

News in Review – November 2014 – Teacher Resource Guide
MALAYSIA AIRLINES MH370: Mystery Unsolved

MINDS ON

In mid-1937, iconic aviator Amelia Earhart — the first woman to fly solo across the Atlantic — was 35 000 kilometres into her effort to fly around the world. She and partner Fred Noonan were heading toward Howland Island as part of the most dangerous leg of the journey, an 11 000 kilometre crossing of the Pacific Ocean. A U.S. navy ship assigned to guide Earhart to the island could hear the pilot appealing for assistance but could not communicate on the radio frequency her plane was transmitting.

Earhart's Lockheed Electra 10E is believed to have crashed just 10 kilometres from Howland Island and not very far from the U.S. Navy crew that was waiting for her arrival, though no one actually saw the plane go down. Initial searches for the plane turned up nothing. Inspired by the mystery, multiple subsequent efforts to find the plane (over many years and at great expense) also turned up nothing. Earhart, Noonan and the Electra simply disappeared despite a rather high

degree of certainty regarding where the plane went down. The fact that the plane (or any debris for that matter) was never found has inspired wild speculation regarding the fate of Amelia Earhart.

Note: Some of that wild speculation included a theory that she survived the flight and moved to New Jersey to live out her days — a theory that has been thoroughly disproven.

1. Why is it surprising that Earhart's plane was never found?
2. Amelia Earhart became a celebrity based on her aviation ability. Her star rose to even greater heights after her solo flight across the Atlantic.
 - a) Why did her disappearance lead to wild speculation regarding her fate?
 - b) What role did celebrity play in people's fascination with her disappearance?



SETTING THE STAGE

The airplane and the 239 souls onboard simply vanished. Malaysia Airlines Flight 370 (MH370) took off from Kuala Lumpur en route to Beijing shortly after midnight on March 8, 2014. Less than an hour after takeoff it disappeared and, to date, not one piece of physical evidence relating to the flight has been found. This has prompted some pundits to call this the greatest aviation mystery in history.

The disappearance

The plane carrying passengers and crew on board MH370 was a Boeing 777 with an excellent safety record. It took off from Kuala Lumpur airport without incident at 12:41 a.m. on March 8. The plane deviated from its pre-programmed route shortly after takeoff and headed toward waypoint Igari in the Gulf of Thailand to give the flight a more direct path to Beijing. Shortly after passing the waypoint, the pilot contacted Vietnamese air traffic control and informed them that MH370 was entering their air space. The time was four seconds past 1:21 a.m. Eight seconds later, the plane disappeared from radar.

The mystery

The disappearance of the plane was initially greeted with concern but not panic. Air traffic controllers wondered if the aircraft had flown into some kind of radar blind spot. However, it soon became clear that the plane's transponder was no longer sending information and something out of the ordinary had happened to MH370. Inexplicably, Malaysian and Vietnamese air traffic controllers noticed something wrong (it is very unusual for a transponder to suddenly go offline) but waited several hours before contacting each other.

The search

Eventually, planes and ships were sent to search the area in the Gulf of Thailand where the last known contact with MH370 took place. Searchers scoured the area for two days to no avail. Then the search suddenly shifted to the Strait of Malacca after military radar revealed the plane appeared to have made a sharp left turn shortly after passing waypoint Igari. The search continued but still nothing was found.

Then, a full four days after the plane went missing, the Wall Street Journal reported that MH370's Rolls Royce engines continued to send data to satellites for up to seven hours after the plane disappeared. The data confirmed the hard left turn that brought searchers to the Strait of Malacca while simultaneously creating a new search area that was 4 000 to 6 000 kilometres away from waypoint Igari.

Narrowing the search

Scientists in London, England, working for a mobile satellite company named Inmarsat, made the determination that MH370 flew for up to seven hours after it disappeared. The scientists reported that a satellite over the Indian Ocean detected pings (which they referred to as "handshakes") coming from the engines of MH370. Because both the plane and the satellite were in motion, it took the scientists some time to narrow the location to a wide arc stretching from Kazakhstan to the southern Indian Ocean. They eventually determined that the data pointed to an area well off the coast of Australia in one of the most inaccessible parts of the Indian Ocean. This location was selected based on MH370's final handshake, a moment when aviation experts speculate the plane ran out of fuel and crashed into the ocean. And so the search shifted to that location — one that happened to be thousands of square kilometres in size.

Nonetheless, search teams made their way to the area and started looking for MH370. Initially they were hoping to track signals emanating from the plane's black box. However, despite their best efforts, the searchers ultimately came

up empty. A full six months after the plane disappeared, search teams from Australia, China, the U.S. and Malaysia weren't able to find one piece of physical evidence concerning MH370.

To consider

1. Why is the disappearance of MH370 considered the biggest aviation mystery in history?
2. What unusual movements did the plane make shortly after disappearing from radar?
3. Why did the search shift to the southern Indian Ocean? How were scientists able to narrow the search?

VIDEO REVIEW

Pre-viewing

Air traffic controllers keep track of planes by using primary and secondary radar. Primary radar has a range of about 160 kilometres and uses information gathered on ground stations as planes leave their destination. Secondary radar has a longer range because it receives information from a device on a plane called a transponder. Many planes leave radar range on transoceanic flights but send data at certain intervals and checkpoints so that air traffic controllers know where the plane is flying. During the times between transmissions, air traffic controllers have to guess the position of the plane. While primary radar is hard to fool, secondary radar can be defeated by simply turning off the transponder (a tactic used by terrorists during the 9/11 attacks on the U.S.).

1. What problems can you see with simply relying on primary and secondary radar to keep track of planes?

2. Many airlines are moving to real-time GPS tracking of planes. This will take time to become an industry standard but many are hopeful the process will be completed relatively soon. Why do you think real-time tracking is an important development? Who will benefit from real-time tracking?

While viewing

1. Why is the disappearance of Malaysia Airlines Flight MH370 considered one of the biggest mysteries of modern times?

2. How many Canadians were reported missing when official's lost track of MH370?

3. Where did the international search team focus its efforts in the immediate aftermath of the disappearance of the plane?

4. How did you feel as you heard reporter Adrienne Arseneault’s account of the last day in the lives of Philip Wood, Zaharie Ahmad Shah and the group of artists preparing to return home to Beijing?

5. Why is the disappearance of MH370 considered a “black swan event”?

6. What mistakes did Malaysian authorities make in handling the disappearance of MH370?

7. What crucial evidence took days to come to light in the immediate aftermath of the disappearance of MH370?

8. Why would some countries want to keep their military radar results secret?

9. How did satellite technology manage to narrow the presumed flight path of MH370?

10. How big was the search zone?

11. Why were military search planes and boats sitting idle for a solid week after the disappearance of MH370?

12. After the search came up empty, what did some experts believe those promising “pings” were?

13. How big did the search area become after searchers failed to find anything in the 853 square kilometres where experts believe the plane went down?

Post-viewing

Many pundits wonder how a world so rich with GPS tracking ability could manage to lose track of a Boeing 777 with 239 people on board. Is this a legitimate position to take or are people over estimating the power of technology?

THERE ARE THEORIES AND THERE ARE CONSPIRACY THEORIES

Detecting conspiracy theory

In December 2010, Scientific American published an article called “The Conspiracy Theory Detector” by Michael Shermer. The author provides criteria that can be used to discern whether a conspiracy theory is true or false. Among the highlights:

- Since conspiracy theories often involve “connecting the dots” make sure that the “dots” can be clearly connected. Often they cannot be connected by any causal link. Instead the conspiracy involves a massive, imaginative stretch.
- Conspiracy theories need to be examined for their ability to be executed. Most conspiracy theories involve complex plans, many co-conspirators and massive cover-ups.
- Many conspiracy theories involve a corrupt perpetrator — i.e. the CIA, CSIS, etc. — who is credited with their skill in escaping blame. The perpetrator is often named despite the fact that no evidence exists to implicate them for being involved in the conspiracy.
- Conspiracy theories do not distinguish between facts and (often wild) speculation. Thus, people learning of a conspiracy are not encouraged to recognize fact (MH370 went missing on March 8, 2014) and speculation (MH370 was commandeered by the CIA).
- Conspiracy theories are hostile to any kind of analysis, criticism or rebuke. Even when a conspiracy theory is factually nullified, those who made the theory in the first place will simply claim that facts are being manipulated to cover up the truth.

Try to keep the idea of a “conspiracy theory detector” in mind as you read about the disappearance of the Malaysia Airlines flight.

Conspiracy theories on MH370

With no physical evidence surrounding the disappearance of MH370, conspiracy theorists had a field day after the plane went missing. Several troubling facts seemed to feed the development of fresh theories. First, the plane suddenly disappeared from radar and then turned hard to the left. Second, the planes transponder and other communication systems suddenly went offline (which is extremely unusual). Third, the plane really disappeared three times: first when the plane was lost by commercial radar, next when the plane was lost by military radar (after the hard left turn), and then when it sent its last signal to an Inmarsat satellite seven hours after it originally went missing. These three troubling facts have invited plenty of speculation.

Here are some of the conspiracy theories associated with MH370:

- **MH370 landed on a beach on some remote island** in the Indian Ocean.
- **MH370 was hijacked** and flown to Kazakhstan or Pakistan where it is being weaponized for a 9/11-style attack on an undisclosed target. Alternatively some claim MH370 was hijacked by Chinese separatists and flown to a deserted location. Both theories would have required the radar systems of many countries to collectively fail to spot the hijacked aircraft.
- **MH370 hid in the shadow of an airline** heading west. The shadow aircraft (flying within a kilometre of the lead plane the entire time) eventually snuck out from behind its unsuspecting host when it was close to its destination and landed at an as yet undisclosed location.

- **Hijackers flew MH370 to 45 000 feet** causing decompression in the cabin, eventually **rendering everyone on the plane unconscious**. The hijackers had independent oxygen tanks. They eventually descended and flew the plane to an undisclosed location.
- **MH370 was shot down** by mistake in a joint U.S.-Thailand **military exercise**.
- After being hijacked/commandeered, **MH370 resurfaced and was shot down by Russian rebels in Ukraine**. The plane was identified as MH17 (a Malaysia Air flight that was actually shot down by Russian rebels over Ukraine!) but conspiracy theorists contend that the plane was really MH370 — loaded with the dead bodies of the original passengers and crew.
- **MH370 was shot down by a Chinese submarine** in an effort to assassinate a passenger onboard the flight.
- Twenty passengers onboard **MH370** worked for a high tech company that posed a security threat to the U.S. As a result, the plane **was hijacked by the U.S. military and flown to a base on Diego Garcia**.
- **MH370 was cyber-hijacked** by hackers who took control of the aircraft remotely and flew it to an undisclosed location.

All of theories were challenged and debunked in the weeks and months following the disappearance of MH370. However, fascination with the theories persists.

What might have happened

Before speculating about what might have happened to MH370, it might be helpful to use Occam's razor as a starting point. Put very simply, Occam's razor is a theory that states the

simplest solution is probably the correct solution.

While MH370 may have been the victim of some of the nefarious elements indicated in the conspiracy theories (one thing about conspiracy theories, it is hard to completely rule them out), it is more likely that some catastrophic event struck the plane.

When a crisis hits an aircraft, the crew is trained to follow a three-step process to get the plane under control: aviate, navigate, and communicate, in that order. Let's say a malfunction like rapid decompression or a fire forced the plane into a state of emergency. The first priority of the pilot and co-pilot would be to find a way to fly the plane (aviate). Perhaps an onboard emergency is the reason why the plane made a sudden turn back toward Malaysia. Maybe the pilots were trying to guide the plane to an alternate airport (navigate). We also know that the transponder and other data sending instruments stopped working suddenly. It might be reasonable to assume that something also knocked out the cockpit's ability to contact air traffic controllers to issue a mayday (communicate). Perhaps the emergency (malfunction? decompression? fire?) could not be contained and, with the automatic pilot activated, and those onboard incapacitated, MH370 turned into a ghost flight that traveled for seven hours after the initial catastrophic event before crashing into the Indian Ocean.

Perhaps this idea is no better than the conspiracy theories mentioned earlier. All that is known is that MH370 disappeared and no one is satisfied with not knowing what happened to the aircraft and the 239 souls onboard.

To Consider

1. How do you explain the popularity and appeal of conspiracy theories?
2. Can any of the conspiracy theories relating to MH370 be completely ruled out?
3. Why does the author highlight certain words in the “Conspiracy theories surrounding MH370” section?
4. Does the account in the “What might have happened” section meet the criteria of Occam’s razor? Is it the simplest explanation for what might have happened to MH370 or is it no more valuable than a conspiracy theory?

Reflection

In 2005, Helios Airways Flight 522 was about to complete the final leg of its journey from London to Prague via Cyprus. Technicians ran a check on the plane’s air pressure in Cyprus, but failed to reset an air conditioning switch from manual to auto before clearing the plane for travel. The pilots should have caught the error when they ran through their pre-flight checklist but they missed it, and the plane took off and began its ascent. It took less than 15 minutes for the cockpit to lose cabin pressure and for the pilots to feel the effects of hypoxia (a lack of oxygen to the brain). They became disoriented, failing to identify the problem and eventually drifted into unconsciousness. The cabin crew realized there was a problem when oxygen masks dropped from the overhead compartments in front of the passengers. They tried to get into the cockpit but the door was securely locked (a post-9/11 security measure). Within 15 minutes, the passengers’ oxygen ran out and they too fell into unconsciousness. Realizing the flight was in trouble, authorities scrambled fighter planes to see if they could make visual contact with someone on the plane. When they arrived, they saw a flight attendant with a portable oxygen tank trying to figure out how to control the plane. He must have found a way to break into the cockpit. He was too late. Two hours after takeoff, Helios Airways Flight 522 crashed in an isolated area, killing all 121 people onboard.

What lessons can be learned from the tragedy surrounding Helios Airways Flight 522?

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