



Examination of MeMoves and MoreMeMoves on Off-Task Behavior in the General Education Classroom

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Overview

1. What is MeMoves?
2. How Does it Work?
3. What is the Intended Purpose for use in schools?
4. Wayzata Study
5. Results & Teacher Feedback
6. Lessons Learned

What is it?

- A multi-media system (short videos)
- Integrates
 - rhythmic music
 - movement patterns
 - comforting vocal frequencies
 - visual patterns
- People, music, movement (no language)
- Supports a number of bio-physiological and neurological functions
- Activates the parasympathetic nervous system
- Builds social connectedness

MeMoves Sequences - Sample

<https://youtu.be/uWLeppywP-s>

How does it work? - “Bottom Up”

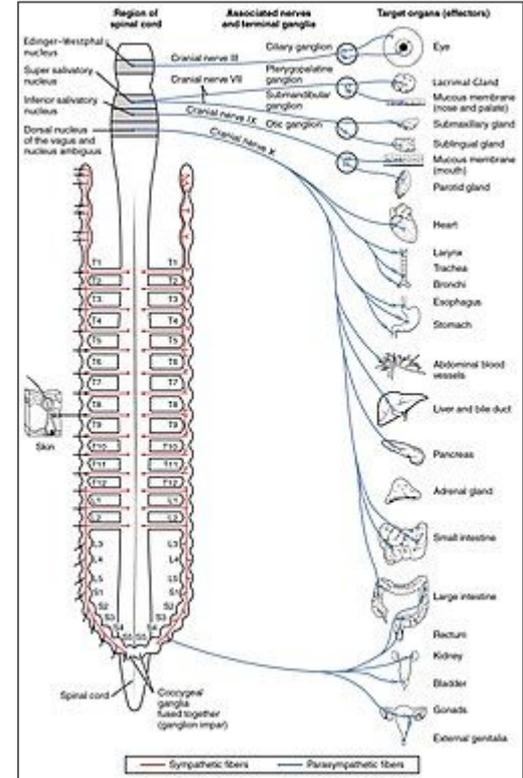
Parasympathetic Nervous System (PNS)

One part of the Autonomic Nervous System.

PNS stimulates our body’s “rest and digest” activities that occur when the body is at rest.

Complementary to the Sympathetic Nervous System (SNS), which is responsible for activities associated with “fight-or-flight” response.

-Wikipedia



How does it work? - Social Connectedness

Polyvagal Theory

- “Claims that humans have physical reactions, such as cardiac and digestive changes, associated with facial expressions”
- Emphasizes the interconnection between our visceral experiences (interpretation of safety vs threat), and the voices and faces of people around us. - Bessel van der Kolk, on Wikipedia

MeMoves

- Facial expressions and eye contact
- Vocal prosody in higher frequencies shared by the female voice
- Rhythmically attuned movements - gestures

How does it work? - Affiliation

Dorsal Anterior Cingulate Cortex (dACC)

- A small strip of brain located in the frontal cortex, associated with processing physical pain. Also responds to social pain and isolation, even being “left out” of a game (Eisenberger, Lieberman, & Williams, 2003)
- Competitive, judgemental, unaccepting environment, increases reactivity of dACC (Scherf, Bye & Torgerson, 2018)

MeMoves

- Emotional and global connection, varied group of people of all ages in videos
- Shared activity to help the group connect with each other
- Non-competitive, not a teaching activity.
- The only incorrect way to participate, is to engage in a different activity

What is the intended purpose in schools?

To change the classroom environment.

Transitional tool, or priming activity.

To make it an calmer, safer environment in which everyone can learn and work together, and make it easier for the teacher to teach.

In order to learn new things, our nervous system needs to be calm and alert.

- Calm kids down and get them to a place where they can function, while learning how to connect and building their community
- Mental health is interwoven with social connectedness

MeMoves in Practice - Kindergarten Classroom

Kindergarten video

Wayzata Classroom Study

- 4 schools, 18 classrooms
- Grades PreK - 4th
- 2 Title I schools, 2 Non-Title I schools
- Treatment assigned by building
 - MeMoves
 - MoreMeMoves
 - MeMoves and MoreMeMoves + Workshop
 - Control
- One building received 45 min workshop pretreatment
- Observers were building staff (teachers, social workers, principals, paras)

Control

MeMoves

Classes:

16 17 18

Classes:

1 2 3 4 5

Classes:

6 7 8 9 10 11 12

Classes:

13 14 15

MoreMeMoves

MeMoves &
MoreMeMoves
+ Workshop

Implementation and Data Collection

- 1-2 sequences each day
- Before an academic activity (e.g., math lesson)
- Three days per week whole-class observation, targeting off-task behavior
- Observation started after the MeMoves videos
- Observation duration, 30 minutes
- One week of observation before treatment started
- Five treatment weeks, with three weeks of observation
- One follow up observation week

Treatment and Observation Schedule

Feb 12 - 16	Feb 19 - 23	Feb 26 - Mar 2	Mar 5 - 9	Mar 12 - 16	Mar 19 - 23	Mar 26 - May 11	May 14 - 18
Pre-Treatment	Treatment Wk 1	Treatment Wk 2	Treatment Wk 3	Treatment Wk 4	Treatment Wk 5	Continue Videos	May Follow-up
Observations M-W-F	Observations W-F*	No Observations	Observations M-W-F	No Observations	Observations M-W-F	No Observations	Observations M-W-F

*Monday Feb 19th is a holiday. Observations only Wed and Fri that week.

Off-Task Behavior Data Collection Tool

Observer Name: _____ Classroom Teacher Name _____ School _____

Week (Circle one): Pre-Treatment Treatment Wk 1 Treatment Wk 3 Treatment Wk 5 Follow up

Directions: Place an X or ✓ mark everytime the behavior is observed in the room. For example: if a student gets up three times in the 30 minutes and is out of the area, that would be 3 check marks under "Out of Seat/Area". If a student is continually rocking for the entire 30 minutes, that is one check mark under "Distracting other Students."

Observed Behavior	Monday Start time: End time: Number of students:	Wednesday Start time: End time: Number of students:	Friday Start time: End time: Number of students:
Not following teacher instructions			
Distracting other students (e.g., excessive fidgeting, tapping, pounding, moving, etc.)			
Talking out of turn (including an off topic question or comment)			
Out of Seat/Area			
Disengaged from classroom activity ("shut down")			

Comments/Notes:

Results

Neutralizing Class Differences

- Analyzed only the change in each metric (since the pre measurement)
- Used standard statistical rules on whether to use:
- change (e.g. 10 off task pre vs. 5 in study = -5), or ratio (e.g. $5/10 = 0.5$)
- Change data from pretreatment to treatment were calculated.
- Removed some rows with missing data and can also can be inspected.

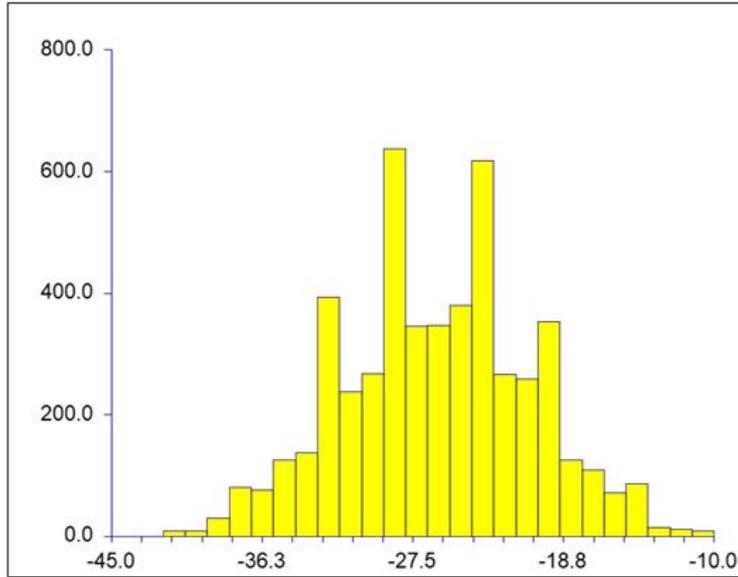
Results

Randomization

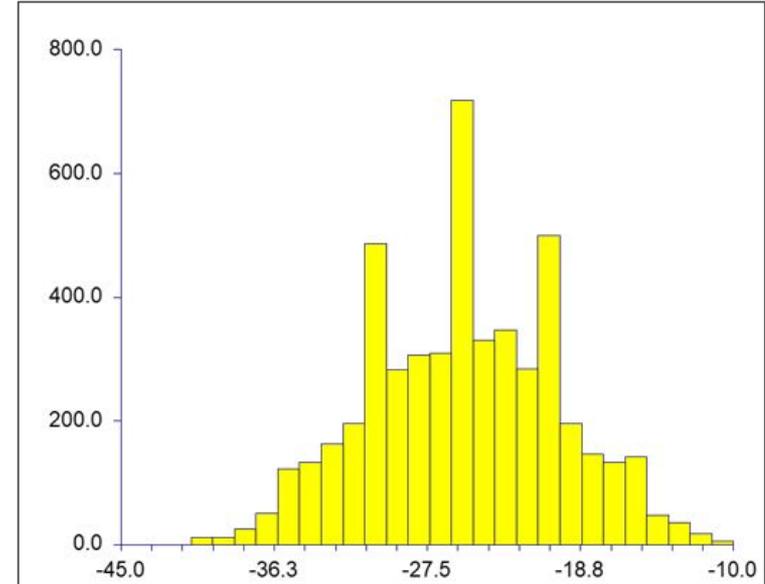
- Randomization eliminates all variables (other than treatments studied): large or small, known or unknown
- Randomization is NOT to “balance” test vs. control
- The assignment of classrooms could not be entirely random due to practical constraints
- So we take a random sub-sample instead: 12 “classroom weekdays” out of 25

5,000 Random Sub-samples

MeMoves (Average -26.0)



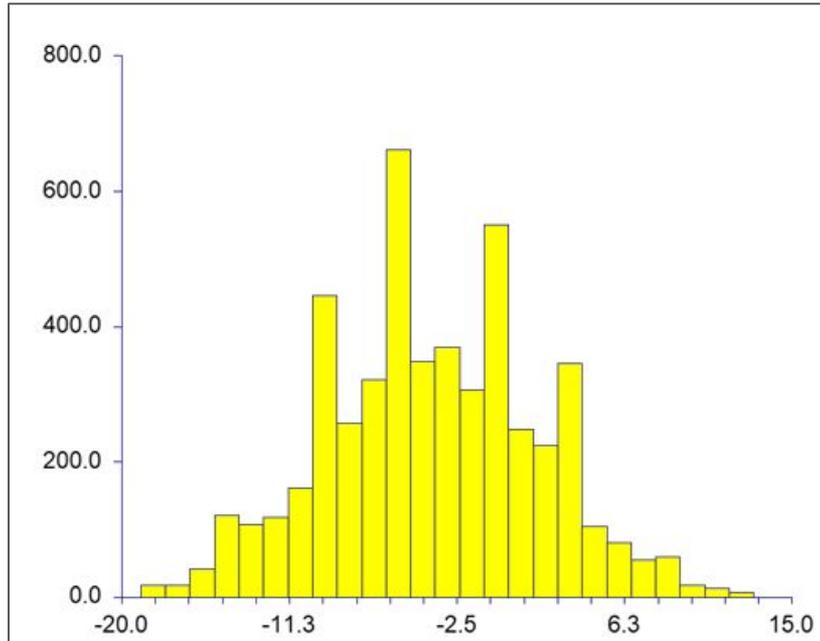
MoreMeMoves (Average -25.3)



MeMoves and MoreMeMoves are highly significant, because the empirical distributions exclude zero. The probability of this occurring “by chance” is less than a 1/5000 probability (p-value < 0.0002).

5,000 Random Sub-samples

MeMoves x MoreMeMoves (Average -3.8)



The interaction between the two treatments, MeMoves x MoreMeMoves is not significant

What proportion of Off-Task Behavior Does MeMoves Eliminate?

There's any number of ways to calculate this: all of which will be similar. E.g:

For the 12 classrooms randomly sub-selected (average pretreatment = 34):

- MeMoves: $-28/34 = -82\%$
- MoreMeMoves: $-26.7/34 = -78\%$

For all classrooms (average pretreatment = 31) and using the results from the 5,000 analyses:

- MeMoves: $-26/31 = -83.9\%$
- MoreMeMoves: $-25.3/31 = -81.6\%$

What Happens with a Regression Model (to “back out” variables like number of students per classroom?)

	Not Follow...	Distracting...	Talking...	OutOfSeat...	Disengaged...	TotalOffTask...
R-squared	0.265	0.281	0.617	0.391	0.315	0.513
Adjusted R-squared	0.220	0.231	0.567	0.348	0.252	0.455
MeMoves	-1.786	-6.685	-23.365	-5.362	-2.891	-40.253
MoreMeMoves	-4.355	1.446	-4.408	-4.257	-2.255	-14.120
Both	-4.623	0.093	-17.643	-1.600	-0.894	-25.177
Grade 1 (anchor)	0.000	0.000	0.000	0.000	0.000	0.000
Grade 2	13.346	-1.726	-8.075	17.971	11.026	30.716
Grade 3	-0.945	-6.635	-16.976	3.658	-0.930	-25.257
Grade 4	5.518	-1.072	-1.450	2.583	0.489	3.631
PreK	2.938	-2.922	-1.745	3.794	1.075	6.959
Qty. Students in Pre		-0.270	-0.305	-0.339		
Test Week 1 (anchor)			0.000			0.000
Test Week 3			-4.093			-5.373
Test Week 5			-3.705			-8.153
Test Follow-up			-6.087			-10.626
Monday			0.609		-2.008	-0.903
Tuesday			20.225		4.032	22.158
Wednesday			-0.722		0.748	-4.505
Friday (anchor)			0.000		0.000	0.000

Important Points on the Regression Analysis

- Gives associations (not necessarily causes, except MeMoves, being a deliberate intervention)
- Though crude, the regression shows MeMoves effects remain, after “removing” other variables
- The effect sizes are off since they apply to a “theoretical” classroom (with no students and everything else anchored) and because the regression is not as pure* as the randomly selected 12 classroom contrasts

* “All models are wrong; some are useful.” G.E.P. Box

Teacher Feedback - Spring 2018

Teachers who participated in the Workshop, had a positive view of MeMoves after the study and planned to use it in the future.

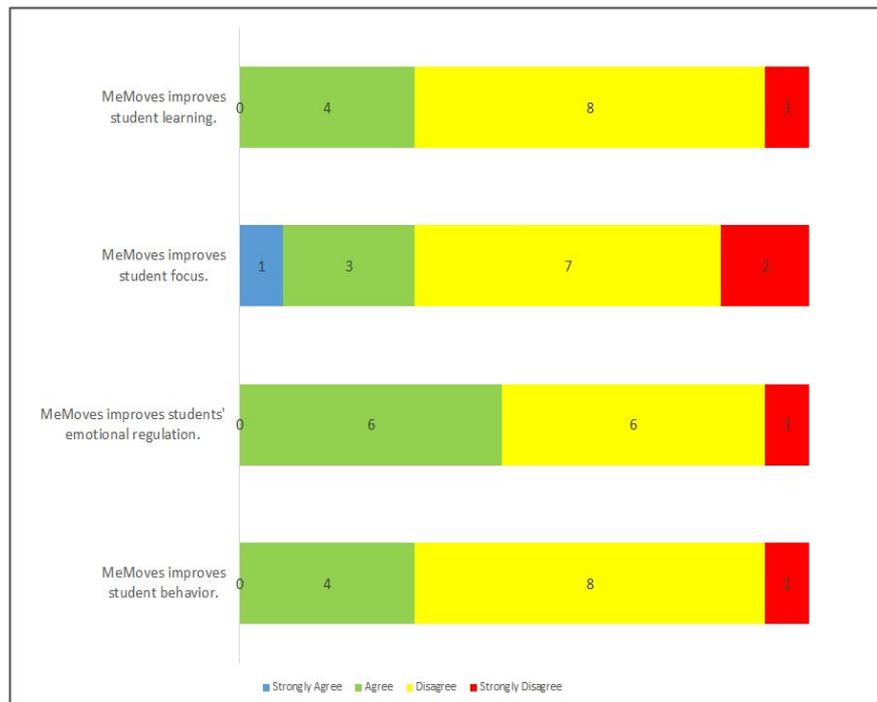
Teachers who did not have the Workshop, had a neutral to negative view of MeMoves after the study and most did not plan to use it in the future.

The observation data demonstrated a decrease in Off-Task behavior for all classrooms that participated in the MeMoves treatments.

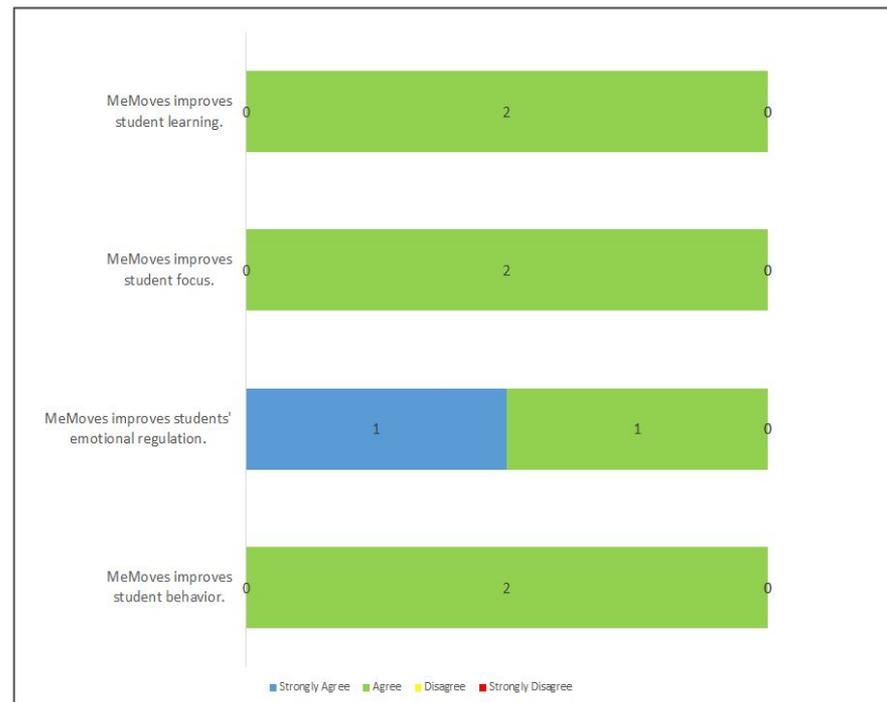
Teacher Feedback - Spring 2018

Please indicate the extent to which you agree with the statements below

No Workshop (N=13)

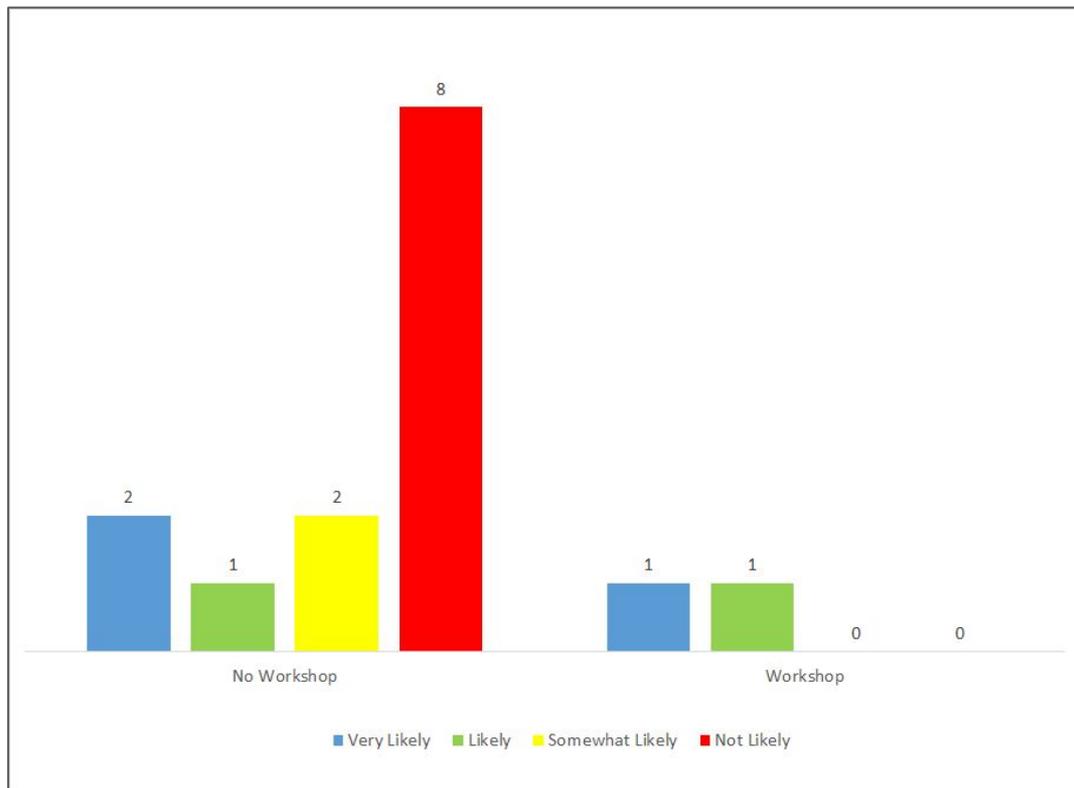


Workshop (N=2)



Teacher Feedback - Spring 2018

As a benefit of participating in the study, MeMoves will be available to teachers in schools who participated until the 2019-20 school year. -- How likely is it that you will use MeMoves with your class next year?



Teacher Comments

Positive

“My class really enjoyed MeMoves, it was a great way to get centered every day.”

“It was a bit challenging at first, but as time went on, it really seemed to help with some students and gather together for our group time.”

“I do feel MeMoves helped one student who consistently struggled with focus, attention and behavior.”

Negative

“I believe it would be better with some explicit teaching about mindfulness.”

“The students actually got more silly after a few videos depending on the person on the screen and how they were acting.”

“Some kids didn’t want to do it.”

“Meditation was more effective than MeMoves”

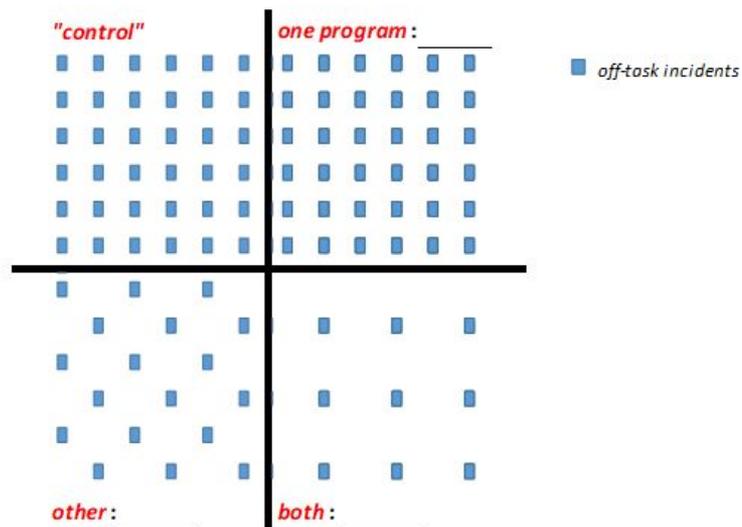
Teacher/Observer Perception

Follow up meeting September 2018

Observer - “I could see the difference in the off-task behavior. I could see the improvement in the weeks.”

Teacher - “I didn’t notice the difference until the observer showed me the [data sheet.]”

Hypothetical Study Example



What would each teacher feel about ■ ?

MeMoves Follow-up: Sept 2018 - Jan 2019

All interested teachers had the opportunity to participate in a MeMoves workshop in Fall 2018.

Study Participant Follow-up Jan 2019

Teacher 1: I use MeMoves about once per week. It is one of the many ways I integrate movement in the room. Calm and Focus are a good way to bring energy level down after recess.

Teacher 2: I use MeMoves everyday before Language Arts. I like the calming music, taking deep breaths and shutting off the lights.

Lessons Learned

- MeMoves and MoreMeMoves videos reduce off-task behavior immediately following the videos.
- MeMoves and MoveMeMoves work equally well to reduce off-task behavior.
- There is no interaction or added benefit to using both MeMoves and MoreMeMoves together.
- Off-task behavior is reduced even when teachers were not given a workshop before using the videos.

#1 Lesson Learned

“The Why” (and “The How”) Matters

Even though off-task behavior was reduced without the workshop, teachers were frustrated with the videos and how to implement the tool when they did not have the workshop before implementation.

Before implementing MeMoves or MoreMeMoves make sure teachers have the opportunity to participate in the MeMoves Workshop.

In the workshop they will learn the rationale behind MeMoves and how to successfully implement MeMoves in their classroom.

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