BASED ON THE UNTOLD TRUE STORY

HIDDEN FIGURES

MEET THE WOMEN YOU DON'T KNOW,
BEHIND THE MISSION YOU DO

20th CENTURY FOX

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About *Journeys in Film*

Founded in 2003, ***Journeys in Film*** operates on the belief that teaching with film has the power to prepare students to live and work more successfully in the 21st century as informed and globally competent citizens. Its core mission is to advance global understanding among youth through the combination of age-appropriate films from around the world, interdisciplinary classroom materials coordinated with the films, and teachers' professional-development offerings. This comprehensive curriculum model promotes widespread use of film as a window to the world to help students to mitigate existing attitudes of cultural bias, cultivate empathy, develop a richer understanding of global issues, and prepare for effective participation in an increasingly interdependent world. Our standards-based lesson plans support various learning styles, promote literacy, transport students around the globe, and foster learning that meets core academic objectives.

Selected films act as springboards for lesson plans in subjects ranging from math, science, language arts, and social studies to other topics that have become critical for students, including environmental sustainability, poverty and hunger, global health, diversity, and immigration. Prominent educators on our team consult with filmmakers and cultural specialists in the development of curriculum guides, each one dedicated to an in-depth exploration of the culture and issues depicted in a specific film. The guides merge effectively into teachers' existing lesson plans and mandated curricular requirements, providing teachers with an innovative way to fulfill their school districts' standards-based goals.

Why use this program?

To be prepared to participate in tomorrow's global arena, students need to gain an understanding of the world beyond their own borders. ***Journeys in Film*** offers innovative and engaging tools to explore other cultures and social issues, beyond the often negative images seen in print, television, and film media.

For today's media-centric youth, film is an appropriate and effective teaching tool. ***Journeys in Film*** has carefully selected quality films that tell the stories of young people living in locations that may otherwise never be experienced by your students. Students travel through these characters and their stories: They drink tea with an Iranian family in *Children of Heaven,* play soccer in a Tibetan monastery in *The Cup*, find themselves in the conflict between urban grandson and rural grandmother in South Korea in *The Way Home,* watch the ways modernity challenges Maori traditions in New Zealand in *Whale Rider,* tour an African school with a Nobel Prize-winning teenager in *He Named Me Malala,* or experience the transformative power of music in *The Music of Strangers: Yo-Yo Ma & the Silk Road Ensemble.*

In addition to our ongoing development of teaching guides for culturally sensitive foreign films, *Journeys in Film* brings outstanding documentary films to the classroom. *Journeys in Film* has identified exceptional narrative and documentary films that teach about a broad range of social issues in real-life settings such as famine-stricken and war-torn Somalia, a maximum-security prison in Alabama, and a World War II concentration camp near Prague. *Journeys in Film* guides help teachers integrate these films into their classrooms, examining complex issues, encouraging students to be active rather than passive viewers, and maximizing the power of film to enhance critical thinking skills and to meet the Common Core Standards.

Journeys in Film is a 501(c)(3) nonprofit organization.

A Letter From Theodore Melfi
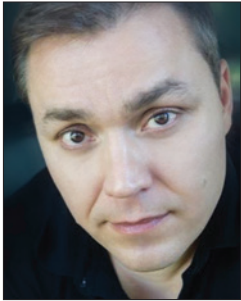
When you find a career you love, fame is far from your mind. Passion, excitement, and challenging work are instead the driving factors that motivate on a daily basis. Such is the case for Katherine G. Johnson, Dorothy Vaughan, and Mary Jackson—the brilliant trio of African-American women working at NASA in the early 1960s—who helped serve as the brains behind one of the greatest operations in history: the Mercury space missions, culminating in the launch of astronaut John Glenn into orbit.

For decades, until the publication of Margot Lee Shetterly's book *Hidden Figures*, the story of Johnson, Vaughan, and Jackson, NASA's *so-called "human computers,"* went untold. But when their story crossed my path—a story that blurs gender, race, and professional lines—I knew this was a part of history that had to be told. Fifty-five years later, *Hidden Figures* is a rich and moving true story that deserves a spot in our collective consciousness.

The backdrop for the movie is one of the most defining, complex periods in American history: the high-stakes Cold War, the space race, the Jim Crow South and the birth of the civil rights movement. Exploring these historic events serves as a reminder that we must learn from our past experiences while continuing to catapult ourselves forward.

It was also important for me, as a son raised by a single mother and as the father of two daughters, to explore the importance of STEM as a compelling and viable career choice for young girls. The media, cinema, and other public discourse often do society a disservice by not presenting strong, independent women in the fields of science, technology, engineering and math on a regular basis. Drawing attention to these figures, often hidden in plain sight, will hopefully help to chart a new course for female students and change the composition of these vital industries.

At its core, *Hidden Figures* is the story of three remarkable women who overcame every obstacle stacked against them, despite gender, race, and the political landscape of the time. Illuminating this universal experience for the next generation was critical. My goal was to showcase how skill and knowledge are equalizers, how hard work and determination are the cornerstones to every pursuit, and how uniting under a common goal is more powerful than staying divided.

Johnson, Vaughan, and Jackson were pioneers who broke down commonly held perceptions and achieved something phenomenal. Their legacy of persistence serves to empower people of all circumstances and teaches us, as NASA points out in its webpage on Katherine Johnson,

- To love learning.
- To follow your passion.
- To accept the help you're given, and help others when you can.
- To follow new leads and don't give up. Keep trying.
- To go beyond the task at hand; ask questions; be inquisitive. Let yourself be heard.
- To do what you love, and love what you do.

I hope that through the exploration of *Hidden Figures*—and your own passions—you, too, will achieve the seemingly impossible.

Theodore Melfi

Director, *Hidden Figures*

Introducing *Hidden Figures*

Space exploration in the modern age is entering a new phase, replete with private space companies, prospective lunar tourism, and even projected travel to Mars, the closest planet in our solar system. It is fitting, therefore, to pause to look back at the early years of the United States space program, and particularly the early efforts to launch astronauts into orbit, a preliminary step toward a moon landing.

Hidden Figures tells us about a generally unheralded group of women whose brilliance and dedication provided a foundation for the space program—the Black women known as "human computers" who worked at the NASA Center in Langley, Virginia. Faced with obstacles to their own education and to job prospects because of race and gender, these women succeeded in earning places and eventually respect in a workplace dominated by male supervisors and colleagues, many of whom were reluctant to hire women, and marked by segregated facilities, from office to restroom, that reflected the pre-civil rights era.

Katherine Johnson, physicist and mathematician, calculated the orbits, trajectories, and launch windows that would put John Glenn and others into space and bring them back safely. Dorothy Vaughan, another mathematician, became the first African-American supervisor at NASA, learning the computer language FORTRAN on her own and teaching it to her staff. Mary Jackson, an aerospace engineer as well as a mathematician, had to go to court to earn the right to take graduate-level courses at a previously all-white school; she eventually also served as a program officer helping other women succeed at NASA.

Their story is also the story of the world in which they lived and worked—the racism and segregation that made their lives more difficult; the beginnings of the civil rights movement in the South; the Cold War with Russia that gave such impetus to the drive for superiority in space; and the space race itself. The film weaves these events into the dramatic personal stories with skill and accuracy, making it an ideal film for the classroom. It is sure to serve as inspiration to many young women considering a career in science and mathematics.

Hidden Figures has been nominated for many awards, including the Academy Awards, BAFTA, the Golden Globes, the NAACP Image Awards, the Screen Actors Guild, and the African-American Film Critics Association.

Film credits

DIRECTOR: Theodore Melfi

SCREENPLAY: Allison Schroeder and Theodore Melfi, based on the book with the same title by Margot Lee Shetterly

PRODUCERS: Donna Gigliotti, Peter Chernin, Jenno Topping, Pharrell Williams, Theodore Melfi

ACTORS: Taraji P. Henson, Octavia Spencer, Janelle Monáe, Kirsten Dunst, Jim Parsons, Mahershala Ali, Aldis Hodge, Glen Powell, Kimberly Quinn, Kevin Costner, Olek Krupa

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Bitter Rivals: The Cold War at Mid-Century

Enduring Understandings

- Knowledge of the origins of the Cold War is essential to understanding the urgency of the work done by the "human computers" in *Hidden Figures*.

- Because of the escalation of the Cold War into 1961, the United States and the Soviet Union viewed the space race as one element of their rivalry for global political and military domination.

- The growth in the number of Communist-controlled countries and allies added increased urgency to the United States' desire to win the Cold War.

Essential Questions

- What was the geographic scale of the Cold War?

- How did the various events prior to 1961 escalate the importance of the work done at NASA?

- How did the United States and the Soviet Union become such enemies after being allies in World War II?

- Who were the major personalities involved in the Cold War conflict? How did these leaders shape global policy prior to 1961?

Notes to the Teacher

As World War II drew to a close, the Allies rushed to divide up as much ground as possible from Germany; the British, French, and Americans moved eastward as the Russians moved west. Eastern Europe in 1945 was in Communist hands, Western Europe was in the hands of democratic nations, and Germany was split between the two factions. The Cold War was on, as each side maneuvered to strengthen its "sphere of influence" over emerging nations elsewhere; "containment" became the overriding foreign policy goal of the United States, but the Korean War and the victory of the Vietnamese against the French in Indochina confirmed Western fears. Fear of Communist "subversives" had an impact within the United States as well, as investigations by Senator Joseph McCarthy and by the House Un-American Activities Committee wrecked the careers of innocent citizens accused of Communist sympathies. This lesson traces the increasing animosity between the Communist nations and the West, in order to explore the pressures under which the "human computers" at Langley were working.

This lesson can be completed prior to viewing *Hidden Figures*. It is designed to provide students with background information about the Cold War as well as a sense of the potential for conflict as the film opens in 1961. The lesson is divided into three parts, with an optional extension activity that uses primary sources to help students understand the mindset of the politicians as they made their decisions during this difficult period.

The first part will take at least one period to allow students adequate time to research the nuances of the various events that occurred from 1945 to 1961 as the world attempted to prevent nuclear war. For homework, please encourage

students to use sources that allow for unbiased reviews of the events. If possible, you may wish to have your school librarian present an information literacy lesson prior to setting the students on their research paths. Before the lesson, photocopy **Handout 1** and cut the "cards" apart; make a second copy if you have more than 26 students in one class.

The second part will take two periods to allow students adequate time to present their research and consider the impact of these events on the "human computers" at Langley. In this portion, students will be asked to move around the room a bit, so it would be a good idea to arrange your classroom in such a manner to allow for this movement. If available, you may wish to hold these classes in a larger space in your school that allows for more movement and flexibility. A list of dates appears on the timeline provided after **Handout 1**.

The third part involves studying a map to illustrate the spread of communism from Eastern Europe to China to Cuba. Students should use the information they researched to work together to determine which countries sympathized with or followed communist rule and which were sympathetic to the democratic cause. If your students already have a good understanding of world geography, you may be able to complete the map exercise in a single one-hour period. Other classes may find that this will take two one-hour segments to complete.

Common Core Standards addressed by this lesson

CCSS.ELA-Literacy.CCRA.R.1
Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCSS.ELA-Literacy.CCRA.R.2
Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

CCSS.ELA-Literacy.CCRA.R.3
Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

CCSS.ELA-Literacy.CCRA.R.7
Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

CCSS.ELA-Literacy.CCRA.SL.2
Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

CCSS.ELA-Literacy.CCRA.SL.4
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

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Duration of the Lesson

Four to five class periods

Assessment

Class discussions

Note-taking handout

Presentations

Materials

Access to library or computers with Internet for research

Handout 1: Topics for Cold War Research

Handout 2: Taking Notes on Your Research

5" x 8" index cards

Colored pencils, markers, or crayons

Paper or bulletin board for classroom timeline

Projector for world map

Procedure

Part 1: The Escalating Events of the Cold War

1. For homework before starting this lesson, have your students define *communism* and *democracy*.

2. Begin class by writing the phrase "The Cold War" on the board and allowing the students to write their ideas for what this might be. If they get stuck, remind them about their definitions of communism and democracy and ask them to consider how those terms might apply here. Additionally, ask them to consider what might make a war "cold."

3. After about 5–10 minutes of this brainstorming, provide students with some context and a time frame for the events of the Cold War period. Explain to the class that as World War II drew to a close, it became clear that the allied powers (Great Britain, the United States, France, and the Soviet Union) divided up both Germany and Europe; they were then faced with the necessity of repairing the damage caused by the war. People were displaced, resources were scarce, and both the Western, more democratic countries and the Eastern, communist countries feared that they would lose the power they had gained during the fighting.

4. Introduce students to the research assignment by distributing the "cards" on **HANDOUT 1**. You may wish to describe each item briefly and then let students volunteer to take the cards they want, you may assign the topics yourself, or you may let students draw a topic at random. If any topics seems too complicated, assign multiple students to work together, or simplify the topic. For example: "Nuclear weapons testing" could be broken down into American, British, and Russian tests.

5. Give the students copies of **Handout 2**. Review the handout with them and tell them to use these sheets to collect their information and keep track of their sources. You may wish to collect these sheets for a grade or simply to check the validity of their sources.

6. Allow students time to research and understand their topic. You may need an additional class period to do this or you may assign additional research for homework.

Part 2: The Cold War Timeline: How do these topics fit together?

1. Prior to the next class period, make some space in your room for the students to be able to move around. They will need to do a bit of work at desks to start, but they will need space for most of the period.

2. When students enter, give them notecards and ask them to write their topic clearly on one side, so that others might be able to read it. On the other, have the students summarize their responses to the questions. Be sure that they include when their event occurred, who was involved, what caused it, and what the effects were.

3. When the students are finished, ask them to arrange themselves chronologically at the front of the class. They may find that some of the topics lasted throughout the period; in these cases, ask those students to stand at the point where their topic first occurred.

4. Once they are in line, ask the students to explain their event to the students who are to the left and right of them. Ask them to consider the following questions: *Did the event just prior to my event create tensions that may have caused my event? Did my event cause the event that followed mine? Did these events around me involve any of the same people? Were they situated in similar geographical areas?* This may take some time, but explain to the students that the goal here is to start to piece together how these events created tension throughout the world as well as how these events are connected to each other.

5. After students are familiar with the events researched by classmates on either side, have them write the date or dates of their event on the side of the card with the name of the event on it. Using the index cards and images they have downloaded and printed out, have the students construct a timeline with construction paper on the wall or bulletin board. Then have them return to their seats.

6. Have each student go up to the timeline and summarize the event that he or she researched while the other students add each event to a timeline in their notebooks and take notes on it.

Part 3: The Geography of Escalation: The Global Spread of Communism

1. Have students look over the timelines in their notebooks and ask them to list as many communist nations as they can, based on the information they collected as a class. Record these answers on the board as they suggest them. Then add any countries that they omitted and the dates that each become communist. (U.S.S.R. [1917], China [1949], Mongolia [1924], Poland [1945], Albania [1944], Bulgaria [1946], East Germany [1949], Hungary [1949], North Korea [1948], Romania [1947], Ukraine [1919], North Vietnam [1945], Yugoslavia [1943], Czechoslovakia [1948].) [Note: You may wish to point out that Czechoslovakia is the territory now made up by the Czech Republic and Slovakia.]

2. Project a world map that shows the status of the Cold War in 1953; a useful map can be found at **https:// upload.wikimedia.org/wikipedia/commons/8/8a/Cold_ War_WorldMap_1953.png**. Help students to identify some of the countries that they have researched. Point out that there were two main blocs of communist and democratic countries; the Communist Bloc was determined to expand, and the Western Bloc was determined to contain communism. [If students ask why Yugoslavia, a communist country, is not shown in red on the map, explain that its leader, Josef Tito, was determined to remain non-aligned.]

3. Ask students if any other countries became communist after 1953. [Cuba, in 1959]
   - Did the Cold War ever become "hot," i.e., with actual fighting? (Yes, there were wars in Korea and Vietnam.)
   - Were there other events that made Americans ever more nervous about the expansion of communism? (The McCarthy and HUAC hearings; the Rosenberg trial)

   - Many countries in the developing world were unaligned with either bloc at this time. Why would the United States be afraid that these countries would become communist? (Many colonies that had been held by European nations were becoming independent at this time; there was fear that they would turn communist out of resentment against the Western colonizers, because their economic needs would tempt them to take a communist "shortcut" to development, or because the U.S.S.R. was trying to influence them.)
   - What kinds of pressures do you think political and military leaders faced during this time?

4. Explain that to counter some of the pressures Western leaders faced, the West formed a military alliance called NATO (North Atlantic Treaty Organization) to counter the spread of communism. Point out the original NATO countries. (United States, Iceland, Belgium, Canada, Denmark, France, Italy, Luxembourg, Netherlands, Norway, Portugal, United Kingdom, Greece, and Turkey.)

5. Ask students, if they were a leader of a communist country and saw that the West had formed a military alliance, what they would do in response. (Form an alliance of Communist nations.) Explain that the Soviet Union organized Communist countries into the Warsaw Pact in 1955. Point out the member countries of the Warsaw Pact. (Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, U.S.S.R.)

6. Review by asking individual students to come up to the projection and point out:

   a. All Communist nations prior to 1945

   b. Additional nations that become communist after 1945

   c. Member nations of NATO

   d. Member nations of the Warsaw Pact

Ask students what they think the term "Iron Curtain" means. (The dividing line between the two blocs.) Point out that the Iron Curtain ran straight through Germany.

7. Ask students to discuss why so much of the world seemed to divide so quickly along communist and democratic lines. (Answers will vary.)

8. Ask the students whose topics focused on the space race to review their findings with the class. Then ask why the Cold War would make Americans particularly anxious to be first in the exploration of space. (Space might be used for military purposes, such as launching an atomic bomb; superiority in the space race would carry prestige and could influence countries that were as yet unaligned.)

Extension Activity

Ask students if they have ever played dominoes; you may wish to bring in a set of dominoes to show them, if they are unfamiliar with the game. Then explain that there is something else you can do with dominoes besides play the game. Show a quick video of a complicated arrangement of dominoes falling; there are many such videos available on the Internet. Then ask students how dominoes could be used as a metaphor for the Cold War. Explain the "domino theory" that was a foundation of U.S. foreign policy in the 1950s.

Topics for Cold War Research

Yalta Conference	**Army-McCarthy hearings**
Berlin Airlift	**Bay of Pigs invasion**
Policy of containment	**Dien Bien Phu**
Korean War	**Sputnik I and II**
House Un-American Activities Committee (HUAC)	**Marshall Plan**
North Atlantic Treaty Organization (NATO)	**Suez Crisis**
Truman Doctrine	**U-2 Incident**

Topics for Cold War Research

Chinese Revolution	**Rise of Fidel Castro**
Invasion of Hungary	**Establishment of Israel**
The Rosenberg Trial	**Nuclear weapons testing**
Launch of CORONA spy satellite	**Construction of Berlin Wall**
The Vostok Program	**U.S. Navy Vanguard Rocket**
KGB	**CIA and FBI**

Teacher Resource

Timeline of the Cold War

HUAC:	*Created 1938; most active 1945–1991*
Nuclear Weapons Testing:	*1945–1963*
Yalta:	*1945*
Policy of Containment:	*1947–1989*
Truman Doctrine:	*March 1947*
CIA:	*September 1947*
Establishment of Israel:	*May 14, 1948*
Marshall Plan:	*June 1948*
Berlin Airlift:	*June 1948–May 1949*
NATO:	*April 1949*
Chinese Revolution:	*1949*
Korean War:	*1950–1953*
The Rosenberg Trial:	*March 1951*
Rise of Fidel Castro:	*1953–1959*
Dien Bien Phu:	*1953*
KGB:	*March 1954*
Army–McCarthy Hearings:	*April–June 1954*
Suez Crisis:	*July 1956*
Invasion of Hungary:	*November 1956*
U.S. Navy Vanguard Rockets:	*1957–1959*
Sputnik I and II:	*October, November 1957*
Vostok Program:	*1960–1963*
U-2 Incident:	*May 1, 1960*
Launch of CORONA:	*August 1960*
Bay of Pigs:	*April 1961*
Construction of Berlin Wall:	*August 1961*

Handout 2 ▸ P.1 Taking Notes on Your Research

Name _____

Directions:

Fill in the following information as you research your assigned topic. As you work, keep track of your research materials, whether printed or on the Internet, in the space at the end of this handout.

Event/Topic: _____

When did this event occur? (Be as specific as possible.) _____

Where did this event occur? _____

Briefly summarize what happened in this event:

Who was involved in this event? (List and identify important people with their titles, their nationality, and their role in the event.)

Democratic	Communist

Handout 2 ▸ P.2   Taking Notes on Your Research

What caused this event to happen? (List as many causes, both short-term and long-term, as possible. Your information will overlap with information discovered by your classmates…and that's good!)

Causes	
Democratic	**Communist**

What results did this event lead to? (Be specific.)

Results	
Democratic	**Communist**

How did this event increase tensions between communist and democratic nations?

What were the sources that you used to research this topic?

Locate an image that you think sums up this topic. Print out the image and bring it with this handout to your next class.