Music and its Effect on Productivity and Students' Ability to Concentrate
by Gwenan Dickenson, age 17, Ysgol Gymraeg Gwynllyw

Summary

Music is everywhere in our society. There is always a faint hum, a whistle, a song, someone listening to their headphones too loudly... Music is society's way of coping with indescribable emotions, of igniting creativity and being inclusive with relevance. Music connects us.

However, it has become an increasing problem when children begin to depend on music and television as background noise when they revise at home or complete homework; they wear headphones instinctively in school, which means they miss valuable information even though their brain is being stimulated in a different way.

Students turn to disruptive behaviour when a teacher asks them to remove their headphones and concentrate in a lesson, because this is not their usual way of working. In addition, they often say they cannot concentrate without music and therefore tend to perform worse than expected under exam conditions.

I have undertaken the task of researching the effect of music on students' productivity and ability to concentrate in lessons, hoping that this could increase understanding of how they can use music to benefit us rather than affect us negatively.

Research Aim

Therefore, the aim of this study is to reach a conclusion regarding which types of music are beneficial to learning environments and which types are harmful to students' concentration and productivity.

Methodology

In my experiment, I had 23 participants. They chose animals as pseudonyms and recorded their age and school year on a piece of paper to maintain their confidentiality. Someone else collected the results to ensure that I could not see which answers belonged to whom.

There were 12 girls and 11 boys who took part, all between 11 and 23 years old. This experiment took place in my school with three classes who were available and had volunteered to take part, at two different times within the same day.
In this research, each participant had to complete five word-search puzzles while listening to five pieces of music for two minutes:

- There was no music for the first puzzle (control group), and they had 2 minutes to complete it.

- For the second puzzle, they listened to *Jupiter*, a piece of instrumental classical music, and again had 2 minutes.
- For the third puzzle, they listened to rave/dance music with a constant beat, with 2 minutes to complete it.
- For the fourth puzzle, they listened to *Wonderwall* by Oasis, as it is a well-known song, with 2 minutes to complete it.
- Finally, they listened to meditation music, again for 2 minutes.

At the end of each puzzle, the music stopped abruptly before quickly moving on to the next.

Each puzzle was created from the same list of 20 words. The list of words was generated randomly by AI to prevent bias, and for each puzzle they were arranged differently so that it would not become easier to find the words over time.

In addition, students completed the puzzles in different orders so that the difficulty level of the puzzles did not affect the results.
At the end of the experiment, participants were asked to answer 5 simple questions, rated from 1 to 5, to express their preference or level of agreement.

Results

(Results were recorded in tables and charts – see data sheet and graphs in the original document.)

Participants circled answers from 1 to 5 to express their preference or agreement. These simple questions made it easy for participants to respond and produced simple answers that were easy to understand and analyse.

Discussion of Results

No Music

These are the results of the first puzzle. They do not agree with my prediction because I expected more people to thrive under silent conditions. These are the conditions in which students are expected to sit exams throughout their academic careers.

This information suggests that complete silence is not an ideal condition for a student to take an exam. Furthermore, this supports the exact idea I set out to test – that children are becoming too dependent on technology and background noise to be able to function in silence.

The purpose of exams is to allow students to succeed under fair conditions, but if the required conditions act as a barrier to concentration and productivity, teachers should have the right to adapt the environment to suit the individual.

However, one person found 7 words and another found 6, so clearly these were optimal conditions for them. Compared to other graphs, this condition showed the greatest range, indicating that everyone responds differently to silence.

The total number of words found without music was 52, which is 6 less than the highest result. Everyone found at least one word, and most words were found by older students, suggesting that the AI-generated words may have been unfamiliar to younger participants.

The mean was 2.35, which is higher than most other puzzles.

Classical Music

The results of the second puzzle show that people are more likely to concentrate with classical music than in silence.

Although the mode was 3 words, the average results were higher than the first puzzle. For example, one participant who found 1 word in silence found 3 with classical music.

However, the highest scores decreased when music was introduced, suggesting that participants were not used to revising with music and that the music distracted rather than enhanced productivity.

The mean was 1.91, lower than silence, but the results had less variation, meaning they were more consistent and reliable.

Rave Music

It is very clear that people struggled to concentrate when listening to rave music. The mode was 2 and the mean was 1.65 – significantly lower than classical music, silence, and meditation music.

This highlights that rave music has a negative effect on productivity and concentration.

Participants even expressed dislike: “thank goodness that’s over.” Some became disruptive, laughing, dancing, and distracting others.

The fast tempo and constant beat appear to interfere with concentration.

Popular Music

This produced the most interesting response. Some participants mouthed lyrics or quietly hummed along while completing the puzzle.

The music clearly distracted them, but they enjoyed it greatly. This suggests that students tend to listen to happy, popular music while working because it increases serotonin and makes the task more enjoyable.

However, the mean was 1.78 and the mode was 0, showing reduced effectiveness. This may be the worst genre for studying.

One exceptional result (9 words) was excluded as it came from an older teacher.

Meditation Music

This was the most effective condition overall, producing the highest number of correct answers (58).

The mode was 3 and the mean was 2.52 – the highest average. This shows consistent and reliable results.

Participants also reported enjoying this condition most, describing it as “nice” and “more chill.”

This demonstrates that students work best with background noise that is:

- quiet
- instrumental
- unfamiliar
- relaxing

Questionnaire Analysis

- Participants preferred relaxing music (classical and meditation) over intense music (rave/pop).
- However, many preferred classical over meditation despite better performance with meditation music.
- Students tend to choose emotionally engaging music when working, even if it is less effective.

Limitations

Over 50% of participants reported being uncomfortable with time constraints. However, since exams, lessons, and homework all involve time limits, this likely made the results more applicable to real-life conditions.

Conclusion and Recommendations

This research clearly shows that not all genres of music are equally effective in supporting concentration and productivity.

- **Most effective:** Meditation music, then classical

- **Least effective:** Rave and popular music

Calm, instrumental, repetitive music creates a stable learning environment that reduces distraction and improves focus.

In contrast, fast-paced, lyrical music reduces concentration despite improving mood.

Recommendations:

- Teach students about the effects of music on learning
- Encourage appropriate music choices
- Trial meditation music in classrooms or even exams