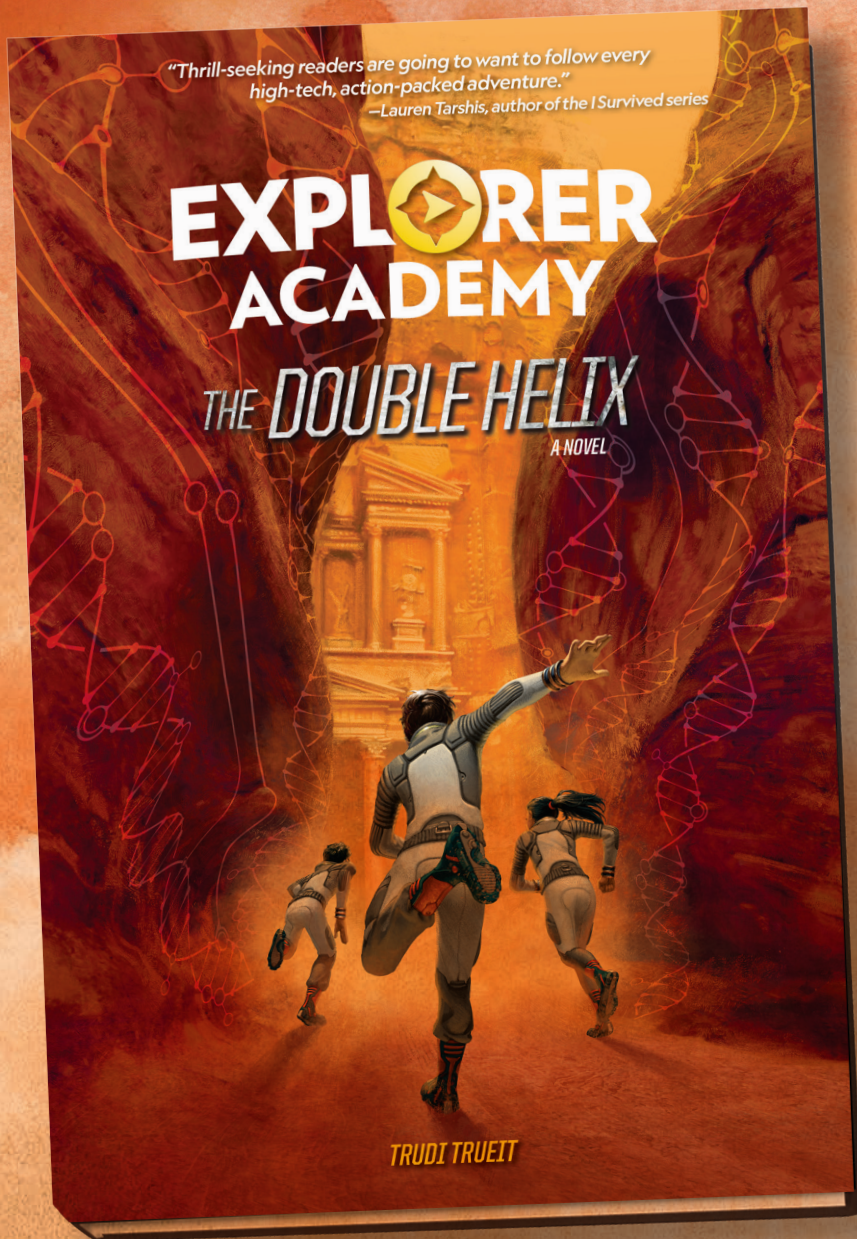


EXPLORER ACADEMY

Educator's Guide



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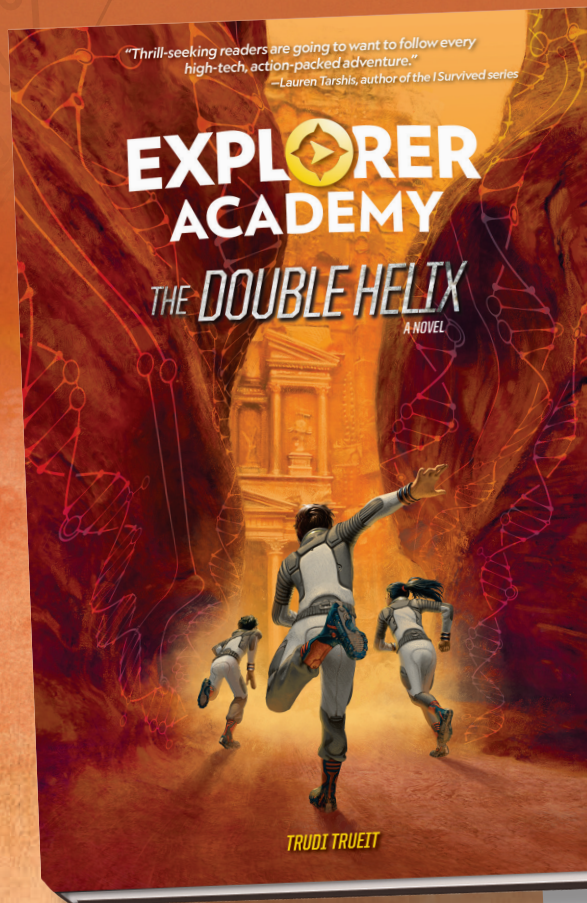
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ing room, continue straight down a narrow hall, or go up the stairs. They could hear cheering from the living room. Cruz peered in. All the kids were trying to wrap a mummy. They were competing against Taryn and Felipe, from Team Galileo, and losing badly. About a dozen kids had gathered around the competitors to cheer them on. "Go, guys!" called Bryndis from across the foyer. She was in the living room, next to a bubbling cauldron. White foam tubes were coiled around her long-sleeved white tee and matching ballet tutu and tights. She wore a headpiece out of a couple of the foam tubes. A coating of glitter covered everything, even her white blond hair. Bryndis looked like a white-chocolate-covered pretzel, but that couldn't be her. "Could it? Seeing Cruz's puzzled expression, she grinned. "I'm coral. Lamé, huh?"

"Cool!" Leave it to Bryndis to come up with a clever environmental costume. She dipped a ladle into the cauldron. "Want some punch, surfer?" Having the other explorers around was making Cruz feel a bit at ease. Everybody was having a good time. Nebula wouldn't be in front of everyone, would they?

"Lots of cups," said Bryndis. "There are more in the kitchen—" "Them," said Sailor, reaching for the door handle. "That's not—" "It's too late. The moment Sailor cracked the door, two green-skinned kids popped out of the pantry and latched on to her arm. A hologram began to wrap chains around her wrist. "Bloody undead," said the zombie who led her away. "See you in a bit. I hope."

"Go on your way back," giggled Bryndis. She turned to Cruz. "So what do you guys want to do? Build a monster? Or is it something about a mystery box," said Emmett. "Is that what you want to wear a blindfold and put your hands in a box to

28

market his GPS mapped out for him. Cruz crossed a parking lot, a wide, heavily traveled highway called Ragıp Gümmüştü. The spice market was located in a big L-shaped building next to a beautiful 17th-century mosque that Cruz's GPS identified as Yeni Cami, or New Mosque. Cruz headed across the square toward the arched stone entrance to the market.

"Stall 19, Galata Sweets," he whispered to himself, then with a deep breath. "Fortes fortuna adiuvat." "Fortune favors the brave," a voice in his ear translated Dr. Hightower's favorite saying. Cruz jumped. "I forgot you were listening, Emmett. I'm here. I'm at

on the table between the two trays. They all knew that touch activated the origami sequence. Cruz placed his fingertips on top of the journal. Three pairs of eyes stared at the wisp of paper. There was nothing to do now but wait.

Sailor ran a hand through the rosemary, sending the piney scent swirling around them. "Well, at least if nothing happens, the journal will smell good," she said.

Cruz grinned. He knew she was trying to ease the tension. On the other side of him, Emmett's glasses had fogged over. Cruz couldn't help but chuckle.

Sailor had seen him and was giggling, too. Everyone went back to staring at the journal. It was so quiet. So still. So warm.

Another five minutes passed. Cruz felt beads of sweat collecting on his forehead. Sailor put up a hand to stifle a yawn. Emmett wiped off his glasses. "Five minutes to lights-out." "You guys better go back down," said Cruz. "Who knows how long this could take?"

"You can't stand here all night," said Sailor. "I don't plan to." Cruz plunked himself down on the floor, crossed his legs, and slid the journal from the table onto his lap. "See? I'll lie down when I get tired. Go on, you guys. There's no sense in all three of us getting into trouble if Taryn finds out we broke curfew. It's okay. Really."

A look passed between Emmett and Sailor. "Go!" Cruz shooed them away. "I'll be fine." "Okay, but call us if something happens," said Sailor, hesitantly moving away.

"Or if you need anything," added Emmett.

"I will." An hour later, Cruz was still staring at the unresponsive journal, now balancing on his left knee. He'd taken off his jacket to use as a pillow, but he wasn't sleepy. What he was, was warm. And thirsty.

105



identify what's inside. I've done it already. It's fun! Come on, I'll show you where it is." She reached for Cruz's hand.

He felt a jolt of static electricity. Bryndis jumped, and he knew she'd felt it, too.

Bryndis led them out of the dining room and down the narrow hall. "Taryn says the explorer that guesses the most items correctly gets a prize at the end of the party. I got five right. If you miss even one, you're out."

"How many are there?" asked Emmett.

"Nobody knows. They're holo-thermal, so as long as you keep guessing correctly, you'll get a new one. Last I heard, Felipe had gotten the most: ten. Here it is." Stopping in front of a silver door, Bryndis nodded to the square light next to it that was off. "The light's not on, so nobody's inside. Only one person can go in at a time. Who wants to be first?"

Cruz was about to volunteer, when he felt a tapping on his chest. Seconds later, his honeybee drone flew out of his shirt pocket. Hovering near his head, Mell flashed her golden eyes.

"Security breach," said Emmett, glancing at his OS band. "Somebody's tripped a sensor in our cabin. I don't have my tablet—didn't think I'd need it tonight. It's probably a false alarm, but I'd better go up and check it out." He looked at Cruz, his eyes widening behind square gray frames. "You'll be okay?"



EXPLORER ACADEMY

Dear Teacher,

For those of you who have already brought the first two books in the Explorer Academy series to your classroom, it is our pleasure to welcome you and your students to Book 3, where the adventures are even more exciting, the stakes are higher, the dangers are closer, and the pace is quicker. For those of you for whom *The Double Helix* is your introduction to the series, hello. You'll find that while the novels are sequential, the reading does not necessarily have to be. After you and your students complete Book 3, they will enjoy digging into the earlier titles and will find many AHA! moments as they more fully understand some of the references.

In *The Double Helix*, Cruz Coronado finds himself in a race with time. He must locate the next piece of the cipher from clues his mother left for him and then turn it over to the evil Nebula Pharmaceuticals as a ransom payment to secure his kidnapped father's release. The urgency of his mission colors everything Cruz faces as he continues his education and explorations at Explorer Academy. Cruz must learn how to balance his many responsibilities to his family—rescuing his father, meeting his Aunt Marisol's high expectations, and upholding his mother's legacy—and his responsibilities to his teachers, friends, and school teammates.

Students in fourth through eighth grade will be breathless as they keep up with Cruz's adventures and the thickening plot. And, because National Geographic publishes Explorer Academy, they will also be introduced to fascinating subjects and new ideas that extend what they are studying in their classrooms.

This guide is meant to help you integrate the novel into your curriculum in Language Arts: Reading, STEM subjects, Archaeology, Geography, Social Studies, Art, Critical Thinking, and more. These curriculum connections are called out at the start of each section of the guide. Common Core State Standards are also noted, listed at the end of each section.

Here's to a terrific shared reading experience for you and your students. Please let us know how it goes.

Rebecca Baines

Rebecca Baines
VP & Editorial Director, Kids Books





Questions of Fact



Language Arts: Reading Comprehension and Retention, Making Inferences; Critical Thinking

1. From the very beginning of *The Double Helix*, Cruz has some choices to make. Should he go with his Aunt Marisol to try to save his father or should he stay at Explorer Academy and continue his search for his mother's cipher? Make a list of at least three other decisions he faces and the choices he makes throughout the book.
2. List the things that the OS band can do. What present-day devices can detect the same things that the band can?
3. Cruz promises his Aunt Marisol that he will not keep secrets from her. Does he keep that promise? Explain.
4. Why does Nebula want to destroy Cruz's mother's formula?
5. While Aunt Marisol is away, her replacement is Dr. Archer Luben. His specialty is space archaeology. What is space archaeology?
6. Dugan is asked to demonstrate the PANDA. Why was he picked?
7. Why did Cruz hide the cipher pieces? Where did he hide them? Why doesn't he tell Emmett where they are hidden?
8. Why was Cruz visibly upset when he saw former Academy librarian Malcolm Rook in the Parc del Laberint d'Horta?
9. Have students identify the major locations in which *The Double Helix* takes place and show the routes followed from one area to the next.
10. What are Nebula's plans for Cruz and his father once they obtain the cipher tiles?

RL 5.1, 5.2, 5.3, 5.4





Questions of Fact

► Language Arts: Vocabulary

As they read *The Double Helix*, your students will find many vocabulary words and terms they are not familiar with. Have them keep a running list of those words. For each they should write a definition in their own words that demonstrates their comprehension. For the terms and other key references, they should write brief notes of what they mean and why they are important to the novel. At the end of each week of study, have your students participate in a Jeopardy-type game where one student gives the definition and another answers with “What is...?”

Students already familiar with *The Explorer Academy* series should add these words to their Explorer Academy vocabulary and terms list.

Here are some words from *The Double Helix* to get your students started:

Atrium

Contaminated

Coprolite

Esteemed

Forensics

Hologram

Paleobotany

Repellent

Tendrils

Virtual

RL 5.4





Questions for Discussion



Language Arts: Critical Thinking, Reading; Speaking and Listening; Social Studies: Ethics, Cooperative Learning

1. There are 23 explorers working individually and in 4 teams. The teams are: Cousteau, Magellan, Galileo, and Earhart. Working as a team has many advantages. Ask your students what they are. The explorers are also competitors, each vying to be the top explorer and win the North Star Award. Do your students see a conflict between the individual competition and working as a team? It is likely that students know about people who have individual goals that become a detriment to the success of the group. Such as a basketball player who shoots the ball all the time rather than passing off to someone else who can score an easy goal. Discuss these instances and the effect it has on the team's success.

2. Cruz is attacked in the CAVE by someone from Nebula. But when the CAVE is examined, there is no one there. Have your class speculate on some possible explanations.

3. Cruz is faced with a moral dilemma. To rescue his father from Nebula, he must give them pieces of the cipher that are the key to his mother's formula for a drug that has the potential to save the lives of millions of people. Nebula will then destroy the cipher. He is torn between giving up the cipher to save his father or continuing the search for the remaining pieces so that the formula can be realized. Ask students what choice he makes. What choice do they think he should make? What choice would they make? Students should explain their reasoning.



Page 36

4. Prescott bristled... he still didn't know why the kid had to be dealt with before he turned 13.

The leader of Nebula emphasized that they must complete their mission before Cruz turns 13. What do your students think will happen when Cruz turns 13?

5. Ask how Cruz feels about Dugan. Make a class list of some of Dugan's characteristics. Students should identify classmates who exhibit those traits. Discuss why Cruz has so many problems with Dugan. Does Cruz trust Dugan? Why? Why not? Does Cruz's opinion of Dugan change in the course of the book? Explain.



Questions for Discussion - continued

6. Cruz's roommate Emmett is a techno wizard and has gone to great lengths to protect their room from unwanted intrusions. Yet Nebula was able to break through those defenses and can track Cruz's movements. How do your students think they managed to do that?
7. One of the technological advances that Cruz has at his disposal is a honey drone named Mell. What is its function? Is a device like Mell ethical? Talk with your students about situations where devices such as Mell could be misused.
8. Talk about Cruz's relationship with Bryndis.



9. Emmett and Sailor put their friendship with Cruz at the forefront and risk not only the possibility of disciplinary action by the school but also their own safety. How do your students respond to this? Have them discuss in small groups the friends they have who will go out on a limb for them despite impending consequences. Have any of the groups reached conclusions about the varied nature of friendships?

10. Dugan surprises Cruz by telling him

11. Unanswered questions that puzzle Cruz include: who is the girl with the blue-gray eyes who saves him from a rockslide in Petra? And how did she know about Nebula? Who do your students think she is? Why do they think the author introduces this new character into the book?

Page 203

12. "Speaking of adventure," came the whisper in his ear. Cruz turned to look up at Professor Luben, who was also looking up. "Interesting outcrop, don't you think?"

Do your students think it is just a coincidence that Professor Luben suggested that Cruz explore a rock shelter and that Cruz falls and is trapped alone at the bottom of a shaft? Or does it make them suspicious of Professor Luben? They should explain their opinions.

13. What does the class think will happen in Book 4 of The Explorer Academy? Discuss likely scenarios.

RL 5.1, 5.2, 5.3; SL 5.1, 5.3



Activities

► Language Arts: Writing; Music Appreciation

Page 45

1. *For a while, Cruz focused on listening to the hum of the engines, hoping they might lull him to sleep. It didn't work. If only he could hear Felipe play Bach's Sonata No. 1 in G minor.*

Cruz enjoys listening to his neighbor Felipe play the violin. He is especially fond of Bach's Violin Sonata No. 1 in G minor. Listen with your students to the first movement of the sonata, the Adagio, played by 19-year-old Sumina Studer. What do your students think appeals to Cruz about the music? Students should write about how it makes them feel and about the images it creates in their minds. ([listen here](#))

Extend the music activity by listening to all four movements of the sonata played by violin virtuoso Itzhak Perlman. ([listen here](#))

Have a discussion about each movement with your class.

RL 5.7; W 5.1, 5.4; SL 5.1, 5.3, 5.4



► Language Arts: Writing, Characterizations; Critical thinking; Speaking and Listening

2. In Explorer Academy Book 2, *The Falcon's Feather*, the leader of Nebula mentions that there are two spies embedded on the Orion. One is a staff member and the other an explorer. Do your students know who they are? As they read *The Double Helix*, they may suspect who the spies are based on suspicious activity or suspicious statements. Students should make a list of the staff and students on the Orion. Next to each name they should note something the characters did or said that seems suspicious. Who do they suspect the culprits are? They should explain their answers and compare them with their classmates.

RL 5.1, 5.3, 5.5; W5.1, 5.3, 5.4; SL 5.1, 5.3



Activities - continued

► Cooperative Learning; Science: the Senses

3. At the explorers' Halloween party, Cruz and his teammates play a game with a mystery box. Blindfolded, Cruz has to put his hand into a box and identify an object in it just by touch. Let your students play the same game. Divide them up into two teams. Each team will gather ten objects to place in a mystery box for the other team to identify. Students should explain their reasoning as to the identity of each object. The team with the most correct answers is the winner.

SL 5.1, 5.3

► Social Studies: Archaeology, Geography, Research, Art

4. Because of their impending visit to Barcelona, Spain, the Explorer Academy students were given a homework assignment on the archaeology of Spain and its parietal art. Assign to the class the same homework assignment from the book and research the parietal art of Spain. Their reports should include but not be limited to: where in Spain the art is located; when the art was drawn; and who drew it. A helpful website from National Geographic can be found [here](#).

RL 5.1, 5.4, 5.7; W 5.2, 5.4, 5.7, 5.8, 5.9

► Science: Technology, Archaeology; Language Arts: Speaking and Listening

Page 16

5. *"I'm Archer Luben...my specialty is space archaeology."*

Using satellite imagery and infrared technology to identify potential archaeological sites in the ancient world is the specialty of American archaeologist and Egyptologist Sarah Parcak, who is the inspiration for the character Archer Luben. She has discovered hidden sites from ancient Rome to ancient Egypt, and she would tell you that there are thousands of archaeological sites still to be discovered around the world. Your students can read about Sarah Parcak and space archaeology at the Smithsonian website ([click here](#)).

and on her website: <https://www.sarahparcak.com>



Activities - continued

Then have the class watch an interview of Sarah by TV personality Stephen Colbert in 2016. Students should write a review of the interview focusing not only on Ms. Parcak's message but also on how Mr. Colbert conducted the interview, keeping in mind questions such as: did Colbert do his homework, was he well informed, and did he show respect to Ms. Parcak.

W 5.1, 5.4, 5.5, 5.8

Social Studies: Geography, Ancient History; Science: Archaeology; Language Arts: Writing; Visual Literacy; Art and Design; Cooperative Learning

6. Cruz and his friends travel to Jordan to search for the next cipher tile in Petra, the ancient Rose City of stone. A nomadic tribe called Nabataeans settled the Rose City. Have students research and learn more about the tribe. Questions to answer are: Who were the Nabataeans? When did they live? Why did they go from being a nomadic tribe to one that settled down to build a great city? Why is the city called the Rose City? Why is Cruz convinced that the third part of the cipher will be found in the Rose City?

[Click here](#) to view a short video of the Rose City.

Students should notice the road map on the right-hand side of the screen. Go up the trail by clicking on the white dots. They will be able to see what Cruz and his friends saw as they searched for the third piece of the cipher. Students should pair up to make a "Visit to the Rose City" travel poster.

W 5.2, 5.4, 5.7





Activities - continued

➤ Social Studies: Geography; Cooperative Learning

7. Aside from the search for the cipher, Cruz and his Explorer Academy fellow students travel all over the globe in search of knowledge that will prepare them to be leaders of society. Someone has to organize and plan the students' travel. That job can fall on the shoulders of your students. Divide the class into five teams. Assign each team a country from the area that the Explorer Academy travels to (The Middle East or Asia). Each team will become travel agents tasked to create a sightseeing PowerPoint tour of cities in their country. The tour should include museums, gardens, architecture, hiking trails, and archaeological sites that are important to the history and culture of their country.

Each presentation can begin with:

"Today we are going to visit _____ located in _____."

W 5.3, 5.4, 5.7, 5.8; SL 5.1, 5.2, 5.5

➤ Language Arts: Writing; Speaking and Listening

8. If *The Double Helix* were made into a movie, who would your students choose to be the film's stars? Each student should act as the casting director for the movie. They can cast real actors, classmates, or teachers to play the roles. They should explain why each person was cast in a particular role. Students should be prepared to make a two-minute verbal "pitch" to the movie's producer for their candidates.

RL 5.1, 5.2, 5.3, 5.7; W 5.1, 5.4; SL 5.1, 5.4

5TH GRADE COMMON CORE STATE STANDARDS KEY

RL – Reading Literature

W – Writing

SL – Speaking and Listening

This guide was created by Clifford Wohl, Educational Consultant

"Thrill-seeking readers are going to want to follow every high-tech, action-packed adventure."
—Lauren Tarshis, author of the I Survived series

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THE DOUBLE HELIX

A NOVEL



TRUDI TRUEIT