

# ACADEMIC SUPPORT LEARNING AND FUN

# **Academic Support**

Learning and fun are not mutually exclusive. There are a number of interesting and engaging ways to reinforce academics—games, project based learning, showcases, and competitions. Remember, for youth, "school is their job", so help give them the skills and practice they need to be "successful at work."



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# **Academic Support**

#### Key Points

When you complete this e-Book you will have an understanding of ways to provide Academic Support for youth beyond the Homework hour. You will have a better understanding of the four core "Academic Areas"—English Language Arts, Math, Science, and History/Social Studies, and also learning modalities, multiple intelligences, and the importance of multiple-disciplinary thinking. Some of the strategies will cut across all of the cores; others will be more specific to one of them.

#### Terms/Glossary

**Reciprocal Teaching:** This is a strategy that can be used in any content area. There are four basic parts: predicting, clarifying, questioning, and summarizing (or in the case of Kindergarten-2<sup>nd</sup> grade, retelling). Each of these components can first be modeled, and then released to the youth so they can work in partners with one another and implement the strategies to drive learning.

**Fluency:** This term refers to the ability of a student to read the words (word call) without delay. Fluency in reading will sound as if the person is speaking without the pauses, 'ums, etc. to gather one's thoughts.

**Automaticity**: This term refers to memorizing something to the point that you no longer have to think about the answer. Math facts memorized to automaticity make the operations and thinking in mathematical ways, easier. Limited energy is being spent to recall the answer.

**Inquiry:** This term refers to the asking of questions to elicit understanding on both sides—listener and speaker. Questions are open-ended and require thoughtful response. Inquiry can also include probing for deeper understanding and meaning. Inquiry is not about inquisition, putting someone on the spot, and making them uncomfortable. It should help the learner

focus on what is already known and what is unknown.

**Multiple Intelligences:** Howard Gardner identified nine different ways in which people can be smart. They are verbal-linguistic, visual-spatial, body-kinesthetic, logical –mathematical, musical, naturalist, interpersonal, intrapersonal and existential.

**Universal Access:** This term refers to the intentional sharing of information with students in a variety of modalities. If a student struggles with reading material, then finding other ways for them to learn the content is important. This could be through conversation, watching videos, listening to something recorded, or going on a field trip.





#### **Prior Knowledge**

When the public school system was conceived in the United States, it was thought that people either were academic (book smart), or they were not. They were either good at reading, writing, mathematics, critical thinking, and problem solving, or they were not. Some people went on to college and embraced academic learning, and others were sent to do other, less-cerebral work. While this notion may have had a place when education was supporting the industrial revolution, it is no longer relevant. Consider how you feel. Think about what is academic and what is not. Consider how schools today are still operated. Did you go to a school that had college preparatory classes, advanced placement classes, honors classes, and then general education? How is this different than the model described above?

#### **Brain Power**



Howard Gardner was one of the first to identify that people have different intelligences. He theorized that people were smart in different ways. With the advent of MRI's Gardner was able to demonstrate brain activity, and sure enough, different parts of the brain "light up" with different stimuli. This thinking, that people can be smart in different ways and that we all learn differently, may help to redefine academic. Gardner identified nine intelligences: verbal-linguistic, visual-spatial, body-kinesthetic, logical –mathematical, musical, naturalist, interpersonal,

intrapersonal and existential. Which of these are your strongest?

#### Introduction

In this e-book we are going to look at learning modalities, multiple intelligences and specific strategies you can use to support the four academic cores, and help to close the achievement gap as it is currently identified. Understanding how the brain works is a relatively recent area of study, and as we learn more about how we learn, we can better support our students.

#### Debrief

Based on what you've read so far, what is important about understanding ways to support learning? What is important about understanding the different ways that we learn? What will you commit to do to strengthen your program in the next 72 hours? Write down what you will be implementing.



#### Learning Modalities

There are four major learning modalities. We know that each person accesses information in a different way-the most common of which are visual, auditory, kinesthetic, and digital.

Visual learners learn by seeing. Many people who have grown up in a media rich environment will tend to learn by seeing visual images. Visual learners benefit from guided imagery, taking and copying notes, watching a demonstration, highlighting text, using flash cards, viewing diagrams, graphs, and photos, and of course, videos. Visual learners can remember what they've seen in greater detail than non-visual learners. They will use phrases such as "I see," "This is how it looks to me," "How does that look?" and other references to visual skills when they talk. Unconsciously they are sharing with you how they best perceive the world.



Auditory learners learn by hearing. These learners enjoy listening to lectures, and also benefit from audio books and presentations. Auditory learners enjoy reading aloud, instructions given verbally, word



associations, group discussions, rhythmic sounds, music and lyrics, and of course, television. Auditory learners will often "talk to themselves," work through complex thoughts by talking them through, and enjoy sharing things verbally. For some, until they can hear something, it really just doesn't "sink in." These are learners that often enjoy theater, creating "voices," and are moved by the music in a film as well as the words. Auditory learners give you clues to their style by saying things

like, "It sounds like we have a solution," or "I hear you."

Kinesthetic or tactile learners learn by doing. The first-hand experience is best for them as it allows

them to take in the situation with all of the senses. Kinesthetic learners are not interested in someone telling them what they have just experienced. They are fine taking in the experience and coming to their own conclusions. Kinesthetic learners like experiments and labs, role play, games, problem solving, writing notes, making lists, and connecting emotions with concepts. Kinesthetic learners invite you to "show them"



how and say things like, "I know how that feels," or "This doesn't feel right to me."

Digital learners learn in the world of digital media—computers, cell phones, and laptops. These learners like learning to be fast-paced. Digital learners eagerly join social media networks, read Blogs, Tweet, and share images on Flickr. Digital media is normal fair. Digital learners want to take things online, Google for information, and communicate through email. They want to be constantly updated and connected with the world around them. They tend to see themselves as "citizens of the world."



Working with all four of these learning modalities effectively is one of the goals of effective after-school programming.

#### **Multiple Intelligences**

Howard Gardner first developed the theory of multiple intelligences, and published information about seven



intelligences in a book entitled Frames of Mind (1983), then added two additional intelligences and reframed his thinking in 1999. Gardner based his study based on his work with many people from a wide variety of circumstances, professions, and walks of life. He found:

- All human beings possess all nine intelligences in varying amounts.
- Each person has a different intellectual composition.
- We can improve education by addressing the multiple intelligences of our students.
- These intelligences are located in different areas of the brain, and can either work independently or together.
- These intelligences may define the human species.

Here is an overview of the nine intelligences as defined by Gardner.

**Linguistic intelligence** involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals. This intelligence includes the ability to effectively use language to express oneself rhetorically or poetically; and language as a means to remember information. Writers, poets, lawyers and speakers are among those that Howard Gardner sees as having high linguistic intelligence.

**Logical-mathematical intelligence** consists of the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. In Howard Gardner's words, "It entails the ability to detect patterns, reason deductively and think logically." This intelligence is most often associated with scientific and mathematical thinking.

**Musical intelligence** involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the capacity to recognize and compose musical pitches, tones, and rhythms. According to Howard Gardner, musical intelligence runs in an almost structural parallel to linguistic intelligence.

**Bodily-kinesthetic intelligence** entails the potential of using one's whole body or parts of the body to solve problems. It is the ability to use mental abilities to coordinate bodily movements. Howard Gardner sees mental and physical activity as related.



**Spatial intelligence** involves the potential to recognize and use the patterns of wide space and more confined areas.

**Interpersonal intelligence** is concerned with the capacity to understand the intentions, motivations and desires of other people. It allows people to work effectively with others. Educators, salespeople, religious and political leaders and counselors all need a well-developed interpersonal intelligence.

**Intrapersonal intelligence** entails the capacity to understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view, it involves having an effective working model of ourselves, and to be able to use such information to regulate our lives.

**Existential Intelligence** entails a sensitivity and capacity to tackle deep questions about human existence, such as the meaning of life, why do we die, and how did we get here. Existentialists are often philosophers, religious leaders, and other people who think deeply about the existence of human kind.

The graphic below, published by the Department of Psychology from the University of Michigan, portrays the interests and professions of the people with each of the intelligences. More information about multiple intelligences can be found at <u>http://sitemaker.umich.edu/356.martin/home</u>.





#### **Academic Core**



After-school is certainly the perfect place to reinforce learning through projects, clubs, and other opportunities to apply academic skills. That being said, after-school can also support English/Language Art, Math, Science, and History/Social Studies specifically. In these four core areas after-school can certainly support the acquisition of Academic Vocabulary. Academic Vocabulary in these four core academic areas, are those words which are essential to discuss the content more effectively. For example, certainly knowing that a triangle has three sides and three angles is important. Knowing the difference between a right, equilateral, obtuse, scalene, acute, and isosceles triangle is certainly helpful when you reach 4<sup>th</sup> grade, and you need to understand more sophisticated things about triangles than three sides and three angles. The conversation you would have during math class would be more rigorous knowing the defining vocabulary. Lists of academic vocabulary by grade level may be available at the school site you are assigned to.

#### Vocabulary Development

Vocabulary development is essential in all core areas. The English language has many nuances of meaning in its words. Think about how many different ways you can say the words "big." You can use such words as large, huge, humongous, gigantic, enormous, gargantuan, colossal, and over-sized to name a few. While each of these words means big, each has an increment of meaning as well as a degree of sophistication. Learning the subtle differences can be challenging. And then of course there are antonyms, homonyms, figurative language, similes, metaphors, personification, analogies, and idioms—all of which are important to understand. There is also Academic Vocabulary—the language that is precise and describes core content. These words, such as organism, onomatopoeia, freedom, and statistic, are essential to understand so that youth can clearly communicate with others. Practicing vocabulary is essential. One of the strategies for English Learners, developed by Marzano, is effective with all students. Students can make a quadrant, and then complete the quadrant for each word.

Picnic	Eating your lunch out doors or at a park
We had a picnic at the park and fixed hot dogs for everyone.	



In this example the first quadrant contains the word. The second contains a description in the student's own words. The third quadrant contains an original sentence, and the fourth a picture that helps the student make the connection to the word. Working with vocabulary in this way helps the youth to internalize the meaning.

Another strategy for developing vocabulary is to act out the words. What would we need to do to demonstrate and obtuse angle or other geometry terms? What would we need to do to "act out" democracy? How will you illustrate photosynthesis? The more authentic and real a word is to youth, the clearer the thinking, understanding, and reasoning will be. We often assume that definitions indicate mastery of the word. Nothing could be further from the truth. Intentionally working with vocabulary and encouraging young people to use newly acquired vocabulary, will support the development of Academic Vocabulary.



#### English Language Arts

English Language Arts refers to four aspects of language: reading, writing, listening and speaking. If you think about the language development of a child, you understand that this development begins with listening or receptive language. Long before a child can speak, he/she is able to understand what is



being communicated to them. If you ask them to hand you a toy, they will. If you ask them to pick up a Teddy Bear, they will. Once the receptive language is being developed, small children will try to communicate and approximate the language that they hear you use. They began to speak, first simple words, then phrases, and finally sentences. Each trial the child produces in expressive language is championed (at least when they are learning to speak), and the child is well on his/her way

to mastering speech. The third aspect of language we develop is the ability to read. This is a process that requires the child to recognize sound-symbol relationships, to blend sounds together into a word, to understand a variety of strategies necessary to unlocking a word and then ultimately making mean of the words that they are reading. The ability to write, probably the most complex language arts aspect, is the ability of a child to capture his/her thoughts accurately and transcribing them on some surface (usually paper), and using the written word to communicate effectively with others. Writing also requires a degree of penmanship if it is handwriting, or a degree of computer expertise if the writing is word processed. When you combine these four essential aspects of reading, writing, listening and speaking, you have a literate person. It is important that we understand that reading and writing, listening and



speaking are the yin and yang of communication. It is also important to understand that the meaning made by the reader is never quite the intent of the writer, and the listener never quite interprets the intent of the speaker. We each bring experience, prior knowledge, and our own understanding of vocabulary to the "table" to make meaning of what we read, write, speak or hear, which means that the notion that no one reads the text the author wrote, is in a way, correct.



In afterschool we have the opportunity to promote four key aspects of English Language Arts:

- 1. fluency
- 2. vocabulary (particularly the development of academic vocabulary
- 3. comprehension
- 4. and conventions of speaking and writing

**Fluency** is the ability to word call accurately and at a normal rate. To increase fluency we have youth practice sight words both within and outside of context. Word lists, sight phrases and repeated reading are three things that can be used to promote fluency. Approximately 65% of the words we read are sight words while the other 35% are words that are not used as frequently. Repeated

reading is an evidence based strategy that allows the reader to practice those sight words within the context of a passage. The reader reads for one minute and marks the last word read. After a week or two of practice, the reader reads again for one minute to determine if he/she was able to read more words in that minute.

Ways that you might consider practicing reading the passage for 5-7 minutes each day between the pre and the post test follow.

#### **Echo Reading**

Read aloud a line of text. Ask the child to read the same line. Continue taking turns reading and rereading the same lines. When the child begins to read with more expression and fluency, suggest that he read aloud on his own. This is one way to help a child develop confidence and fluency.

#### **Paired Reading**

Paired reading is a technique that allows leaders to vary the amount of support they provide to a child while reading aloud together. Explain to the child that sometimes you will read aloud together – duet reading – and sometimes he or she will read alone – solo reading. Agree on two signals the child can use to switch back and forth from solo to duet reading. When the child gives you the duet signal, you will begin reading together. When the child feels ready for solo reading, he/she will give the solo signal and you will stop reading.



#### **Choral Reading**

This strategy helps children become more fluent and confident readers. Hold the book together and ask the child to read along with you. Begin reading in a voice that is slightly louder and faster than the child's. As the child becomes more comfortable with reading the text, lower your voice and slow down your reading speed. If the child slows down, increase your volume and speed again.

**Comprehension** is the ability to make meaning of the words that we read. There are three cuing systems that come together to ensure that the black squiggly marks on a piece of paper make sense.



Graphophonics has to do with sound-symbol relationships. Syntax is word order (often defined as grammar), and connotation is the meaning of the word (without the nuance of personal experience). At the center, where all of the circles overlap, is where meaning is made. This is the first step in comprehension, understanding the words themselves.

The second step is to "wrestle" with the material as a whole. We suggest that you utilize the strategy of reciprocal teaching to do this. Reciprocal Teaching is a practice that transfers the responsibility for learning from the instructor to the learners. There are four steps in the Reciprocal Teaching process of understanding text.



- Predicting occurs when students hypothesize what the author will discuss next in the text. In order
  to do this successfully, students must activate the relevant background knowledge that they
  already possess regarding the topic. The students have a purpose for reading: to confirm or
  disprove their hypotheses. Furthermore, the opportunity has been created for the students to link
  the new knowledge they will encounter in the text with the knowledge they already possess. The
  predicting strategy also facilitates use of text structure as students learn that headings,
  subheadings, and questions imbedded in the text are useful means of anticipating what might
  occur next.
- Clarifying is an activity that is particularly important when working with students who have a
  history of comprehension difficulty. These students may believe that the purpose of reading is
  saying the words correctly; they may not be particularly uncomfortable that the words, and in fact
  the passage, are not making sense. When the students are asked to clarify, their attention is called

to the fact that there may be many reasons why text is difficult to understand (e.g., new vocabulary, unclear reference words, and unfamiliar and perhaps difficult concepts). They are taught to be alert to the effects of such impediments to comprehension and to take the necessary measures to restore meaning (e.g., reread, ask for help).

 Question generating reinforces the summarizing strategy and carries the learner one more step along in the comprehension activity. When students generate questions, they first identify the kind of information that is significant enough to provide the substance for a question. They then pose this information in



question form and self-test to ascertain that they can indeed answer their own question. Question generating is a flexible strategy to the extent that students can be taught and encouraged to generate questions at many levels. For example, some school situations require that students master supporting detail information; others require that the students be able to infer or apply new information from text.

 Summarizing provides the opportunity to identify and integrate the most important information in the text. Text can be summarized across sentences, across paragraphs, and across the passage as a whole. When the students first begin the reciprocal teaching procedure, their efforts are generally focused at the sentence and paragraph levels. As they become more proficient, they are able to integrate at the paragraph and passage levels.

**Conventions** of speaking and writing really focus on grammar. This includes parts of speech, sentence types (declarative, interrogative, exclamatory, commands), capitalization, punctuation, appositives, independent and dependent clauses, compound, complex, and compound/complex sentences, and so on. Learning these conventions are critical in speaking and even more critical in writing. These



conventions are a perfect fit for afterschool programs because they can easily be taught through games and straightforward yet hands-on activities.

#### **Mathematics**

It is suggested that a portion of afterschool programs support math by focusing on the operations (addition, subtraction, multiplication, and division—whole numbers, fractions, and decimals, including



positive and negative numbers—referred to as Step 3 below), the development of academic vocabulary, the ability to work through word problems in context, and then the application of math skills in projects. Afterschool should also continue to support measurement, geometry, statistics, probability, and the acquisition of pre-algebra and algebra skills. Supporting mathematics and authentic learning opportunities is part of after-school's portfolio.

With Common Core Standards are focused on

processes and proficiencies. Processes include standards of problem solving, reasoning and proof, communication, representation, and connections. Proficiency standards focus on adaptive reasoning, strategic competence, conceptual understanding 9comprehension of mathematical concepts, operations, and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile). Students who demonstrate mastery of the Common Core will:

- 1. Make sense of problems and persevere in solving them
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics
- 5. Use appropriate tools strategically
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

After-school programs have long been the place for disguised learning (games and activities that appear more fun than about learning) and project-based learning that encourages youth to explore and investigate, applying the skills they have learned.

It is also important that we understand that there is a difference between "arithmetic" (the operations) and mathematical/logistical thinking. On the University of Oregon website they have the following to say about mathematics.



- Mathematics is a human endeavor. For example, consider the math of measurement of time such as years, seasons, months, weeks, days, and so on. Or, consider the measurement of distance, and the different systems of distance measurement that developed throughout the world. Or, think about math in art, dance, and music. There is a rich history of human development of mathematics and mathematical uses in our modern society.
- Mathematics is an interdisciplinary language and tool. Like reading and writing, math is an important component of learning and "doing" (using one's knowledge) in each academic discipline. Mathematics is such a useful language and tool that it is considered one of the "basics" in our formal educational system.
- Our current K-12 math curriculum spends the majority of its time teaching students to do Step 3 (using a computational or algorithmic procedure to solve a computational or algorithmic math problem). <u>http://darkwing.uoregon.edu/~moursund/Math/mathematics.htm</u>

If we think about mathematics in this way we can be sure that math is more than simply solving computational problems. We will encourage youth to see math as a tool that can be used across most core disciplines.

#### Use of Games

The use of games to reinforce computational skills provides youth with opportunities to practice in a "disguised learning" way. Although youth enjoy learning, they would prefer that those opportunities



are engaging, relevant, rigorous, and of course promote working together. Using cards, dice and dominoes as random number generators, offers a natural link between math concepts and activities that students are motivated to participate in. Games should be aligned with the school day scope and sequence and be used to reinforce the school day curriculum.

Each game should encourage students to build and hone

their mental math skills as well as develop automaticity with computation and math facts. One of the values of the games is that students are willing to play them over and over, and this provides them with repeated practice which supports learning.

Activities and games should be easy to play and require little preparation. It is important to take the time to teach each game to students so that they are ready to play on their own at any time. Games can be available for students during a specific math practice afterschool or when they have completed homework.



#### **General Guidelines for Using Math Games**

Before introducing a game, review the directions and collect any needed supplies. Gather students and model the game by playing it with one or two student volunteers. Once students understand the rules,



observe them playing the game together and answer the questions that they might have.

Before introducing a game, remind students that this game will give them an opportunity to:

- spend time with their classmates and friends
- practice math skills
- practice good sportsmanship (win or lose)
- have fun.

Discuss the importance of picking up all of the cards and

returning them to the box, collecting the dice that they used and putting them back, and gather the dominoes into a set to use the next time.

Remind students that game sheets should be placed in the sheet protectors, and at the end of the game, the sheet protector is erased and clean for the next time.

#### Who Goes First?

- It is always a challenge to determine who will go first. It is okay to "mix it up" and not have the same procedure every day. Brainstorm with students ways to determine the first player. Here are some possible ways to determine who is first:
- Each player draws a card, rolls a die, or draws a domino. The player with the greater-value card, dice or domino goes first.
- Each player draws a card, rolls a die, or draws a domino. The player with the lower-value card, dice or domino goes first.
- Each player draws 2 cards, rolls a 2 dice, or draws 2 dominoes. The player with the greatest sum goes first.



• Each player draws 2 cards, rolls a 2 dice, or draws 2 dominoes. The player with the lowest sum goes first.



#### Order of Operations

Many of the games for older students involve addition, subtraction, multiplication, and division. When doing



problems that require all of these operations, you will need to remind the students of the basic rules when solving problems that include more than one operation. The order of operations rules are as follows:

If grouping symbols (parentheses) are used, perform the operations within the grouping symbols first.

If there are exponents, then this activity should be completed next.

Perform multiplication and division in the order it appears, from left to right.

Then perform addition and subtraction in the order it appears, from left to right.

For example, a player has the following cards:



The player creates the following equation without any grouping symbols:  $4 + 2 \times 3 - 9 = 1$ 

The answer is determined by following the order of operations:

First multiply:	2 x 3 = 6
Then add:	6 + 4 = 10
Then subtract:	10 – 9 = 1

If the player uses grouping symbols, the player could create this equation instead:  $(4 + 2) \times 3 - 9 = 9$ 

First add:	(4 + 2) = 6
Then multiply:	6 x 3 = 18



Then subtract: 18 - 9 = 9

It will be necessary for you to model the **Order of Operations** many times and also to remind students of the order. A poster is included in the kit, but a poster is not enough if you don't help students to use it to remind them of the order.

#### Properties of Cards

There are 52 cards in a deck and four suits: hearts, diamonds, clubs, and spades. Many games call for a deck of cards with the face cards and jokers removed. Remind students that the ace is used to represent the number 1. When the face cards are used, each may represent a single number, such as 10, or each can represent a different value (Jack—11, Queen—12, King—13). Jokers can be used to represent any value, including "0" (zero), depending on the game. Be sure to emphasize the importance of shuffling a deck so that the numbers generated are random.

#### Properties of Dice

The most common dice have 6 sides with dots on them. These are called 6-sided dice. Other six-sided dice can actually have a number (1, 2, 3, 4, 5, or 6) on them. Six-sided dice can come in a variety of sizes. You should also consider having 10-sided and 12-sided dice. These can be used for specific games and give students an opportunity to practice with larger numbers  $(12 \times 12)$  or the power of 10.

#### **Properties of Dominoes**

Dominoes can be made of cardstock and laminated if you do not wish to purchase sets of dominoes.



Cardstock dominoes are light-weight and will make it easier for staff to carry. A full complement of dominoes would include 3 different sets, a Double Six set, a Double Nine set, and a Double Twelve set.

The Double Six set is considered the "standard set" and contains 28 dominoes. The dominoes range from a double 0 to a double 6. Dominoes can be used in a variety of ways, but most often as factors, a fraction or pair of graphing coordinates.

#### Word Problems

To support youth with problems in context (word problems) consider teaching them these steps:

- 1. Read each problem aloud 2-3 times. If students can read problems with a partner that is even more effective
- 2. Look for key words and be sure you understand the question
- 3. Underline or write down key numbers and labels



- 4. Study any graphs, pictures or charts-if there aren't any, draw your own
- 5. Ask what operations are needed (+, -, X, ÷ ) to solve the problem
- 6. Solve the problem and show your work
- 7. Ask yourself if the answer makes sense
- 8. Check your answer<sup>1</sup>

Part of the goal of afterschool programs should be the promotion of "enjoying" math.

#### Science

STEM (Science, Technology, Engineering, and Math) looks holistically at the four inter-related components which support both process and proficiency. In this section we will look specifically at science. Science activities can be instructional (content, information, understanding, and knowledge) or investigative (inquiry,



questions, experiments, unknowns.) Young people need to interact with science in both ways. For example, instruction or content focused science might include an activity to reinforce the students' understanding of the phases of the moon. This could be done by creating new, full, waxing, and waning moons using Oreo cookies. This hands-on activity would reinforce the youths' understanding of what moon phase they are seeing in the night sky. They could share the information with other youth by telling about the activity. An example of investigative science would be more like a science fair entry. The student or team of students would pose a question, identify the hypothesis (what they think is going to happen), conduct an experiment, record their

observations, determine the results and then create a display and share it with his/her peers.

An afterschool program is strong in science when it is infused with the following characteristics:

- 1. Hands-on experiences through project-based learning and inquiry to explore:
  - physical, earth, and life sciences
  - engineering (including aerospace, agriculture, architecture, bio/biomedical, chemical. Civil, computer/software, electrical, environmental, industrial, manufacturing, mechanical, metallurgy/materials, mineral/mining, nuclear, ocean, and transportation)
  - math as it applies to everyday life, science, technology, engineering, art and music
  - technology as a tool and a career opportunity such as graphic or web design, programming, etc.
- 2. Infuse Science Academic Vocabulary into your program

<sup>&</sup>lt;sup>1</sup> Common Core State Standards.



- 3. Broaden student understanding of STEM careers, including post-secondary schooling requirements
- 4. Engagement of the STEM community—businesses, colleges, universities, foundations, corporations
- 5. Field trips (at least 2 per year if possible) to reinforce learning
- 6. Annual culminating events such as: Math Olympics, Science Fair, Technology Gala, Innovating Engineers, Makers Fair, etc. that would include students from across your program(s).

According the <u>A Framework for K-12 Science Education</u>, high quality science programs promote both scientific and engineering practices by:

- 1. Asking questions (science) and designing problems (engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematics and computational thinking
- 6. Constructing explanations (science) and designing solutions (engineering)
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluating and communicating information.

Science programs also crosscut concepts that have common application across other academic cores:

- 1. Patterns
- 2. Cause and effect (mechanism and explanation)
- 3. Scale, proportion, and quantity
- 4. Systems and system models
- 5. Energy and matter (flows, cycles, and conservation)
- 6. Structure and function
- 7. Stability and change

#### **Social Studies/History**

In afterschool, history/social studies can be supported in a variety of ways. Some examples include selecting current events, running a debate club, holding mock elections, handling discipline with a "student court", spending an hour in the Mayflower, experiencing the Louis and Clark Expedition, and honoring American heroes can strengthen students appreciation for and understanding of history and social studies. Supporting the history/social studies academic instruction of the school day and the good work that is being





done by teachers each day, will give students a deeper understanding of the material and help to make the learning relevant as well as rigorous.

Reinforcing 21<sup>st</sup> Century Work Place Skills are a natural fit with history/social studies if you can broaden your thinking to consider that career and work force development is part of history/social studies. Tony Wagner, <u>The Global Achievement Gap</u>, identifies "critical thinking and problem solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analyzing information, curiosity and imagination as the Seven Survival Skills of the 21<sup>st</sup> Century. Embedding these skills in history/social studies activities makes sense.

Project-based learning also creates space for young people to apply academic skills and can apply to history/social studies support. A project begins when you have found out what the youth are interested in learning about or accomplishing. You then begin with the end in mind and select a culminating activity that



will allow students to share the learning with others—peers or family. Then you begin to brainstorm the experiences that youth will need to have to be prepared for the culminating event. You then create a project plan. For example, young people decide that they would like to learn more about Cesar Chavez and celebrate the work he did on May 5. After conversations, the youth decide they would like to have a combination performance and gallery. They would like to display reports, art work, and other representations of Chavez' work, and they would like to celebrate by showcasing ballet folklorico, several songs,

and students reading original reports about the life and work of Cesar Chavez. Once the decision about the culminating activity is made, then the group would brainstorm the lead-up activities which might include: reading a biography of Cesar Chavez, interviewing people who knew and worked with Mr. Chavez, reviewing newspaper articles about the boycotts, learn the steps to ballet folklorico, design a costume that would be appropriate, have an essay contest, make murals the depict the journey of the farm laborers, and so on. Once this is calendared out, the project can begin. Other project themes could be "Night at the Museum", "Back to the Future", and "National Treasure".

Service Learning and Community Service activities can also serve as a catalyst for applying a variety of skills across different curricular areas. Service Learning differs from Community Service in two significant ways. The first is that Service Learning requires the academic piece to be intentionally embedded in the project. Secondly, Service Learning requires a reflection to be included in the project. Students are expected to think about the project and how the project is progressing, and also on the impact of the project and the effect of the project on the student and others—perhaps the community. This reflection allows young people to connect the dots and more clearly see how academic learning is relevant. Both Service Learning and Community Service begin with students identifying an unmet need. Dependent upon the age of the student, this could vary from something on the school ground, the immediate neighborhood around the school, and as students mature, the community at large. Both Service Learning and Community



Service require youth to be involved in the planning and implementation of the plan. Sometimes with Community Service young people will join others in supporting the community. A perfect example would be young people participating in "Relay for Life" or a community holiday parade. The work is supporting the community and teaching the young person about the importance of giving back.

#### **Bullet Points**

- Four learning modalities: visual, auditory, kinesthetic, digital.
- Nine intelligences: linguistic, logical mathematical, musical, bodily-kinesthetic, spatial, interpersonal, intrapersonal, and existential.
- Four academic cores: English Language Arts, Math, Science, History/Social Studies
- Vocabulary must be intentionally developed in each of the cores.
- English Language Arts: focus on fluency, vocabulary development, comprehension, and the conventions of speaking and writing.
- Use reciprocal reading strategies (predicting, clarifying, questioning, and summarizing-retelling) to promote comprehension.
- Mathematics: focus on automaticity, vocabulary development, deciphering word problems, creating authentic experiences that require youth to utilize the math skills they have been developing.
- Use games and disguised learning activities to promote learning.
- Science: instructional (content) and investigative (inquiry), vocabulary development, opportunities to learn about life, earth, and physical science through hands-on activities.
- History/Social Studies: thematic instruction, vocabulary development, service learning, projectbased learning, community service reinforce 21<sup>st</sup> Century work place skills.

#### C4K Minute—Making It Real

Too often we think of academics as being a "paper and pencil" activity. Review your program for several days. With the exception of homework see if you can eliminate the use of paper and pencil as much as possible. How can you activate all of the learning modalities to ensure that all kids have the greatest opportunity to learn?



#### Debrief

What are your key learnings from this section. Consider what

has been confirmed, adjusted or tweaked, and whether or not you have had an Aha! Once you've considered this, think about what you will do in the next 72 hours to utilize this learning.



# Review

#### **Tricks of the Trade**

To ensure that learning has occurred take time throughout your lesson to have youth talk with a partner. You can do this by asking for a "heads together" or talk to your "elbow partner".

#### Gem of the Day

In all academic areas take the time to develop key academic vocabulary. Work to have youth experience the words in all learning modalities. The more interactive the work is with the vocabulary the more likely it is that youth will truly understand the concepts and thoughts the words capture.

#### Important Take-Aways

The notion of multiple intelligences helps us to find the strengths in each student. While we all have all of the intelligences we each have gifts and talents which are highlighted through particular intelligences. Explore the cores through as many intelligences as possible.

#### Troubleshooting

I'm not a teacher. How can I possibly teach academic subjects?

Having a teaching credential is not what makes you a teacher. A teacher is anyone who supports another person's learning. And of course, the teacher is also always a learner—students can and do teach you amazing things. To help you with the academics plan ahead. Go through the activities and ask yourself if participating in this activity will help you learn and ultimately master the objective of the lesson. Think about the questions that you have and that youth may ask, and how you will flip the question into another question so young people are required to think. If you don't know some content piece, let the kids know you don't know and then go to work to learn at the same time. Your role will be to ask questions to move the learning forward.



#### **Best Practices**

- Incorporate as many learning modalities as possible in each experience.
- Learning through the multiple intelligences helps everyone be a "round peg in a round hole"/
- Ask questions. It's not having the answers but rather asking good questions that promotes learning.

#### FAQ's

Which of the academic areas is the most important?



Rather than focusing on one of the academic cores, think more about how you can integrate them and have youth participate in cross-disciplinary activities. The reason that these are identified as the cores is that they can be found in every real-world activity. Focus on authentic learning opportunities and debriefing the learning with youth.

#### Universal

Knowledge and information cross-cuts academic cores to help you understand and navigate the world and the work that you do. If you find you have a gap that needs to be filled, as a learner it is your responsibility to fill the gap.

#### Afterschool

In afterschool we change activities into learning opportunities by debriefing the activities and helping youth think about how to use the things they know. Through experiential learning young people can expand knowledge, comprehension, and application.

#### Positional

As a leader in afterschool be a positive role model by being a learner. Ask yourself: "If I didn't know this what would make learning this easier?" Also, think of particular students in your afterschool group and ask the same question and think of the answer for each of them.

#### Review

In your journal, write about the information that you are taking away from this content. Highlight your key learnings

## **Key Learning**

Since you have reviewed the material, ask yourself how you can translate the information into a learning for you, and then how will you practice that learning by implementing it or executing on a specific action. Think in terms of your personal and professional life. For example:



**Personal**: I have learned that I need to be a learner and open to strengthening my own knowledge across the board and then integrate that learning into my life.

**Professional:** I want to remember that academic knowledge that is experienced through a variety of modalities and intelligences is more likely to be remembered.



# Journal Entry

I did this well and celebrated by \_\_\_\_\_-.

I did not do so well at \_\_\_\_\_\_, and I will strengthen my performance in the future by doing \_\_\_\_\_\_.





# Walk Through the Day

#### The Openings

## **Pre-Pre-Opening**

The importance of the pre-pre-opening is getting your own focus on the "day" that is to come.

#### **Practical Application:**

On your way to work think through the great questions you can ask to promote academic learning. Ask yourself what key academic vocabulary you might explore today and how you can do that in a "non-school-day" way.

#### Pre-Opening:

Part of the pre-opening is getting your materials and supplies prepared for the day ahead. It is important that you have supplies that youth can use to explore learning in authentic ways. Paper and pencil is not enough—in fact, try to avoid using as much as possible.

#### **Practical Application:**

Be sure that you have random number generators (dice, dominoes, and cards) if you are going to explore math or have math games as one of the activities to do when homework is finished. As often as possible gather manipulatives and hands-on materials so youth have opportunities to "model" what they are thinking.

#### Opening:

During opening you are transitioning youth from the school day to the afterschool program. One of the transitions is from more content-focused, paper-pencil learning (school day) to experiential, hands-on learning opportunities (afterschool).

#### **Practical Application:**

During Opening you are encouraged to have group contests and activities. Select an activity that will promote academic learning. Have a Jeopardy tournament, spelling bee, or play a version of Pictionary as the competition. Have groups work together to participate in opening activities.

#### **Rotations:**

Certainly Homework is a part of the academic support effort. However, every rotation you have in your program and every choice that youth can make, require them to learn something new or practice what they already know. Promote learning in everything you engage youth in. Ask yourself, "What is the learning in this activity?"



#### **Practical Application:**

As well as thinking about the experiences that youth will have today, think about what questions you will ask. As easy as it sounds, asking questions that are open-ended, focused on the activity intentionally, and then crafting follow-up with a questions that probe and deepen understanding of the learner, is challenging. Planning these questions in advance is helpful.

#### **Closing:**

This is the time of the day that you are wrapping things up. In some cases parents will be coming in and signing youth out of the program. This is the time when youth will be asked, "What did you do today?" and if the youth are unprepared with an answer the response will be "Nothing". Using the closing to ensure that this question is answered differently will promote learning.

#### **Practical Application:**

Set up a "Speed Dating" format (two circles, one inside another with youth facing one partner). Ask them to tell the person across from them one thing they've learned today. Give them a total of 45 seconds. Then have the outside circle move to the right and ask again, "What did you learn today?" After this second round, ask the inside circle to move to the right, 4 people, and repeat the question—"What did you learn today?"



# **Connect to Online Instruction**

Program Leader C4K Online Instruction Support

## Academic Support

> KEY INDICATOR: Academic Support

Mini #5	Checking for Understanding
Mini #20	Teaching Moments
Mini #27	Planning
Mini #57	Establishing Routines
Mini #58	Basics of Lesson Design
Mini #61	Task and To Do Lists
Mini #102	Facts About Literacy—Importance of Books
Mini #120	Practice, Practice, Practice, Afterschool Style
Mini#132	Planning To Be Flexible
Mini #133	Identifying A Teaching Moment
Mini #134	Morning Meetings (How They Work in Afterschool)
Module #2	Delivery
Module #3	Transitions
Lesson #5	Lesson Design
Lesson #6	Lesson Delivery
Lesson #8	Delivery
Lesson #12	Middle School Approach
Lesson #13	Successful Rotations
Lesson #14	Middle School Approach
Lesson #15	Middle School Academic Clubs
Class #18	Schedules
Class #19	Implementing Quality Lessons

# > KEY INDICATOR: English Language Arts

Mini #11	Reading Aloud
Mini #81	Academic Vocabulary
Mini #104	Using School Day Materials
Mini #105	What Is Phonemic Awareness?
Mini #121	Using Homework to Create Games
Module #7	California Standards





Module #15	Middle Sc	hool Power	1/2 Hour
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- Module #16 Middle School Academics
- Module #22 Building Fluency
- Module #27 Supporting Learning Conversations
- Lesson #16 Supporting Language Arts
- Lesson #22 Meeting Students Academic Needs
- Lesson #23 Marzano Strategies

#### **KEY INDICATOR:** English Language Arts, Continued

Lesson #18	Reciprocal Teaching Strategies
Class #17	Activities to Promote Literacy
Class #29	Phonemic Awareness
Class #30	Basics of Phonics

#### > KEY INDICATOR: Mathematics

Mini #103	Practicing Math Facts
Mini #106	Practicing Math Strategies
Module #7	California Standards
Module #15	Middle School Power 1/2 Hour
Module #23	Focusing on Grade Level Standards in Math
Class # 12	Math Activities

## > KEY INDICATOR: STEM Education

Mini #107	What is STEM?
Mini #108	Engineering Fun in ASP
Lesson #19	Science Activities

## > KEY INDICATOR: History / Social Studies

Mini # 78	Service Projects
Mini #124	Developing Volunteers
Mini #125	Working with Volunteers
Class # 16	Reaching Out to the Community
Class # 21	Service Learning



Site Coordinator C4K Online Instruction Support

# > KEY INDICATOR: Lesson Design

Mini #118	Lesson Openings
Module #7	Lesson Plans
Lesson #22	Designing Lessons