



Summer Bridge Activities Research White Paper – Fall 2020

Learners of all ages often lose concepts, vocabulary, and skills they have mastered when a break between school years leads to a lapse in learning and practice, a phenomenon that researchers and educators refer to as summer learning loss or “the summer slide.”¹ However, providing students with a chance to engage both new and familiar skills during the summer months can help to alleviate this problem and set them up for success in the coming school year. Summer Bridge Activities is designed to do just that, drawing from a range of research in the field of the learning sciences on how children acquire and retain knowledge.

Here, we will summarize the intersection of learning research and the design of Summer Bridge Activities, leveraging what we know from a number of research domains, including:

- Activating learners’ prior knowledge
- Allowing spaced practice for optimal memory retention
- Involving family in the learning process
- Supporting social and emotional learning (SEL)
- Encouraging real-world application of ideas through hands-on learning activities


¹Kerry & Davies (1998); Cooper (2003); Alexander et al. (2016)


“Pre-Training” & Activating Prior Knowledge


When introduced to new information, learners of all ages are better supported when reminded of relevant material learned previously or skills that they have already mastered — this strategy is often described as activating prior knowledge.² Researchers have found that activating prior knowledge is helpful in improving reading comprehension,³ math learning,⁴ and introduction to new science concepts. Other studies have supported the “pre-training” principle, finding that introducing key vocabulary and basic concepts early on, before progressing to more complex content, can greatly improve the learner’s ability to master complex concepts.⁵

Measurement/Grammar **DAY 8**

Measure each object below once to the nearest inch and once to the nearest centimeter. Write the measurements on the lines.

1. 
_____ inches _____ centimeters

2. 
_____ inches _____ centimeters

3. 
_____ inches _____ centimeters

Circle the adverb in each sentence. Then, underline the verb each adverb modifies.

4. The dogs barked loudly at the sound of the doorbell.
5. I looked everywhere for my coat.
6. Nancy swims faster than I do.
7. Greg walked slowly up the driveway.
8. Valerie awoke early on Saturday morning.
9. Let's play outside in the front yard.

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Summer Bridge Activities provides students with opportunities to regularly engage with familiar and new content, so that in addition to maintaining already acquired knowledge, they will be better equipped to encounter and process new material when it is presented to them the following school year.

Summer Bridge Activities Grades 2–3, ID: 704698

² Hattan et al. (2015)

³ Hattan et al. (2015)

⁴ Sidney & Alibali (2015)

⁵ Mayer (2005)

Spaced Practice

A large body of research has shown that when learning a new skill or concept, the most effective approach is to practice that skill repeatedly over time rather than in a concentrated burst.⁶ By revisiting information in shorter, spaced segments, the new information is much more likely to be stored in long-term memory rather than short-term memory (as is the case when material is first introduced, or when a “cramming” approach to studying material is employed).⁷ The boost in performance from spaced practice has been found across subject areas, including vocabulary⁸ and mathematical problem solving.⁹



Just 15 Minutes a Day
...is all it takes to stay sharp with learning activities for each weekday, all summer long!

Month-by-Month Organization
Three color-coded sections match the three months of summer vacation. Each month begins with a goal-setting and vocabulary-building activity. You'll also find an introduction to the section's fitness and character-building focus.

Daily Activities
Two pages of activities are provided for each weekday. They'll take about 15 minutes to complete. Activities cover math, reading comprehension, writing, grammar, and more.

Summer Bridge Activities utilizes the spaced practice approach by providing daily learning exercises designed to be completed in about 15 minutes each day. This allows learners to engage with concepts, vocabulary, and skills in repeated, short intervals, in order to maximize retention and understanding in the long-term.

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⁶ Weinstein et al. (2018);
Dunlosky & Rawson (2015)
⁷ Kang (2016)

⁸ Petersen-Brown et al. (2019)
⁹ Taylor & Rohrer (2010)

Family Engagement

The importance of parent and family involvement in children’s motivation and academic performance has been the subject of much attention, for elementary age children¹⁰ as well as for middle school children.¹¹ Studies have shown that family involvement — whether through supervision of homework, discussion about activities completed at school, or direct participation in school events — has a profoundly positive impact on children’s attitudes¹² and academic achievement.¹³ Importantly, this positive effect has been found across gender, age, and various ethnicities and cultures.¹⁴

Plenty of Bonus Features
...match your child's needs and interests!

Bonus Activities
Social studies activities explore places, maps, and more—a perfect complement to summer travel. Science experiments invite your child to interact with the world and build critical thinking skills.

Take It Outside!
A collection of fun ideas for outdoor observation, exploration, learning, and play is provided for each summer month.

Skill-Building Flash Cards
Cut out the cards at the back of the book. Store in a zip-top bag or punch a hole in each one and thread on a ring. Take the cards along with you for practice on the go.

Give a High-Five
...to your child for a job well done!

Star Stickers
Use the star stickers at the back of the book. Place a sticker in the space provided at the end of each day's learning activities when the pages are complete.

Praise and Rewards
After completing learning activities for a whole week or month, offer a reward. It could be a special treat, an outing, or time spent together. Praise the progress your child has made.

Certificate of Congratulations
At the end of the summer, complete and present the certificate at the back of the book. Congratulate your child for being well prepared for the next school year.

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Summer Bridge Activities includes a range of integrated supportive materials for parents and family, including a comprehensive skills matrix, activities that children and parents can do together, and suggestions for ways to support milestones along the way (e.g., star stickers, certificate of congratulations).

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¹⁰ Gailindo & Sheldon (2012)

¹¹ Hill & Tyson (2009); Hornby (2011)

¹² Ginsburg & Bronstein (1993)

¹³ Gailindo & Sheldon (2012)

¹⁴ Hornby (2011); Jeynes (2017)

Social and Emotional Learning (SEL)

In the past decade, the set of competencies known collectively as SEL — encompassing self-awareness, management of emotions, interpersonal relationship skills, and empathy for others — has been gaining momentum and support among educators.¹⁵ Many K-12 schools have begun implementing SEL instruction either as a standalone curriculum, or integrated with subject area instruction, and are reporting that after doing so, students' achievement scores reflect as much as an 11-point percentile gain.¹⁶ Experts have developed ways to weave in SEL-related content along with other best practices for subject-specific instruction in science, math, and literacy.¹⁷ Knowing what we now do about the benefits of SEL, it is clear that these skills should be deliberately developed in children both for their personal development as citizens and for their success as learners.

Summer Bridge Activities incorporates a set of Character & Fitness activities that fosters students' SEL development, including appreciation of other cultures, reflection on emotion management and self-regulation, and perceptiveness of others' characteristics.

CHARACTER CHECK: Think of a book or movie character who shows kindness. How does the character show kindness?

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CHARACTER CHECK: Make a list of at least three ways you can show patience at home. Share the list with a family member.

Summer Bridge Activities Grades 6-7, ID: 704702

¹⁵ Jones (2016)

¹⁶ Durlak et al. (2011)

¹⁷ CASEL (2016); Garner et al. (2018); Dresser (2013)

Hands-on Learning & Real World Application

When children are given a chance to engage in hands-on activities that teach or reinforce academic concepts and skills, research suggests that it boosts engagement and motivation as well as allows for deeper comprehension and improved retention.¹⁸ Furthermore, experiences that are authentic applications of concepts help students to readily apply their growing body of real-world knowledge in appropriate ways when they encounter new information in a traditional classroom context (e.g., in a word problem).¹⁹

BONUS Outdoor Extension Activities

Take It Outside!

Have a family member join you on a walk around a community park. Bring a pen and a notebook. Record the geographical features you observe in the park, such as streams, rivers, boulders, and hills. Once you return home, make a list of at least 10 prepositions. Then, reflect on your walk around the park. Write a short story or poem about the walk. Incorporate prepositions with the geographical features that you saw.

Go outside with a friend or family member. Take a pencil, a notebook, and a measuring tape. Measure the area in front of and behind where you live. Having someone to help you with the measuring tape will make the task easier. After you have measured the length and width of both places, determine the total area in front of and behind where you live. Which area is larger? How much larger is it?

Take a camera, a notebook, and a pen and go for a walk around your neighborhood with an adult. Take a picture of each landmark or notable place in your neighborhood, such as your home, school, or favorite restaurant. Record each landmark's location in your notebook. Print the pictures when you return home. On a piece of posterboard, create a map that represents your neighborhood. Tape or glue your pictures to the map. Beneath each picture, write a brief description of each landmark or place and why it is shown on your map.

Choose one of the landmarks on your map and write about a memory you have that is associated with it. Use descriptive details that strongly convey a sense of place to your reader. Share your map and story with a friend.

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BONUS Science Experiment

Solar "Still" Works

What is a solar still? How does a solar still work?

Solar energy is a renewable resource because, unlike energy resources such as oil and coal, it is quickly replenished. Renewable energy can help solve environmental problems, such as drought. In some coastal areas where there are low levels of freshwater for drinking and farming, people use a device called a solar still to create freshwater. In this activity, you will create a solar still and discover how it works.

Materials:

- clear glass measuring cup
- teaspoon
- large plastic cup
- plastic wrap
- small rock
- water
- salt
- small paper cup
- rubber band

Procedure:

Fill the measuring cup with 8 ounces (0.24 L) of water and 1–2 teaspoons (49–9.8 mL) of salt. Stir the water and salt until the salt dissolves. Dip your finger in the water and taste it.

Pour about 2 ounces (1/4 cup) of salt water into the large plastic cup. Place the small paper cup inside the large cup so that it floats. Then, cover the large cup with plastic wrap, and secure it tightly with the rubber band. Place the small rock in the middle of the plastic wrap so that it sags slightly. Do not allow the rock to touch the salt water or rip the plastic wrap.

Place the cups in a sunny location, and check them after a few hours. Record your observations on the lines. After a few days, check the cups by removing the plastic wrap. Record your observations. Dip your finger into the small cup's water and taste it.

Observations:

1. How was solar energy used in this activity? _____

2. How might this method be used on a larger scale? _____

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Summer Bridge Activities' "Bonus" and "Take It Outside" features provide students with fun, accessible, and meaningful learning activities that support relevant STEM and humanities learning objectives. They are designed to encourage learners to take concepts and skills and directly apply them to engaging real-world scenarios (e.g., create a magazine with a friend on a topic of shared interest, plan a dream vacation and create a budget, make a DIY museum exhibit using flowers, leaves, rocks you find).

¹⁸ Herrington et al. (2014); Bouillon & Gomez (2001); ASCD (2002)

¹⁹ Verschaffel & De Corte (1997)

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