Dear Educator/Parent,

Welcome to the Center for Puppetry Arts and this production of Peter Pan, adapted and directed by Michael Haverty (based on the book by J.M. Barrie).

Peter Pan celebrates the carefree spirit of childhood and the value of following your dreams. Adventures abound as the Darling children romp with the Lost Boys, rescue the resourceful Princess Tigerlily and battle the nefarious Captain Hook. This exciting, fun and poignant show is the perfect accompaniment to a thematic unit on literature, family, the science of shadows and/or flying--and a celebration of the power that the arts have to both entertain and educate!

It has been proven (through test scores and numerous studies) that the arts
• invite empathy and interaction
• stretch the imagination
• develop important coordination and language skills (emotional and spoken)
• satisfy educational objectives across the curriculum
• support literacy and writing
• enhance social skills such as problem solving, turn-taking and active listening
• impact school attendance in a positive way
• improve motivation and behavior
• and simply allow children to have fun (they’re called “plays” for a reason, after all!)

This Educator Resource Guide is designed to prepare you for the experience of a live performance. You’re also invited to utilize the suggested activities as a springboard for follow-up fun after the curtain has gone down.

All three areas of programming at the Center for Puppetry Arts (performance, puppet-making workshops and Museum) meet Georgia Performance Standards (GPS) and Georgia Bright From the Start Pre-K Program Standards. To access the Georgia Performance Standards that have been correlated to each programming area according to grade level, click the links below:

Peter Pan, P-K & K
Peter Pan, Grade 1
Peter Pan, Grade 2
Peter Pan, Grade 3
Peter Pan, Grade 4
Peter Pan, Grade 5
Peter Pan, Grade 6

To access a complete list of GA Performance Standards for all grades and subjects, please visit https://www.georgiastandards.org.

Enjoy the show!

Sincerely,
Aretta Baumgartner, Education Director
Association of Theatre Movement Educators
American Alliance for Theatre & Education
Educational Theatre Association
WHAT IS A PUPPET?
A “puppet” is an inanimate (non-living) object that is brought to life by an outside force (usually a human being working as a performer) in order to tell a story.

Peter Pan is performed by five skilled puppeteers using full-bodied rod puppets. Small control rods (painted black) extend from each of the character’s heads, elbows, and feet. The puppeteers manipulate these rods in order to make their puppets walk, talk, sing, gesture and fly. You will notice that the puppets and set pieces in Peter Pan seem to glow in the dark. That is because the entire show is performed under ultraviolet light (black light). The puppets and set pieces in the production have been painted with a special type of fluorescent paint that glows vividly under ultraviolet lights, creating a magical effect on stage. The puppeteers are dressed entirely in black from head to toe so that they seem to disappear into the darkness. Projected animations and shadow puppet films provide additional backgrounds and help tell the story. Each puppeteer wears a small, cordless headset microphone to amplify the voice.

• DISCUSSION: Ask the children what puppets are. Have they seen them before? Are they real or pretend? What can be used as a puppet? Out of what materials can puppets be made, and why would you choose some materials over others for certain projects? Have you ever made your own mouth puppets or shadow puppets?

WHAT IS A PUPPETEER?
A performer who uses a puppet or puppets to tell a story is called a “puppeteer.”

There are five puppeteers in Peter Pan: Dolph Amick, Luis Hernandez, Allison Murphy, Julie Scarborough, and Tim Sweeney (find out more about the puppeteers in the “WHO PERFORMS OUR STORY?” section below). They will each bring to life many different characters. All the dialogue and songs are performed live.

• DISCUSSION: What skills does it take to be a puppeteer? Every puppeteer plays multiple roles in the show. How are they able to make each character distinct and unique? Puppeteers can change their bodies to make their puppet characters move in unique and interesting ways, and can change their voices to make those characters sound different from one another. Do you change your bodies and/or voices and play different “roles”?

WHAT IS AN AUDIENCE?
Being a good audience member is as important as being a good puppeteer! It takes teamwork between the audience and puppeteer/actor to make a show successful. There are “rules of etiquette” that need to be followed, such as:

• A LIVE SHOW IS DIFFERENT THAN TV OR MOVIES. It’s okay to have fun, but do remember that the people on-stage (and in the audience) can hear you—be polite!
• MAKE SURE EVERYONE CAN SEE. Stay seated so the audience members behind you can see the show.
• BE SUPPORTIVE. The way audience members show that they like something is to applaud. Make sure to applaud if you appreciate what you see and hear. Between songs or scenes, after the show, and after the post-show demonstration are appropriate places/times to show your appreciation.
• LISTEN CLOSELY. It’s important that you hear all the details of the story so that you can enjoy it fully.

• DISCUSSION: Review the “rules” of being a good audience member. Role play what is appropriate and what is not.
What is the Story We’ll Share
(The Story Synopsis)?

*Peter Pan* is a puppet play about adventure, family, imagination, invention, and following your dreams. It is an original adaptation of an existing book, created especially for and by the Center for Puppetry Arts.

Our story introduces us to a young lady named Wendy Darling (a budding inventor), her brothers (John and Michael), her father and mother (Mr. and Mrs. Darling) and her nanny (Nana, the family’s dog). Wendy meets a boy from Neverland named Peter Pan—a boy who can fly!—and takes her siblings with her on a journey to Neverland that changes the course of their lives. They encounter many colorful characters on their adventure, including pirates, mermaids, Lost Boys, and a “goofily ferocious” crocodile. They face their fears and watch their dreams come to life. And they return home with an appreciation of family and place and with stories enough to last a lifetime.

**DISCUSSION:** What is the difference between an original play and an adaptation? What challenges would each type of storytelling have? Brainstorm examples of adaptations and original stories that you’ve enjoyed and/or created.

Who Created the Show?

*Michael Haverty* is the Center’s Artistic Associate. He is a freelance playwright, director, puppeteer, and artistic director of The Object Group, with which he creates bold, dynamically sensorial theater mixing puppetry, object theater, and tableau vivant. Michael has created new work with the Center for Puppetry Arts, 7 Stages Theatre, PushPush Theatre, KSP, Dad’s Garage Theatre, and the Alliance Theatre. Creating both innovative adaptations and original work, Michael seeks to expand and explore the vocabulary of puppetry and the language of theater. Michael has appeared extensively at the Center in both the Family Series and the New Directions Series (for adults & teens), performing in over twenty shows and touring internationally. Since 2004, he has served as the program director of the Center’s *Xperimental Puppetry Theater* program. Haverty studied puppetry at Sarah Lawrence College in New York and at the Samuel Beckett School of Drama in Dublin, Ireland. He has been awarded project grants from Puppeteers of America, Meet the Composer Foundation, and The Jim Henson Foundation. His current position at the Center was made possible by the New Generations Program: Future Leaders, a program funded by the Doris Duke Charitable Foundation, The Andrew W. Mellon Foundation, and administered by Theatre Communications Group.

An original score (background or instrumental music that enhances the stage action) by *Jeffrey Bützer* complements the show, featuring an array of musical instruments including accordion, toy piano, saxophone, cello, flute, guitar, glockenspiel and more. The musical instruments were played by Mr. Bützer (piano, accordion, melodica, toy pianos, resonator bells, glockenspiel, xylophone, guitar, drums, percussion, organ), *Shane Pringle* (saxophone), *Kristin Haverty* (cello), *Claire Lodge* (guitar), *Chad Shivers* (guitar, lap steel), *Cory Wofford* (flute), *Mark Carbone* (drums), *Eric Balint* (marimba, glockenspiel), and *William j. Brisby* (bass). Audio engineering (the mixing and recording of the sounds and music in the show) was done by *Matt Steadman*. *Wesley Morgan* served as Music Director (teaching the puppeteers the songs they sing in the show) and did all of the vocal arrangements (making decisions about what voices should be used in what parts of the songs and how the songs should be sung).


**DISCUSSION:** Visit the Center for Puppetry Arts website (www.puppet.org). Find out about the Center’s mission (“About Us”), history (“History”) and programming (“Performances,” “Museum,” and “Education”). Discuss what you think each of the Production Team members’ responsibilities are, and discuss what job or jobs you’d like to do when working on a puppet show.
Who Performs our Story?

Dolph Amick has just returned from SPACE! (Center for Puppetry Arts) only to immediately depart for Neverland. Recent work includes writing and recording the score for *Big Hearts* (Imagine It! The Children's Museum of Atlanta) and an appearance on *Tyler Perry’s House of Payne*. His band, Three Quarter Ale, will be celebrating their tenth anniversary this August by hosting their very own performing arts convention, AleCon. He wishes love and the gift of flight to his beautiful wife, Kara, and his newborn son, Valentine.

Luis R. Hernandez is thrilled to be back on the stage after his trip around the Solar System in SPACE! Previously, he has performed in *Winnie-the-Pooh, Charlotte’s Web, Beauty & the Beast,* and *Mighty Bug* on the Center’s Mainstage. He has also appeared in *Don Quixote* and *Tales of Edgar Allan Poe* in the Downstairs Theatre. He played Alexander T. Wolf in Theatre in the Square’s production of *The True Story of the 3 Little Pigs* last year.

Allison Murphy is so excited to be a part of *Peter Pan!* This is her eighth show at the Center; you may also have seen her as Starshine in SPACE!, Rudolph in *Rudolph the Red-Nosed Reindeer,* or Beauty in *Beauty & the Beast.* Allison has performed with Theatre in the Square, Stage Door Players, and the Boston Pops. She also works as a private voice, speech, and acting teacher for Atlanta Voice and Stage. Love and fairy dust to her husband Adam. Thank you for supporting live theatre and the art of puppetry!

Julie Scarborough (Head Puppeteer) is thrilled to be in Neverland! She has worked at the Center since 1998 and been in literally thousands of performances. Some of them include *The Little Pirate Mermaid, Cinderella Della Circus, Duke Ellington’s Cat, American Tall Tales,* and many, many more. She hopes you enjoy the show and thanks you for supporting live theatre. You rock! Love to Steve (who teaches people to fly) and Elena and Veronica (who do believe in fairies)!

Tim Sweeney is thrilled to be part of this awesome cast to reprise his very first role here at the Center! Past Center performances also include *The Velveteen Rabbit, Rumpelstiltskin, Aladdin, Rainforest Adventures, Cinderella Della Circus, Rudolph, SPACE!, and The Ghastly Dreadfuls.* In addition, he has performed in various touring shows with Swazzle in California. Huge “huzzahs!” to everyone involved in this gi-normous spectacular and also smooches to Amy for putting up with me.

A special “thank you” to Meghan Fuller (Assistant to the Executive Director at the Center for Puppetry Arts and Director of Membership Services for UNIMA-USA) for her information, ideas and inspirations for this Educator Resource Guide.

Peter Pan teaches Wendy, John, and Michael how to fly in *Peter Pan*
WHICH CAME FIRST, THE BOOK OR THE PLAY? AN INTRO TO J.M. BARRIE’S PETER PAN

The play Peter Pan and its well-known plot was technically the first play to come from the genius of J.M. Barrie. Before the play was written, however, Peter Pan— as a baby— made an appearance in Barrie’s narrative called The Little White Bird. The chapters from this book involving Peter were later pulled out and assembled into the short, freestanding piece Peter Pan in Kensington Gardens. Then, in 1904, from Peter’s adventures in the gardens, Barrie formulated the originally-named play version Peter Pan, or The Boy Who Wouldn’t Grow Up, which embraces the story line familiar to so many today. It was in 1911 that J.M. Barrie turned the play into a full book, initially entitled Peter and Wendy. Over the years, it came to be called just plain “Peter Pan.” Our production is based on this book.

Peter Pan is so well known because his story has been constantly performed around the world (except for a short hiatus during and after WWII) since its opening on Tuesday, December 27, 1904. Versions differ in all forms of entertainment, with songs and dialogue added, taken out, or changed. But the story seemed to be written with room for a little bit of tinkering. Barrie himself changed elements of the play in the years it was first in production in London.

-Meghan Fuller (from the Alabama Shakespeare Festival SchoolFest Study Guide, 2007)

J.M. BARRIE: THE BOY WHO NEVER GREW UP

One of the most beloved plays during the first twenty years of children’s theatre—and even still today—is J.M. Barrie’s Peter Pan. Barrie was born in 1860 and moved to London from his home, the village of Kerriemuir, Scotland, in 1885. The origins of the play Peter Pan truly began when Barrie married an actress in 1894, with various events in his past as influences. One of these events was his brother, David, dying at 13 years old. Barrie saw David as eternally 13, which lends itself to the idea of a forever young boy. Another aspect is the fact that Barrie never physically matured. He grew to only five feet and did not start shaving until his 20s.

Shortly after marriage, Barrie and his wife bought a St. Bernard puppy, which later inspired the part of Nana. Later, J.M. Barrie became acquainted with Mr. and Mrs. Llewlyn-Davies, who had five sons. Barrie would meet with the boys, their nurse, and large dog for walks, at which time he would play with the kids and invent stories. The children motivated Barrie to write about castaways, who later became the Lost Boys and even the soul of Peter Pan himself. J.M. Barrie was once quoted to say “By rubbing the five of you violently together, as savages with two sticks to produce a flame, I made the spark of you that is Peter Pan.” When Mr. and Mrs. Llewlyn-Davies passed away, J.M Barrie became the unofficial guardian of the boys.

Although very fantastical, the classic story of Peter Pan is a simple tale for a child—and even an adult—which serves the same purpose as other children’s narratives: living through the characters to have a wild adventure and learning about morals, values, behaviors and facts along the way. Though, perhaps, Barrie sprinkled a little extra fairy dust on his to make it that much more magical.

The first line in the novel Peter Pan is “All children, except one, grow up.” Perhaps J.M. Barrie was not only talking about Peter Pan, but himself, and maybe even the rest of humanity. For there will always be a part of us that never wants to grow up.

-Meghan Fuller (from the Alabama Shakespeare Festival SchoolFest Study Guide, 2007)
FUN FACTS AND EXTRA TIDBITS

* The name Wendy had never been seen until Barrie used it. He borrowed it from the young daughter of poet W.E. Henley. Henley’s daughter called Barrie her ‘fwendy’ because she could not pronounce the letter ‘r.’

* Peter Pan was possibly the first straight play (as opposed to pantomime) to be directed toward adults and children, so both could get something out of it.

* The house the Lost Boys build for Wendy was the prototype of all children’s playhouses seen today.

* J.M. Barrie was so concerned that no one would clap to save Tinker Bell on opening night that he told the orchestra to clap if there was a silence. Luckily this did not happen.

* Flying was so realistic in the first production of Peter Pan that children were in danger of hurting themselves by trying to think a happy thought. Thus, Barrie invented fairy dust as a requirement for flying so children wouldn’t risk it.

* In the book and in Barrie’s play, Mrs. Darling turns on the children’s nightlights before they go to sleep. The nightlights would most likely have still been gas. So when was the light bulb invented? Thomas Edison, with help from his team, began to perfect the light bulb in October of 1879.

* Also in the book and Barrie’s play, the children are dancing and pretending to be their parents. What type of dance was most popular during this time period? Waltzes were extremely fashionable. There was a new version of the waltz, which incorporated bits of what would later be swing. This new waltz was called The Knickerbocker.

-Meghan Fuller (from the Alabama Shakespeare Festival SchoolFest Study Guide, 2007)

Peter and Wendy
By James Matthew Barrie
Published 1911 C. Scribner’s Sons
Illustrations by Francis Donkin Bedford
LEARNING ACTIVITY, P-K & K: Cherokee Animal BINGO

Thank you to http://www.cherokeelessons.com/BINGO for the template pages for this activity!

Georgia Bright from the Start Pre-K Content Standards covered: CD1 (Creative Development), LD3 (Language and Literacy Development, Vocabulary), LD5 (Language and Literacy Development, Oral Reading Skills), MD2 (Mathematical Development, Patterns), SD2 (Science, Life Science), SE1 and SE3 (Social and Emotional Development)

Georgia Performance Standards covered, Kindergarten: ELAKR5 (English Language Arts & Reading, Vocabulary), MKG2 (Mathematics, Geometry, Spatial Relationships), SKL1 and SKL2 (Science, Life Science), SSKCG1 (Social Studies, Civics and Government Understanding, Rules), VAKPR1 & 2 (Visual Art, Production)

Objective: Students will learn about the Cherokee language and practice basic vocabulary and pronunciation by playing Cherokee Animal BINGO.

Materials: Copy of If You Lived with the Cherokee by Peter and Connie Roop (Scholastic, 1998), Cherokee Syllabary (page 8 of this Educator Resource Guide), animal call card sheets (pages 9 and 10 of this Educator Guide), construction paper, glue, scissors, BINGO player cards (one per student—available at http://www.cherokeelessons.com/BINGO/01/(4%20of%204)%20cards-1247419936.pdf), crayons, BINGO markers/chips (15 or 20 per student--could be pennies, small stones, stickers, etc. if BINGO chips are not available)

NOTE: In the Center for Puppetry Arts’ production of Peter Pan, Princess Tigerlily, the daughter of the chief of the Neverland tribe, speaks Cherokee. The Center for Puppetry Arts was pleased to work with the Cherokee Nation Education Services and the Translation Department of Education Services to translate Tigerlily’s dialogue into this beautiful language for the show.

Procedure:
1. FOR THE ACTIVITY LEADER: Review the basic pronunciation and syllabary of the Cherokee language (“Cherokee Syllabary” sheet). Practice pronunciation of the Cherokee vocabulary/names for the animals that will be used in the game (25 animals, found on the two animal call card sheets). Glue the animal call card sheets onto construction paper, then cut them apart into 25 individual animal call cards. Place the animal call cards into a small bowl.
2. Read If You Lived with the Cherokee with/to the students. Using the book as a jumping-off point for discussion, talking about what’s similar to and different from your lives and the lives of early Cherokee Indians. Focus especially on the book’s examples of Cherokee relationships with and respect for animals. Tell the students that you’ll be playing a game that celebrates the Cherokee culture and language: Cherokee Animal BINGO.
3. Share each of the 25 animal cards with the students, showing the animal’s picture, teaching the Cherokee word for the corresponding animal, and creating a sound and/or motion for the animal (i.e. for dog: “gi tli,” <<woof>>, move bottom half of body to “wag tails”). Have the students repeat the words, sounds and motions. Place all animal cards back into the bowl.
4. Give each student a BINGO player card and 15 or 20 BINGO markers/chips. Have students color the animals on their player cards. Explain that you will be pulling the animal call cards one at a time out of the bowl, calling the animal’s name in Cherokee and adding the sound/motion for that animal. All students will repeat the name, sound and motion. If a student sees the animal on their player card, they will place a marker/chip on the picture of the animal on their player card. When a student fills a row, column or diagonal, on his/her player card, he/she will call “BINGO!” . To double-check that the animals were all called during game play, the student will uncover and call back the animals to the activity leader by repeating their sound and movement. The activity leader will confirm the animal for the student by repeating back the name of the animal in Cherokee.
5. Proceed with game play, pulling the animal call cards one at a time out of the bowl, calling them to the students (see #4 above for procedure on calling of the animals), and placing them outside the bowl until animals need to be confirmed at game’s end. Play and repeat as time allows.

Assessment: Make sure that all students are participating in game play (repeating names, sounds and motions; covering animal pictures with markers/chips). Keep animal cards handy to review vocabulary and incorporate into other classroom activities/lesson plans when possible, reviewing pronunciation and vocabulary as needed.
1 The Cherokee Syllabary

2 Key to Pronunciation

Vowel Sounds

a: as (a) in father, or short as (a) in rival
e: as (a) in hate, or short as (e) in met
i: as (i) in pique or pig, or short as (i) in pit
o: as (o) in note, approaching (aw) in law
u: as (oo) in fool, or short as (u) in pull
v: as (u) in but, nasalized

Consonant Sounds

g: nearly as in English (g)oat, but approaching to (k)ite. So that syllables beginning with g, except $ (ga) will sometimes sound like (k).
d: nearly as in English (d)am, but approaching to (t)ask. In addition, as there are no (to), (tu), and (tv) symbols, words pronounced with these sounds are written with the V (do), S (du), or P (dv) symbols. One has to remember the pronunciation.

h k l m n q s t w y as in English.
The T (qua), Q (que), P (qui), V (quo), E (quv), and E (quv) are pronounced as though they were kwa, kwe, kwi, kwo, kwu, and kwv.

Syllables written with (tl) except $ (tla) sometimes sound more like they start with (dl). When pronouncing the dla, tla, tle, tli, tlo, tlu, and tlv, place the tongue at the roof of the mouth and bring it down as you speak these syllables.

The ts in G (tsa), V (tse), R (tsi), K (tso), J (tsu), and C (tsv) have the sound of the (j) as in jaunt.

The Syllabary does not provide symbols to indicate unvoiced vowels, glottal stops, lengthened vowels, and stressed syllables. These will be indicated in the pronunciation guides as follows:

• Unvoiced vowels: A (') will replace the vowel. Buffalo. ᏯᎾᏎ. yan' se.
• Glottal stops: A (?) will be inserted. A glottal stop is a very short pause to prevent syllables from combining together. Skunk. ᏗᎵ. di?li.
• Stress is indicated by (') after the vowel. ᏣᏏᏲ O' si yo.
• A lengthened/double long vowel is indicated by a (:) after the vowel. I go. ᏨᎦ. ge: ga.

This abbreviated pronunciation guide is adapted from the more complete pronunciation guide as used in Beginning Cherokee ᏔᎵᏍᎪ ᎦᎵᏉᎩ Ꮧطائر ᏣᎳᎩ ᏗᎪᏪᎵ by Ruth Bradley Holmes and Betty Sharp Smith. Additional information was adapted from the Easy to use Cherokee Tsa La Gi Dictionary by Prentice Robinson.
a wi
a deer

di?li
a skunk

do'ya
a beaver

e:tli
a mink
gi ga
a gopher

gi tli
a dog

ko:g'
a crow
gv he
a bobcat
gv li
a raccoon

gv ni
a turkey
sa:sa
a goose
si qua
a hog or pig

su li:
a buzzard
te wa
a flying squirrel

ti:na'
a louse
TLA GA
a blue jay

TO SI
a mosquito

TSI YA
an otter

TSU LA
a fox

TV GI
a fly

WA KA
a cow

WA YA
a wolf

WE SI
a cat

WO XI
a pigeon

YO NA
a bear
LEARNING ACTIVITY, 1st & 2nd Grades: Shadow and Light

Georgia Performance Standards covered, Grade 1: English Language Arts and Reading ELA1R5 (Vocabulary), ELA1R6 (Comprehension), ELA1LSV1 (Listening/Speaking/Viewing); Mathematics M1D1 (Data Analysis and Probability); Science S1CS1, S1CS4, S1CS7 (Habits of Mind), S1P1 (Physical Science)

Georgia Performance Standards covered, Grade 2: English Language Arts and Reading ELA2R3 (Vocabulary), ELA2R4 (Comprehension), ELA2LSV1 (Listening/Speaking/Viewing); Mathematics M2D1 (Data Analysis and Probability); Science S2CS1, S2CS4, S2CS5 (Habits of Mind), S2CS6, S2CS7 (The Nature of Science), S2E2 (Earth Science), S2P2 (Physical Science)

Objective: Students will define “shadow” and learn the difference between transparent, translucent, and opaque with this hands-on activity.

Materials: Flashlight and transparent, translucent, and opaque objects (several of each)

Examples: saran wrap and clear plastic bottle (transparent), leaves and tissue (translucent), book and backpack (opaque)

Procedure:
1. Review with students the basic story of Peter Pan, reminding them that his introductory scene with Wendy was their search for his shadow. Define with the students the word “shadow”: the dark figure cast on a surface by a body that is between the surface and the light (Merriam-Webster’s Word Central online dictionary: http://wordcentral.com/).
2. Mention that different types of objects cast different types of shadows, and that we’ll be exploring three types of objects in this lesson:
   - **Transparent:** light easily passes through these objects
   - **Translucent:** only some or a little bit of light passes through these objects
   - **Opaque:** light is blocked from passing through these objects.
3. Predict (hypothesize) with students as to which objects fall into which categories (which will cast shadows and which will not). Chart the results.
4. Darken the room and give the students a flashlight. Let them shine the flashlights on objects in the room to see which ones will make a shadow and through which objects the light will shine. The light will shine through transparent objects like saran wrap or clear plastic bottles. Some light will pass through translucent objects like leaves or tissue. No light will pass through solid opaque objects like books and backpacks. Compare results with predictions charted earlier.
5. Let students experiment with objects that are partially opaque and partially transparent. Fans are great examples: the holes in the fan allow the light to pass through creating interesting patterns. Move the flashlight around on the fan to change the shape of the shadow.
6. You can also place other objects in front of the light to create strange shadows. Have the students try to guess what the object is. Move the objects closer to the light and then farther away from the light. How does the distance from the light change the shape and clarity of the shadow?
7. Try making hand shadows with the students—examples found online at http://www.internetfamilyfun.com/sitesforkids/handshadows.htm.

Assessment: Make sure that all students are participating in the activity. Review vocabulary. Remediate if necessary.
LEARNING ACTIVITY, 3rd & 4th Grades:  
Whirlycopters and the Physics of Flying

**Georgia Performance Standards covered, Grade 3**: English Language Arts and Reading ELA3R2 (Vocabulary), ELA3R3 (Comprehension), ELA3LSV1 (Listening/Speaking/Viewing); Mathematics M3P4 (Process Skills); Science S3CS1 (Habits of Mind), S3CS8 (The Nature of Science)

**Georgia Performance Standards covered, Grade 4**: English Language Arts and Reading ELA4R3 (Vocabulary), ELA4LSV1 (Listening/Speaking/Viewing); Mathematics M4P4 (Process Skills); Science S4CS1 (Habits of Mind), S4CS8 (The Nature of Science), S4P3 (Physical Science)

**Objective**: Students will put simple paper “whirlycopters” into flight and apply the physics of flight to the activity and to their observations.

**Materials**: Whirlycopter patterns copied onto 8 ½ “ x 11” paper or cardstock (one per student, template found on page 13 ), scissors, jumbo-sized paper clips (one per student)

**Procedure**:
1. Point out that flight is an important theme in the story of “Peter Pan.” Discuss how the dream of flight has long been a part of human history, and review the timeline of flight (visit [http://www.aviation-for-kids.com/history_of_flight.html](http://www.aviation-for-kids.com/history_of_flight.html) or read the book *Pioneers of the Air* by Molly Burkett).
2. Tell students that you’ll be exploring some of the forces involved in flying such as lift, thrust and drag, and a theory that adapts these forces to airplane design called “Bernoulli’s Principle”:
   * **LIFT**: the upward force required to overcome gravity that allows an object to lift up and push forward
   * **THRUST**: the forward force required to move an aircraft through the air that provides speed and overcomes drag
   * **DRAG**: the resistance to airflow or something that slows flight down
   * **BERNOULLI’S PRINCIPLE**: states that an increase in the speed of moving air is accompanied by a decrease in the air pressure.
   You’ll explore these by making your own whirlycopters, putting them into action, and observing and discussing their actions.
3. Have each student make their own whirlycopter:
   a. Cut out the whirlycopter on the solid outside lines only so that it resembles a tall rectangle with a “v” cut out at the top.
   b. Make three cuts as indicated on the pattern: a vertical cut between “A” and “B” (to the dotted line), a small horizontal cut above the “C” section, and a small horizontal cut above the “D” section.
   c. Fold section C forward and section D backward. Bend the stem up at E and hold in place with a paperclip. Fold A forward and B backward.
4. Have each student hold their whirlycopter about five feet off the ground and let go.
5. What happens? Bernoulli’s principle! Faster moving air has less pressure than slower moving air. This means that the faster moving air flowing over the top of the wing exerts less pressure than the slower moving air flowing below the wing. This creates lift, and is part of the explanation behind how planes fly. Lift doesn’t necessarily make something rise; it simply slows how fast it falls. The paper clip (and gravity) provide drag and your muscles give the whirlycopter force upon “take off.” The whirlycopter’s natural twirling motion reduces the air pressure above the wing, creating lift and slowing its fall. Experiment with more paper clips, with dropping the copters from different heights, etc.

**Assessment**: Observe students during activity. Discuss choices, successes, and challenges. Review vocabulary and remediate as/if necessary.
with inspiration from TLC’s family activities page:
http://tlc.howstuffworks.com/family
LEARNING ACTIVITY, 5th & 6th Grades: Inventors and Inventions Word Search and Matching Game

Note: Thanks to T. Trimpe for the word search puzzle that inspired this activity

Georgia Performance Standards covered, Grade 5: English Language Arts and Reading ELA5R1 (Reading, Comprehension), ELA5R3 (Reading, Vocabulary), ELALSV1 and ELA5LSV2 (Listening/Speaking/Viewing); Science 5S5S5 (Habits of the Mind), 5S5S8 (The Nature of Science); Social Studies 5SH3 (Historical Understandings), 5S5E1 (Economic Understandings)

Georgia Performance Standards covered, Grade 6: English Language Arts and Reading ELA6R1 (Reading, Comprehension), ELA6R2 (Reading, Vocabulary), ELA6LSV2 (Listening/Speaking/Viewing); Science 6S5S10 (Cross-Curricular Reading); Social Studies 6SH3 (Historical Understandings), 6S5E1 (Economic Understandings)

Objective: Students will do online research to complete a worksheet that matches inventors with their famous inventions, then complete an “Inventor’s Challenge” word search puzzle that uses vocabulary from that match game.

Materials: Copies of matching worksheet (one per student, template on page 15), Inventor’s Challenge word search (one per student, template on page 16), computer(s) with internet access. Optional: Inventors and Discoveries by Jeanne Sturm (Rourke Publishing 2011)

Procedure:
1. Inform (or remind) students that Wendy Darling, our heroine from Peter Pan, is an inventor. Discuss how many famous inventors got their start as children, experimenting in their “home laboratories.” Inventors come from diverse backgrounds and have diverse interests and skills, and the stories of how some of their most famous inventions came to be are worth exploring. Use Jeanne Sturm’s book Inventors and Discoveries as an inspiration for classroom discussion if possible.
2. Hand out a copy of the inventors/inventions matching worksheet and a copy of the Inventor’s Challenge word search to each student (along with a pen or pencil).
3. Have students direct their web browser to Enchanted Learning’s “Inventors and Inventions” website: http://www.enchantedlearning.com/inventors/. Additional inventors/inventions can be found here: http://inventors.about.com/ (HINT: use the search box on this site for “Etienne Lenoir” and “Edward Jenner”).
4. Encourage students to complete the worksheets using the above webpage(s) as a resource.
5. Discuss with students which invention story surprised them most, and which story was most inspirational to them. What invention(s) do they use in their day-to-day lives? Does anyone have an idea for an invention of their own?

Assessment: Circulate around the room during the activity to observe students reading and completing their work. Check handouts for completeness and accuracy (answer key included as page 17 of this Educator Resource Guide). Remediate as/if necessary.
MATCH THE INVENTOR WITH THEIR FAMOUS INVENTION(S)!

ALEXANDER FLEMING
ALEXANDER GRAHAM BELL
ARTHUR GRANJEAN
BEN FRANKLIN
BINNEY SMITH
CHARLES DREW
CHRISTOPHER LATHAM SHOLES
EDWARD JENNER
ELIJAH MCCOY
ELISHA G. OTIS
ELI WHITNEY
ETIENNE LENOIR
EZRA WARNER
ISAAC MERRITT SINGER
JAMES WATT
JOHANNES GUTENBERG
LEVI STRAUSS
L.E. WATERMAN
RICHARD DREW
RICHARD JAMES
ROBERT FULTON
SAMUEL F.B. MORSE
THOMAS ALVA EDISON (2 inventions!)
W.H. CARRIER
WHITCOMB JUDSON
WRIGHT BROTHERS

AIR CONDITIONING
AIRPLANE
BIFOCALS
BLOOD BANK
CAN OPENER
COTTON GIN
CRAYOLA
DENIM JEANS
ELEVATOR BRAKE
ETCH A SKETCH
FOUNTAIN PEN
GAS ENGINE
LIGHT BULB
MORSE CODE
PENICILLIN
PHONOGRAPH
PRINTING PRESS
SCOTCH TAPE
SEWING MACHINE
SLINKY
SMALL POX VACCINE
STEAM BOAT
STEAM ENGINE (2 inventors!)
TELEPHONE
TYPEWRITER
ZIPPER

BONUS QUESTIONS (inventors not on the above list, but inventions found in puzzle):
Who invented the camera? ____________________ or ____________________
Who invented Liquid Paper? ____________________
Who invented the microwave oven? ____________________
Who invented Silly Putty? ____________________
INVENTOR MATCHING GAME ANSWER SHEET

AIR CONDITIONING: W. H. Carrier
AIRPLANE: Wright Brothers
BIFOCALS: Ben Franklin
BLOOD BANK: Charles Drew
CAN OPENER: Ezra Warner
COTTON GIN: Eli Whitney
CRAYOLA: Binney Smith
DENIM JEANS: Levi Strauss
ELEVATOR BRAKE: Elisha G. Otis
ETCH A SKETCH: Arthur Granjean
FOUNTAIN PEN: L.E. Waterman
GAS ENGINE: Etienne Lenoir
LIGHT BULB: Thomas Alva Edison
MORSE CODE: Samuel F.B. Morse
PENICILLIN: Alexander Fleming
PHONOGRAPH: Thomas Alva Edison
PRINTING PRESS: Johannes Gutenberg
SCOTCH TAPE: Richard Drew
SEWING MACHINE: Isaac Merritt Singer
SLINKY: Richard James
SMALL POX VACCINE: Edward Jenner
STEAM BOAT: Robert Fulton
STEAM ENGINE (2 inventors!): Elijah McCoy/James Watt
TELEPHONE: Alexander Graham Bell
TYPEWRITER: Christopher Latham Sholes
ZIPPER: Whitcomb Judson

BONUS QUESTIONS (inventors not on the above list, but inventions found in puzzle):
Who invented the camera? Louis J.M. Daguerre or George Eastman
Who invented Liquid Paper? Bette Nesmith Graham
Who invented the microwave oven? Percy Spencer
Who invented Silly Putty? James Wright
Additional Learning and Enrichment Opportunities

Acting and Drama
How do performers tell stories? Just as carpenters use hammers and doctors use stethoscopes, performers use tools: voice, body and movement. Talk about how we use our voice, our body, and our movement to pretend to be things, other people, animals, etc. Have the children explore the tools (body, movement, voice) one at a time:

1. BODY: pose as different things (i.e. an elephant, using an arm as trunk and expanding to be as big as possible; a grandmother/grandfather, bending your back and leaning over a bit; a Ferris wheel, placing both arms over your head in a circle and clasping your hands together)
2. MOVEMENT: add movement to the above
3. VOICE: how would they sound?

CURRICULUM CONNECTION: Theatre Arts

Fitness
Have students do “flying exercises” such as squatting, jumping in place as high as possible, and then stretching their arms way above their heads—these activities improve muscular strength and cardiovascular endurance. Allow them to tiptoe around the room with their arms up and out like they are flying, practicing balance and playing with weightlessness and gravity (as they take safe, gentle leaps).

CURRICULUM CONNECTIONS: Physical Education, Science

Math Fun
There are many ways to explore math using the Peter Pan performance as an inspiration. Count how many characters you can recall from the play, and figure out what percentage of the show’s total character count were in the Darling family, Lost Boys and/or Pirates. Talk about the Darling children and, based on their ages, do size comparisons, guessing who might be tallest, who might be shortest, who might be the same size (greater than, less than, equal to). What other math games can you create using the show and/or its characters as a jumping-off point?

CURRICULUM CONNECTION: Mathematics

Music and Sound Effects
Explore how music can help tell a story. Music was a big part of this theatrical experience. How did music help you understand the actions of the play and the feelings of the characters? Make your own music: play drums you make out of coffee cans, guitars you make out of cereal boxes and rubber bands, and flutes you make out of empty plastic bottles. Create lyrics and sing along! What mood or emotion do these different instruments suggest, and how can your voice reflect these emotions? Listen to different styles of music (such as classical, jazz, country, and pop/rock) and identify what instruments you hear being played. Discuss what “sound effects” are and recall any sound effects you heard in the show that helped create the world of the puppet play.

CURRICULUM CONNECTIONS: Fine Arts/Music, Fine Arts/Visual Art
Places and People
What parts of the story made you think/know it was set in England? Find the country of England on a globe. Talk about the costumes, scenery, and the characters in the puppet show and how they are or are not representative of England.” Was the play set in modern times, or in the past? How did you know? How is life in England in the early 20th century (the time period of for Barrie’s original tale) similar to and/or different from our modern customs in the United States of America?

CURRICULUM CONNECTION: Social Studies

Puppetry and Science
How are puppets brought to life? How are puppet shows created? Have the students create a puppet show using objects they can find in the classroom and/or in their desks. Have them each bring in one kitchen utensil from home (marked with their name on masking tape!) and brainstorm how to re-create a favorite fairytale using these utensils. Puppets designed for this show and for all puppet shows use scientific applications in their designs. Can you figure out how simple machines (levers, pulleys, wedges, screws, wheels/axles, inclines) might have been used in the puppets, set, props or stage for this puppet show? Discuss how properties of light and dark apply to the production and performance of this show. What other ways can you see that science would have been used in the research for or creation of Peter Pan?

CURRICULUM CONNECTION: Theatre Arts, Science (Engineering and Technology)

Seasons, Eco-systems, and Weather
Discuss the setting of the marsh (the home of the crocodile) in the play. What is life like in a marsh? What sounds did you hear? What plants did you see? What other plants and animals would our crocodile encounter? Create posters of a marsh eco-system using clippings from discarded magazines, crayons, scraps of fabric, etc. Rain falls on the marsh/in Neverland during the play, and lightning strikes during that storm. What does that lightning strike, and why is it attracted to that particular thing?

CURRICULUM CONNECTIONS: Science, Mathematics

Spelling
What fun can you have with the letters of the words “Peter Pan”? Give each student the letters P-E-T-E-R-P-A-N (or write them on the SMARTBoard or chalk board) and ask them to make (and define) the following words: trap, rate, nape and preen. What other words can you and your students make (and define) using those letters?

CURRICULUM CONNECTIONS: English Language Arts & Reading (Spelling)

Storytelling
How are stories written? How can a story be told? Have the children draw a series of pictures to illustrate what happened in the story. Add simple captions. This is called a “storyboard” and is often the way a play or a movie is created! Have the children act out what they remember, allowing different children to take on different roles (including scenery so all have a part to play!).

CURRICULUM CONNECTIONS: Theatre Arts, English Language Arts & Reading, Fine Arts/Visual Art
Selected Bibliography


Internet Resources

Have all your crocodile questions answered by animal experts on the Animal Planet Ferocious Crocs page.

http://www.puppet.org
Visit the website of the Center for Puppetry Arts, where you can take a virtual tour of the Museum and see examples of puppets from many cultures and of many different styles.

Take free Cherokee language lessons on the website of the Cherokee Lessons organization.

Discover the statistics and learn about the importance of Arts Advocacy at the Educational Theatre Association website.

http://www.mermaidtheatre.ns.ca/repertory/index.shtml

http://www.nationalgeographic.com/pirates/
Go on a high seas adventure when you find out all about pirates on National Geographic’s “Pirates!” website.

http://www.native-languages.org/kids.htm
Celebrate the culture, history and language of the Cherokee Indians via the Native Language of the Americas website.

www.peterpan.com
Explore this portal to connect you with books, games, movies, sound recordings and other educational resources of/for “Peter Pan.”

http://www.gutenberg.org/ebooks/16
Read J.M. Barrie’s original text for “Peter and Wendy” here online via Project Gutenberg’s website.

http://www.puppeteers.org
Find out about puppetry and puppeteers in the United States by visiting the webpage for the Puppeteers of America.

http://www.sciencekids.co.nz/
Invite your students to learn the fun of physics through these interactive experiments in light/shadow, flight and more on the Science Kids website.

http://www.inventionatplay.org/index.html
Investigate how play connects to the creative impulse that inspired both historic and contemporary inventors through interactive games and activities from the Smithsonian’s Lemelson Center for the Study of Invention and Innovation.

http://www.unima-usa.org
Learn how Union Internationale de la Marionnette-USA “promotes international friendship through the art of puppetry.”

http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/
Define patents and trademarks, enjoy games and puzzles on inventions and inventors, see an invention timeline and more on the United States Patent and Trademark Office’s Kids Pages.