



DEVON CARNEY
ARTISTIC DIRECTOR

STUDY GUIDE



THEATER ETIQUETTE

Thank you in advance for partnering with us to teach your students theater etiquette.

ARRIVAL

- School clothes are appropriate, and so is “dressing up.”
- Please plan to arrive at the Kauffman at 10:00 AM.
- Backpacks, computer bags, cans, bottles, food and beverages are prohibited.

PERFORMANCE

- Running Time is 2 hours and 15 minutes including one 20-minute intermission: 10:30AM-12:45PM
- Photography and videography are prohibited.
- It’s ok to laugh when you see the dancers doing something funny!
- Clap (applaud) when the dancing has finished, especially when you see dancers take a bow!
- Wait to talk and ask questions until intermission and at the end of the performance.

RESTROOMS

- Use the bathroom before the performance and during intermission.
- Please accompany your students to the restrooms.
- Ushers will direct you to the restrooms.

FOOD AND BEVERAGES

- Food and beverages are not permitted inside of Muriel Kauffman Theatre at the Kauffman Center. Thank you for helping the Kauffman Center maintain this beautiful space for generations to come by discarding all food items and beverages before beginning the security screening process at the building entrance.

Note: For this student matinee performance, patrons with medical needs may be permitted to bring in a sealed water bottle or necessary food item to be consumed in the lobby spaces before the performance or during intermission. These items must be stored on the tray outside of the hall doors or under the theater seat at all times while in Muriel Kauffman Theatre.

KAUFFMAN CENTER FOR THE PERFORMING ARTS



Photography: Tim Hursley.

The **Muriel Kauffman Theatre** hosts many kinds of performances from around the world, including music, Broadway shows, comedy, ballet, and opera. It is the performance home of Kansas City Ballet and Lyric Opera of Kansas City.

The theatre has **1,800** seats and is designed to feel both beautiful and close to the stage. The seats are arranged in a curved shape so audiences feel near the performers, and the wide seats help everyone stay comfortable.

The theatre has a large, flexible stage and an orchestra pit that can hold up to **95 musicians**. A tall fly tower allows scenery to move above the stage, and the stage opening can change size for different types of shows. Some performances also use supertitles, shown on small screens, to help audiences understand the words.

KANSAS CITY BALLET

Kansas City Ballet is a professional ballet company with more than 30 dancers. It performs at the **Kauffman Center for the Performing Arts** and is led by Artistic Director **Devon Carney** and Executive Director **David Gray**.

In addition to the main company, Kansas City Ballet has a **second company** made up of advanced students called **KCB II and Trainees**. These dancers are learning and preparing to become professional performers. The ballet also runs a dance school and special programs that share the creativity, diversity, and joy of dance.

Each year, Kansas City Ballet reaches over **20,000** people through education and community programs. The Kansas City Ballet School teaches more than 2,000 students each year at two locations: the **Todd Bolender Center for Dance & Creativity** and the **South Campus at Meadowbrook** in Prairie Village, Kansas.



Photography: Brett Pruitt & East Market Studios.

2026-2027 Kansas City Ballet Company Dancers

(Front Row from L-R) 1. Amelia Meissner 2. Amira Hogan* 3. Gillian Yoder* 4. Olivia Jacobus
5. Kelsey Ivana Hellebuyck 6. Amanda DeVenuta 7. Amaya Rodriguez 8. Whitney Huell
9. Marisa DeEtte Whiteman 10. Sidney Haefs 11. Emily Mistretta
12. Kaleena Burks 13. Taryn Pachciarz 14. Georgia Fuller 15. Naomi Tanioka

(Back Row from L-R) 16. Elliott Rogers 17. Gavin Abercrombie 18. Joshua Kiesel 19. Kevin Wilson 20. Paul Zusi
21. Joseph Boswell* 22. Keaton Linzau* 23. Andrew Vecseri 24. Chase Hanson 25. Alladson Barreto
26. Angelin Carrant 27. Isaac Allen 28. Cameron Thomas 29. Aidan Duffy 30. Gabriel Lorena

*apprentice

KC BALLET HISTORY/ VISUAL TIMELINE



In 1957, Tatiana Dokoudovska founds the company at the Carriage House next to the old brick Conservatory building (old Grant Hall).

During the 1970-1971 season, the company name changed to Kansas City Ballet.

In 1976, Miss Tania steps down as artistic director of the Ballet so she can devote her time to teaching and continue her position as head of the ballet department at the Conservatory of Music.



December 1981, Bolender's first full-length ballet for the company establishes one of the most cherished holiday traditions in the region: *Nutcracker* premieres to full houses.

In the 1958-1959 season, company name changed to Kansas City Civic Ballet.



In December 1972, KCB performs first *Nutcracker*.



January 1981, Todd Bolender accepts the artistic directorship of the new Kansas City Ballet and the company debuts at the Music Hall on May 29, 1981. The program includes two Bolender ballets, both created for NYCB in 1955: *The Still Point* and *Souvenirs*.

In 1995, Bolender retires, at age 81, from artistic directorship to become artistic director emeritus.



The Todd Bolender Center for Dance & Creativity becomes the permanent home of Kansas City Ballet in August 2011.



KCB unveils the world premiere of Artistic Director Devon Carney's production of *The Nutcracker* in December 2015 to great acclaim.



Kansas City Ballet introduced sensory-friendly performances in 2018 with *The Nutcracker*, led by Artistic Director Devon Carney, to create an inclusive experience for all. In 2024, they expanded to include a sensory-friendly performance of *ALICE (in wonderland)*!



In 1996 William Whitener is selected as the new KCB artistic director.



In 2013 Devon Carney is selected as the new KCB artistic director.

As part of KCB's 60th anniversary, the Company travels to the John F. Kennedy Center in Washington D.C., to premiere Carney's *The Nutcracker* in November 2017.



Whitney Huell was the first African American ballerina to perform as the Sugar Plum Fairy in *The Nutcracker* for Kansas City Ballet (KCB) in 2018. Huell has also been featured in *Dance Magazine's* Top 25 to Watch and *Pointe Magazine*.

MEET THE CHOREOGRAPHER



Devon Carney became the Artistic Director of **Kansas City Ballet** in 2013. Before that, he spent 10 years with **Cincinnati Ballet** as associate artistic director. He trained with Harvey Hysell in New Orleans and danced as a Principal with **Boston Ballet** for 12 years.

Mr. Carney has performed many famous ballet roles and worked with well-known choreographers like Mark Morris, Maurice Bejart, and Merce Cunningham. He has also toured with ballet stars like Rudolf Nureyev, Fernando Bujones, and Cynthia Gregory.

He has taught at schools such as **Alvin Ailey American Dance Theatre** and **Pittsburgh Ballet**, and choreographed for companies including **Boston Ballet**, **Cincinnati Ballet**, **Lyric Opera of Kansas City**, **Kansas City Ballet**, and others.

Some of his works with Kansas City Ballet include *Opus I*, *Giselle*, *The Nutcracker*, *Swan Lake*, *Sleeping Beauty*, *Romeo & Juliet*, *Peter Pan*, and *Cinderella*. His *Nutcracker* has been performed at the Kennedy Center.

Mr. Carney says, *"Ever since I was a dancer, I've always dreamed of choreographing The Nutcracker, and it's such an honor to be able to do it here."*

[Click on video here.](#)



Mr. Carney rehearsing children.

MEET THE COMPOSER



Pyotr Ilyich Tchaikovsky was born on May 7, 1840, in **Kamsko-Votkinsk, Russia**. He was very smart and could read **Russian, French, and German** by age six. Tchaikovsky began taking **piano lessons** when he was five. Sometimes he tapped his music on windowpanes if he didn't have a piano—and once broke a window and cut himself!

At age ten, he went to a **boarding school in St. Petersburg**. His parents wanted him to work in the government, so he became a **bureau clerk** at the Ministry of Justice. After four years, he quit to study music full-time at the **St. Petersburg Conservatory**.

Tchaikovsky later taught at the **Moscow Conservatory**, then left in 1878 to focus on composing. He wrote **169 pieces**, including nine operas, six symphonies, four concertos, three string quartets, and many ballets. His most famous ballets are ***Swan Lake*, *The Sleeping Beauty*, and *The Nutcracker***.

He composed ***The Nutcracker*** in 1891–1892. Even though he was unsure about it at first, it became a holiday favorite. Tchaikovsky used the **celesta**, a new instrument, for the Sugar Plum Fairy because of its “heavenly sweet sound,” and he added **toy instruments** for the Christmas party scene.

Listen carefully to music from Act I and Act II on your field trip—see if you recognize the songs!

🎵 *Tchaikovsky Score Audio Clip*

🎵 *Sugar Plum Fairy Music Audio Clip*

MEET KC BALLET'S MUSIC DIRECTOR



Ramona Pansegrau has been the **music director** for **Kansas City Ballet** for 17 years. Before coming to Kansas City, she worked with **Boston Ballet** and **Tulsa Ballet** as a pianist, conductor, and music director. She has been called one of the **best ballet pianists in the world**.

Ms. Pansegrau has performed piano concertos by **Tchaikovsky, Brahms, Chopin**, and others with many orchestras, including the **Kennedy Center Opera Orchestra**. She has taught at the **Aspen/Snowmass Dance Festival, Jacob's Pillow**, and conducted for ballet companies around the world, including in **Japan, Italy, and Finland**.

She has arranged and edited music for many ballets, including ***Jekyll & Hyde, Aladdin and the Magic Carpet, Sleeping Beauty, Swan Lake, and Don Quixote***. Critics praise her for helping the music match the dancers on stage and bringing the score to life.

For ***The Nutcracker***, Ms. Pansegrau explains the use of the **celesta**, a bell-like instrument that gives the Sugar Plum Fairy her magical sound. Tchaikovsky discovered the celesta in Paris and used it to create a special, secret sound that became one of the most famous parts of the ballet.

Nutcracker Music Notes by Ramona Pansegrau

Intrigue, secrets, and drama—not words you normally associate with the Nutcracker score, however the creation of Tchaikovsky's iconic work contained all the elements of a bestselling novel. The reason? The use of the celesta—the bell-like keyboard instrument used to present the Sugar Plum Fairy and take the listener to the Land of the Sweets. Tchaikovsky had first heard the enchanting sound of the celesta during his visit to the Paris Exposition in 1889. He was enthralled by the lovely, delicate sound and decided to compose a work using the instrument. The drama—he wanted to use it before anyone else at the Russian court. The problem—Rimsky-Korsakov had also attended the Exposition. Tchaikovsky composed in secrecy and premiered his score in 1892 in the form of a suite, after production delays for the ballet, on a program with other works. He won the “competition” and the “Dance of the Sugar Plum Fairy” has made the sound of the celesta an indispensable part of The Nutcracker.

MEET KC BALLET'S PRODUCTION TEAM —



AMY TAYLOR
DIRECTOR OF PRODUCTION

Amy Taylor's design credits for Kansas City Ballet include *Giselle*, *Suite Kander*, *The Scarlatti Dances*, *Carmina Burana*, *Coppélia* and *On the Boulevard*. Locally, she has also worked with Wylliams/Henry Contemporary Dance Company and the Kansas City Symphony. Before joining Kansas City Ballet, Taylor received her M.F.A. from the University of Missouri – Kansas City.



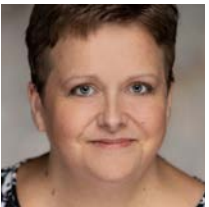
LAURA KRUS
STAGE MANAGER

Laura Krus is a graduate of Oklahoma City University's Dance Management Program. Krus worked with Adams Davy Media as a Production Intern for productions like *Batman Live* and *Arts for Autism*. She also has worked with various professional dance companies as a Production Stage Manager for the American Dance Festival. Krus began working with Kansas City Ballet in 2021. Krus wants to thank her family and friends for always believing in her and helping get her to where she is now.



JENNIFER CARROLL
COSTUME DIRECTOR

Jennifer Carroll came to Kansas City Ballet in 2008 after touring with Broadway Shows for eight years. She toured with shows such as *Victor, Victoria*, *Jekyll & Hyde*, *Cabaret*, *Oklahoma!*, and Twyla Tharp and Billy Joel's *Movin' Out*. Her design credits for Kansas City Ballet include *Concerto Grosso*, *Mercy of the Elements*, *Energy Made Visible*, *Vesna*, and *Klein Perspectives*. Ms. Carroll received her M.F.A. in Costume Design and Technology from the University of Arkansas. She is a member of Kansas City's IATSE Theatrical Wardrobe Union, Local #810.



BETTI JO DIEM
COSTUME SHOP MANAGER

Betti Jo Diem came to Kansas City Ballet after touring with the Radio City Christmas Spectacular Arena Tour and the First National Tour of *Rock of Ages*. She is a member of the IATSE Theatrical Wardrobe Union, Local #810 here in Kansas City. She began her theatrical wardrobe career in Branson, Missouri while working for Silver Dollar City's Opera House theater and the Radio City Rockettes at the Grand Palace Theater. She feels extremely lucky to have a career she is passionate about and that allows her to learn something new every day!

MEET THE DESIGN TEAM

"In my wildest dreams I could never have imagined that I could assemble some of the greatest design talent the ballet world has to offer to create this amazing new production. Each is truly known for being one of, if not THE, best in the industry. The joy of seeing the holidays through a child's eyes will permeate throughout. I promise audiences a new and joyous holiday classic."

—Choreographer Devon Carney



The Set Designer, Alain Vaës

Since moving to the United States from his native France, Mr. Vaës has worked as an artist, set designer, and as an author and illustrator of children's books. He has designed sets and costumes for 25 productions including *Romeo and Juliet*, *Swan Lake*, *Cinderella*, and *The Nutcracker* mainly for New York City Ballet but also for Boston Ballet, National Ballet of Flanders, and the Royal Danish Theater, to name a few.

"If children are pleased and they dream a little bit, then I am a winner."



The Costume Designer, Holly Hynes

For more than 20 years the director of costumes for New York City Ballet, Ms. Hynes has earned a reputation as one of the leading costume designers for ballet in the world. She has created designs for the likes of Paris Opera Ballet, La Scala Theatre Ballet, National Ballet of Canada and more. Ms. Hynes' work was previously seen in Kansas City with *Tom Sawyer, a Ballet in 3 Acts* which had its world premiere at the Ballet's inaugural season at the opening of the Kauffman Center for the Performing Arts.

"I think that if you love what you do, it is not work."



The Lighting Designer, Trad A Burns

Mr. Burns has designed lighting for more than 400 productions in ballet companies around the world including New York City Ballet and American Ballet Theater as well as designing for dramatic theatre, musicals, and for several world renowned theme

BALLET SYNOPSIS BY DEVON CARNEY —

THE NUTCRACKER

Choreography by DEVON CARNEY

Music by PETER I. TCHAIKOVSKY

Scenery and Properties Design by ALAIN VAËS

Costume Design by HOLLY HYNES

Lighting Design by TRAD A BURNS

Conducted by RAMONA PANSEGRAU

Music performed by KANSAS CITY SYMPHONY

Repetiteurs KRISTI CAPPS, PARRISH MAYNARD, CHRISTOPHER RUUD

Children's Ballet Coaches KIMBERLY COWEN & LAUREN FADELEY VEYETTE

Flying Illusions provided by FLYING BY FOY

All children appearing are students of Kansas City Ballet School



ACT I

Dr. Drosselmeier, a mysterious magician and creator of mechanical toys and clocks, puts the finishing touches on some magical dolls and a very special Nutcracker in his workshop on Christmas Eve. He has made them as gifts to entertain his relatives and friends at the Silberhaus home later that night.



In the parlor, the Silberhaus family, along with their children Clara and Fritz and their staff, is anxiously finishing preparations for their annual Christmas Eve party. Friends and relatives arrive from near and far. The tree is trimmed, the children receive special gifts from the Silberhaus family, and there is much celebratory dancing.



Suddenly, Dr. Drosselmeier appears with his arms full of gifts. He is full of surprises to entertain everyone, like his presentation of a miniature toy theatre.



He presents Clara with the special Nutcracker he has made just for her, and she immediately becomes enchanted. Then he brings out his mechanical dolls who, to the amazement of all, come to life at his command and dance.



Dinner is served and all depart except Clara. She dances a special dance with her Nutcracker, imagining someday he could be her Prince. She is rudely interrupted by her brother Fritz who, in a jealous fit, steals her Nutcracker and breaks him. The commotion draws the guests back to the parlor to see Dr. Drosselmeier repairing Clara's Nutcracker. The girls join together to soothe the Nutcracker by dancing a lullaby with their dolls. They are suddenly interrupted by the mischievous Fritz and the boys who create a cacophony with their noise makers.



Then Clara's Grandfather invites all the parents to one last dance led by him and her Grandmother before it gets late and the party guests depart. Clara and Fritz are sent to bed to dream of all their presents under the tree.



As the lights dim, Clara returns to search for her Nutcracker until she becomes tired and falls asleep on the couch. Dr. Drosselmeier appears in the parlor to cast his magical spell. Maniacal mice of various sizes begin to emerge as midnight falls and Clara is awakened.



She is terrified but then sees her Nutcracker has been transformed to human size by Dr. Drosselmeier. The mice scatter and Dr. Drosselmeier alters the room, making everything larger than life.



A battle ensues between the mice, led by the Mouse King, and the Nutcracker, accompanied by his regiments of tiny soldiers, culminating in a sword fight between the two leaders.



Just when hope seems lost, Clara throws her slipper at the Mouse King, distracting him long enough for the Nutcracker to vanquish him. Clara receives a crown for her efforts and the Nutcracker is transformed into a handsome prince. The two are magically transported to the Kingdom of the Snow where the Snow King and Queen greet them and send them on a beautiful sleigh ride.



A whirlwind of snowflakes dance at their command. At the culmination of this dreamlike scene, Clara and her Nutcracker Prince board a magical vessel to journey to the Land of the Sweets, guided by Dr. Drosselmeier.



ACT II

As the scene opens, we find ourselves in the clouds with dancing angels who watch over the Land of the Sweets. Clara and her Nutcracker Prince arrive in the enchanted Candy Palace. They are welcomed by the Sugar Plum Fairy and her Cavalier who are preparing a spectacular confection-filled festival in their honor.



Those who have gathered begin to dance, representing various lands and treats, including chocolate (a Spanish dance)



coffee (an Arabian dance),



and tea (a Chinese dance).



A French Shepherdess and her flock,



a band of Russian dancers,



and the always gregarious, larger-than-life
Mother Ginger also have a few surprises
for Clara.



Following that, Clara enjoys a lush Waltz of the Flowers led by the most beautiful Rose in the entire Land of the Sweets.



Then the Sugar Plum Fairy and her Cavalier
dance a grand pas de deux in honor of
their guests.



A magnificent grand finale brings the festival to its thrilling conclusion as Clara and her Nutcracker Prince begin their journey home. Was it all a dream or did it really happen?

NUTCRACKER BALLET

ADVENTURE WORKSHEET

On Christmas Eve, Dr. Drosselmeier, a magical toy maker, brings special gifts to the Silberhaus family, including a charming Nutcracker for Clara that she loves right away. During the party, her brother Fritz accidentally breaks the Nutcracker, but Dr. Drosselmeier magically fixes it. When Clara falls asleep, she wakes up in a fantastic battle between the Nutcracker and the Mouse King, leading to her Nutcracker becoming a prince and taking Clara on a magical journey to the Land of the Sweets.

Fill in the Blank: Fill in the blank with the correct words.

1. Dr. Drosselmeier is a mysterious _____ who makes magical toys.
2. Clara's brother, _____, breaks her Nutcracker.
3. Clara dreams that the Nutcracker turns into a _____.
4. The Nutcracker and his soldiers fight against the _____ King.
5. Clara and the Nutcracker Prince travel to the Land of the _____.

Word bank: magician, Sweets, Fritz, prince, Mouse

Multiple Choice Questions: Choose the correct answer from the choices for each question.

1. What does Dr. Drosselmeier give to Clara?
 - A) A teddy bear
 - B) A Nutcracker
 - C) A music box
2. Who interrupts Clara's special dance with her Nutcracker?
 - A) Her mother
 - B) Her brother Fritz
 - C) Dr. Drosselmeier
3. What happens to the Nutcracker during the battle?
 - A) He runs away
 - B) He is broken again
 - C) He defeats the Mouse King
4. Where do Clara and the Nutcracker Prince go after the battle?
 - A) The Candy Palace
 - B) The Kingdom of the Snow
 - C) A toy shop
5. Who welcomes Clara and the Nutcracker Prince to the Land of the Sweets?
 - A) The Ice Queen
 - B) The Sugar Plum Fairy
 - C) The Chocolate King

NUTCRACKER BALLET

ADVENTURE WORKSHEET

Open Ended Questions: Answer the following questions in complete sentences:

1. Why do you think Dr. Drosselmeier gave Clara the Nutcracker?
2. How did Clara help the Nutcracker during the battle with the Mouse King?
3. Describe the Land of the Sweets and what Clara saw there.

Answer Key:

Fill in the Blank:

1. magician
2. Fritz
3. prince
4. Mouse
5. Sweets

Multiple Choice Questions:

1. B) A Nutcracker
2. B) Her brother Fritz
3. C) He defeats the Mouse King
4. B) The Kingdom of the Snow
5. B) The Sugar Plum Fairy

Open Ended Questions (Example responses):

1. Dr. Drosselmeier gave Clara the Nutcracker because it was a special gift made just for her, and he wanted to entertain her with his magical toys.
2. Clara helped the Nutcracker during the battle by throwing her slipper at the Mouse King, which distracted him long enough for the Nutcracker to defeat him.
3. The Land of the Sweets is a magical place filled with candy and treats. Clara saw many dancers, including chocolate, coffee, tea dancers, and even a Waltz of the Flowers. It was a beautiful and enchanting place.

STEM ACTIVITY

(IN COLLABORATION WITH OUR PARTNERS AT SCIENCE CITY)



TINY DANCERS with the Kansas City Ballet

(<https://babbledabbledo.com/steam-project-tiny-dancers-homopolar-motor/>)

Materials

- [Copper Wire](#)
- [1/2" x 1/8" Neodymium Disc Magnets](#)
- [AA Battery](#)
- [3 in 1 Combination Tool](#) or pliers/wire cutters
- [Template](#)
- **Crepe or Tissue Paper (optional for skirt)**
- **Hot Glue (optional)**

Instructions

- **Step One** Cut a long piece of wire off your spool, I started with about a 10" long piece. Lay it on the template of your choice and bend as shown using 3-in-1 tool or pliers. No need to be perfect HOWEVER try and keep your form as symmetrical as possible.
- **Step Two** To create the base section of wire that wraps the magnets, I recommend bending the end of the wire around the battery. Remove the battery and gently widen the circular wire form with your fingers.
- **Step Three** Place three neodymium magnets on the negative side of your battery.
- **Step Four** Place the motor on top of the battery so that it touches the positive pole.
- **The round section at the bottom of the motor must be low enough to encircle the magnets!**
- **Step Five** Let it go. If properly constructed it should start to spin. If it doesn't see our tips below.
- **Step Six** (optional) to make a skirt for your dancer cut a small circle of crepe then cut a slit in the center of the circle. Slide it up onto the dancer and secure in place with a dab of hot glue.

STEM ACTIVITY

(IN COLLABORATION WITH OUR PARTNERS AT SCIENCE CITY)



Tips

- **MONITOR THESE FOR HEAT!** Some of the motors that got going really fast heated up quite quickly. If you notice a battery getting usually warm stop the project, let it cool down and remove the magnets. I recommend **against** reusing a battery that got overheated. Instead replace it with a fresh battery. O
- Start with your basic homopolar motor. It's easy to bend and shape and you should have success with it. The dancers require more time to fine tune.
- **Keep the forms as symmetrical as possible!** Since they spin on an axis if they are not symmetrical and/or balanced they will spin off the battery! This happened to us all.the.time. If they do spin off try and bend the form slightly to get them balanced on the battery.
- To make the head of the dancer, bend your wire around a pencil.
- Thin wire does not work! We tried this with very thin copper wire at first and it did not work. Stick to heavier gauges.
- The templates are meant as GUIDES ONLY!
- **The motors will need to be fine tuned by hand by you!**
- Remove the magnets immediately after running your motor. They will drain your motor if kept attached.
- When the electrical circuit is completed you will hear a very low buzz.

Troubleshooting

- **If the motor does not work try turning your magnets upside down and reversing the polarity.** I found this did the trick most of the time.
- **The batteries burn out quickly!** If turning the magnets upside down doesn't work, try replacing your battery with a new one.
- Make sure that the bottom section of wire encircles the magnets. If it doesn't your motor will not work.
- Be sure your wire is free to move around the battery and magnets. If it's too close to the battery or magnet it will get stuck and be motionless.

STEM ACTIVITY

(IN COLLABORATION WITH OUR PARTNERS AT SCIENCE CITY)

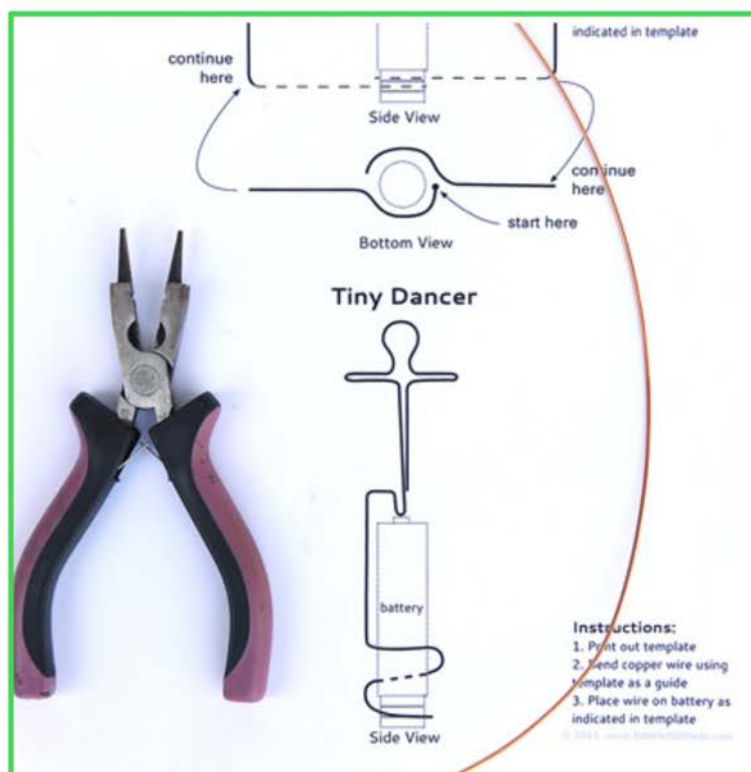
- I read that you can use a nail to put a small indentation in the top of your battery to help keep the motor in place. *I highly recommend AGAINST doing this.* I tried it! One small and light dent worked and the next dent smashed a hole in the battery causing battery acid to spin on my counter! Eek! I decided off balance motors were better than battery acid splashes.

What's happening?

Homopolar motors demonstrate something called a **Lorentz Force**. This is a force that is generated when electricity moves through a magnetic field. The copper wire is conducting electricity from one end of the battery to the other. As it moves through the magnets on the negative side of the battery, it creates a force which causes the wire to spin.

Looks Like

Hendrik Lorentz was a Nobel Prize winning Dutch physicist who inspired Albert Einstein! The Lorentz Force is named after him though he was not the first to discover its existence. In his early years Lorentz was primarily interested in studying electromagnetism and light. Albert Einstein used Lorentz's paper "On the Electrodynamics of Moving Bodies" as the basis of his own work and the theory of special relativity. It's super complex stuff but suffice it to say Lorentz's studies of electromagnetism laid the groundwork for some of the most important scientific discoveries of the last century.



BONUS ACTIVITY

Write a letter or send a card to your favorite
Nutcracker dancer!

They love to receive “fan mail”!

Mail it to:
Kansas City Ballet
Attention: Matinees for Schools
500 West Pershing Road
Kansas City, MO 64108



Nutcracker Prince



Snow Queen



Sugar Plum Fairy



Clara

Photography by Kenny Johnson.

APPENDIX: ALIGNMENT OF NUTCRACKER STUDY GUIDE SECTIONS WITH EDUCATION STANDARDS

1. Muriel Kauffman Theatre Overview

Fine Arts Standards:

- **Kansas:**
 - *Dance (K-12):* DA:Re9.1 – Interpret dance works within historical and cultural contexts.
 - *Visual Arts:* VA:Re7.2 – Analyze visual elements to understand artistic environments.
- **Missouri:**
 - *Theatre:* TH:Re7.1 – Recognize how visual elements support narrative in a performance.

STEM/Math:

- **Kansas & Missouri:**
 - *Math (Grades K-12):* MA.1 – Analyze geometric shapes (e.g., stage layout and structure).
 - *Science (Engineering Design):* MS-ETS1-1 – Define criteria and constraints of a design problem (e.g., theatre architecture and acoustics).

2. Kansas City Ballet History with Visual Timeline

Fine Arts Standards:

- **Kansas:**
 - *Dance (K-12):* DA:Re9.1 – Interpret dance works in historical contexts.
 - *Visual Arts:* VA:Re7.2 – Interpret visual storytelling through images (the timeline of Kansas City Ballet's history).
- **Missouri:**
 - *Dance:* DA2 – Explore the history and cultural impact of dance.
 - *Visual Arts:* FA3 – Analyze how history shapes visual culture.

Social Studies:

APPENDIX: ALIGNMENT OF NUTCRACKER STUDY GUIDE SECTIONS WITH EDUCATION STANDARDS

- **Kansas & Missouri:**

- *History (Grades 4–12):* SS.2 – Understand the significance of local arts institutions and cultural events.

3. Meet the Artist

Fine Arts Standards:

- **Kansas:**

- *Dance:* DA:Cn11.1 – Relate dance content to personal and historical context through artist biographies.
- *Music:* MU:Re9.1 – Evaluate works and performances using artistic statements from the choreographer, composer, etc.

- **Missouri:**

- *Dance:* DA4 – Understand how choreographers' choices reflect cultural influence.
- *Music:* MU2 – Analyze how composer intent reflects personal experience and culture.

ELA:

- **Kansas & Missouri:**

- *Listening and Speaking (Grades 3–12):* SL.2 – Analyze information presented in diverse formats (audio, video).

Math

- **Kansas & Missouri:**

- *Algebraic Thinking: MA.4* - Students may identify and analyze rhythmic and melodic patterns in the musical compositions discussed, applying mathematical pattern recognition to music structure.
- *Number and Operations: MA.1* - When students explore or discuss beats or musical timing during pre-viewing and pre-listening activities, they practice counting and sequencing aligned with numerical operations.

APPENDIX: ALIGNMENT OF NUTCRACKER STUDY GUIDE SECTIONS WITH EDUCATION STANDARDS

4. Visual Synopsis of *The Nutcracker* (Story with Accompanying Photos)

Fine Arts Standards:

- **Kansas:**
 - *Dance*: DA:Re8.1 – Analyze dance meaning based on movement and context.
 - *Visual Arts*: VA:Re7.2 – Interpret visual elements to understand the story in *The Nutcracker*.
- **Missouri:**
 - *Dance*: DA3 – Identify narrative structures in ballet.
 - *Visual Arts*: FA2 – Use images to understand character and story.

ELA:

- **Kansas & Missouri:**
 - *Reading Literature (Grades 3-12)*: RL.7 – Analyze how illustrations contribute to story understanding.

Math

- **Kansas & Missouri:**
 - *Measurement & Time*: MA.5 – Understanding how musical tempo and choreography are timed (e.g., 3/4 waltz rhythm) connects dance and storytelling with time measurement concepts.

5. Pre-Field Trip Activity (Nutcracker Ballet Adventure Worksheet)

Fine Arts Standards:

- **Kansas:**
 - *Dance*: DA:Re9.1 – Analyze how dance is influenced by culture and history.
- **Missouri:**
 - *Dance*: DA2 – Understand how culture impacts dance.

APPENDIX: ALIGNMENT OF NUTCRACKER STUDY GUIDE SECTIONS WITH EDUCATION STANDARDS

ELA:

- **Kansas & Missouri:**
 - *Reading Literature*: RL.1 – Answer questions about key details in a text.
 - *Writing (Grades K-12)*: W.3 – Write narratives and explanations clearly.

6. Post-Field Trip STEM Activity: Tiny Dancers Homopolar Motor

STEM Standards:

- **Kansas & Missouri:**
 - *Science (Grades 6-12)*: MS-PS2-3 – Plan and conduct investigations to provide evidence that objects interact with forces (e.g., how magnets influence spinning dancers).
 - *Engineering Design*: MS-ETS1-1 – Design and test a solution to a problem (e.g., creating a working homopolar motor).

Math:

- **Kansas & Missouri:**
 - *Math (Grades 3-12)*: MA.5 – Understand and apply mathematical principles like geometry (e.g., constructing the motor with symmetrical shapes and understanding circuits).

ELA:

- **Kansas & Missouri:**
 - *Writing (Grades 3-12)*: W.2 – Write informative/explanatory texts to describe processes and ideas.
 - *Speaking & Listening*: SL.1 – Participate in discussions about the scientific process involved in the activity.

7. Bonus Activity: Write a Letter to Your Favorite Nutcracker Dancer

ELA Standards:

APPENDIX: ALIGNMENT OF NUTCRACKER STUDY GUIDE SECTIONS WITH EDUCATION STANDARDS

- **Kansas & Missouri:**

- *Writing (Grades K-12):* W.3 – Write narratives, using effective techniques and clear event sequences.
- *Language:* L.1 – Demonstrate command of grammar and usage when writing or speaking.
- *Speaking & Listening:* SL.1 – Participate in discussions and share ideas effectively.

General Integration:

Math (General):

- **Kansas & Missouri:**

- *Mathematical Practices (Grades K-12):* MA.1 – Analyze and solve real-world problems, like measuring materials for activities or understanding proportions in set design.

Social Studies:

- **Kansas & Missouri:**

- *History/Social Studies (Grades 3-12):* SS.6-8.H.1B – Analyze the cultural history of performances like *The Nutcracker*.
- *Civics (Grades K-12):* SS.2 – Understand community engagement with local arts organizations.