

During Reading – Analyzing & Aligning



THINK-ALLOUD

- What?** Think-alouds model the process the learner is using to comprehend text, plan a response, or work through a problem.
- Why?** The think-aloud enhances student awareness of thought processes that occur as a reader attempts to construct meaning from text. Students are considering what they know or don't know as they read.
- How?** Select a passage to read aloud that contains information related to concept goals of the lesson but offers points of difficulty, contradictions, ambiguities, or unknown words.
- Choose specific instances when comprehension breaks down to model thought process such as making predictions, visualizing, connecting to prior knowledge, verbalizing confusion. Also, include instruction of “fix up” strategies like rereading, reading ahead, and using text features to guide understanding.
- Explain the strategy and its purpose before demonstrating the think-aloud. Give students a copy or the text or use a projector while modeling. Write out comments for think-aloud on your copy.
- When students practice in pairs or independently, give guidelines about what their focus should be (i.e. questions, connections, response to author, points of confusion, etc.). Keep your focus narrow.
- If students cannot write on text, provide small Post-it notes.

Example: Science Literacy – Making Connections & Monitoring Comprehension

Biology can explain why some people prefer to wake up early whereas others only come alive at night.

by Mary Tucker (from FirstScience.com)



Prefer to sleep late? People seem to have a preference for either the morning or evening with 10% of the population being extreme morning people and a further 10% extreme night owls.

Scientists nickname early risers "larks" and people who like to stay up late, "owls". While about 80% of people fall into the middle of the spectrum, only slightly favouring the morning or the night, it is now believed that about 10% of the population are extreme larks and a further 10% are extreme owls. Larks are most alert around noon, function best in the late morning, and are talkative, friendly, and pleasant from around 9 am to 4 pm. Owls, on the other hand, are not really up and running until the afternoon, are at their best later in the day, and most alert around 6 pm.

The body clock

The preference for 'morningness' or 'eveningness' is a result of variations in circadian rhythms - the rough 24-hour cycle in the physiological processes of living organisms. Also known as the "body clock", each individual has a unique profile, or

chronotype, that describes their rhythmic behaviour over the course of a day, and which can vary significantly from person to person.

The body clock controls sleep-wake patterns by regulating body temperature and hormones such as melatonin and cortisol. A normal circadian rhythm sees melatonin rising just before bedtime and dropping just after waking. The stress hormone cortisol peaks moments before first consciousness, and core body temperature is at its lowest during the middle of the night. A person is therefore inclined to be a lark or an owl depending on whether these chemical changes happen earlier or later than the norm.

Our circadian clocks tend to tick slower or faster depending on age. On average, larks tend to be older, whereas younger university students and twenty-somethings tend to be owls. These age-related tendencies are part hormonal/biological and part social. Hormonal changes that occur as humans age reduce the need for the longer periods of sleep required by the young. In addition, light exposure is constantly resetting our clocks: as we

Teacher Model:

Based on this description, I think I am more a night owl than a lark. A friend of mine is a lark. She does all kinds of housework at 6:00 a.m.

I can see the connection between clock and the word chronotype. If something is in chronological order, it is organized by time.

I never knew hormones and stress were related. The body just takes over to control your sleep-wake patterns.

We've all noticed that teenagers tend to sleep late if they can. Even my ten year old daughter is starting to sleep later on the weekends.

grow older our corneas and retinas cloud with age, reducing our light intake. Middle-aged adults saddled with many responsibilities also tend to forget their intrinsic biological clocks and reprogram their cycles to fit their demanding schedules. University students, on the other hand, are often notorious night owls due to academic and social pressures.

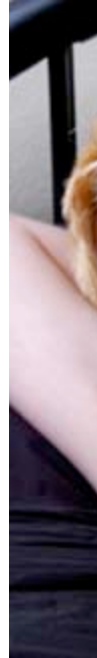
Till Roenneberg at the University of Munich is especially concerned with the sleep cycle of adolescents. In a landmark study of the sleeping habits of 25,000 people aged between 8 and 90, Roenneberg calculated the "mid-point" of each person's sleep cycle - the time halfway between when they went to bed and when they woke up on days free of work obligations.

He found that children tend to sleep later and later in the morning until they reach about age 20. At that point, there is an abrupt change in sleeping habits, and the mid-point starts getting earlier and earlier again. Roenneberg believes such a sudden shift suggests a biological cause and serves as the first-ever marker for the end of adolescence. The study also reflects the trend for girls to mature faster than boys: the women in the study that slept the latest were 19.5 years of age compared to 20.9 years of age for the men. Roenneberg's research involving teenagers has highlighted the unique sleep needs required by this age group: adolescents sleeping late should no longer be considered lazy, but as exhibiting normal biological traits for their age. Roenneberg's study has also sparked a debate about the early start of the school day, and whether it should be adjusted to account for teenagers' need for more sleep.

The early bird gets the worm?

Benjamin Franklin's well-known proverb "Early to bed and early to rise makes a man healthy, wealthy and wise" (from his *Poor Richard's Almanac*) not only gives larks a smug sense of superiority, but also reflects the larger trend of society to view sleeping late as a character flaw. Historically, this may have been due to our agrarian ancestors' need to rise with the sun in order to accomplish a full day's work. However, numerous studies have since refuted the claim that there is any health, socioeconomic, or cognitive benefit to following Franklin's advice.

Moreover, new evidence shows that the most important factor in determining a person's morning or night preference is not their willpower but- you guessed it - their DNA. Scientists believe interactions between a dozen or more genes located in the hypothalamus in the brain, and the polymorphisms or differences in those genes, have a strong influence on circadian rhythms. In genetics, variation of traits within a population is often key, and, as Dr. Christopher R. Jones, the medical director of the Sleep-Wake Center at the University of Utah points out, "The whole tribe is better off if someone is up all the night, listening for a lion walking



Research shows that adolescents have a biological need to sleep more.

Teenagers are biologically programmed to sleep later. It is normal. I wonder why more schools don't change their schedules because of that?

Our lives do not require us to get up so early for work. Agrarian –tough vocab

2 more difficult words - socioeconomic, cognitive

I am not sure what or where the hypothalamus is in the brain.

I wasn't sure what polymorphisms were but when I read on it said "differences in those genes."

Having differences within a group is good so people can do different jobs.

through the grass."

The latest genetic breakthrough in the study of morning people versus night people comes from researchers at the University of Surrey, England, where a study led by Dr. Simon Archer found a link between a gene called Period 3 and people's lark or owl preference. The research was carried out at the Science Museum in London, England where visitors were asked to complete the Horne-Ostberg questionnaire. In use since 1967, this survey is comprised of 19 questions designed to determine the time of day people prefer doing certain tasks. The researchers took genetic samples from the participants who scored the most extreme on the morning/night spectrum and analysed their DNA. Published in *Sleep*, the journal of the American Academy of Sleep Medicine and the Sleep Research Society, the study's findings show that most of the extreme morning people have a longer version of the gene while night people have a shorter type.

The genetic explanation for an extreme morning or night preference may come as a welcome relief to those who have spent years fighting their own nature. In particular, night owls tend to be the losers in our 9 to 5 society: people who are inclined to stay up late but have to function on a normal working schedule often end up sleep deprived due to insomnia.

Carolyn Schur, a sleep advocate and author of the book *Birds of a Different Feather*, which explores the relationships between early birds and night owls, doesn't believe in labelling people with an illness simply because their natural habits are different from what society mandates. For example, patients described as having Delayed Sleep Phase Syndrome or DSPS, are typically unable to fall asleep before 2 am and have extreme difficulty waking early. (Extreme morningness is referred to as advanced sleep phase syndrome, or ASPS). Instead of making people with either DSPS or ASPS feel guilty and shunning their lifestyle, Schur argues for increased tolerance and understanding of sleep variations, and greater flexibility with work schedules.

An ideal future would allow humans to test their genetic make-up to determine the healthiest work schedule for them. At the moment, there are entire professions that tend to be larks, like bankers and surgeons, whereas owls gravitate to freelance or shift work or industries that operate later in the day like entertainment and hospitality. Perhaps predictably, Schur also notes that there is a much higher divorce and separation rate between couples who have different morning/evening preferences.

So should people try to change what is genetically inherent? Schur doesn't recommend it. Although there are treatments to alter your circadian rhythms like light therapy, melatonin and large doses of vitamin B12, she likens such course to continually dying your hair. "If you're a blond who wants to be darker, you can do it, but you're committing yourself to a lifetime of maintenance and upkeep," she says.

I think that this research in England shows that morning people have a long "sleep gene and night people have a short "sleep gene." I didn't know genes were described as long or short.

I always thought I would get used to getting up early for work, but it doesn't get much better over time. This tells me why.

It sounds like the people who are extreme cases of larks or night owls have the most difficulty.

What happens if you don't have a job that matches your best sleep pattern?

This answers my previous question, but the process doesn't sound easy.