# KENT SLA

Kent SLA Newsletter

*"When I began researching this topic, I thought it would be a contentious issue. However, the research is pretty clear on this. There are certainly circumstances when listening to music can be helpful when studying, and circumstances when it may be a hindrance. The following is a (very condensed!) distillation of the research findings."*

## Is it a help or hindrance to listen to music while you study?

Research findings collected by Philippa Rose, Librarian at The King's School, Canterbury.

Everything we do occupies some **brain bandwidth** (see: nicolamorgan.com). Your brain has a finite amount of bandwidth and it's roughly the same for everyone. Bandwidth can be taken up by intrusive thought and worries; change and new things; processing information; scarcity of food, money or time; resisting temptation (to watch tv, talk to your friends) and more. When something is occupying a lot of bandwidth, other things happen more slowly and less well. Listening to music occupies some bandwidth, so you would think that it would be better to switch off your music in order to focus on a task. However, in reality there are other things that are likely to be occupying more bandwidth than listening to music, like noises and distracting irritations (rustling, sniffing, clicking pens), and noises inside your own head (thoughts, worries, frustrations). Music can drown out these distractions, allowing you to improve focus and concentration.

**Certain factors are crucial in assessing how music affects learning.**

**Emotion:** Listening to music can improve your mood, which has corresponding improvements in performance. When you're in a good mood, you perform well. Familiar, age-appropriate music leads to better improvements than unfamiliar music (see: Schellenberg, Nakata, Hunter, and Tamoto 'Exposure to music and cognitive performance: tests of children and adults', 2007).

**Personality:** Different personality types (the spectrum of introversion and extroversion) have preferences for certain optimal levels of brain stimulation (see: Cain 'Quiet', 2012). Generally, research shows that the interplay between personality type and task complexity can affect whether or not background music can help or hinder study. If the task is quite complex and you are more of an introvert, music is likely to hinder your study. While extroverts responded best to background music, followed by background noise which had little impact, while silence had a negative impact on study (see: Dobbs et al. 'The effect of background music and noise on the cognitive test performance of introverts and extroverts', 2011).

**What kind of music is best?**

**Rapidly changing music** (with or without lyrics) will distract learning and lead to poor performance. The more variable the state of musical stimulus, the greater the degree of disruption to study and short-term memory (see: Jones, Tremblay 'Interference from degraded auditory stimuli: linear effects of changing-state in the irrelevant sequence', 2000).

**Smooth, unvarying states of music** are preferable for those who are likely to benefit from listening to music when studying. It has been argued that the best music for concentration is the **video game soundtrack**, designed to help create an immersive environment and to facilitate but not distract from a task that requires attention and focus.

It's possible that **music with lyrics** could be problematic when writing or reading because you are effectively multi-tasking, using the language processing part of your brain for both.
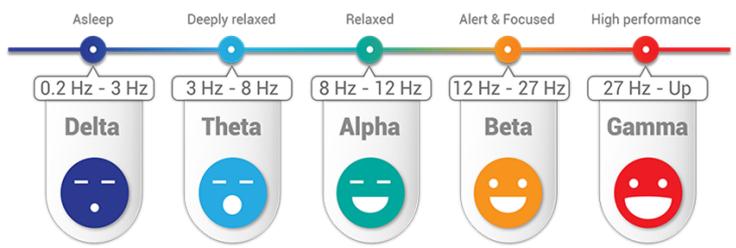
Musicians may find that their study performance is impaired when listening to music that features **their own instrument** (see: Yang et al. 'The effect of background music on the cognitive performance of musicians', 2016).

**The Mozart effect:** Listening to Mozart does not make you smarter! The research showed that pupils' spatial reasoning improved for about ten minutes after listening to a Mozart Sonata (fast tempo, major key) as compared to listening to relaxation music or silence. If you consider the major key to be associated with a happy mood, and read on to learn about tempo and rhythm, the 'Mozart effect' results make sense without the need to jump to the conclusion that listening to Mozart makes you smart!

**What about music intentionally designed for cognitive change?**

A lot of neural activity is rhythmic. Certain brainwave frequency changes are associated with different types of cognitive activity. There are five categories of brainwave, and they are consistent across gender and cultures.

This knowledge has led many to investigate the potential to **induce patterns of neuronal activity using external stimuli**, such as music that is algorithmically generated to drive the brain into a certain state (like a pacemaker encourages your heart to synchronise with its own electrical pulses, so too for musical beats). Most of the current literature



| Asleep | Deeply relaxed | Relaxed | Alert & Focused | High performance |
|---|---|---|---|---|
| 0.2 Hz – 3 Hz | 3 Hz – 8 Hz | 8 Hz – 12 Hz | 12 Hz – 27 Hz | 27 Hz – Up |
| Delta | Theta | Alpha | Beta | Gamma |

can't disentangle positive developmental results from the placebo effect (see: Schonberg et al. 'Neurofeedback, sham neurofeedback, and cognitive-behavioural group therapy in adults with ADHD: a triple-blind, randomised, controlled trial', 2017). However, a preliminary study of brain.fm showed an improvement in reaction time, alertness, pattern recognition, and focus (see: Santostasi 'EEG analysis on brain.fm').

**Conclusions**

The research clarifies what we know experientially:

- For those who are easily distracted or find it hard to get into a highly focussed study-state, listening to music can help.

- Music should match personality and task-type.

- Extroverts will benefit from high-energy music, while introverts will find it overstimulating.

- The best music to listen to is music that is familiar, enjoyable, more than one song but not particularly variable in mood, and at a volume that doesn't intrude on thoughts.

- Music with lyrics can conflict with study that involves language-processing, with less of an effect on math-related tasks.

- If a musician, the music should not feature your own instrument.

- The more conceptual the task becomes, the more brain bandwidth will be required so calmer, more unobtrusive music (for extroverts) or silence (for introverts) is best.

- Turning off music to consider particularly tricky concepts can be helpful. It's about adapting to the situation and accepting the interplay between personality, aptitude for the task, and study environment.

In the final stages of revision for exams (i.e. once the subject knowledge has been committed to memory and it's time to practice manipulating that knowledge to suit different questions) it can be beneficial to practice working in absolute silence, in order to replicate **exam conditions**.

When presenting any study behaviour advice to teenagers, it can be helpful to consider the following:

The brain is a collection of cells that communicate with one another using chemicals called neurotransmitters. During adolescence, there is an increase in the activity of the neural circuits utilising dopamine, a neurotransmitter central in creating our drive for reward. This manifests itself in a number of different ways (impulsiveness, addiction etc), including the way in which the brain makes calculations about the perceived results of a course of action. Evaluation centres in the adolescent brain downplay the possible negative outcomes while amplifying the significance of a possible positive result. It simply means that **an adolescent is more likely to aim for something than inhibit something.** The significance for adults in this scenario is to appreciate the power of promoting the positive, so instead of trying to shut down an impulse by inhibiting it, we'll have much better results if we focus on a positive factor to promote.

**Alternatives to listening to music**

Essentially listening to background music is a way to improve focus and alleviate distractions. However, there are alternative ways to do this. Here are just a few:

**Mindfulness meditation:** requires commitment but takes up very little time.

**Distraction sheet:** for those who struggle with their inner monologue, having a distraction sheet on which to write out interrupting thoughts as they surface can really help.

**Forest app:** for those who struggle with mobile-related distractions and thrive on rewards, planting a

seed at the start of a study session and allowing it to grow as you spend time away from your phone can be a great way to improve productivity.

**Pre-commit to a microtask:** breaking the task into smaller micro-tasks can make the task feel achievable by shifting the focus from product to process and relieving paralysing anxiety.

**Pomodoro technique:** set a timer for 25 minutes; once the timer starts ticking, there's no web surfing, chatting etc. When distraction arises, which it inevitably will, you simply ignore it until the timer beeps.

It's common to treat undistracted concentration as a habit like flossing – something you know how to do, know it's good for you, but have been neglecting due to a lack of motivation. It's an appealing belief because it implies you can transform your working life overnight if you can simply muster enough motivation. This simply ignores the difficulty of focus and the hours of practice necessary to strengthen your mental 'muscle'. It can take up to three months to form a new habit. The more you fire your brain in a particular way, the stronger the bonds that are built will be and the more you'll be predisposed to behave in that way in the future. **Focus is a skill,** like any other.

**A final note on distraction**

**Distractions and daydreaming are not the enemies of learning. In fact, they're essential to learning.** It can help to think of your brain as a flashlight. When you're intensely studying something, the beam is tightly focussed and strong. If you set your flashlight to a more diffuse setting where it casts its light broadly but not particularly strongly, you get more of an overall picture – a broader context. Diffuse thinking occurs when we are mentally 'twiddling our thumbs' or daydreaming.

**To figure out new ideas and solve problems, it's important not only to focus initially, but also to subsequently turn our focus *away* from what we want to learn**.

Each interlude in which you are not directly focussed on the problem allows you to look at the problem in a fresh way. When you turn your focussed attention back to the problem, you'll have consolidated new ideas and patterns that the diffuse mode has delivered. If you only work in a focussed mode, the resulting neural patterns will be faint, fragmented, and will quickly disappear. It's a very shaky foundation upon which to build real knowledge (see: Oakley 'A mind for numbers', 2014).

That study break reward of using your phone after a short burst of intellectual activity can actually be beneficial. *But it's important to understand that distractions can be used to avoid negative experiences or promote positive ones. Identifying why and how you engage with personal technology can be the difference between healthy or destructive behaviours.*

# Interactive Fiction in Libraries

**By Nora Camann**

**Deputy Librarian at Kings School Canterbury**

On Thursday, May 24th, Florencia Minuzzi gave a talk about using Interactive fiction (IF) for teaching in libraries at the Herne Bay High School Library.

Florencia (Flo) is the co-director and co-founder of a computer game company called, Tea-Powered Games. She has also written and designed several IF games on a variety of topics.

The talk began with a definition of what Interactive fiction games are and descriptions of how they can be useful for education. In essence, Flo said they are a bit like a choose-your-own-adventure novel with a lot more depth and interaction. Because they are games that involve text, they are especially good for teaching reading comprehension. The story is the game and it is fun to read because the player is usually the story's protagonist.

There are many IF games available for download from the internet that can be used for teaching different topics. However, Flo encourages people to make their own games. The tools for creating them are free to use online and they are simple enough to use that a non-programmer can create a game in their free time.

There are two main types of IF, the hypertext version with options that you click on and a parser version where the player must type in simple commands in order to advance the story. The first IF games were developed in the 1970s and were parser games, such as "Zork".

The simplest IF games to both make and to play are the hypertext games. These games can be made in and played on an internet browser. The player will never get stuck in playing one of these games, wondering what to do next, as there is always an option to click on.

If you want to create a more challenging game, a parser game may be the better option. Here the player is presented with a scene, such as a dark and deserted library, where they must decide what to do next. Although these games are harder to make as you will need to plan for what the player might type in, the higher level of intentionality makes them quite rewarding to play.

Librarians who have an interest in teaching computing skills may wish to make a lesson for students to create their own IF games. Flo gave several examples to the benefits of this type of lesson. First, planning the game will help the student understand cause and effect; they will get practice making engaging stories and dialogue, with fleshed out settings and multiple

## Reasons to play IF

- It promotes empathy. You can live a day in the life of someone different from yourself.

- It provides a safe space for problem solving.

- It does not require supervision. The game provides guidance.

- It can be used to explain a complex system, taking the player through step-by-step.

- Embodying certain characters can make people feel closer to historical events.

- It helps a person to understand how ideas are connected.

outcomes. In order to make the game interesting, they will need to think about what the player might do and what they want. This makes game creation a social experience. Although you can make a game by yourself, your job is not finished until it is played.

Flo gave some advice for those wishing to teach IF game-creation as a lesson. First, you need to learn how to use the online software. There are plenty of online tutorials to walk you through the process. Have students play some games first so that they have an understanding of IF and then start them off with making hypertext games since it is simpler. And finally, look for IF competitions for your students to enter. Or make your own.

# Neal Zetter comes to the

# Holmesdale School

## By Emma Foreman: Learning Resource Centre manager

Over 150, Year 5-7 students from visiting schools recently joined The Holmesdale School Year 7s for a lively performance from Neal Zetter, a London-based comedy performance poet and author. The audience were soon finger clicking, cheering and joining in as Neal treated them to poems on subjects as far ranging as ketchup, orang-utans, and whether he should be voted in as the next Prime Minister. He also kept them entertained with his rendition on 'how dads think they're cool', much to the amusement of the children and the adults.

Neal then answered questions from the audience and signed copies of his books, Yuck and Yum (A Feast of Funny Food Poems), Here Come the Superheroes (Raps & Rhymes to Save the Galaxy), Bees in My Bananas and It's Not Fine to Sit on a Porcupine.

If you are interested in hosting an event, Neal is normally happy to give a talk for the price of his travel expenses. He also brings a selection of his books for sale on the day and posts pre-ordered books in advance.

If you want to find out more about Neal, visit his webpage, www.cccpworkshops.co.uk or contact me to find out more about his visit at The Holmesdale School.

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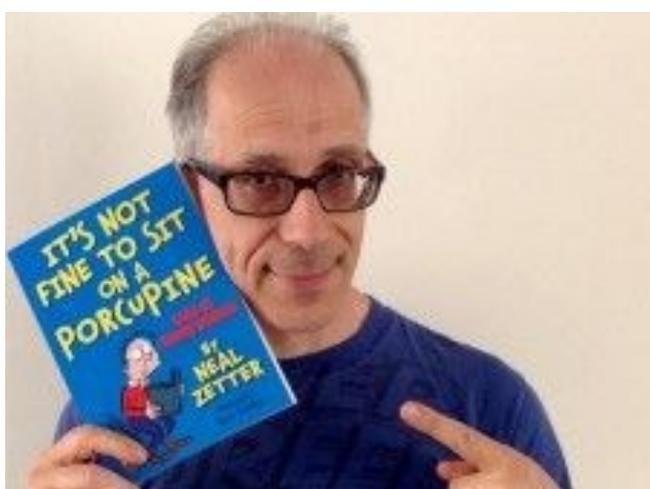
I'm sure that, like me, many of you await the announcement of the Carnegie shortlist in March each year with a mixture of excitement, trepidation, and wonder. How many will I have read already? How expensive will it be to get full sets in? Is it feasible to set up a shadowing group if a majority of the titles are "not suitable" for younger students?

In my opinion, this year's shortlist is one of the most interesting for a while. It's almost as if the judges had a number of boxes to tick, and have succeeded in their aim to keep (almost) everyone happy.

So: four men, four women. Four books that I would class as "Young Adult" (Year 9+), and four that I would happily let Years 7 & 8 read. A few nods to racial and sexual diversity. Four previously short-listed authors, four first-timers. Two (or possibly three) that could possibly be classed as historical. Two that are unashamedly 'political'. One – the same one – that could tick both the 'humour' and 'fantasy' boxes. And all eight that, in their own ways, deal with real life issues, relationships with parents, siblings, friends, and loved ones.

Will Patrick Ness become the first ever three-time winner? Or will Geraldine McCaughrean join him with two medals? Now, don't go listening to me too much if I'm going to try and predict a winner. The only time I've ever guessed right was with Ness' 'A Monster Calls' in 2012, and I know that many people saw that as head and shoulders above everything else, so it wasn't a hard decision. Personally though, I feel that 'Release' isn't his strongest – I never quite got the back story with the ghost – if it was a ghost. McCaughrean could certainly win with 'Where the World Ends' for the beautiful descriptive prose, and coming 30 years after her winning with 'A Pack of Lies' in 1988 this would be a remarkable achievement.

Actually, any of the other six could win – although I feel that 'Rook' really suffers both for its brevity and the fact that it is one of a series (this didn't stop 'Monsters of Men' winning, of course). I could certainly understand 'Saint Death' being successful, with its strong themes of gang culture, anti-drugs and anti-globalization. Some people have likened Lauren Wolk's 'Beyond a Bright Sea' to Annie Proulx's 'The Shipping News' and even, in a way, to 'To Kill a Mockingbird' – high praise indeed – and I found 'Wed Rabbit' very clever and thought-provoking.

However, I feel that this year's Carnegie will be a two horse race between Will Hill's 'After the Fire' and Angie Thomas' 'The Hate U Give'. The intricate way Hill tells his narrative from pre-and post-fire is cleverly done – often when novels do too much jumping about in time and place I either get confused or bored, but not with this. 'The Hate U Give' must certainly be my favourite to win, though – not just because of the inspirational character Angie Thomas will become over the next few years, but because, sadly, the plot rings so true to today's societies on both sides of 'the pond'. It has also received the majority vote from my own shadowing group.

OK. I know that by the time you read this, the winner will have been announced (I'm writing this on Sunday, 17th June, and the big day is tomorrow). And our Newsletter editor, Nora, will I'm sure vouch for the fact that this hasn't been edited "post announcement". So will I have chosen the winner? Who knows? And that's all part of the fun!