

DARWIN

THE DINOSAUR



Applause Series CURRICULUM GUIDE
CIVIC CENTER OF GREATER DES MOINES

April 1, 2011

DARWIN THE DINOSAUR

Dear Teachers,

Thank you for joining us for the Applause Series presentation of *Darwin the Dinosaur* from CORBiAN Visual Arts and Dance. The creators of the show, Ian Carney and Corbin Popp, are Broadway performers who have combined their love of dance, theater, and technology to create a truly unique theatrical experience. Their movement-based tale— an original story about a dinosaur out to discover the meaning of love— promises to dazzle audience members young and old alike with its use of electroluminescent lighting and elegant storytelling.

We thank you for sharing this very special experience with your students and hope that this study guide helps you connect the performance to your in-classroom curriculum in ways that you find valuable. In the following pages, you will find contextual information about the performance and related subjects, as well as a variety of discussion questions and activities. Some pages are appropriate to reproduce for your students; others are designed more specifically with you, their teacher, in mind. As such, we hope that you are able to “pick and choose” material and ideas from the study guide to meet your class’s unique needs.

See you at the theater,

Civic Center Education Team



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Alliant Energy, American Republic Insurance Company, Bank of the West, Bradford and Sally Austin, Bank of America, EMC Insurance Companies, Jules and Judy Gray, Greater Des Moines Community Foundation, Hy-Vee, John Deere Des Moines Operations, Iowa Department of Cultural Affairs, Richard and Deborah McConnell, Pioneer Hi-Bred - a DuPont business, Polk County, Prairie Meadows Community Betterment Grant, Sargent Family Foundation, U.S. Bank, Wells Fargo & Co., Willis Auto Campus, and more than 200 individual donors.

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This study guide was compiled and written by Karoline Myers; edited by Michelle McDonald and Eric Olmscheid. Partially adapted from study guide materials by CORBiAN Visual Arts and Dance.

ABOUT THE CIVIC CENTER



The Civic Center of Greater Des Moines is a cultural landmark of central Iowa and is committed to engaging the Midwest in world-class entertainment, education, and cultural activities. The Civic Center has achieved a national reputation for excellence as a performing arts center and belongs to several national organizations, including The Broadway League, the Independent Presenters Network, International Performing Arts for Youth, and Theater for Young Audiences/USA.

Five performing arts series currently comprise the season— the Willis Broadway Series, Prairie Meadows Temple Theater Series, Wellmark Blue Cross and Blue Shield Family Series, the Dance Series, and the Applause Series. The Civic Center is also the performance home for the Des Moines Symphony and Stage West.

The Civic Center is a private, nonprofit organization and is an important part of central Iowa's cultural community. Through its education programs, the Civic Center strives to engage patrons in arts experiences that extend beyond the stage. Master classes bring professional and local artists together to share their art form and craft, while pre-performance lectures and post-performance Q&A sessions with company members offer ticket holders the opportunity to explore each show as a living, evolving piece of art.

Through the Applause Series— curriculum-connected performances for school audiences— students are encouraged to discover the rich, diverse world of performing arts. During the 2010-2011 season, the Civic Center will welcome more than 37,000 students and educators to 12 professional productions for young audiences.

.....
Want an inside look? Request a tour.
.....

Group tours can be arranged for performance and non-performance dates for groups grades 3 and above.

Call 515-246-2355 or visit civiccenter.org/education to check on availability or book your visit.
.....

DID YOU KNOW?

More than 250,000 patrons visit the Civic Center each year.

The Civic Center opened in 1979.

The Civic Center has three theater spaces:

- *Main Hall, 2744 seats*
- *Stoner Studio, 200 seats*
- *Temple Theater, 299 seats (located in the Temple for the Performing Arts)*

No seat is more than 155 feet from center stage in the Main Hall.

Nollen Plaza, situated just west of the Civic Center, is a park and amphitheater that is also part of the Civic Center complex. The space features the Brenton Waterfall and Reflection Pool and the Crusoe Umbrella sculpture.

The Applause Series started in 1996. You are joining us for the 15th anniversary season!

GOING TO THE THEATER . . .



YOUR ROLE AS AN AUDIENCE MEMBER

Attending a live performance is a unique and exciting opportunity. Unlike the passive experience of watching a movie, audience members play an important role in every live performance. As they act, sing, dance, or play instruments, the performers on stage are very aware of the audience's mood and level of engagement. Each performance calls for a different response from audience members. Lively bands, musicians, and dancers may desire the audience to focus silently on the stage and applaud only during natural breaks in the performance. Audience members can often take cues from performers on how to respond to the performance appropriately. For example, performers will often pause or bow for applause at a specific time.

As you experience the performance, consider the following questions:

- What kind of live performance is this (a play, a dance, a concert, etc.)?
- What is the mood of the performance? Is the subject matter serious or lighthearted?
- What is the mood of the performers? Are they happy and smiling or somber and reserved?
- Are the performers encouraging the audience to clap to the music or move to the beat?
- Are there natural breaks in the performance where applause seems appropriate?

THEATER ETIQUETTE

Here is a checklist of general guidelines to follow when you visit the Civic Center:

- Leave all food, drinks, and chewing gum at school or on the bus.
- Cameras, recording devices, and personal listening devices are not permitted in the theater.
- Turn off cell phones, pagers, and all other electronic devices before the performance begins.
- When the house lights dim, the performance is about to begin. Please stop talking at this time.
- **Talk before and after the performance only.** Remember, the theater is designed to amplify sound, so the other audience members and the performers on stage can hear your voice!
- Appropriate responses such as laughing and applauding are appreciated. Pay attention to the artists on stage—they will let you know what is appropriate.
- Open your eyes, ears, mind, and heart to the entire experience. Enjoy yourself!

*GOING TO THE THEATER information is adapted from the Ordway Center for the Performing Arts study guide materials.

CIVIC CENTER FIELD TRIP INFORMATION FOR TEACHERS



Thank you for choosing the Applause Series at the Civic Center of Greater Des Moines. Below are tips for organizing a safe and successful field trip to the Civic Center.

ORGANIZING YOUR FIELD TRIP

- Please include all students, teachers, and chaperones in your ticket request.
- After you submit your ticket request, you will receive a confirmation e-mail within five business days. Your **invoice will be attached to the confirmation e-mail.**
- Payment policies and options are located at the top of the invoice. **Payment (or a purchase order) for your reservation is due four weeks** prior to the date of the performance.
- The Civic Center reserves the right to cancel unpaid reservations after the payment due date.
- Tickets are not printed for Applause Series shows. Your invoice will serve as the reservation confirmation for your group order.
- Schedule buses to arrive in downtown Des Moines at least 30 minutes prior to the start of the performance. This will allow time to park, walk to the Civic Center, and be seated in the theater.
- Performances are approximately 60 minutes unless otherwise noted on the website and printed materials.
- All school groups with reservations to the show will receive an e-mail notification when the study guide is posted. Please note that study guides are only printed and mailed upon request.

DIRECTIONS AND PARKING

- Directions: From I-235, take Exit 8A (Downtown Exits) and the ramp toward 3rd Street and 2nd Avenue. Turn onto 3rd Street and head south.
- Police officers are stationed at the corner of 3rd and Locust Streets and will direct buses to parking areas with hooded meters near the Civic Center. Groups traveling in personal vehicles are responsible for locating their own parking in ramps or metered (non-hooded) spots downtown.
- Buses will remain parked for the duration of the show. At the conclusion, bus drivers must be available to move their bus if necessary, even if their students are staying at the Civic Center to eat lunch or take a tour.
- Buses are not generally permitted to drop off or pick up students near the Civic Center. If a bus must return to school during the performance, prior arrangements must be made with the Civic Center Education staff.

ARRIVAL TO THE CIVIC CENTER

- When arriving at the Civic Center, please have an **adult lead your group** for identification and check-in purposes. You may enter the building through the East or West lobbies; a Civic Center staff member may be stationed outside the building to direct you.
- Civic Center staff will usher groups into the building as quickly as possible. Once inside, you will be directed to the check-in area.
- Seating in the theater is general admission. Ushers will escort groups to their seats; various seating factors including group size, grade levels, arrival time, and special needs seating requests may determine a group's specific location in the hall.
- We request that an **adult lead the group into the theater and other adults position themselves throughout the group**; we request this arrangement for supervision purposes, especially in the event that a group must be seated in multiple rows.
- Please allow ushers to seat your entire group before rearranging seat locations and taking groups to the restroom.

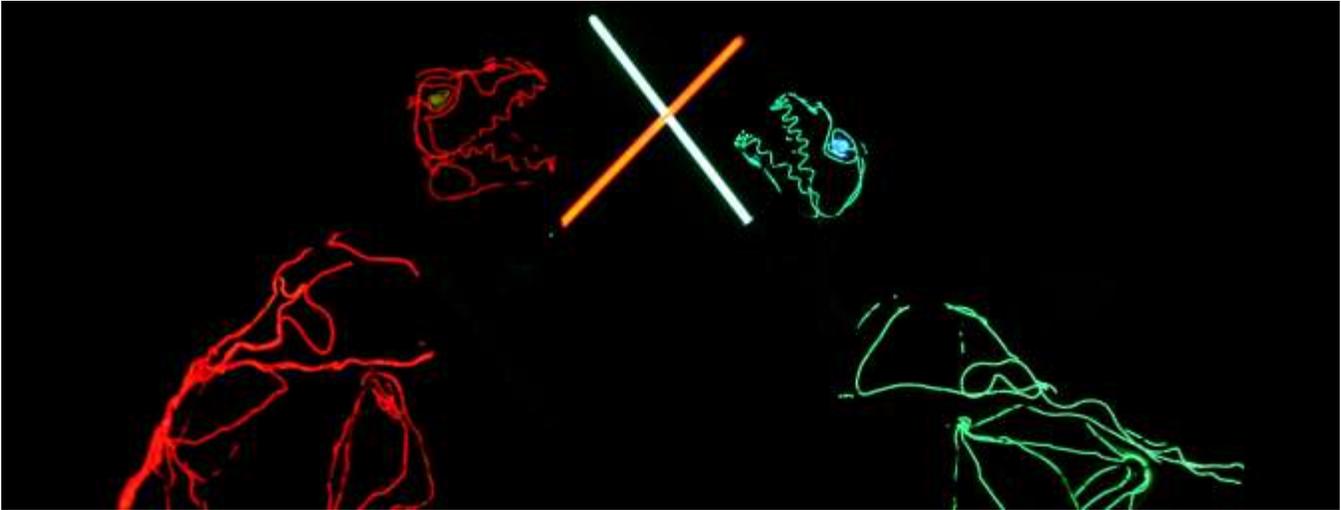
IN THE THEATER

- In case of a medical emergency, please notify the nearest usher. A medical assistant is on duty for all Main Hall performances.
- We ask that adults handle any disruptive behavior in their groups. If the behavior persists, an usher may request your group to exit the theater.
- Following the performance groups may exit the theater and proceed to their bus(es).
- If an item is lost at the Civic Center, please see an usher or contact us after the performance at 515.246.2355.

QUESTIONS?

Please contact the Education department at 515.246.2355 or education@civiccenter.org. Thank you!

ABOUT THE PERFORMANCE



In this 60-minute performance from CORBiAN Visual Arts and Dance, the audience will experience an original story told through electroluminescent puppetry. Clothed in black, the puppeteers remain invisible to the audience as crayon-like squiggles in the form of different creatures light up the stage. The performance contains no spoken word. Instead, the story is revealed through the ballet-like movements of the many puppets. Read more about the performance before seeing it at the theater.

"...an eye-popping display of storytelling that's like nothing else you've ever seen"

--Broadwayworld.com

"A wonderful hour of fantasy that combines ancient, wordless storytelling with modern technology and music."

– LA Times

SYNOPSIS

Professor Henslow, a scientist with magical powers, puts the final touches on his latest creation—a dinosaur named Darwin. With a wave of his magic wand, Darwin is brought to life. Though he learns to take his first steps from his creator, Darwin's animal instincts take over. Realizing that he is suddenly in danger, Henslow gives Darwin compassion by making him a heart.

Soon, Professor Henslow encourages Darwin to explore life and sends him off with fireflies to guide him through the night. On his journey, Darwin encounters many different types of creatures including a gangly ostrich, a beautiful fish, and a menacing Tyrannosaurus Rex. From each experience, he learns something new about the world around him.

The scientist comes to miss his companion and sets off to find him. Unfortunately, his path crosses that of the dangerous Tyrannosaurus Rex. With his creator's life in danger, Darwin is forced to make a decision— a decision that will alter his life forever and ultimately lead him to discover the true meaning of love.

MUSIC

The action of *Darwin the Dinosaur* is accompanied by several musical compositions. Many are recognizable classical pieces. As you watch the performance, think about how the music enhances the story. For example, how do you feel when you hear the music that accompanies the red dinosaur? How do you feel when you hear the music that accompanies the ostrich?

FUN FACTS

- The show runs on approximately 250 batteries—size AA and 9v.
- Many of the batteries come from Broadway shows that only use their batteries for one performance.
- There are approximately 2,000 feet of electroluminescent wire used in the show.
- There are many common household items and toys used in the costumes, such as skateboards, trucks, super balls, shin-guards, and paint poles.

ABOUT THE ARTISTS, CORBIAN VISUAL ARTS & DANCE



Ian Carney and Corbin Popp, the founders of CORBIAN Visual Arts and Dance and the creators of *Darwin the Dinosaur*, met while dancing in Twyla Tharp and Billy Joel's Broadway show MOVIN' OUT. An immediate connection was made as they discovered their mutual love for art, theater, and technology. After coming across a product called EL Wire, a new vision formed. To Carney and Popp, the possibilities of this technology seemed endless. Together, with their wives Eleanor and Whitney, they began to develop puppet-like creatures out of EL Wire.

Soon, they relocated from New York to New Orleans, Louisiana, to continue the creative process. The result, after years of engineering and development is *Darwin the Dinosaur*. Out of that initial collaboration and project, they decided to form their own production company. CORBIAN Visual Arts and Dance is currently developing a show based on the tale of *The Ugly Duckling*.



Ian Carney

Ian Carney was raised in New Orleans, Louisiana. He is a classically trained dancer, and has danced principal roles in *Coppelia*, *The Nutcracker*, *Sleeping Beauty*, *Scherezade*, *Petrouchke*, and *Les Sylphides* to name a few. He danced the lead roll on *Broadway* in Billy Joel and Twyla Tharp's *Movin' Out* for three years and was honored as a dance captain. He currently balances directing and performing while instructing ballet at Tulane University in New Orleans.



Corbin Popp

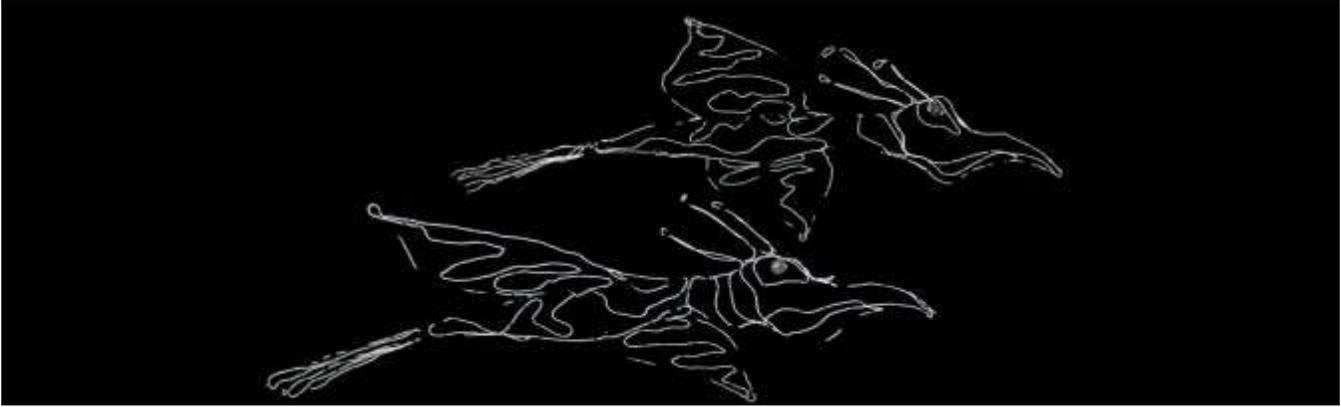
Corbin Popp, from Lincoln, Nebraska, sparked interest in dance at the Lincoln Midwest Ballet Company. He holds a bachelor of science degree in biochemistry and minors in math and physics from the University of Nebraska at Lincoln. In 2000, he was a Fulbright scholar in Germany. He began his professional dance training during his final years at UNL, and has since continued dancing professionally with the Omaha Theater Company, The Sacramento Ballet, Complexions, Billy

Joel and Twyla Tharp's *Movin' Out* on Broadway, and *The Phantom of the Opera* on Broadway.

The Ensemble

There are 7 ensemble members who travel and perform *Darwin the Dinosaur*: Stephen Charles Nicholson; Eleanor Carney (married to Ian Carney); Whitney Popp (married to Corbin Popp); Michael Quintana; sisters Tierney St. John and Karson St. John; and Reyn Lambert. Members of the ensemble studied dance or acting in school and have performed in professional ballet companies and on Broadway.

THE ELEMENTS... ABOUT THE MOVEMENT



Darwin the Dinosaur is told through movement, gestures, and images much like ballet. Dance has always held an important role in the human experience. Before there was a word for dance, people were moving their bodies in rhythmic patterns. Dance is often used as a way to express how one is feeling and to socially connect with others. People around the world use dance to mourn, celebrate, worship, honor, heal, demonstrate power, and to entertain. Dance is also a nonverbal form of communication.

The creators of *Darwin the Dinosaur* worked within some very specific parameters when choreographing the show:

- The EL wire light against a black background creates a two-dimensional effect.
- The actors have to try to remain invisible. This means one actor cannot pass in front of others or they will be backlit and their bodies will show.
- The way the puppets are built limits the ways in which they can be moved. For example, the legs of the dinosaurs and birds always face forward, which means they can only move in parallel lines.

ELEMENTS OF DANCE

Dance is the movement of the human body through space in time using energy. Although *Darwin the Dinosaur* uses puppetry, the choreographers and performers continue to utilize the elements of dance in the movement for the show. It can be helpful to think about each of these elements and how they come together to create the whole.

BODY refers to the awareness of specific body parts and how they can be moved in isolation and combination.

ACTION refers to locomotor movement and non-locomotor movement.

Locomotor action includes movement that travels through space such as walking, running, jumping, and leaping.

Non-locomotor or axial action refers to movement with body parts while the main part of the body stays planted in one space. Examples of non-locomotor action are swaying, shaking, stretching, and twisting.

SPACE refers to the space the

dancer's body moves through, the shape of the dancer's body, the direction of the body movements, and the shapes, levels and movement patterns of a group of dancers.

TIME is both a musical and dance element. It includes beat, tempo, accent, and duration.

ENERGY refers to the force applied to dance to accentuate the weight, attack, strength, and flow of a dancer's movement.

Explore ACTION, TIME, and SPACE by using the movement exercises on page 12.

TIPS FOR SUCCESS:

1. Set some collective rules of behavior while the group is moving. These can include keeping hands and feet to yourself, etc.
2. Start each part of the activity by demonstrating a movement before asking students to participate.

Page adapted from the Ordway Center for the Performing Arts' "Understanding Dance" materials.

THE ELEMENTS... ABOUT THE PUPPETS



Puppetry is an ancient art form that exists in many different cultures. Puppets are used in storytelling to convey simple, clear meaning about universal themes such as love, friendship, or discovery. Some examples of different kinds of puppets are shadow puppets, hand puppets, ventriloquist dummies, and marionettes. *Darwin the Dinosaur* uses a new kind of light-based puppetry.

THE PUPPETS

Each character in *Darwin the Dinosaur* story is built from a framework of struts and joints covered in black cloth that is lined with electroluminescent wire powered by a battery pack. (Learn more about EL wire on page 10). Building the characters required knowledge of both art and technology. The designers had to solve problems such as how to make a hinge joint that does not stress the light wire, or a battery pack that is powerful but not too heavy for the actors to wear while moving.

TOP: Creators Ian Carney and Corbin Popp with two of the puppets that are worn like costumes. Can you see the battery packs that power the lighting?

TYPES

Some of the characters—like the dinosaurs and birds—are designed like costumes that the actors wear.

Other characters are more like standard puppets which the actors hold and manipulate. The fish and the flowers in the show are examples.

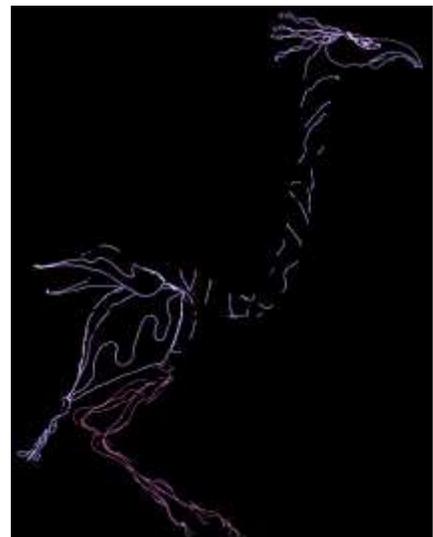
In addition to the characters, the designers created many props that the actors manipulate. Examples include a staff, a book, a bone, and a heart.

DESIGN CHOICES

When designing the puppets and costumes, the creators made many artistic choices. For each character, the creators had to decide on its color, size, and shape. When making these decisions, the creators took into account the characters' roles in the story. As you watch the show, think about how the different design choices affect how you feel about the characters. For example, would the red dinosaur still be scary if he were tiny?



An actor manipulates a large bird puppet.



Illuminated bird puppet. You can no longer see the actor.

THE ELEMENTS... ABOUT THE TECHNOLOGY

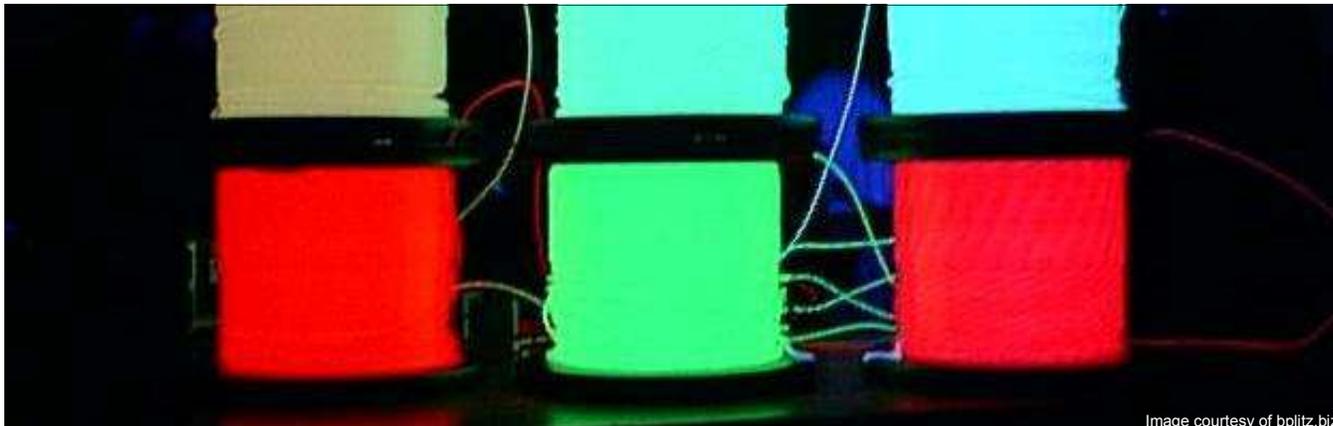


Image courtesy of bplitz.biz

Darwin the Dinosaur uses electroluminescent wire (or EL Wire, for short) to create its glow-in-the-dark creatures. EL Wire can be used in many creative ways, such as on clothing and costumes. It is also sometimes used on bicycle spokes and helmets, stairs, and walkways so that people can see them in the dark and stay safe. Learn more about how EL Wire works before seeing the show.

COMPONENTS

Electroluminescent Wire (or EL Wire) has several components:

Copper Core

At the center of EL Wire is a solid metal core made from copper. This copper core acts as a conductor. A conductor is a material through which electricity – a flow of electrons – moves easily.

Phosphor

The copper core is coated with an even layer of phosphor. (You find phosphor in other glow-in-the-dark products like light sticks.) Phosphor gives off light when it is exposed to an energy source such as electricity.

Copper Wires

Next, two very thin copper wires are twined together to make one long strand, which will also serve as a conductor. These thin wires are coiled around the phosphor-coated core and will also provide the energy needed for the phosphor to illuminate.

Plastic Sleeves

For protection, the copper core, phosphor, and copper wires are coated in two plastic sleeves. The first plastic sleeve is made from a clear, water-proof plastic. The second plastic sleeve adds another layer of protection. Phosphor gives off limited colors of light, so this outer plastic sleeve is sometimes dyed to create additional color effects.

HOW IT WORKS

When electricity is applied to the EL Wire, the electrons in the phosphor become excited and are knocked to a higher energy level. When the electrons release that extra energy and move back to their original energy level, they emit particles of light called photons. This causes the phosphor to glow.

POWER SOURCE

To create electricity to illuminate the EL Wire, a power source is required. The EL Wire in *Darwin the Dinosaur* is powered using batteries so that the performers can move around the stage.

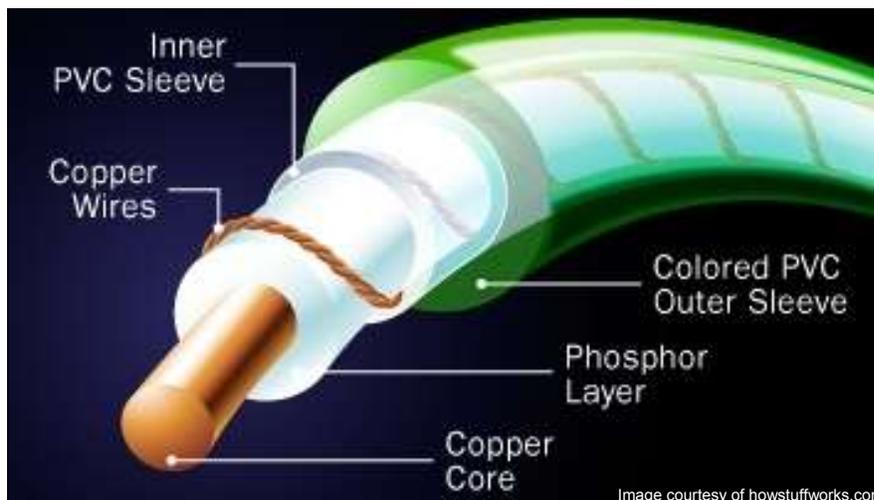


Image courtesy of howstuffworks.com

VOCABULARY



DANCE AND THEATER



Ballet dancer.

ballet: a classical form of dance marked by grace, precision, and fluidity. Many of the movements in *Darwin the Dinosaur* are ballet-like.

choreographer: an artist who creates the concept for a dance, composes the steps, and teaches the movement to the dancers.

energy: in dance, the intensity, amount or force of the movement. Adjectives, such as explosive, smooth, free, restrained, wild, etc., describe some different types of energy that dancers can exhibit.

locomotor movement: movement where the body travels through space such as walking, running, jumping, and leaping

non-locomotor movement: movement of body parts while the main part of the body stays in one space. Examples include swaying, shaking, stretching, and twisting.

prop: an item held or moved by a performer. In addition to EL Wire costumes and puppets, props made of EL Wire are also used in *Darwin the Dinosaur*.

shape: a formation or design created by the dancers with the lines of their bodies.

space: the whole design and use of the area in which a dance unfolds.

tempo: the time, speed, or rhythm of the beats of a piece of music or the pace of any movement or activity.

time: a measurable period in which movement of dance occurs. Time is indicated in dance in many ways, ranging from complex rhythm patterns to long, unbroken stillness.

LIGHT AND EL WIRE

backlit: to be illuminated from behind. If a performer crosses in front of another performer in *Darwin the Dinosaur*, he or she will be backlit.

conductor: a material through which electricity flows easily. In EL Wire, copper serves as the conductor.

electrons: an elementary particle that has a negative charge.



Several colors of EL Wire. glows when electricity runs through it.

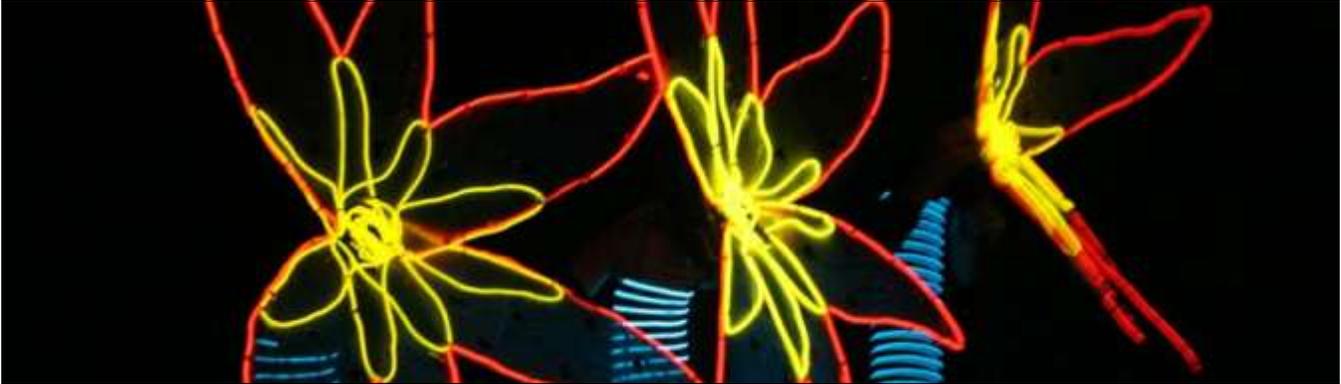
EL Wire: wire that includes a copper core coated in phosphor that glows

opaque: not allowing light to pass through.

phosphor: an element that glows when electricity runs through it. EL Wire glows because it contains phosphor.

photon: a particle of light.

ACTIVITIES AND DISCUSSION: Movement Connections



The Dancing Mirror

Goal: To explore locomotor and non-locomotor action and to develop basic dance vocabulary

Explanation: Students will be introduced to ACTION, one of the basic elements of dance through exploration of locomotor and non-locomotor movements.

Activity:

1. Write 'locomotor movement' and 'non-locomotor movement' on the board and read the descriptions of each from the elements of dance ACTION section on page 9.
2. Read through the examples of each type of action as a group and ask students to generate additional examples of each that can be listed on the board underneath the title of each type of action.
3. Ask the students to stand up and form a circle with you. Explain to students that they are to be your mirror image. If your hand moves, their hand moves. If your body sways, their body sways, etc.
4. Demonstrate a number of examples of action from the board and ask students to name whether the action is locomotor or non-locomotor movement as they mirror the action.
5. Ask students to form pairs and each take turns being the leader and the follower using both locomotor and non-locomotor actions.

Discussion:

1. Describe how it felt to perform locomotor action.
2. Describe how it felt to perform non-locomotor action.
3. What was it like to lead your partner?
4. What was it like to follow your partner?
5. What did your movements remind you of, if anything?

Grooving to the Beat

Goal: To move through space to a beat

Explanation: Students will be introduced to TIME and SPACE, two of the basic elements of dance, through beat creation and movement through space.

Activity:

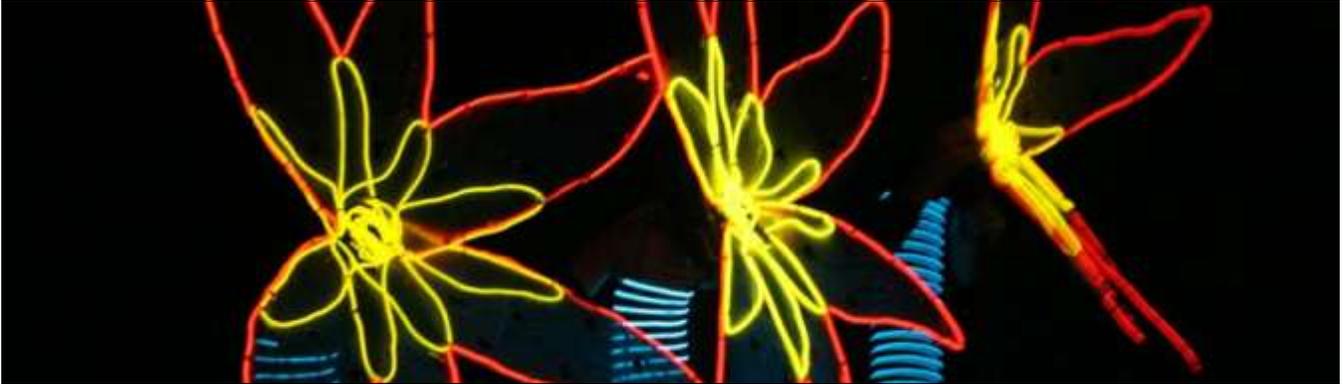
1. Ask the students to create a circle and clap 8 count beats while counting out loud: 1, 2, 3, 4, 5, 6, 7, 8.
2. Explore variations in tempo by asking students to insert a word after each number such as 'Mississippi' for a slow tempo, 'art' for a fast tempo, or 'dancer' for a medium tempo. I.e. "one, Mississippi, two," etc.
3. Ask students to divide into two groups: A and B.
4. Ask group "A" to clap a beat using one of the tempo prompts from the previous step, while group "B" moves through the space by stepping on each beat. To give the walking purpose and character, you may want to ask students to move like a certain kind of animal as they walk, or as if walking on the moon, through water, etc.
5. Students in group "A" can experiment with different tempos, prompted by you, as students in group "B" change their movement to the beat.
6. Ask the two groups to switch roles.

Discussion:

1. Describe the difference between moving to the beat and creating the beat by clapping. Was one more challenging for you? Why?
2. How did changing the tempo of the beat affect your group's movement?
3. Describe some of the ways that everyone moved through the space (stepping, high or low levels, etc.). What are some other ways that you might move through space to a beat?

Movement activities adapted from the Ordway Center for the Performing Arts study guide materials.

ACTIVITIES AND DISCUSSION: Literacy Connections



ADVENTURE JOURNAL

When: Before the show

Goal: To write about an adventure

Explanation: In *Darwin the Dinosaur*, Darwin sets off on his own on an adventure to discover the world around him. In this activity, students will imagine that they are embarking on an adventure and write a journal entry about their experience.

Activity:

1. Encourage students to imagine that they are leaving their home to have an adventure. Invite them to think about where they are going and whom and what they might encounter.
2. Tell students that they are now going to write a journal entry about their adventure. In their journal, they should write about where they have traveled to and at least one person or creature that they met. What happened during this encounter?
3. When students have finished their journal entries, allow them to share with one another.

Follow-up Questions:

1. What was the setting of your adventure? Why?
2. What did you encounter?
3. Did anything exciting/scary/surprising happen to you on your adventure? What?
4. If this were a real adventure, do you think you would have learned anything from the experience?

Additional Questions for After the Show:

1. What sort of adventure did Darwin go on?
2. Was there anything you wrote about on your adventure that was similar to what Darwin experienced?

BEFORE OR AFTER STORY

When: After the performance

Goal: To write a story inspired by one of the characters in the performance

Explanation: In this activity, students will choose a character from the performance and create a story about what happened to the character before or after the story contained within the performance.

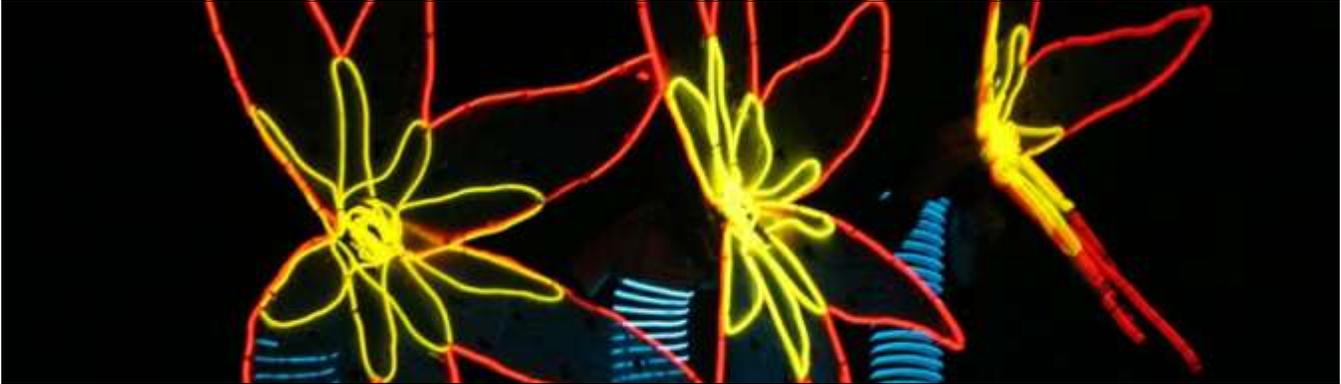
Activity:

1. Explain to students that *Darwin the Dinosaur* was an original story and that all of the characters and action were made up by the creators.
2. Ask students to pick one of the characters from the performance.
3. Students should think about this character's life before Darwin came along or what happened to the character after Darwin's adventure. Invite students to think about what they know about the character from the show and what clues the character's design (size, shape, color, etc.) might also tell them about the character.
4. Students should then write a short story where their chosen character is the star. For example, how did Professor Henslow receive his magic powers?
5. After editing their story, students may choose to illustrate a scene and share their story with the class.

Follow-up Questions:

1. Which character did you choose? Why?
2. What was your character like during the performance? How did that influence the story you wrote?
3. Do you think it is easier to write a story when a character is given to you? Or, do you think it is easier to write a story when you get to make up everything?

ACTIVITIES AND DISCUSSION: Science Connections



DANCING FLASHLIGHTS

When: After the show

Goal: To explore how light travels in a straight line and does not pass through opaque objects

Explanation: In this activity, students will explore the nature of light and how it effected how the choreographers' choices when creating the movement for the show.

Activity:

1. Clear space in the classroom large enough for two students to walk around.
2. Darken the classroom as much as possible by turning off lights and covering windows.
3. Explain to students that you are going to experiment with light and movement, just like the performers in *Darwin the Dinosaur*.
4. Ask for one student to volunteer to be your first performer. Invite them to carefully move around the open space while holding a flashlight. While the student is moving, the rest of the students should carefully observe the light from the flashlight. What do they notice? What direction does the light travel? Does the light change direction on its own or because the performer moves the flashlight? What does this lead them to conclude?
5. After students have observed and come to the conclusion that light travels in a straight line, add a second performer. This performer will not have a flashlight.
6. As both performers carefully move through the space, invite the rest of the class to observe what happens when the second performer crosses behind or in front of the performer with the flashlight. Is the light affected when someone walks behind it? Is it affected when someone crosses in front of it? When does the light illuminate the second performer?

7. Invite students to discuss their observations.

Introduce the term *opaque* when students discuss how the second performer blocked the light when they crossed in front of the flashlight. (The light was blocked because our bodies are opaque. Any object that light does not pass through is opaque.)

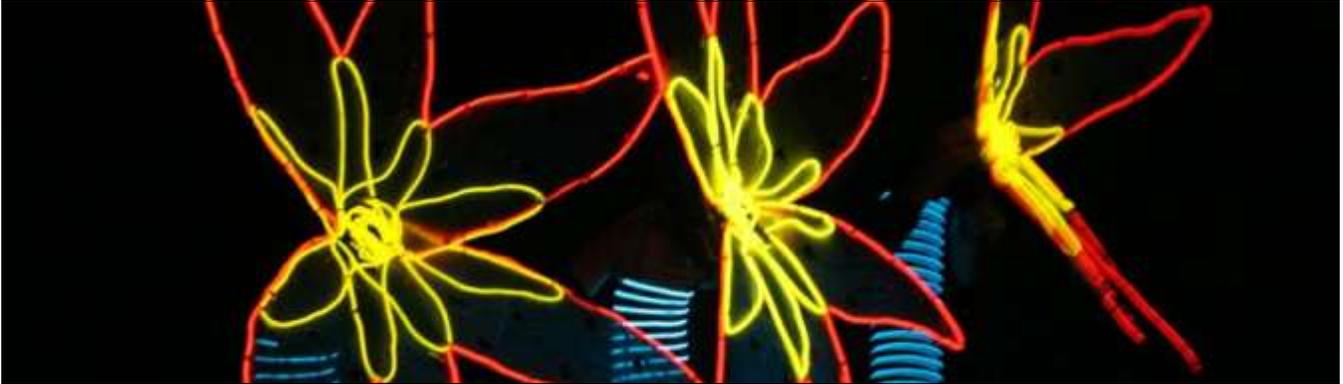
8. If students observed that you could see the outline of the second performer when they crossed in front of the flashlight, tell students that the second performer was backlit by the flashlight. What you could see was the performer's *silhouette*.

9. If time allows, switch performers, add more performers, or add more flashlights. Given what students now know about light, can they create patterns or movement without letting the flashlight beams collide? Can they create a dance without blocking another flashlight beam with their bodies?

Follow-up Questions:

1. What elements of light do the performers in *Darwin the Dinosaur* need to think about? What would happen, for instance, if a performer crossed in front of another performer?
2. Does this new understanding of light give you a new appreciation for the choreography in *Darwin the Dinosaur*? Why or why not?

ACTIVITIES AND DISCUSSION: Character Connections



JOURNEY TO INDEPENDENCE

When: After the show

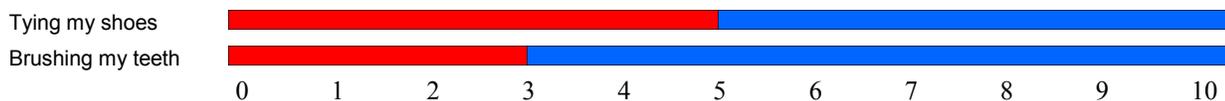
Goal: To reflect on milestones in students lives as they learn how to be more independent

Explanation: In *Darwin the Dinosaur*, Darwin goes out into world on his own. In this activity, students will create a graph of their lives showing the different things their parents or other adults used to help them with that they can now do on their own.

Activity:

1. Remind students that Darwin the Dinosaur went out into the world on his own. Like Darwin, students are also learning how to be independent.
2. Ask students to brainstorm a list of things that they used to not be able to do on their own. (Example: tying their shoes.) Who helped them with these things? How old were they when they learned how to do it for themselves?
3. Once students have generated a list, instruct them to create a graph showing their "Journey to Independence."
4. First, students should label the bottom of their paper with the years of their life, starting with 0 up to their current age.
5. For each task on their list, students should create a two-color bar. The first color should represent the years that their parents or others helped them with the task. The second color should represent the years that they were able to do the task on their own. Each bar should be appropriately labeled as to the activity or task.

Example:



6. Encourage students to organize their graph so that it is easy to see the sequence of what they learned to do on their "journey to independence." For instance, one option might be to start from the bottom of the page with the task that they learned at the earliest age. Above that, they may put the next task or activity that they learned next, etc.

7. When students' life graphs are complete, display them in the room.

Follow-up Questions:

1. What things do you need to learn in order to be independent? Do you have to learn these things all at once or is it a gradual process?
2. How do parents show that they care for us?
3. Is helping us learn how to be independent a way that parents and adults show that they care? Why?
4. When you look at your graph, where do you see responsibilities? As you've grown are there things that were once the responsibilities of your parents or others that are now your responsibilities? Like what?
5. Darwin went on his own independent journey but he and Professor Henslow reunited at the end. Do our relationships continue even when we become more independent?

RESOURCES AND SOURCES



CLASSROOM RESOURCES

Print Resources:

Check your school library for books about dinosaurs— both fiction and non-fiction. Possibilities include:

Dixon, Dougal. Dougal Dixon's Amazing Dinosaurs: the Fiercest, the Tallest, the Toughest, the Smallest. Scientific Advisor: Peter Dodson. Honesdale, PA: Boyd's Mills Press, 2000.

Gurney, James. Dinotopia: a Land Apart from Time. Kansas City, MO: Andrews and McMeel, 1992.

Osborne, Mary Pope. Dinosaurs Before Dark. Illustrated by Sal Murdocca. New York: Random House, 1992.

Schwabacher, Martin. The Magic School Bus Flies with the Dinosaurs. Illustrated by Carolyn Bracken. New York: Scholastic, 2005.

Web Resources:

Darwin the Dinosaur Study Guide. <http://www.iancarney.com/images/downloads/Darwin-studyguide2010.pdf>
Includes additional activities and discussion questions related to the performance.

Woodlands Science Zone. "Electricity Interactive Games and Activities."
<http://www.woodlands-junior.kent.sch.uk/revision/Science/electricity.htm>
Contains links to several online interactive games for students to explore electricity and circuits.

STUDY GUIDE SOURCES

Burgess, Joanna. "How Electroluminescent (EL) Wire Works." How Stuff Works. A Discovery Channel Company.
<http://science.howstuffworks.com/electroluminescent-wire.htm>

CORBiAN Visual Arts & Dance, Official Website.
<http://www.iancarney.com/>

Darwin the Dinosaur Study Guide, CORBiAN Visual Arts & Dance.
<http://www.iancarney.com/images/downloads/Darwin-studyguide2010.pdf>

Ordway Center for the Performing Arts: Dance Study Guide Materials
<http://www.ordway.org/>