

*“Learning is more effective when it is an active rather than a passive process.”*

—KURT LEWIN

*chapter 4*

## Critical Thinking and Student Movement



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In the business world, the physical workplace is changing. Instead of the conference room, professionals conduct meetings while walking. Treadmill desks replace stationary desks. Desk chairs are exchanged for exercise balls. Employees engage in complex problem-solving and critical thinking as they move. Why would businesses shift in this direction? Because movement has been shown to have a positive effect on focus and retention.

In contrast, in some schools students spend a large amount of time sitting. Students *can* learn when sitting, but for the last 400,000 years, humans have been walking, running, learning, and doing. The relatively new phenomenon of sitting began only in the last 500 generations. When students sit for most of the school day, they can encounter poor breathing and eyesight as well as overall body fatigue (Jensen, 2000). In fact, students who are inactive and sedentary for more than 20 minutes experience a decrease in the neural transmissions in the brain (Kinoshita, 1997). Research has revealed that passive learning experiences produce little long-term learning (Gardner, 1999). Brain research indicates a strong connection between cognitive and motor processes (Sousa, 2011). So how can schools similarly integrate critical thinking and movement into instruction? The answer is kinesthetic learning.

### Kinesthetic Learning

A tactile-kinesthetic learner likes to be active while learning. Kinesthetic learners try to assemble items before reading the directions, they manipulate objects when learning, or they have difficul-

ties sitting still. Kinesthetic learners experience learning through movement and touch and prefer tasks that call for active participation. Characteristics of kinesthetic learners include the following:

- » They move around.
- » They enjoy physical activities.
- » They take frequent breaks when studying.
- » They move their hands when they talk.
- » They enjoy touching things.
- » They have difficulty sitting still for extended periods of time.
- » They fidget by tapping their pencils or feet while doing classwork (Reed, 2009).

Research suggests that 15% of the population are kinesthetic learners and prefer active rather than passive activities (Coffield, Moseley, Hall, & Ecclestone, 2004). Reports indicate increasing numbers of kinesthetic learners in classrooms (National Center for Educational Statistics, 2006).

It is important that teachers do not see kinesthetic learning as a problem or disadvantage. Over 30 years ago, research found positive relationships between physical activity and school performance (Gabbard & Barton, 1979); since then, extensive research has shown that using active, hands-on tasks can be very effective for many students (Honigsfeld & Dunn, 2009). Paivio (1991), for example, found that students engage and retain more when teachers reinforce instruction with kinesthetic motions. Even simply by standing, students use energy to support their posture. Therefore, at a minimum, teachers should provide stand-up and stretch breaks to reinvigorate students.

Studies also show that incorporating movement into classroom instruction can enhance the classroom environment and can positively affect classroom management. Movement releases positive hormones and reduces the levels of stress hormones (Gregory & Kaufeldt, 2015). Kinesthetic tasks are particularly positive for stu-

dents from low socioeconomic backgrounds (Helgeson, 2011) as well as special needs students. Perhaps movement produces positive emotions, motivating students to want to learn (Jensen, 2000).

With these findings, teachers should incorporate kinesthetic learning into instruction whenever feasible to promote active engagement.

### Critical Thinking and Movement

Research into the human brain reveals interesting details about how thinking and movement are connected. Research suggests that the human brain evolved as two areas in the brain expanded: the cerebellum (the part of the brain above the brain stem that controls movement) and the frontal parts of the higher cortex. Hence, the section of the brain that gives humans motor dexterity grew to give them mental dexterity, too. Brain-imaging studies support this theory (Blakeslee, 1994).

There is a solid body of research supporting a strong relationship between motor and cognitive processes (Jenson, 2005). Movement increases the amount of oxygen in the blood fueling the brain. When we sit, blood “pools” and does not circulate as efficiently to the brain. Moving helps reoxygenate the blood and push it to the brain, energizing sluggish students and getting their neurons firing; this, in turn, stimulates learning. Higher concentrations of oxygen in the blood affect cognitive performance and strengthen the brain’s ability to perform tasks (Chung, Kasprian, Brugger, & Prayer, 2009; Sousa, 2011). In essence, movement-based learning nourishes the brain.

A number of recent studies demonstrate the positive effects of instructional tasks that use movement while teaching content. Marzano, Pickering, and Heflebower (2011) found that physical activity deepened students’ understanding and increased energy levels. Taras (2005) found that activity improved concentration and enhanced performance in reading and mathematics. Masera (2010) found that students achieved their highest test scores and expressed a positive attitude toward learning when they were ac-

tively engaged with tactile learning techniques, while Hannaford (2005) suggests that when cognitive information is linked with movement, retaining and recalling information is easier.

Teachers can see this in action in their classrooms as they notice the attention spans of their students. When students move, their brains focus more easily and they become more alert and motivated. Increased physical movement (with 5–8% greater blood flow) narrows attention to target tasks (Easterbrook, 1959). Because the brain responds to active learning, a student can be alert for longer periods of time when instruction includes movement.

Movement also has a great effect on the emotional state of students (Jensen, 2000). The brain needs to interact with people and things in its environment, building a sense of classroom community. It is easier to store, remember, and retrieve learned information if it connected to a positive emotional base, which can be created through movement.

### Instructional Strategies Fusing Movement with Critical Thinking

Many instructional strategies have been developed to integrate movement with critical thinking. The following section highlights strategies that are beneficial in engaging students in critical thinking and movement, along with a discussion on ways to incorporate them in various content areas.



#### FOUR CORNERS

The Four Corners strategy involves students moving to one corner of the room based on their responses to a question. It can be a quick tool for formatively assessing students while promoting safe conversation in small groups. The question should be posed along with four answer choices. Below are sample question prompts:

- » Which president was the most influential?
  - Choices: George Washington, Thomas Jefferson, John Adams, Abraham Lincoln

- » What is the most efficient way to solve this math problem?
  - Choices: multiplication, addition, subtraction, division
- » Which metaphor makes you think about the term “conservation”?
  - Choices: playing a basketball game, eating ice cream, sleeping, or running a race

Another option would be to present questions requiring students to express their opinions and using the corners to represent a rating scale: *Strongly Agree*, *Agree*, *Disagree*, and *Strongly Disagree*. Some examples are as follows:

- » Is the main character in the book a hero? Support your answer with textual evidence.
- » Review the data. Does the data support the claim that climate change is largely human-made?

#### Strategy Steps

1. Before beginning the strategy, explain why you are using it. For example, the strategy gives students an opportunity to think, discuss with partners, share with the entire class, and physically move to cultivate their arguments and thinking.
2. Select a thoughtful question. Controversial topics tend to be more engaging.
3. To ensure that students are prepared for the group conversations, have them record their initial ideas about the question on a piece of paper or a notecard. Giving students three to four minutes to solidify their thinking will prepare them to share their thoughts with group members.
4. Using chart paper, post signs in the corners of the room to represent the option choices. Have students move to the corner that aligns with their ideas. Students will then subdivide into clusters of two or three to explain their choices.

#### FOUR CORNERS

1. Explain the purpose of the strategy.
2. Pose a thoughtful question.
3. Provide time for individual reflection.
4. Move to corners and subdivide into clusters of two to three to share their reasons for their choices.
5. Invite groups to share with the whole class.

5. Groups select a spokesperson, or students are randomly called on to share their thinking. Afterward, students could pose questions to other groups and debate the topic. After the discussion, if students have been persuaded, they can switch corners and have further discussions with their new groups.

There are many positive aspects to this strategy. Students make decisions and then, based on their choices, they converse with others with similar thinking. Students are highly engaged as they listen to various perspectives and participate in critical thinking. As students discuss, they need to reflect on their thinking and critique the thinking of others.

This strategy can be used in the following ways:

- » to pre-assess students' prior knowledge of a topic;
- » to prepare for a debate;
- » to stimulate thinking and conversation after a text is read; and
- » to provide time for students to process their learning (Teacher Toolkit, n.d.).



### MATRIX AND CONSENSOGRAM

The Matrix and Consensogram strategies display data to initiate conversations (Lipton & Wellman, 2011). They can expose a variety of perspectives and assess students' levels of understanding. These strategies reinforce the teacher's listening to the student voices.

The Matrix strategy involves examining two variables or ideas and observing the interactions. Each axis represents a variable on a scale of zero to ten. Some ideas that could be used as variables on a matrix include the following:

- » In science, collect opinions on how much effort should be involved in preserving the environment versus the cost required to do so.

- » In economics, have students consider how much risk business should take in relation to the potential profit.
- » In writing, ask students to consider the relative importance of the format of the haiku compared to the impact of the writing.
- » In social studies, ask whether it is always wrong to hurt another person.

### Strategy Steps

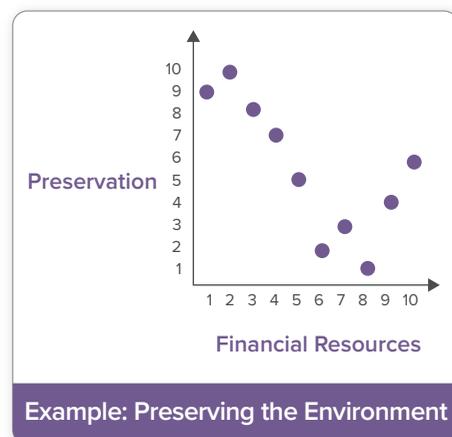
1. Select two variables to examine in the matrix. The interaction of these variables should spark interesting discussions and reveal different perspectives.
2. Have students create matrices on their own paper, on which they mark their ratings. For example, a student might say that on a scale of zero to ten, preserving the environment should be a nine (very important), but they might also believe that few financial resources should be allocated to support environmental initiatives, thus a two. The student would then mark the intersection of those points on his or her matrix. Below the matrix, students would justify their opinions in several sentences, using readings or other materials to support their answer.
3. Create a large matrix on chart paper and post it on the wall. Have students use sticky notes to mark their ratings, creating a cluster graph (see **Figure 4.1** for an example).
4. In small groups, have students examine the data. Instead of sitting, students could form standing groups around the room. Groups could consider the following questions: What do you notice in the data? What patterns are noticeable? What surprises you? What conclusions might you draw? What are some inferences? What questions do you have about the data?
5. Share conclusions in a whole-group discussion. Students could use different-colored sticky dots to mark their opinions at the end of the discussion to visually determine whether opinions have changed.

### MATRIX

1. Select two variables to examine in the matrix.
2. Have students use their own matrices to individually mark their ratings for each axis and justify their thinking.
3. Direct students to create a cluster graph, using sticky dots to record ratings on a large wall matrix.
4. Invite students to form small groups and examine the data.
5. Share findings in a whole-group discussion.

The strategy provides time for students to think deeply about two ideas. Many informational texts pose arguments that consider two ideas. A matrix would be an excellent way to start a conversation based on a text.

Figure 4.1. Matrix Example.



A related strategy is the Consensogram, which displays data generated by a group as a bar graph and encourages conversation. The Consensogram strategy is a way for students to explore their beliefs, assumptions, and values in a safe environment (Lipton & Wellman, 2011). Students can share viewpoints and consider other perspectives. Examples of some questions for a Consensogram strategy include the following:

- » To what degree do you consider the main character a hero?
- » To what extent does the new Walmart in our community impact the local economy?
- » To what degree is our community's economy shaped by geography?
- » To what extent is art necessary?

### Strategy Steps

1. Prepare a task sheet noting the questions; add a rating scale from zero to ten in one degree increments below each question. You could also replace the numbers with other ratings, such as *None*, *Minor*, *Moderate*, and *Extremely High*; *Not Important*, *Somewhat Important*, *Important*, and *Very Important*; or *Definitely Won't*, *Probably Won't*, *Probably Will*, and *Definitely Will* (see Figure 4.2 for an example). Students should complete the task sheet individually, recording their ratings for each question. Below each question, students should justify their ratings. They could use citations from other sources to support their ratings.
2. On a large sheet of chart paper, post the question at the top and the zero to ten-degree increments or other rating scale indicators. Students should use a sticky note or colored dot to transfer their ratings to the scale on the chart paper, creating a bar graph depicting the data.
3. Ask the students to form small groups to examine the data. Instead of sitting, students could form groups standing around the perimeter of the room. Some questions to consider include: *What do you notice in the data? What patterns can you see? What surprises you? What conclusions might you draw?*
4. Students take part in a whole-group discussion, sharing reactions to the data.

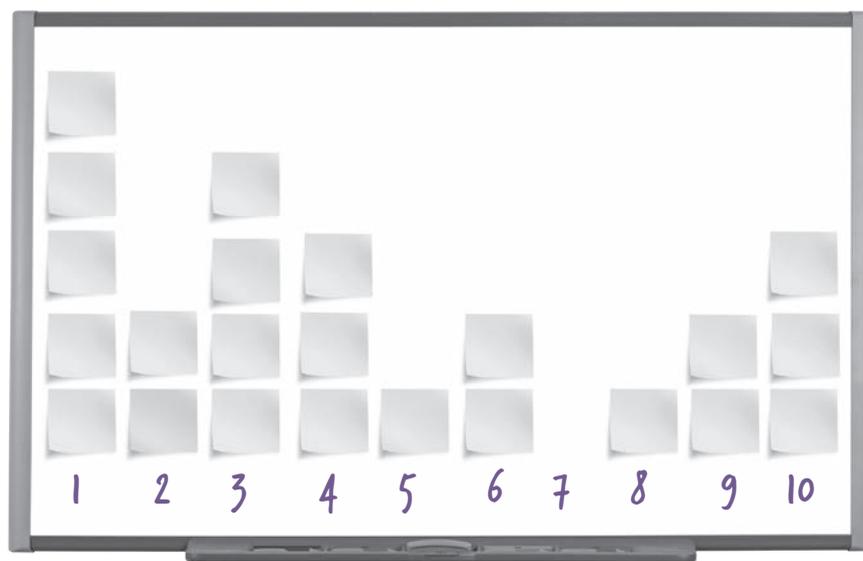
This strategy visually shows the differences of opinions or reactions to a topic that can lead to deeper discussions on the topic. There are several ways to adapt this strategy. Different-colored sticky notes or dots could be used to represent groups within the class. For example, it might be interesting to see how males and females respond differently. In addition, different class periods could use different-colored sticky notes to examine the varying opinions among the class periods. The Consensogram strategy could be used as a pre-assessment with students marking whether they were *Not Confident*, *Confident*, or *Very Confident* on each of the unit

### CONSENSOGRAM

1. Have students individually complete a sheet responding to the questions on the rating scale.
2. Students use a sticky note or colored dot to transfer their ratings to a scale on the chart paper.
3. Put students into small groups to examine the data and discuss conclusions.
4. At the end, conduct a whole-group discussion.

learning targets. Then at the end of the unit, students could use another color to mark the same chart and compare the changes. Teachers can use the data to adjust instruction and provide differentiated instruction based on the data. The Teacher Toolkit website has some downloadable Consensogram templates (see [www.theteachertoolkit.com/index.php/tool/consensogram](http://www.theteachertoolkit.com/index.php/tool/consensogram)).

Figure 4.2. Consensogram Example.



### GALLERY WALK

As seen in Chapter 3, Gallery Walk is an instructional strategy where students move in small groups around the classroom. They rotate around the room to various stations and respond to thoughtful questions, documents, images, texts, or situations. This strategy engages students as they move about and respond to prompts on chart paper. It can be used to pre-assess, brainstorm new ideas, introduce new content, or review prior learning.

#### Strategy Steps

1. Select topics or concepts to be considered and record them on chart paper. Tape them to the wall. These could be key

topics, images (e.g., political cartoons), paintings, or quotes from a novel or primary source. They could also be higher-level questions based on reading a text or synthesizing information, for example, “Based on the reading, has equality been achieved in our nation?” Another variation is that after a reading, students can respond to three different prompts and note comments or personal reactions, questions, and predictions.

2. Create groups of three to five students. Give each group a different-colored marker to use when recording their responses at each station. Groups should select who will be the initial recorder. When groups rotate to a new station, the recorder will change.
3. Signal when you wish groups to move to their first stations. If using brainstorming prompts, students might only need one or two minutes to record their thoughts, but with higher-level questions they may need additional time (three or four minutes) to process and reflect. If students are brainstorming, they should record all they know about the topic on the paper. Students also can list questions at each station, to be discussed later. A possible variation is Graffiti Wall, in which students record short phrases or pictures at this step.
4. Have groups rotate to the next station after a designated time period. Explain the rotational pattern; for example, tell them whether to rotate clockwise or counter-clockwise. When students read comments from other groups and have a question, they can place a question mark on the chart to discuss later as a class. Students should add new ideas and not repeat ideas already posted. Students will continue until they have visited all the stations.
5. Engage in a whole-group discussion or reflection. Groups can cycle back to their original prompts or stations and summarize the posts and address any posted questions. Another option is for the groups to rotate another time, reviewing the posts of the other groups.

### GALLERY WALK

1. Select topics, thoughtful questions, documents, images, texts, or situations to be considered. Record them on chart paper and tape them to the wall.
2. Create groups of three to five.
3. Designate a recorder in each group and signal when you wish groups to move to their first stations.
4. Have groups rotate to another station after a designated time period.
5. Conduct a whole-group discussion.

- To conclude the activity, students could summarize their learning in a graphic organizer, write a summary, or work in groups to circle three key information points on each chart (International Reading Association and National Council of Teachers of English, 2010).

The benefit of the Gallery Walk strategy is that it allows students to engage in movement around the classroom as well as take part in discussions with peers and reflect on their ideas. All students are engaged in the small-group conversations, so more timid students are encouraged to participate.

### STATIONS

Instead of posting prompts on the walls with the Gallery Walk, stations could be made with groups of desks all around the room. Stations are often used to chunk instruction and reinforce learning. Instead of the teacher presenting information to the whole class, stations can be used to introduce new information.

#### Strategy Steps

- After determining the learning target, identify various stations that support learning. Stations can be differentiated to support different learning preferences; for example, students could respond to media clips, create short *Show Me* technology presentations to explain their thinking, or design a model to represent a concept. Tasks can be on paper, or they can be embedded digitally using **QR (quick response) codes**. Develop enough stations so three to five students can work at one station at a time.
- Distribute a task sheet with questions to answers or other tasks to complete. Students complete the sheet individually, while working in groups and rotating around to the stations. Tell students how much time they may take at each station.
- Divide the class into small groups and assign each to a station. Students will begin working on the station tasks.
- After the stated amount of time, have groups rotate to the next station.

### STATIONS

- Create stations based on learning target.
- Distribute a task sheet and announce designated time allowed at each station.
- Divide into station groups and students begin to work on station tasks.
- At the stated time, rotate the groups to the next station.

### A QR (QUICK RESPONSE) CODE

is a machine-readable code consisting of black and white squares, often used for storing web links, which is read by a smartphone.

### VOCABULARY-BUILDING MOVEMENT STRATEGIES

Using physical movement to represent concepts is effective with younger children. When concepts are abstract, iconic or representational gestures depict objects or events (Kendon, 1988). For example, students might put their arms directly in front of them to represent parallel lines. Metaphoric gestures, in contrast, make references to visual images but are more abstract. Students might symbolize the word *dictatorship* by putting one arm above their heads with one finger up, noting “one,” meaning the leader is all-powerful.

For students who have trouble explaining a concept, gesturing offers insight into their understanding (Church & Goldin-Meadow, 1986). Piaget (1959) believed that gestures play an important role in students’ learning, development, and communication. In agreement, Roth (2001) stated that gestures are a key component of children’s cognitive development. Using hand gestures as representations for abstract concepts has been shown to enhance student learning (Collins, 2005). Vocabulary is easier to remember if taught with a gesture.

#### Strategy Options

- Use hand gestures to represent terminology. Students can create their own representational gestures, demonstrating the concept in concrete ways. In addition, students could design gestures that depict concepts in a more abstract fashion. Of course, a variation would be for students to act out their gestures and play a game of charades.
- Form a group statue. Students group with other students and use their bodies to represent a concept. For example, to illustrate the word *conservation*, two students could be in the center and the third student could wrap their arms around the others.
- Create a model. Individuals or groups could create an abstract model to represent a word. Students can be given a box of random objects including sticky notes, markers, building blocks, etc. They construct a model that represents



### VOCABULARY-BUILDING MOVEMENT STRATEGIES

- Use hand gestures.
- Form a group statue.
- Create a model.

the word; for example, students might make a small tower with a pack of sticky notes, a building block and craft stick, symbolizing the three branches of government. The sticky notes represent the judicial branch as they handle the “sticky” issues. The building block depicts Congress as the group that makes the laws—the “building block” of societal rules. The craft stick represents the executive branch, which is led by one key figure—the president. Students can be allowed to choose a way to demonstrate their understanding of vocabulary terms through a hand gesture, group statue, or model.



### THINK-PAIR-SHARE CONTINUUM

This strategy requires students to think about a question with a wide array of stances. After deciding on a stance, students will physically stand on the continuum and share their opinions. Some classroom ideas for using the continuum include the following:

- » After reading the article, do you believe Group 2 made a logical inference?
- » Does the scientific data support the claims?
- » Is this the best way to solve this math problem?

#### Strategy Steps

1. Introduce students to a controversial topic by way of historical documents, literary writing, current news, or other informational texts.
2. Set up a continuum across the room. The two ends of the continuum represent polar opposite standpoints on the topic at hand. With signs or chart paper, note the ideas on each end of the continuum. To get students thinking, ask students to first write a paragraph about their positions. This works well in a class with students who prefer to group together with friends, regardless of their actual stances. Then students will move and stand near the place on the continuum that represents their thinking (THINK).

#### THINK-PAIR-SHARE CONTINUUM

1. Identify text(s)/topic of discussion.
2. Have students move to their places on the continuum.
3. Create groups for discussion.
4. Conduct whole-group discussion.

3. Divide students into groups according to their location on the continuum. Students will discuss, based on textual evidence, why they chose that area on the continuum (PAIR).
4. Finally, open the floor for each group to discuss their issue at hand by having groups present their viewpoints and textual evidence (SHARE).

Another option with a controversial topic is to pre-assign students to a spot on the continuum. Give them a position and supporting text upon which to base their argument. Be sure to have equal amounts of arguments from each side. Using this strategy not only gets students moving but also provides a visual representation of contemporary issues. Issues are not black and white, and this strategy aims to acknowledge this important reality through learning kinesthetically and visually.

### SWAP AND SHARE

Swap and Share is an instructional strategy designed to energize students at the beginning of the lesson, to assess prior knowledge, or to summarize understanding at the end of the lesson. The strategy encourages students to listen and learn from other students.

#### Strategy Steps

1. Students record three understandings from the lesson in the top row of their graphic organizer (see **Figure 4.3**).
2. The teacher plays music and student mix and mingle. When the music stops, students share one of their ideas from their organizers and collect one idea from their partner's grid.
3. Students repeat Step 2 and mix with two other students.
4. To enhance the thinking level, the students can finish the activity by circling the most important points on their graphic organizers and justify their choices in a classroom discussion.



#### SWAP AND SHARE

1. Students record three understandings on a graphic organizer.
2. As music plays, students move around the room.
3. When the music stops, students share ideas from their organizers and collect one new idea from their partners.
4. Repeat Step 2 twice.
5. Students identify the most important points on their organizers.

Figure 4.3. Swap and Share Organizer.

Swap and Share Organizer	
My Ideas	New Ideas



### SILENT STICKY-NOTE STORM/AFFINITY MAPPING

Sticky-Note Storm is an activity that can be used to promote brainstorming and creative thinking, or to review.

#### Strategy Steps

1. Post chart paper around the room.
2. Divide students into groups of three to five. Each group stands near a piece of chart paper. Provide each group with sticky notes.
3. Pose a question, for example:
  - What are all the math problems that could result in an answer of 45?
  - Which items could you reuse to save the environment?
  - How can you exercise your first amendment rights? Give examples.
  - What might be a better way for Serina, the character in our story, to handle her conflict?
4. Students should silently think of as many ideas or answers as possible. Each idea is placed on a separate sticky note.
5. At the end of the designated time, ask students to post their sticky notes on the chart paper. They silently categorize similar ideas by moving the sticky notes around on the chart paper and putting them in groups.

#### SILENT STICKY-NOTE STORM/AFFINITY MAPPING

1. Post chart paper and distribute supplies. Identify groups.
2. Pose a question.
3. Brainstorm on sticky notes as many ideas or answers as possible.
4. Post sticky notes on chart paper and categorize ideas silently.
5. Discuss and label each category.
6. Host a whole-group discussion.

6. Provide time for groups to discuss and place a label on each category.
7. Host a whole-group discussion, with students listening for commonalities and differences among groups' responses.

### MINGLE, PAIR, SHARE

Mingle, Pair, Share is a movement strategy that can be used to review key understandings. It is similar to Stand Up, Hand Up, Pair Up (Kagan & Kagan, 1998).



#### Strategy Steps

1. Students move around the classroom silently as music plays in the background.
2. When the music stops, each student finds a partner nearby. Partners put their hands together in a high-five.
3. Ask a question and tell students to think quietly about the answer. Questions could be on various thinking levels, for example:
  - What is the definition of an ecosystem?
  - Describe how living and non-living components interact within an ecosystem.
  - How do organisms modify their environments? Give an example.
  - Which geographical feature would you not want to live near? Why?
  - Can changes to ecosystems be prevented? Why, or why not?
  - Design an organism with structural adaptations that make survival in extreme environmental conditions more likely.
  - Debate whether a wooded area is the best location for a new shopping center.

#### MINGLE, PAIR, SHARE

1. Play music and students move around the room.
2. Ask students to find a partner.
3. Pose a question.
4. Pair and share answer to question.
5. Repeat steps 1 through 4.

- At the teacher's cue, one partner in the pair shares their answer while the other listens. The roles are then reversed so the other partner can share. Move around the room and listen to conversations to formatively assess students' understanding.
- As students finish sharing, the music begins again and the process is repeated with new partners and questions. Typically asking three to four questions is best. Often after four questions, students lose focus.



### INNER-OUTER CIRCLE

The Inner-Outer Circle strategy encourages students to move as they discuss questions.

#### Strategy Steps

- Divide the class into two halves. Instruct one half of the students to create a circle facing outward. Assign partners to the inner-circle group, or have students choose to stand in front of a student in the inner circle, thereby creating an outer circle.
- Pose a thoughtful question and encourage students to think about the question.
- The inner-circle partner will share their answer to the question, while the outer-circle partner listens.
- At the teacher's cue, the outer-circle partner will then share their thinking while the inner-circle partner listens.
- After the pair discussion, instruct the outer-circle members to rotate clockwise to a new partner.
- After the rotation, pose another question and repeat steps 2 through 5.

A variation is to use parallel lines. In this instance, students will stand in two straight lines facing their partner. After discussing the question, one line rotates to the right to pair with another student. The student at the end of the line will loop around to the other end.

#### INNER-OUTER CIRCLE

- Create an inner and outer circle of students with each person facing a partner.
- Pose a thoughtful question.
- The inner-circle partner will share their answers.
- The outer-circle partner will share their answer.
- Rotate outer-circle members clockwise.
- Repeat steps 2 through 5.

### MATCH MAKER

Match Maker is an effective method to review terminology in an engaging manner. Students can guess their vocabulary term by posing questions to fellow students.

#### Strategy Steps

- Write vocabulary words on small sheets of paper or on sticky notes.
- Use tape to attach a vocabulary word onto the back of each student.
- Students may mingle around the room and ask one question to each student to gain clues about their word. The questions must lead to a "yes" or "no" answer.
- When students believe they know their words, they will tell the teacher their guesses. If they are correct, they can help the teacher check when new students believe they have guessed their word. If the student is incorrect, they are sent out to mingle again to ask more questions to determine their words.

A variation of this strategy involves students finding someone in the room that has the matching definition or word.

### THE CHAIR TALKS

The Chair Talks is another strategy that is perfect for reinforcing vocabulary.

#### Strategy Steps

- One student sits in a chair facing the class.
- The teacher displays a vocabulary term above the student's head so that they cannot see the term, but the class can.
- In turn, students give clues, without speaking, using body gestures or kinesthetic movements.
- The person in the chair tries to guess the mystery word using the visual clues.
- The student giving the final, successful clue trades places with the seated student.



#### MATCH MAKER

- Write vocabulary words on small sheets of paper or sticky notes.
- Use tape to attach words on students' backs.
- Mingle around the room and ask questions to determine words.
- Check answer with the teacher.



#### THE CHAIR TALKS

- Select a student to sit in the chair.
- Display vocabulary term above the student's head.
- Give clues without speaking.
- Ask the student in the chair to guess the word.
- Trade places when final, successful clue is given.

## Student Response Methods

To ensure all students participate and gain accurate formative assessment data, there are several ways for all students to respond through dry-erase boards, cards, fists, or thumbs.



### DRY-ERASE BOARDS

Small dry-erase boards are an engaging way for students to demonstrate their understanding; they also provide a means of formative assessment. Based on the data they obtain, teachers can immediately address misunderstandings. If teachers do not have access to small dry-erase boards, students can write with dry-erase markers on clean sheet protectors.

#### Strategy Steps

1. Pose a question.
2. Students use dry-erase markers to record their answers on their own boards.
3. At an identified time, students raise their boards to display their answers.
4. Based on the variety of answers, determine whether discussion is needed to clear up misconceptions or whether you can move on to the next question.



### CARDS

Similarly, give students four cards labeled A, B, C, and D. Pose a multiple-choice question and have the students raise their cards for the answer they believe is correct.



### THUMB-OMETER

This is another way to formatively assess or spark discussion. To show their degree of agreement, students can put their thumbs up, to the side, or down.

- » Thumb up: Agree
- » Thumb to the side: Unsure
- » Thumb down: Disagree

Some statements a teacher could pose using this strategy include:

- » This math problem has the correct answer.
- » Based on the reading, Jeremy's inference is an accurate conclusion.
- » "I feel unhappy" is an opinion.
- » The main theme of the story is good versus bad.

### FIST-TO-FIVE

This also involves students also using gestures to express their opinions. The fist represents "0" or total disagreement, and raising one to five fingers would signal higher levels of agreement. To prevent students from mimicking others, students could place their fist gesture near their opposite shoulder.

### Movement with a Purpose

While instructional strategies that incorporate movement can engage students in learning, teachers should be purposeful when determining what strategy would be best for a lesson. Consider the following before beginning a movement activity:

1. Define the behavioral expectations.
2. Prepare the room. Ensure there is enough space and the area is safe for the activity.
3. Define and use attention cues. Before having the students move, explain the signal for transitions: flashing the ceiling lights, projecting a certain color on the projector, teacher raising their hand, or rhythmic clapping.
4. Consider how to form groups. It is usually best if the teacher selects partners instead of allowing students to choose their partners as students often will pick friends who may not be effective collaborators.



### STUDENT RESPONSE METHODS

- » Dry-erase boards
- » A, B, C, and D cards
- » Thumbs
- » Fists



5. Provide time limits to encourage students to stay focused. There are many online time clocks, including egg timers, clock countdown, bomb countdown, dynamite timer, rocker timer, and many more. The links below provide some options.
  - <http://www.online-stopwatch.com/classroom-timers/>
  - <http://www.online-stopwatch.com/egg-timer-countdown/full-screen/>
6. State the learning target for the activity. Clearly articulating the target focuses the students on the learning objectives while helping them to engage in the strategy (Reed, 2009).

### Summary

Kurt Lewin said, “Learning is more effective when it is an active rather than a passive process” (1951, as cited in Kindesely, 2012, p. 222). The aforementioned strategies demonstrate the importance of getting students moving while learning. However, movement must be intentional. Unless strategies align with objectives, they may not successfully affect student learning. When carefully considered, these strategies will prove effective in promoting critical thinking. When used appropriately, fusing critical thinking with movement can enhance learning through higher student engagement. As students move, discuss, reflect, and analyze, learning becomes an active, student-centered experience that compels students to dig deeper into the content while enjoying the learning process.

### Discussion Questions

1. What characteristics of kinesthetic learners do you notice in your classroom?
2. Which strategy profiled in this chapter would you like to try? Why?
3. In your opinion, which kinesthetic strategy most effectively integrates critical thinking?
4. Which movement strategy do you think your students will enjoy the most? Why?

5. What other kinesthetic strategies not mentioned in this chapter are also effective?

### Ideas for Action

1. Select a kinesthetic strategy that could enhance one of your lessons. Plan ways to integrate the strategy.
2. Review the “Movement with a Purpose” section at the end of this chapter. What actions can you take to improve the way you currently use kinesthetic tasks?