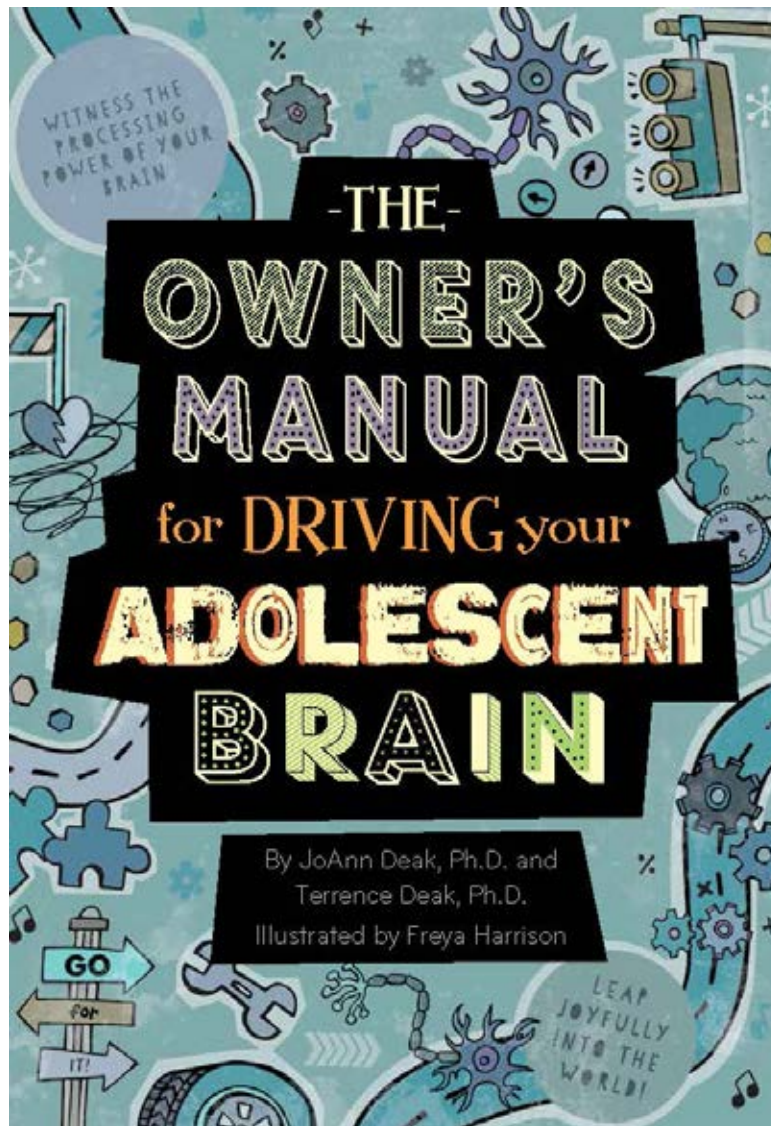


# Little Pickle Press



## Lesson Plans for Teachers Grade 3 – 8

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# Overview

In *The Owner's Manual for Driving Your Adolescent Brain*, authors JoAnn Deak, Ph.D. and Terrence Deak, Ph.D. provide a road map for young people navigating the countless challenges of early adolescence. Embellished with clear diagrams and engaging illustrations, comprehensible explanations of complex scientific vocabulary, a collection of creative analogies from riding a bike to driving a car, and an easily referenced glossary of key terms highlighted in the body of the text, the book helps adolescents make sense of this multifaceted journey toward independence.

Designed to facilitate young readers' understanding of this enigmatic developmental stage, *The Owner's Manual for Driving Your Adolescent Brain* highlights a series of physiological phenomena, including:

- the neuroanatomical form and function of the central nervous system, with special attention to the brain
- how the brain increases in size and complexity over time
- the emotional and physical changes elicited by hormone production in the brain
- the critical importance of protecting the brain from harm, inside and out
- the power of using diverse mental and physical exercises to strengthen the brain

The text provides an entry point for teachers to introduce students to the behaviors and practices underlying the essential message that “time and experience” collectively contribute to brain growth in adolescence and beyond. Although each person’s path into adulthood will be unique, the importance of making good choices, persevering in spite of obstacles, and opening our minds and bodies to new learning experiences is universal. Classroom activities in this instructional unit invite students to explore the three fundamental ingredients for brain health: nourishment, enrichment, and protection.

This instructional unit includes three learning projects as well as supplemental online resources to augment the more straightforward projects. The design of each plan allows teachers to build and elaborate the activities to a degree that best suits the needs of their classroom. The learning activities also enable teachers to cultivate children’s character development through the pillars of mindfulness, reasoning, and responsibility.

At each grade level, lessons align with the Common Core State Standards Initiative (<http://bit.ly/1lwNXnA>) for Speaking and Listening, as well as the Next Generation Science Standards (<http://bit.ly/1g3yrOI>) for Life Science. These standards are especially pertinent for educators in the United States.

*The Owner's Manual for Driving Your Adolescent Brain* is printed on recycled materials using soy inks and is an excellent addition to every school library. Please visit the links at the end of the lesson plans to see all of our products.



# Project 1

## Learn to Nourish Your Adolescent Brain

### Background

The first essential ingredient in maximizing brain health is nourishment. The benefits of “feeding” the brain with exercise, sleep, and healthy food choices are exponential. Learning activities in this project help students understand the myriad behaviors they can utilize to nourish their developing adolescent brains.

### Objectives

- Students will develop an understanding of the fundamental role that mental and physical exercise plays in nourishing brain health
- Students will reflect on the critical role of sleep in nourishing brain health
- Students will experiment with how experience and commitment to cultivating new skills over time nourish brain health

### Focal Activities

Guiding Questions:

- What does nourishment mean?
- Which activities/behaviors/habits nourish your brain?
- When do you feel your best physically/mentally/emotionally?
- What activities make you feel strong/smart/energetic?
- How do you feel when you eat/sleep/exercise?
- What is involved in learning how to do something new?



### ACTIVITY A: TIME FOR A LITTLE GARDENING

Just as a plant needs food, water, and sunlight to flourish, the brain needs to be tended to and cared for as well. Both mental and physical exercises stimulate brain growth. Invite students to select a mental (e.g. crosswords, chess, logic puzzles) and a physical (e.g. jogging, dancing, basketball) activity they enjoy or would like to experience and provide opportunities for them to test out these activities at various times of the day and week. Encourage students to monitor and reflect on how they felt before and after engaging in the activities. Suggest that students attend to ideas such as mood, energy, and attitude. Were the effects of mental and physical exercise comparable? Reinforce the key idea that the positive effects of both mental and physical exercise are a result of active brain engagement and growth.



## ACTIVITY B: IT DOESN'T HAPPEN OVERNIGHT

Although developing a unique skill or talent doesn't happen overnight, what does happen during the night—sleep—is essential to brain health. Sleep offers an opportunity for the brain to process all of the learning and interactions that have taken place during the day. Provide students with a sleep and dream journal and suggest that they keep it bedside with a pencil or pen. Ask students to use the journal to note any or all of the following features of their sleep patterns:

- What time do you go to bed at night?
- What time do you wake up in the morning?
- How many hours do you sleep a night, on average?
- How well do you sleep at night?

Have you noticed any parallels between how you feel during the day and the quantity and quality of your sleep the previous night?

In conjunction with sleep monitoring, ask students to write about dreams they may have had and remember. Encourage students to do this first thing in the morning, or even during the night if they wake from a dream. Do they notice any similarities between the nature of their dreams and what has been happening in real life?

Reinforce the key idea that connections between sleep quantity and quality, dreams, and how we feel during the day are a result of how well we have nourished our brains with sleep.

## ACTIVITY C: PATIENCE, PRACTICE, PERSISTENCE

Do you know someone who just seems to be so good at something that they don't even have to try? Chances are, that person didn't just wake up one morning with complete mastery of that skill, but rather, put in substantial effort over time to achieve success. Although you are born with some skills that appear to require minimal effort,

many of the things that you know how to do (e.g. walking, talking, tying your shoe) took substantial time and effort, and maybe some frustration, even though you might not remember it now. That same time and effort could be used to develop success with a new skill, even one you've never tried before. Invite students to embark on a personal journey of skill development over the course of the academic year. Provide students with suggestions of new talents they might want to cultivate (e.g. playing an instrument, building a model airplane, learning to play tennis, writing poetry) but allow them to choose their own. Students might document their success with written, photo, or video journals. You might also break students into support teams that regularly check in and provide encouragement to one another (this could be a role that family members take on as well). Reinforce the central idea that with time, experience, and a positive attitude, you really can train your brain, and your body, to do something new.

## Character Building Connections

The key character value to cultivate in this lesson is mindfulness. Students can be encouraged to:

- increase their consciousness of specific behaviors and activities that promote a healthy brain
- practice patience and perseverance as they pursue new activities, skills, and talents

## Additional Online Resources

### BRAIN GAMES

<http://bit.ly/LSpfRm>

<http://bit.ly/1nsm8vG>

### NEUROSCIENCE FOR KIDS

<http://bit.ly/1nsmDJh>

<http://bit.ly/1aRUCrb>

### TRAIN YOUR BRAIN

<http://bit.ly/MINdPO>

<http://bit.ly/1bSD4ts>





# Project 2

## Learn to Enrich Your Adolescent Brain

### Background

The second essential ingredient in maximizing brain health is enrichment. Undertaking a new challenge, making a mistake and reflecting on what was learned, finding something you love and pursuing it, or taking ownership of your destiny all serve to strengthen your brain. Learning activities in this project help students understand the myriad behaviors they can utilize to enrich their developing adolescent brains.

### Objectives

- Students will learn how development of a growth mindset enriches brain vitality
- Students will cultivate their leadership and entrepreneurial skills to enrich brain growth
- Students will identify and explore personal interests and passions in pursuit of enriched brain health

### Focal Activities

#### Guiding Questions:

- What does enrichment mean?
- Which activities/behaviors/habits enrich your brain?
- How do you feel when you make a mistake?
- Do you have to be born good at something or can you improve?
- What new thing would you try if you had no fear of failure?
- What makes you feel good? How could you make that "thing" more central or present in your life?

#### ACTIVITY A: STRUGGLE MAKES YOU STRONGER

Stanford University Professor Carol Dweck has conducted extensive research on the concept of fixed versus growth mindset. Individuals with a fixed mindset believe that their ability level is a static entity that cannot be changed and often avoid challenges for fear of failure. Individuals with a growth mindset believe that ability can be increased with effort and practice and often seek new challenges with curiosity and anticipation. A central component of the growth mindset involves being tolerant of making mistakes and using the mistakes as learning experiences. By making mistakes and testing alternate solutions, the brain has an opportunity to learn, strengthening critical neural pathways in the process. Invite students to brainstorm growth mindset statements to post around the classroom (i.e. 'Working through a challenge enables me to be strong and successful'). Reflect on these statements throughout the academic year. Encourage students to share challenges as they arise, with an emphasis on how a growth mindset fosters resilience and willingness to move forward. You might incorporate "great" mistakes into your classroom climate, encouraging students to share "great" mistakes they've made and what they learned from the experience.





## ACTIVITY B: BLAZE YOUR OWN TRAIL

Life is a continuous work in progress, and the number one person who decides which path to take along the way is ... YOU! Help students understand the power they have in shaping their own future by taking steps forward every day. Discuss the meaning of entrepreneurship with students. Invite several local entrepreneurs to speak to your class or school about how they got started in their chosen field and what choices they made along the way. Ask students to brainstorm projects that they would like to undertake (e.g. starting a school club, lemonade or cookie stand, or blog) or a community problem in need of a solution (e.g. abundance of trash in local parks, establishment of a neighborhood youth center). The visiting entrepreneurs might act as trusted mentors who collaborate with students on a plan of action to bring the project to life. Help students take ownership of the project by allowing them to make key decisions and encouraging them to consider potential outcomes of these decisions ahead of time. Reinforce the central idea that the process of taking initiative, making a plan, and following through with action enriches your brain.

## ACTIVITY C: FIND YOUR NORTH STAR

In times of frustration, sadness, or difficulty, it can be challenging to see the light at the end of the tunnel. Yet having an activity or interest to immerse yourself in can make the difficult times, particularly those that may surface during adolescence, much easier to manage. Invite each student to create a personal mind map or dream board of his or her interests and wishes. Encourage students to include concepts including: 'what I'm good at,' 'what I'm not so good at,' 'what I want to get better at,' 'what I'd like to try but am a little nervous about,' etc. Help students identify which activity might represent their "north star," a go-to experience that helps them maintain

a positive attitude when things just aren't going their way. Provide students with opportunities to revisit and modify these maps over time. Reinforce the central idea that developing a variety of interests and pursuing passions helps ward off stress so the brain can thrive.

## Character Building Connections

The key character value to cultivate in this lesson is reasoning. Students can be encouraged to

- think critically about how to shift frustrating mistakes into opportunities to learn and develop resilience
- take initiative in finding solutions to pervasive problems or areas of need
- engage their curiosity about new activities, evaluate areas of personal strength or need, and make decisions about areas of growth

## Additional Online Resources

### GROWTH MINDSET

<http://bit.ly/1aRVc8u>

<http://bit.ly/1kzmjs9>

### ENTREPRENEURSHIP

<http://bit.ly/1bSE00U>

<http://bit.ly/MINXo3>

### CHILDREN PURSUING PASSIONS

<http://bit.ly/MIO3fF>

<http://bit.ly/Nzj9r4>





# Project 3

## Learn to Protect Your Adolescent Brain

### Background

The final essential ingredient in maximizing brain health is protection. When it comes to protecting the brain, maintaining both physical and emotional safety is essential. Learning activities in this project help students understand the myriad behaviors they can utilize to protect their developing adolescent brains.

### Objectives

- Students will explore specific behaviors that contribute to brain protection
- Students will practice planning and impulse control to promote conflict prevention and brain protection
- Students will reflect upon the role that empathy plays in brain health and engage in empathetic behavior toward others

### Focal Activities

#### Guiding Questions:

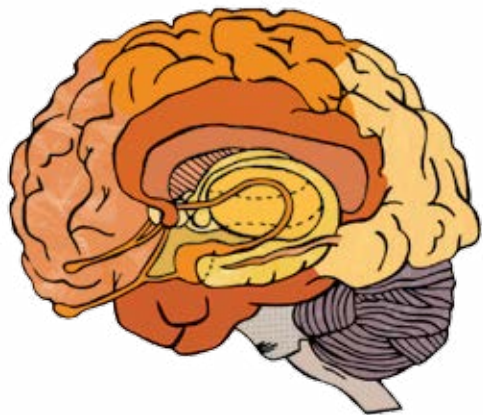
- What does protection mean?
- Which activities/behaviors/habits protect your brain?
- What do you do to protect yourself each day? Why?
- How do you react when something makes you happy/sad/angry? Why?
- Have you ever imagined what it would be like to be in someone else's shoes? How did that make you feel?

### ACTIVITY A: DO YOUR BRAIN A FAVOR, PROTECT IT

One of the key practices for maintaining a healthy brain is to provide it with physical protection. Because we don't ever get to see our own brain, it's sometimes easy to forget how fragile it is and how gently it must be cared for. To simulate a brain's fragility, talk to students about what happens when a raw egg is cracked. Just like an egg needs to be carried in a protective carton, so too does our brain need to be carried in its own protective carrier. While our skull provides the most immediate protection, just like the shell of an egg, additional precautions are necessary to protect it from harm. Engage students in an egg drop project. Invite each student to consider the best protection for an egg using materials easily found at home or school (e.g. bubble wrap, tissue, foam, tape, milk cartons), and plan to drop the protected eggs from an elevated setting. You might ask your principal or a cherished local community member to drop the wrapped eggs (the local fire department might also be available to drop the eggs off of an extended ladder on a fire truck). Debrief which materials seemed to provide the most protection, and consider which materials and behaviors might provide the best physical protection for your brain (e.g. wearing a helmet when riding a bike, wearing a face mask when playing a contact sport, wearing your seat belt when riding in a car, using mats when engaged in wrestling or gymnastics). This activity provides an easy segue into a discussion of the variety of substances and behaviors (e.g. smoking, drugs, alcohol) that are harmful to brain health, as well as the healthy foods and behaviors that promote brain health.







### **ACTIVITY B: PREVENT PROBLEMS DOWN THE ROAD**

Planning ahead and controlling impulses are key strategies for handling new or unfamiliar experiences. The brain's pre-frontal cortex is a critical neuroanatomical structure involved in planning and impulse control, but because it's still in development during adolescence, it can use all the support it can get. Help students consider strategies to avert potential problems before, not after, they arise. Encourage each student to come up with a target word or phrase (e.g. 'I'm in control of myself,' counting to 10, saying their own name) to say out loud when they find themselves in a situation of escalating frustration or anger. As a class, you might also propose

a similar calming phrase to use during discussions or debates. To help students understand the neurobiological basis of this process, demonstrate how to measure heart rate using a watch or timer with a second hand. Encourage students to take their own heart rate as they encounter an upsetting situation and then again after using their chosen calming strategy, and notice the difference between the two. The act of pausing to take a heart rate might itself trigger students to slow down and think before acting in a manner they might later regret.

### **ACTIVITY C: THE CHOICE IS YOURS, WHICH WAY WILL YOU GO?**

As you progress through adolescence, there are seemingly endless decisions to be made. These decisions are often influenced by external factors including peers and pressure to fit in, but ultimately, decisions about how you treat others, and yourself, are up to you. Protecting your emotional well-being, while treating others with kindness and respect, is a critical component of maintaining brain health. Trying to understand and support how someone else is feeling, known as empathy, provides emotional benefits for everyone involved. Help students understand the importance of interpersonal interaction in building empathy, a skill which might require students to unplug from the wealth of omnipresent technological resources. Engage students in a series of role plays (older students might design their own) that depict individuals displaying empathy towards others. Similarly, you might have students "fishbowl" scenarios that depict high or low levels of empathy and then debrief these interactions, highlighting the importance of reading facial expressions and body language and trying to take the perspective of others. As an extension, you might pair your students with cross-age buddies at a younger grade level. Students can tutor these younger students in reading, math, or perhaps even the fundamentals of neuroanatomy. Remind students that the key concept to remember is a focus on what the other person needs and how to offer support. Reinforce the key idea that showing empathy toward others is a critical factor in fostering emotional health and positive neural pathways in the brain.





## Character Building Connections

The key character value to cultivate in this lesson is *responsibility*. Students can be encouraged to:

- develop a vision for the future by making choices that promote lifelong brain health and safety
- increase their consciousness of the importance of planning and impulse control
- demonstrate respect for themselves and others by engaging in empathetic behavior

## Additional Online Resources

### BRAIN SAFETY

<http://bit.ly/MIOeaA>

<http://bit.ly/1grrrtg>

### PLANNING/SELF CONTROL

<http://bit.ly/1fa6Vk1>

<http://1.usa.gov/1m6d5C0>

### EMPATHY

<http://bit.ly/1jOsybF>

<http://bit.ly/1hsyKpf>





# Little Pickle Press Resources

This concludes our lesson plan for *The Owner's Manual for Driving Your Adolescent Brain*. If you have comments, questions, or other ideas please share them with us at the special blog link we have created:

<http://bit.ly/1etCbEF>

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