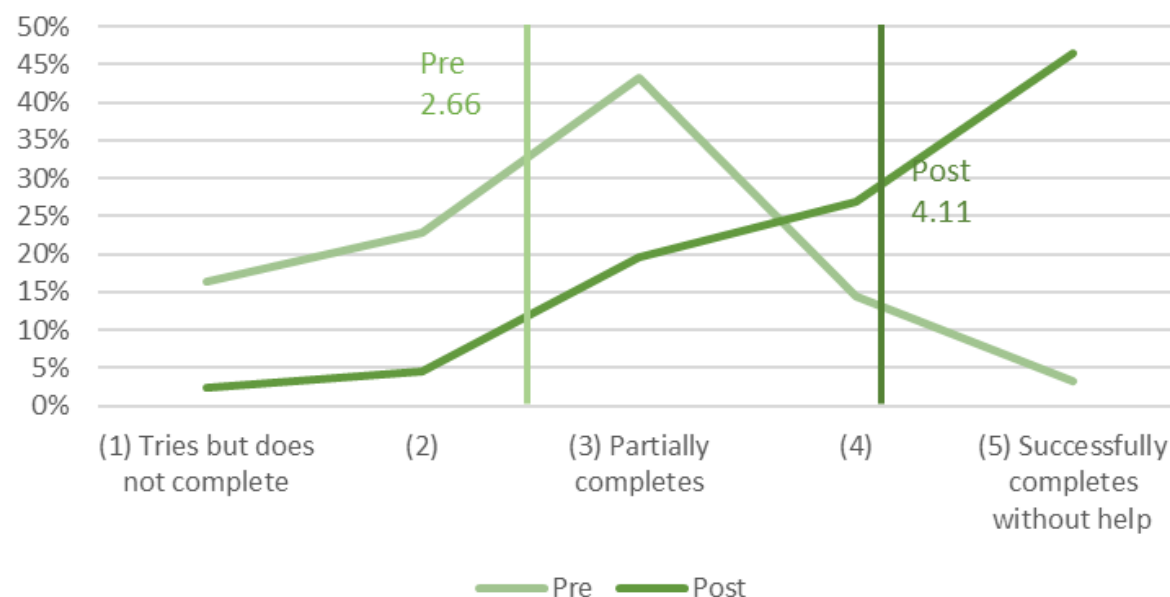
The graph to the right shows the distribution of average ratings for the stationary Cross-Lateral rubric measurement both at the beginning and end of the 10-week program for all students who participated in the movement. (Students who received a score of 0 – “did not participate” –for either the pre- or the post-measurement were not included.) The average rating (vertical lines) moved away from the lower scores of “Tries but does not complete” toward the higher ratings of “Successfully completes.” This change was statistically significant.

N=215

Percentage of preschoolers who improved (overall) on stationary measures of Cross-Lateral Opposition:



Pre-Post Improvement: Cross-Lateral Stationary





THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

DID PARTICIPATING CHILDREN INCREASE THEIR EXECUTIVE FUNCTION SKILLS?

THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Measuring Executive Function

The domain of executive functioning (EF) is defined as a set of “top-down processes involved in any cognitive work that demands novel thinking, thinking ‘out of the box’, operating in a non-automatic way. They underlie planning, cognitive control, self-control, and sustained attention (Carey, Zaitchik, & Bascandziev, 2015, p. 41). Also included in EF is working memory, which is defined as the ability to update and monitor information in real time.



Student Surveys (completed by classroom teacher)

At the beginning of each session and again at the end, teachers rated each child's executive function skills, including: inhibition, shifting, working memory, and planning and organizing. Survey questions were taken from the reliable and valid Ratings of Everyday Executive Function (REEF) questionnaire (Nilsen, Huyder, McAuley, & Liebermann, 2017) to assess each of the above categories.

THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Inhibition

Inhibition refers to the ability to withhold a motor response or restrain an impulse (Garon, Bryson, & Smith, 2008). It has also been linked to attention (Anderson, 2002).

Preschoolers' ability to inhibit responses was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Inhibition was measured by the following statements:

- Waits his/her turn in games and other activities
- Refrains from talking when others are talking
- Refrains from talking when asked to be silent

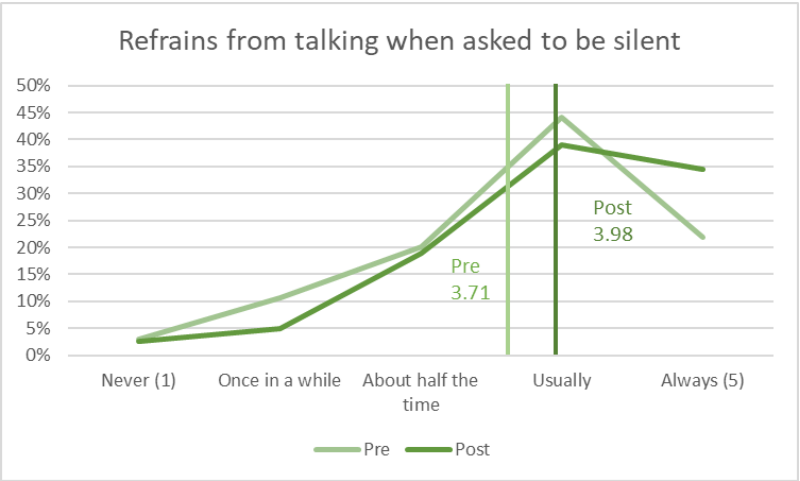
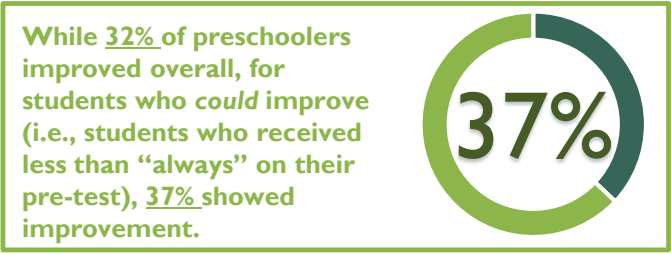
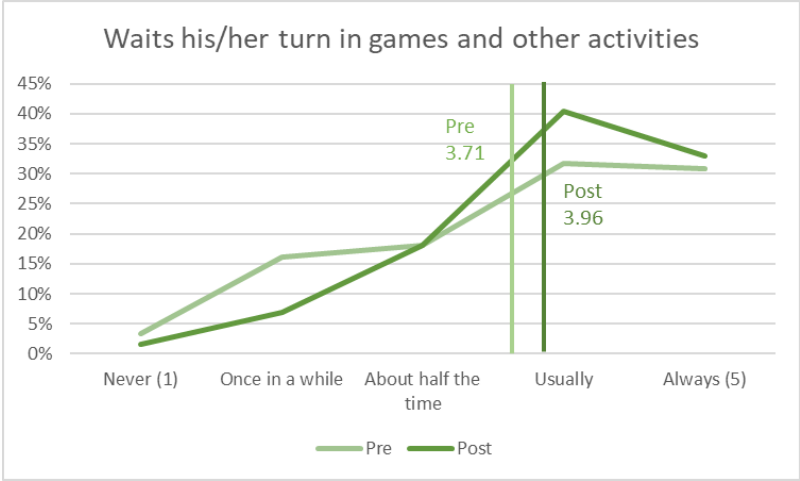
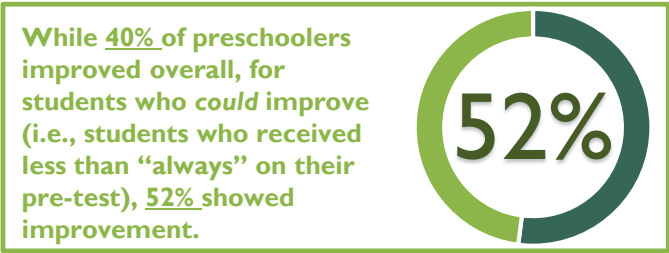
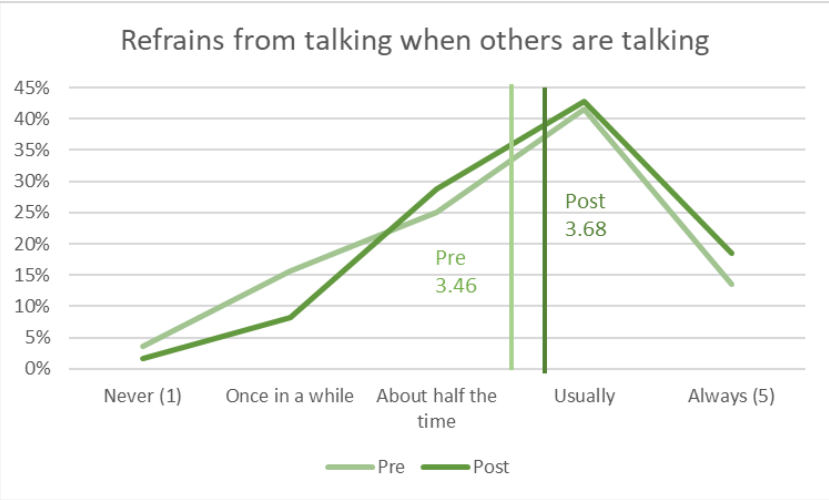
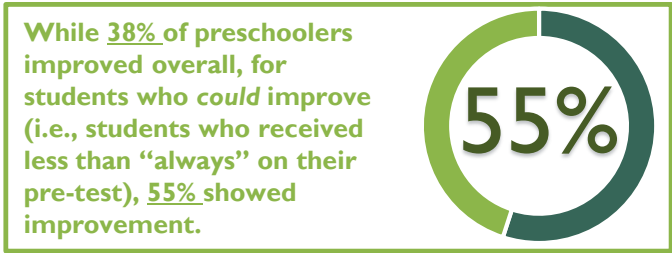
THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Inhibition (continued)

Children increase their ability to successfully inhibit responses after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to wait their turn (38% of preschoolers improved), refrain from talking when others are talking (32% of preschoolers improved), and refrain from talking when asked to be silent (40% of preschoolers improved), as rated by teachers. This makes sense, as dance instruction emphasizes the ability to use one's body rather than one's voice and wait one's turn during solo exercises.

*Note: This data shows growth from 2021-2022, when only two of the three questions showed significant improvement.



THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Shifting

The ability to shift behaviors and learn from mistakes, also sometimes referred to as cognitive flexibility, is another construct of EF (Anderson, 2002).

Preschoolers' ability to shift responses was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Shifting was measured by the following statements:

- Can shift gears and easily adapt behaviors to a new task
- Uses the same object for different or novel uses (e.g., uses a pencil as chopsticks)

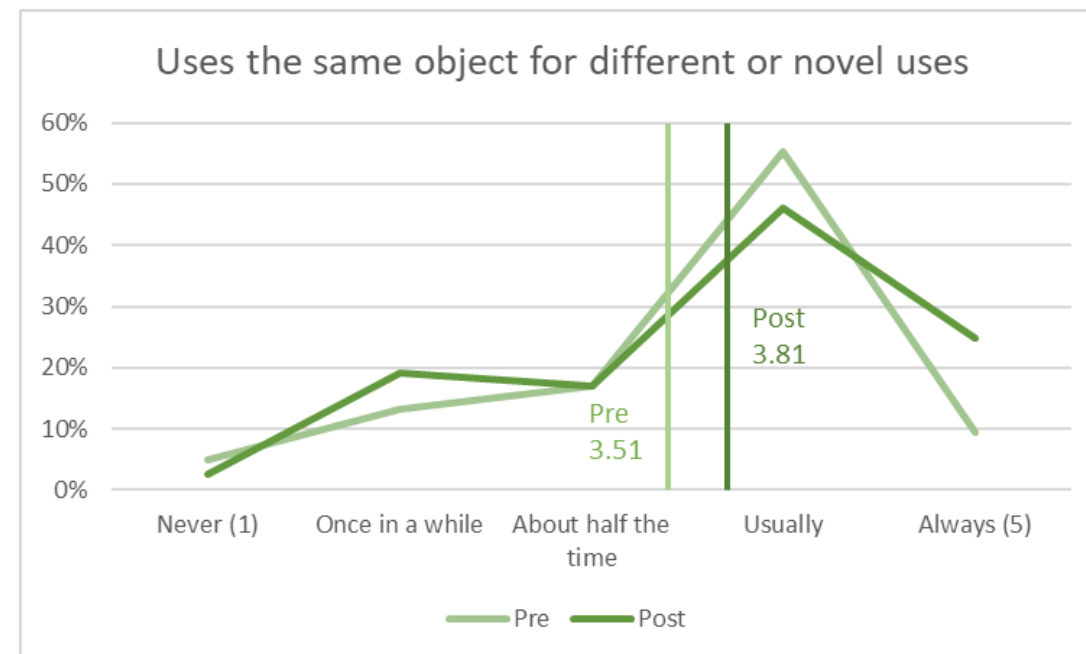
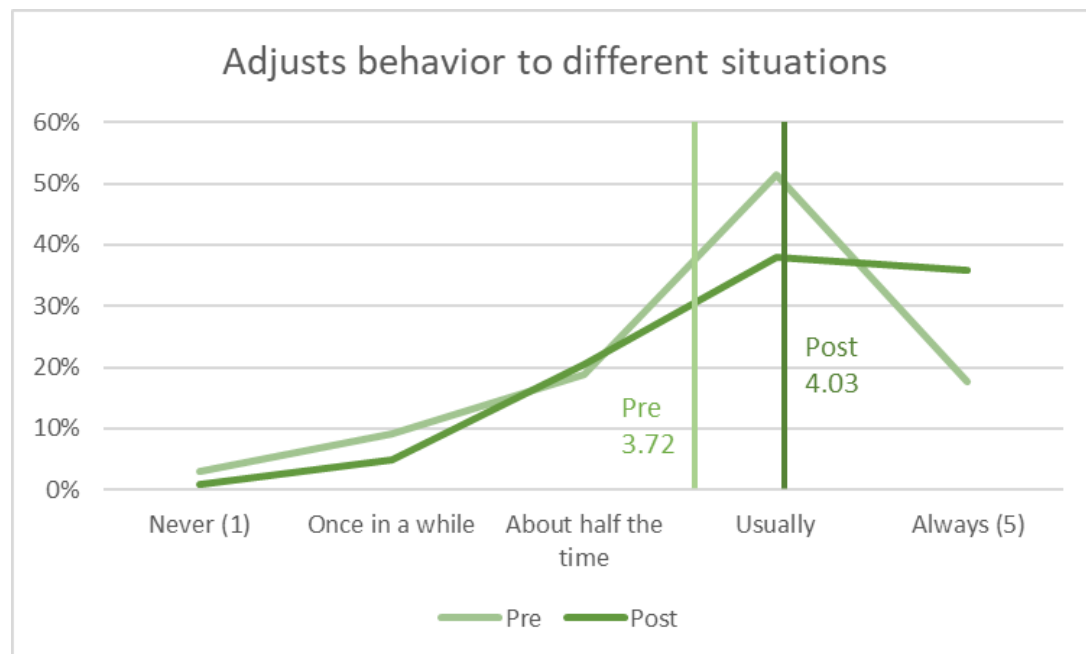
THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Shifting (continued)

Children increase their ability to successfully shift responses after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to adjust behavior to different situations (39% of all students improved; 47% of all students who *could* improve did improve) and to use objects for novel things (37% of all students improved; 41% of all students who *could* improve did improve), as rated by teachers. This makes sense, as dance instruction is a new environment for students that requires different behavioral norms, and employs props (like scarves to represent butterfly wings) in creative movement.

*Note: This data shows growth from 2021-2022, when only one of the two questions showed significant improvement.



THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Working Memory

Working memory refers to the ability to update and monitor information in real time (Garon, Bryson, & Smith, 2008). As in inhibition, attention can also affect working memory.

Preschoolers' ability to use working memory skills was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior...
“Never | Once in a while | About half the time | Usually | Always”.

Working Memory was measured by the following statements:

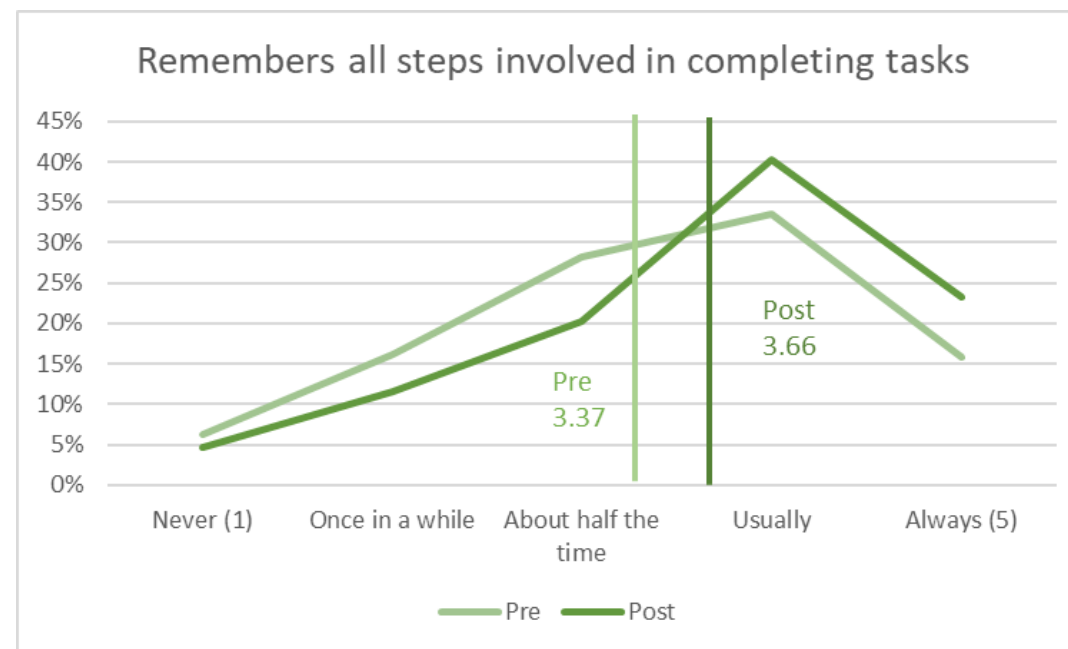
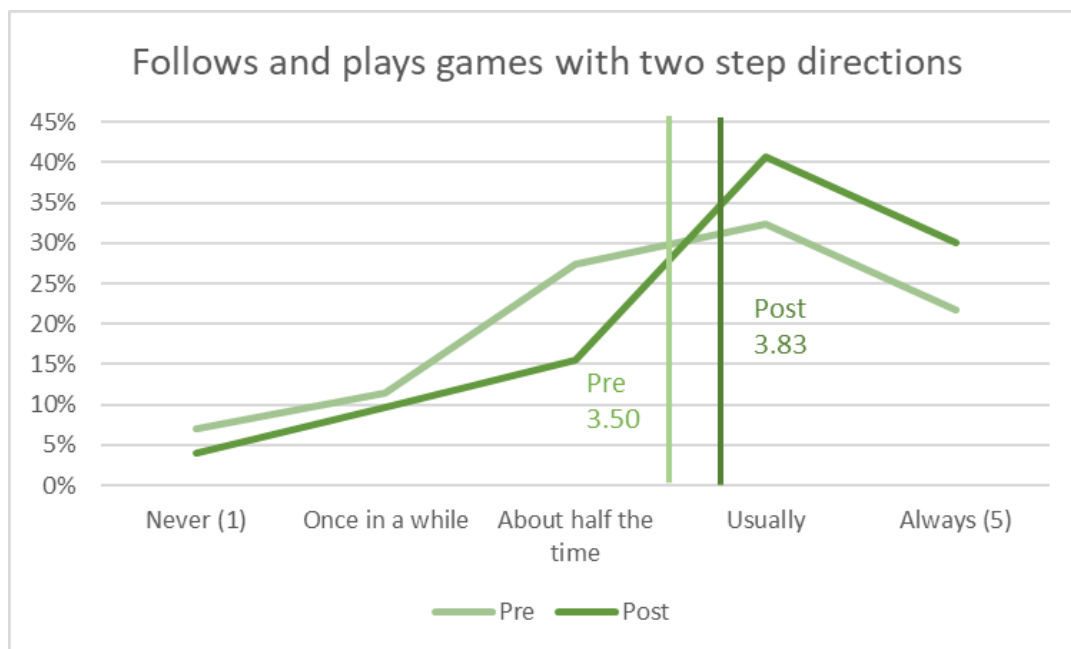
- Follows and plays games with two step directions (e.g., in a memory game, selects cards and checks if they match) without reminders
- Remembers all steps in completing tasks (i.e., does not forget halfway through activity)

THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Working Memory (continued)

Children increase their ability to successfully employ working memory skills after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to follow two-step directions (38% of all students improved; 49% of all students who *could* improve did improve) and complete tasks without forgetting steps (37% of all students improved; 44% of all students who *could* improve did improve), as rated by teachers. Remembering all steps was also affected by age (older students were more likely to improve on this concept over time). This makes sense, as dance instruction emphasizes the ability to follow directions and remember sequenced movements in the moment.



THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

Planning/Organizing

Planning requires managing task demands and organizing information logically (Nilsen, Huyder, McAuley, & Liebermann, 2017). Being able to recall information and answer questions correctly is also an important cognitive construct related to organizing information. This is arguably the most advanced concept measured for Executive Function.

Preschoolers' ability to plan and organize information was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Planning/Organizing was measured by the following statements:

- Can do things that require mental effort (e.g., remembers previous events, correctly answers questions)
- Plans/talks about the next day's events

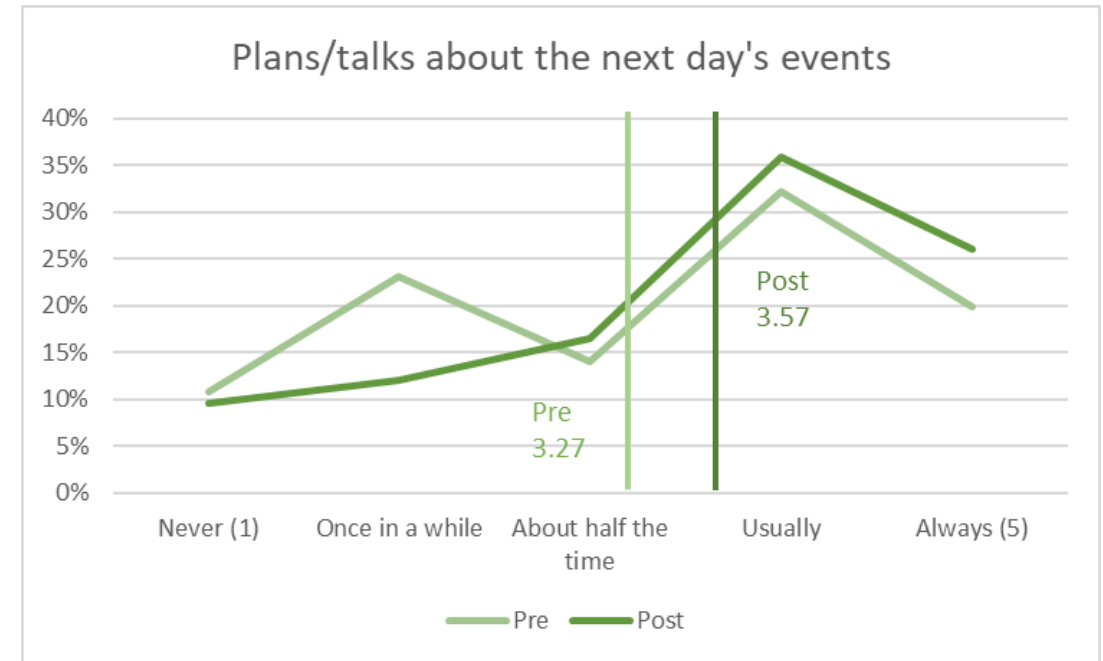
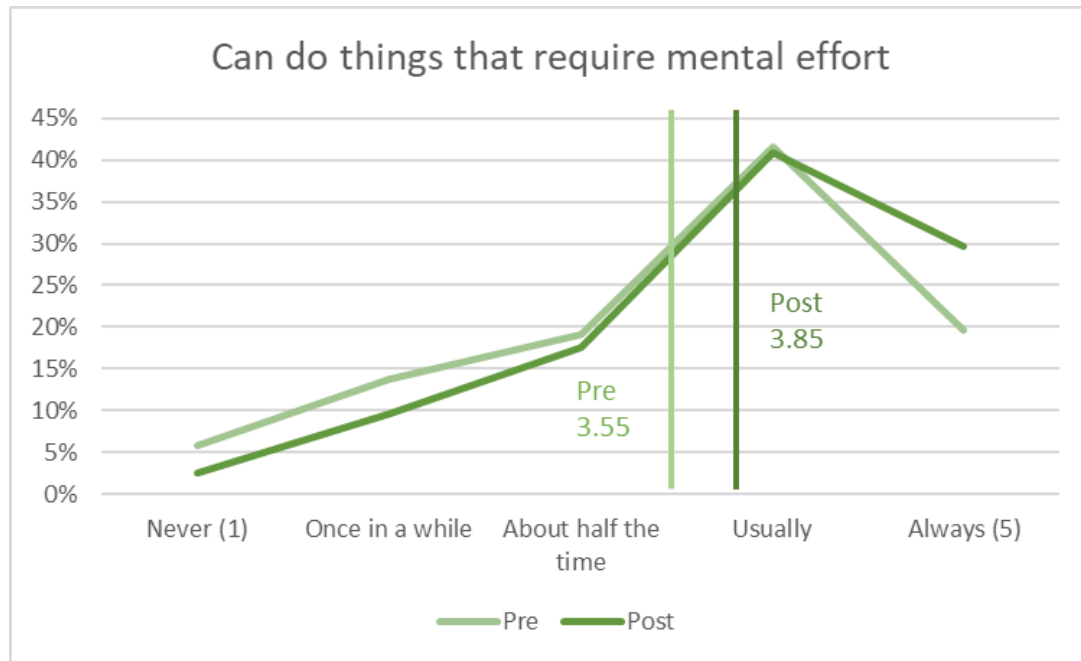
THE WIGGLE JIG'S IMPACT ON CHILDREN'S EXECUTIVE FUNCTION SKILLS

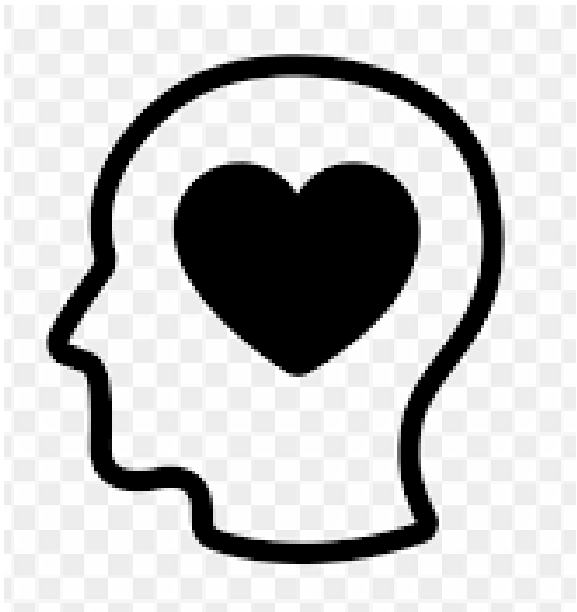
Planning and Organizing (continued)

Children increase their ability to plan and organize information after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to do things that require mental effort (34% of all students improved; 45% of those who *could* improve did improve) and to plan and talk about the next day's events (36% of all students improved; 44% of those who *could* improve did improve), as rated by teachers. This makes sense, as dance class requires students to remember previous events and information as well as sequence and plan for movement activities.

*Note: This data shows growth from 2021-2022, when only one of the two questions showed significant improvement.





THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

DID PARTICIPATING CHILDREN INCREASE THEIR SOCIAL EMOTIONAL SKILLS?

THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

Measuring Social Emotional Skills

In a broad sense, socio-emotional development involves a child's ability to understand and regulate her or his own emotions and to have positive relationships with others by being able to understand and respond to theirs and others' emotions. Researchers consider the foundations of socio-emotional development to include sustained positive engagement with peers and regulating emotional experiences and expressiveness. This kind of emotional control involves managing, modulating, inhibiting, and enhancing emotion (Denham, 2006).



Student Surveys (completed by classroom teacher)

At the beginning of each session and again at the end, teachers rated each child's social-emotional skills, including: emotional expression, self-regulation, and cooperation. Survey questions were taken from the Social-Emotional Assessment Measure for 3-5 year-olds (Squires, Bricker, Waddell, Funk, Clifford, & Hoselton, 2009).

THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

Emotional Expression

Emotional expressiveness refers to a preschooler's ability to express how they are feeling through facial expressions, body language, tone, and voice. Positive affect is particularly important, especially in terms of sustaining positive relationships (Denham, 2006).

Preschoolers' ability to express and understand emotion was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Emotional Expression was measured by the following statements:

- Shows affection and empathy toward you, familiar adults and children
- Smiles and laughs

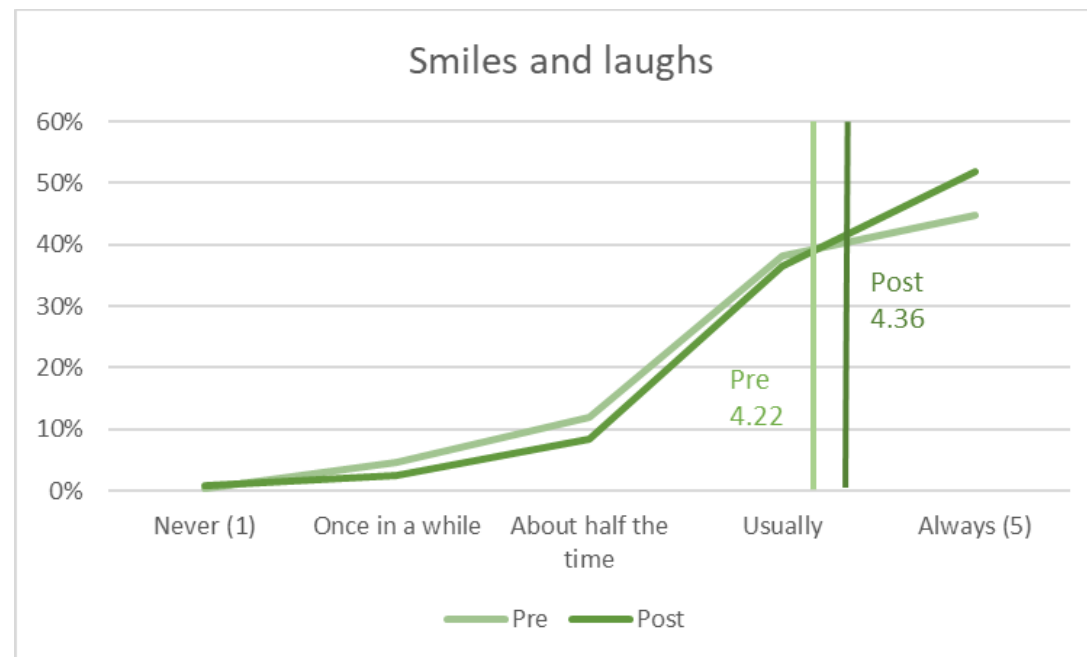
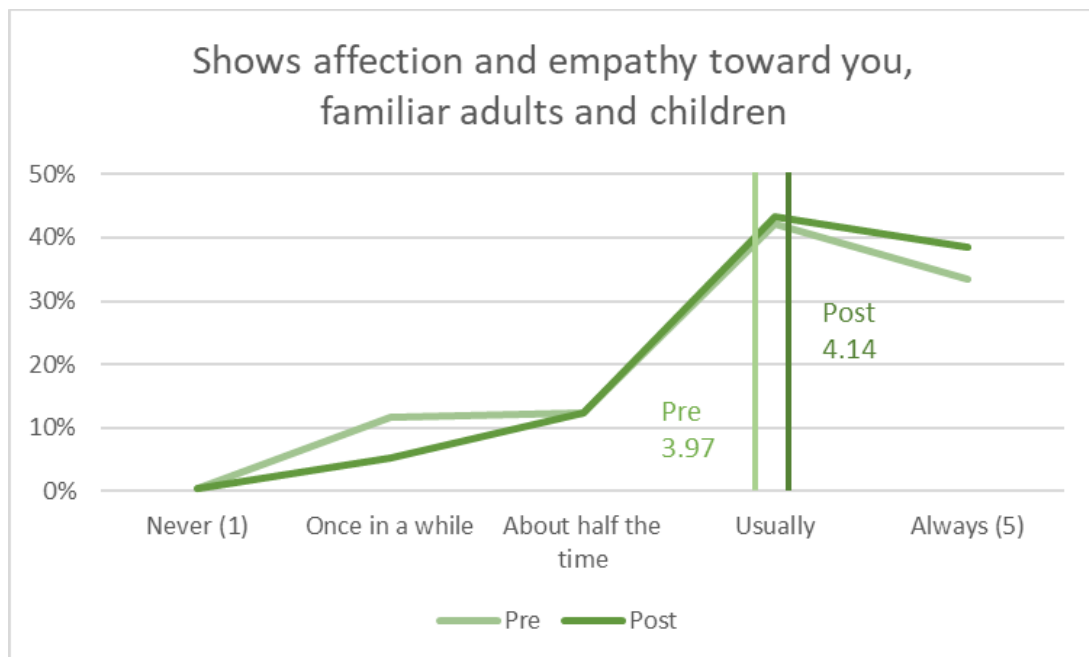
THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

Emotional Expression (continued)

Children increase their ability to successfully express and understand their own and others' emotions after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to show affection and empathy (31% of all students improved; 47% of all students who *could* improve did improve) and smiling and laughing (24% of all students improved; 44% of all students who *could* improve did improve), as rated by teachers. This makes sense, as dance instruction emphasizes the ability to express emotions without words.

*It is important to note that for both of these questions, 76% and 83% of children, respectively, scored either a 4 or 5 on the pre-test, so students already demonstrated strong characteristics of emotion expression across the board prior to the dance program. Despite that, both categories showed significant improvement after the dance program.



THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

Emotion Regulation

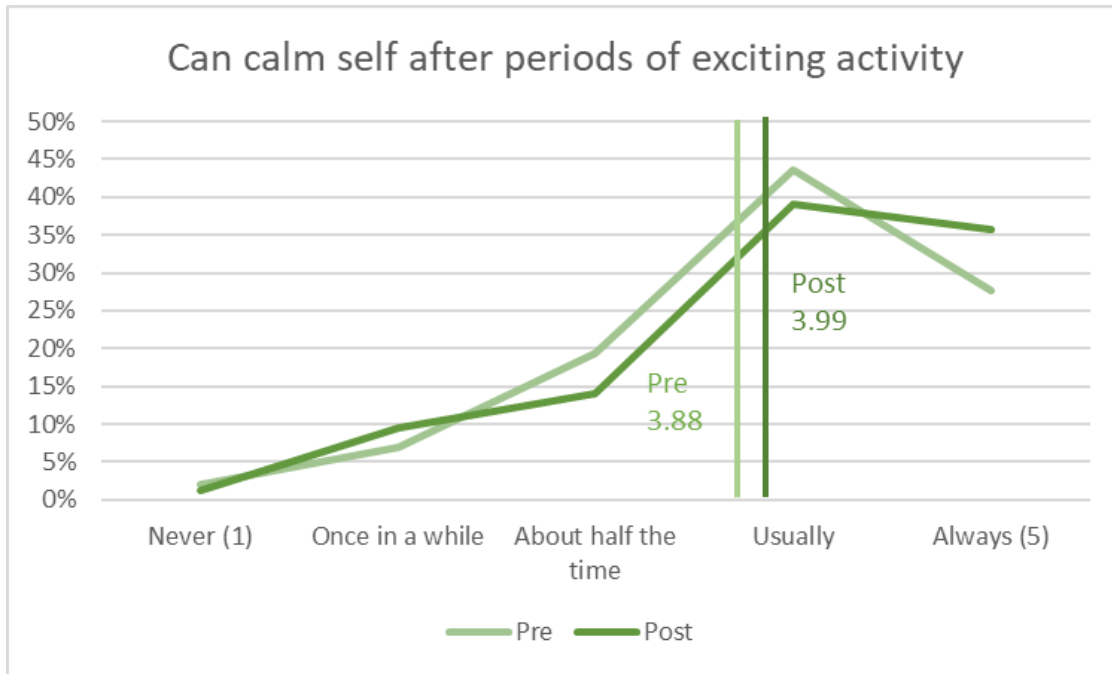
Emotion regulation describes the ability to experience emotion and appropriately control one's own behavior in response to strong emotion (Denham, 2006).

Preschoolers' ability to regulate emotion was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Emotion Regulation was measured by the following statement:

- Can calm self after periods of exciting activity

THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS



Emotion Regulation (continued)

Children increase their ability to successfully regulate their emotions after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to calm themselves down (25% of all students improved; 35% of all students who *could* improve did improve), as rated by teachers. This makes sense, as dance instruction uses a combination of big or fast movements and stillness or calming movements, requiring students to regulate between the two.

*It is important to note that for this question, 71% children scored either a 4 or 5 on the pre-test, so students already demonstrated strong characteristics of emotion regulation across the board prior to the dance program. Despite that, this category showed significant improvement after the dance program.

THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

Social Relationships and Cooperation

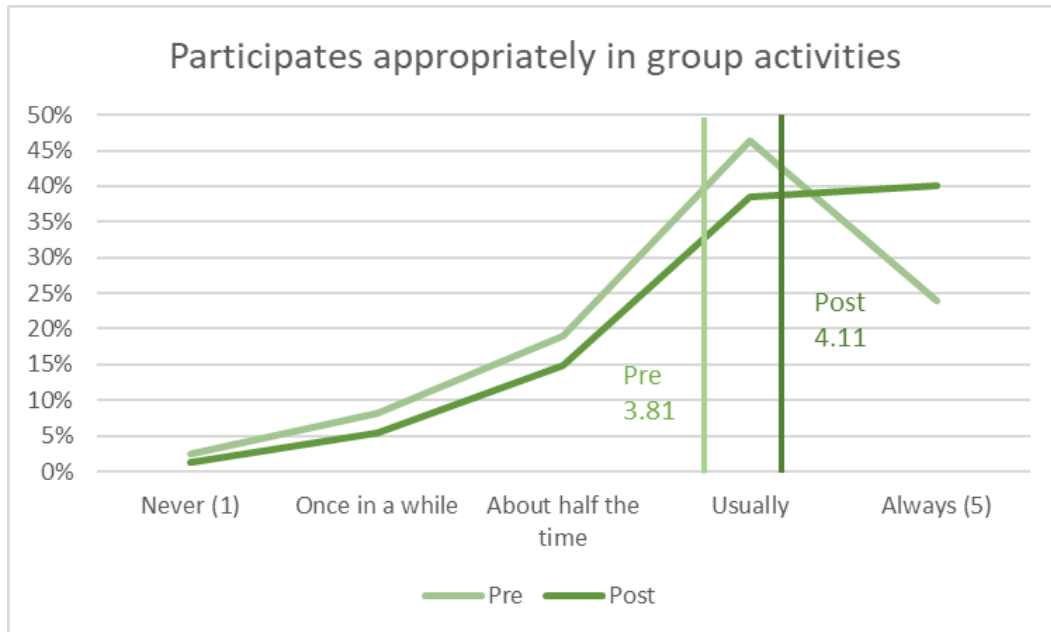
Social relationships as a socio-emotional developmental construct refer to social skills and positive and prosocial interactions among peers.

Preschoolers' ability to cooperate was measured by teachers' responses to the following statements. For each statement, teachers indicated whether the child displayed this ability or behavior... "Never | Once in a while | About half the time | Usually | Always".

Cooperation was measured by the following statements:

- Participates appropriately in group activities
- Cooperates in play or when completing a task

THE WIGGLE JIG'S IMPACT ON CHILDREN'S SOCIAL EMOTIONAL SKILLS

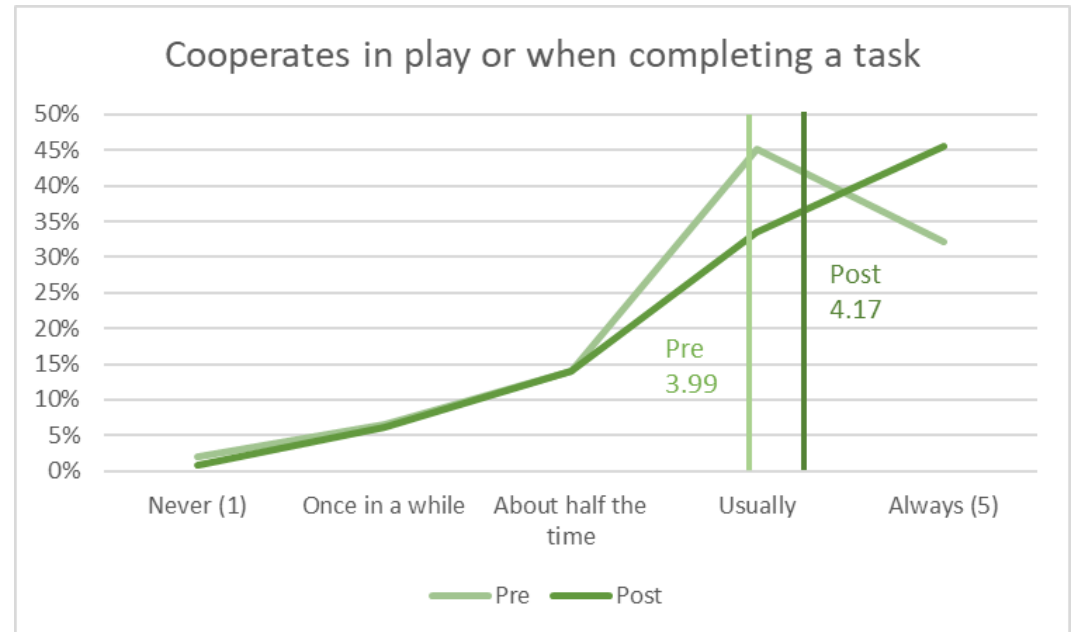


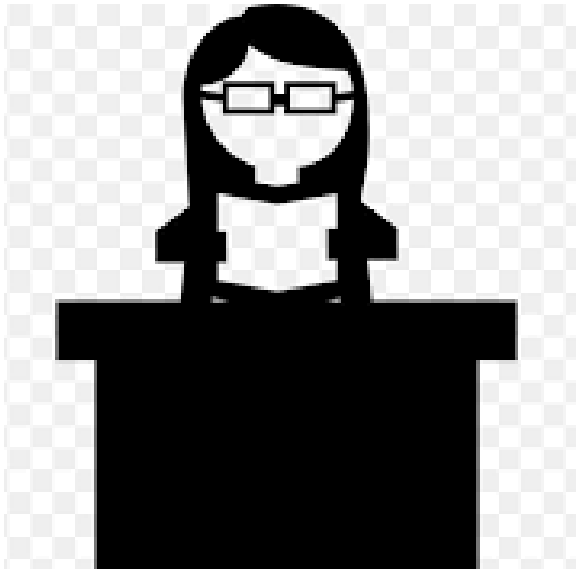
Cooperation (continued)

Children increase their ability to successfully cooperate with peers after participating in *The Wiggle Jig*.

Overall, preschoolers taking part in *The Wiggle Jig* showed significant improvement in their ability to participate appropriately in group activities (34% of all students improved; 46% of students who *could* improve did improve) and cooperate with others (27% of all students improved; 40% of students who *could* improve did improve), as rated by teachers. This makes sense, as dance instruction uses requires working with others, such as navigating shared space or taking turns.

*It is important to note that for both of these questions, 70% and 77% of children, respectively, scored either a 4 or 5 on the pre-test, so students already demonstrated strong characteristics of cooperation across the board prior to the dance program. Despite that, both categories showed significant improvement after the dance program.





TEACHER FEEDBACK ON *THE WIGGLE JIG*

WHAT DID TEACHERS THINK OF THE PROGRAM AFTER SESSION COMPLETION?

TEACHER FEEDBACK ON *THE WIGGLE JIG*

Teachers find Value in Incorporating Dance/Movement in their Classroom

After completing *The Wiggle Jig*, the classroom teachers were asked a series of questions about their experience with the program. In all, 17 teachers completed both the pre- and post-survey.

Value of dance/movement in the classroom

Nearly all teachers who completed post surveys reported dance/movement was “Extremely” valuable (47%) or “Very” valuable (42%).

Teachers also noted the developmental benefits of the program:

- *“Gained/worked on large motor skills, perfected following multiple directions, they can "dance" now :).”*
- *“Dance really improved my students listening skills. I was impressed with how motivated they were to follow along and how much they enjoyed the Wiggle Jig sessions. I also believe it helped my students continue to practice and master new learning concepts as they could practice the ideas kinesthetically through dance.”*
- *“Increased focus, enjoying different dance steps when transitioning, decrease fidgeting, calm their bodies by "getting the wiggles out", better prepare them to sit for table work, etc. <3”*
- *“The program challenged them for attention to task, waiting, listening and follow the adult leader.”*
- *“Dance affected my students by improving their gross motor skills, auditory and social/emotional skills.”*

TEACHER FEEDBACK ON *THE WIGGLE JIG*

Teachers are more likely to use dance/movement in the classroom

In the post survey, 85% of teachers reported that they used dance/movement in the classroom more than in the pre-survey. 47% said they were “Extremely” likely to use dance/movement in the classroom, and another 47% said they were “Very” likely to use dance/movement in the classroom on their own.

Teachers are more confident in their ability to use dance/movement in the classroom

In the post survey, 89% of teachers were either “Extremely” or “Very” confident using dance/movement in the classroom.

- 80% of the teachers who completed both a pre- and post-survey, and who had not said they were “Extremely” confident before the program (i.e., those who *could* show an increase), showed an increase in confidence.

TEACHER FEEDBACK ON *THE WIGGLE JIG*

Teachers recognize the impact of the program

- In the post survey, when asked how much *The Wiggle Jig* influenced motor skills, 76% of teachers said answered “Very” or “Extremely”
 - All teachers believed the program had *at least* a moderate impact on motor skills
- In the post survey, when asked how much *The Wiggle Jig* influenced social emotional skills, 59% of teachers said answered “Very” or “Extremely”
 - All teachers believed the program had *at least* a moderate impact on social emotional skills
- In the post survey, when asked how much *The Wiggle Jig* influenced executive function skills, 47% of teachers said answered “Very” or “Extremely”
 - All teachers believed the program had *at least* a moderate impact on executive function skills

These results suggest that while classroom teachers do understand the impact of the program to some extent, they should be made more aware of the direct correlation between *The Wiggle Jig* and social-emotional learning/executive function and how specific activities in *The Wiggle Jig* engage those skills.



EDUCATION

IMPACT EVALUATION OF *THE WIGGLE JIG* PROGRAM (2022-2023): KEY TAKEAWAY

This robust evaluation of The Wiggle Jig program (2022-2023) finds considerable evidence to suggest this program has a significantly positive impact on preschoolers' motor control, executive function, and social emotional skills.

REFERENCES

- Anderson, P. (2002). Assessment and development of executive function (EF) during childhood. *Child Neuropsychology*, 8(2), 71–82. <https://doi.org/10.1076/chin.8.2.71.8724>
- Carey, S., Zaitchik, D., & Bascandziew, I. (2015). Theories of development: In dialog with Jean Piaget. *Developmental Review*, 38, 36–54. <https://doi.org/10.1016/j.dr.2015.07.003>
- Denham, S.A. (2006). Social-emotional competence as support for school readiness: What is it and how do we assess it? *Early Education and Development*, 17(1), 57–89. <https://doi.org/10.1207/s15566935eed1701>
- Garon, N., Bryson, S. E., & Smith, I. M. (2008). Executive function in preschoolers: A review using an integrative framework. *Psychological Bulletin*, 134(1), 31–60. <https://doi.org/10.1037/0033-2909.134.1.31>
- Nilsen, E. S., Huyder, V., McAuley, T., & Liebermann, D. (2017). Ratings of Everyday Executive Functioning (REEF): A parent-report measure of preschoolers' executive functioning skills. *Psychological Assessment*, 29(1), 50–64. <https://doi.org/10.1037/pas0000308>
- Squires, J., Bricker, D., Waddell, M., Funk, K., Clifford, J., & Hoselton, R. (2009). Technical Report. In *Social-Emotional Assessment/Evaluation Measure (SEAM), Research Edition* (pp. 23–32). Baltimore, MD: Brookes Publishing. [https://doi.org/10.1016/S0007-8506\(07\)90004-9](https://doi.org/10.1016/S0007-8506(07)90004-9)