

Experimental Study on the influence of music on concentration

Researcher: WU, YA-HSI

Adviser: JHANG, SIN-WUN



Research Background

The Research about Fifth-Grade Students' Preference and Benefit for Music

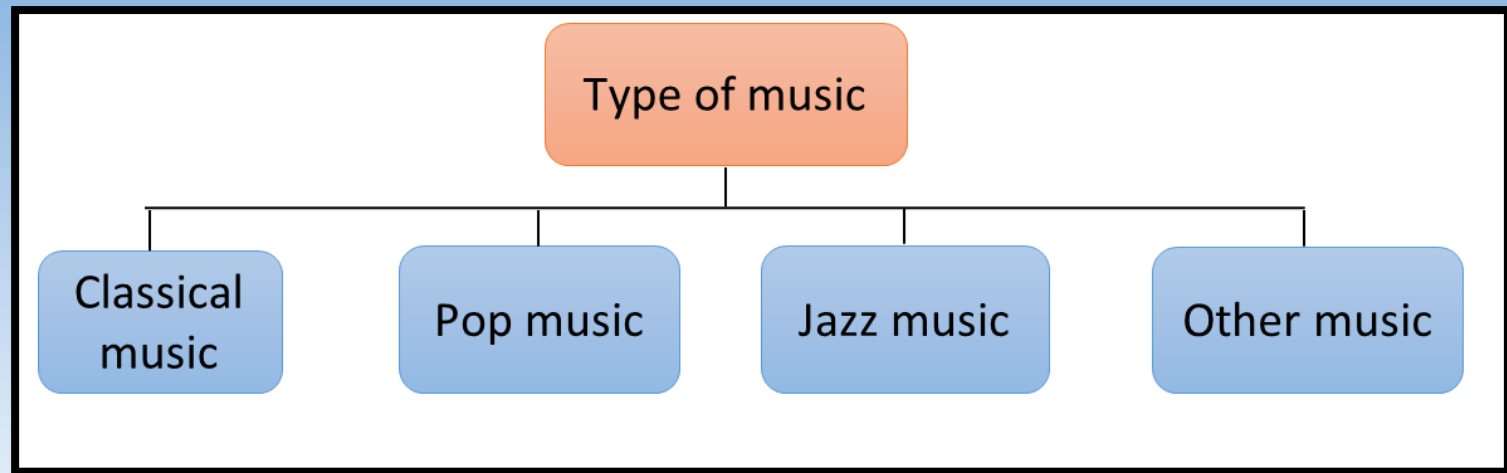
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INTRODUCTION



MOTIVATION

1. The related research I did in the fifth-grade.



MOTIVATION

2. reports about **benefits of music** for concentration while doing homework

3. concentration Influenced by **what kind of music**



PURPOSE

1. the influence of the type of music
2. the influence of lyrics
3. the influence of tempo



METHODOLOGY

Experimental Study

Research objects :

Fourteen students of
sixth grade in Minsheng elementary school



LITERATURE REVIEW



1. INDEPENDENT RESEARCH

Minsheng elementary school gifted class 27th
[CHIN, YI-FAN]



研究者：金以凡
指導老師：王璽崑老師

壹、緒論

一、研究動機

因為我很喜歡聽音樂，因此也常常一邊聽音樂一邊寫功課，但是從來沒有想過這些舉動是否會讓工作效率降低。不過自從有一次，我偶然問起班上的其他同學，他們都說那樣會讓人無法專心。而我之前也看過有關人不能一心多用的電視節目。因此我就很好奇，這是真的嗎？那麼，哪一種歌會影響比較多呢？所以我決定利用這次的研究機會，找出聆聽不同種類的歌曲對數學能力的影響。

二、研究目的

- (一)了解旋律的快慢對資優班六年級學生數學能力的影響。
- (二)了解歌詞的有無對資優班六年級學生數學能力的影響。

Experimental Study
about the influence on listening to
music on mathematical ability

2. NEW RESEARCH FINDINGS



新研究發現沒有歌詞的音樂可以提高你的大腦認知能力以及生產力，EDM Forever !

[EDM 電音新聞](#) [外電報導 >>](#) [👍 讚 234](#) [分享](#)

我想大家都知道音樂可以增強我們的認知能力以及生產能力，這已經是眾所皆知的事情了，不過到底是怎麼樣提升我們的認知能力或是說是怎麼樣刺激我們的左右腦，現在有人研究出來真實的數據了。

Carol A. Smith和Larry W是來自中莫里斯田納西州大學的兩位教授，兩位最近對於「音樂會影響大腦」這件事情發表了他們的研究，發現當學生們選擇他們喜歡的抒情且帶有歌詞的音樂，並且同時讓他們參與考試測試，發現最後的得分都不會高於那些只聽純音樂而且沒有歌詞的人高，音樂中的歌詞可能就是讓前者得分較不高的因素，選擇帶有歌詞音樂的人在當下較無法集中注意力以及發揮較好的記憶能力。

Knox大學的大一新鮮人Iman Ghosh也同樣表示說：「我會聽techno類型的電音，有時候也會聽dubstep的，但不管怎麼樣，我都只聽沒有歌詞以及沒有人聲唱歌的音樂，因為如果有人音樂中出現人聲，那會讓我無法專心。」

2002年，曾經讓一組介於七到十歲的小朋友在較為平靜的音樂類型環境下進行數學考試以及記憶的測試，之後再讓他們進行第二回合同類型的測試，只不過這次的音樂改為節奏較快的類型，之後再進行第三回合，也就是最後一回合的測試，則是完全不放任何音樂，考試的環境相當的安靜，最後發現的結果是在較為平靜的音樂類型環境下的考試，小朋友的成績比較好，不過這項測試失敗的地方在於說他並沒有考慮到每個人喜歡的音樂類型這點，因此只能僅供參考。

Music without lyrics can improve your brain's cognitive abilities and productivity.

職場力 | 職場修煉

想要聽音樂提升專注力？研究說：老歌比新歌好

2014.09.25

讚 72



來源：Philippe Put@flickr, CC BY 2.0

撰文者 Alice Lee

科技報摘 | 瀏覽數：15946

Do you want to listen to music and boost your concentration?

Old songs are better than new songs, study says.

RESEARCH METHODOLOGY AND STEPS



EXPERIMENTAL STUDY

1. pre-preparation
2. perform a pilot test
3. pilot test results and changes
4. formal research



SOURCE OF THE TEST QUESTIONS



四則運算



精選試卷

全部

一年級

二年級

三年級

四年級

五年級

六年級

頁次選擇：**1**

年級	標題	出版社 ▾	時間 ▾	下載 ▾
6	有括號的小數四則計算	中大小學堂	2018-01-10	21
6	有括號的分數四則計算	中大小學堂	2018-01-09	30
4	有括號的四則運算	中大小學堂	2018-01-05	98
4	整數四則運算練習	中大小學堂	2017-12-28	67
6	分數、小數的四則運算	中大小學堂	2017-11-13	56
5	四則運算	中大小學堂	2017-11-13	99
4	四則運算	中大小學堂	2017-11-13	91
4	四則運算	中大小學堂	2017-11-13	30

頁次選擇：**1**

Formal research~ Math Question

音樂對專注力影響之正式題目(三)

這份題目是為了解不同的音樂是否影響答題的正確率和效率，
藉此判斷音樂對專注力的影響，請您協助完成。
答題結果僅作為研究分析，不會公開您的個人資料，請放心作答。

研究者：資優班六年級學生吳正華

指導老師：資優班張慶文老師

2018.12.7

基本資料：

六年()班()號

一、選擇題：

1. () $26779 + 472796 \div 38 - 2746 = ?$
① 36473 ② 36474 ③ 36475 ④ 36477.

2. () $28.82 \times (2.1 \div 0.7) = ?$
① 76.46 ② 86.36 ③ 86.46 ④ 86.47.

二、填充題：

1. $2683 \div 7 + 2215 \div 7 + 1220 \div 7$
 $= (2683 + 2215 + 1220) \div 7$
 $= \underline{\quad} \div \underline{\quad}$
 $= \underline{\quad}$

2. $70.84 - (9.6 - ?) - 32.57 = 28.87$ ，則?為 $\underline{\quad}$



Experimental Session (表格一張 師改美觀)

	Hypothesis 1 st		Hypothesis 2 nd		Hypothesis 3 rd	
session	1 st	2 nd	2 nd	4 th	1 st	3 rd



Music Track Table (表格—張師改 美觀)

music	Beethoven sonata No. 23 <enthusiasm> third movement		POP Songs_ Floating to the north(piano)		Beethoven Symphony No. 5 <destiny> second movement		POP Songs_ Floating to the north (original with vocal)
Hypothesis	1 st	3 rd	1 st	2 nd	3 rd		2 nd



Experimental site



RESULTS



HYPOTHESIS 1ST

The math answers are more accurate while listening to classical music than listening to pop music.



OUTCOMES OF HYPOTHESIS 1ST

the math answers are more accurate

classical music

pop music

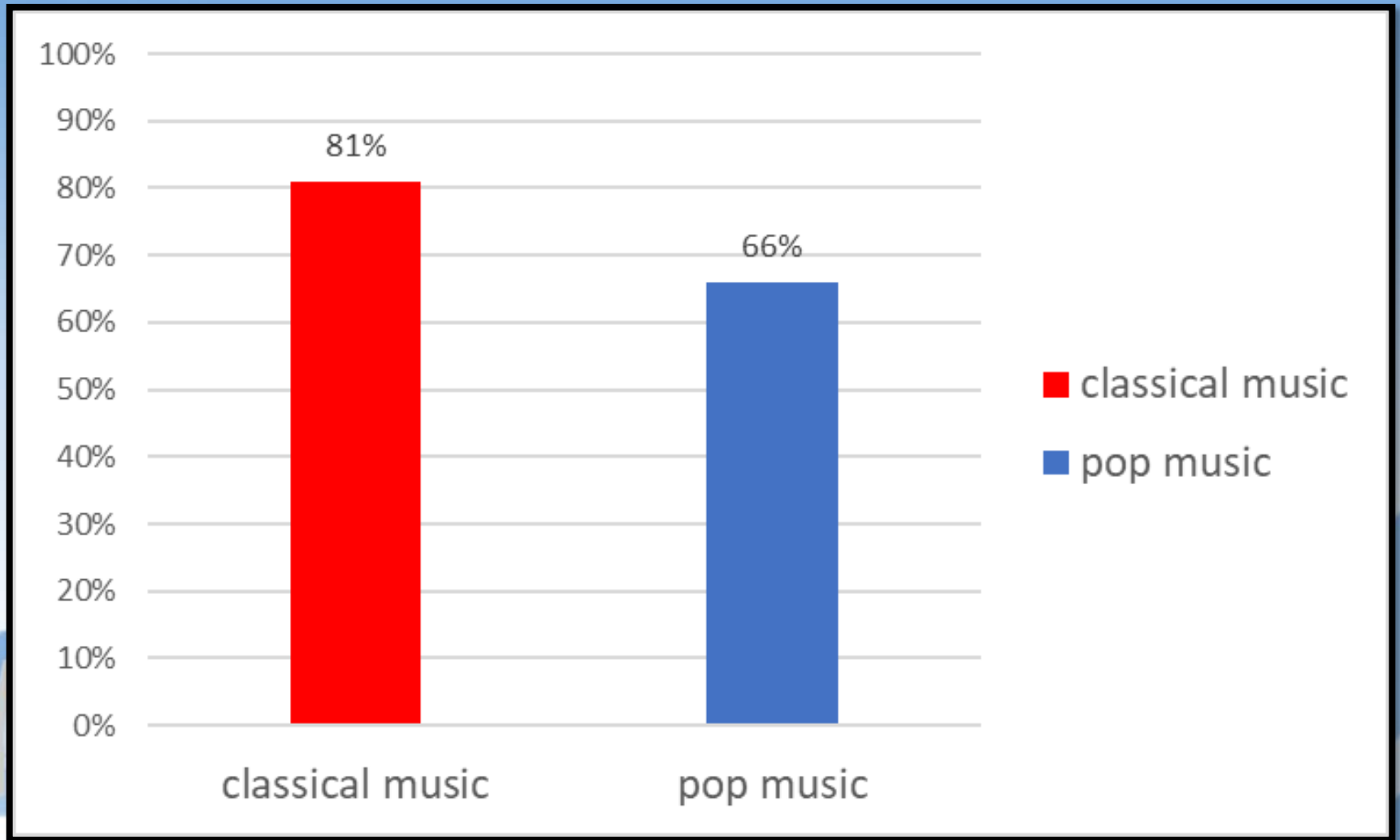
YES

NO



HYPOTHESIS 1ST

the math answers are more accurate



HYPOTHESIS 2ND

The math answers are more accurate while listening to pop music without lyrics than listening to pop music with lyrics.



OUTCOMES OF HYPOTHESIS 2ND

the math answers are more accurate

without lyrics

with lyrics

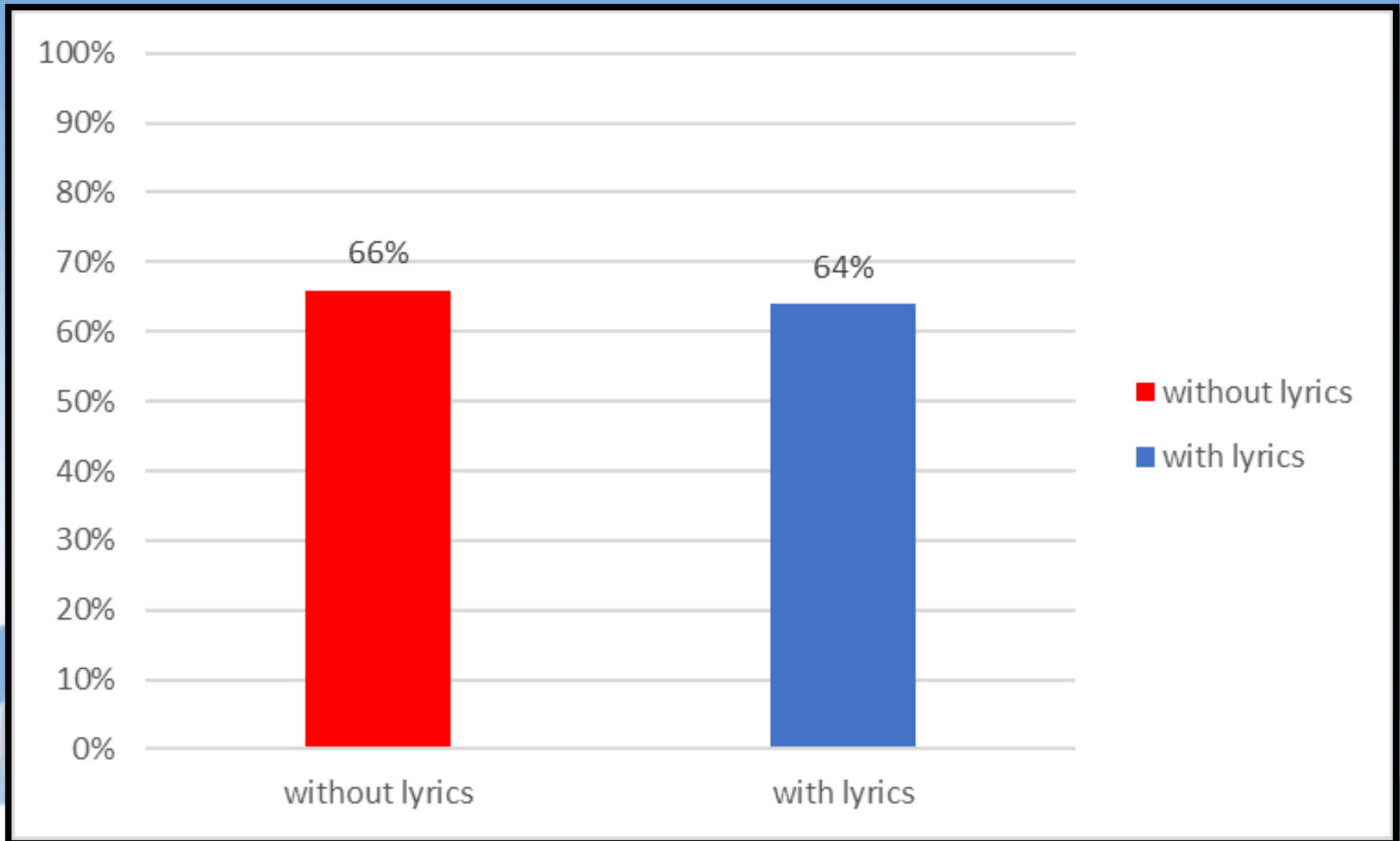
YES

NO



HYPOTHESIS 2ND

the math answers are more accurate



HYPOTHESIS 3RD

The math answers are more accurate while listening to Andante classical music than listening to Allegro classical music.



OUTCOMES OF HYPOTHESIS 3RD

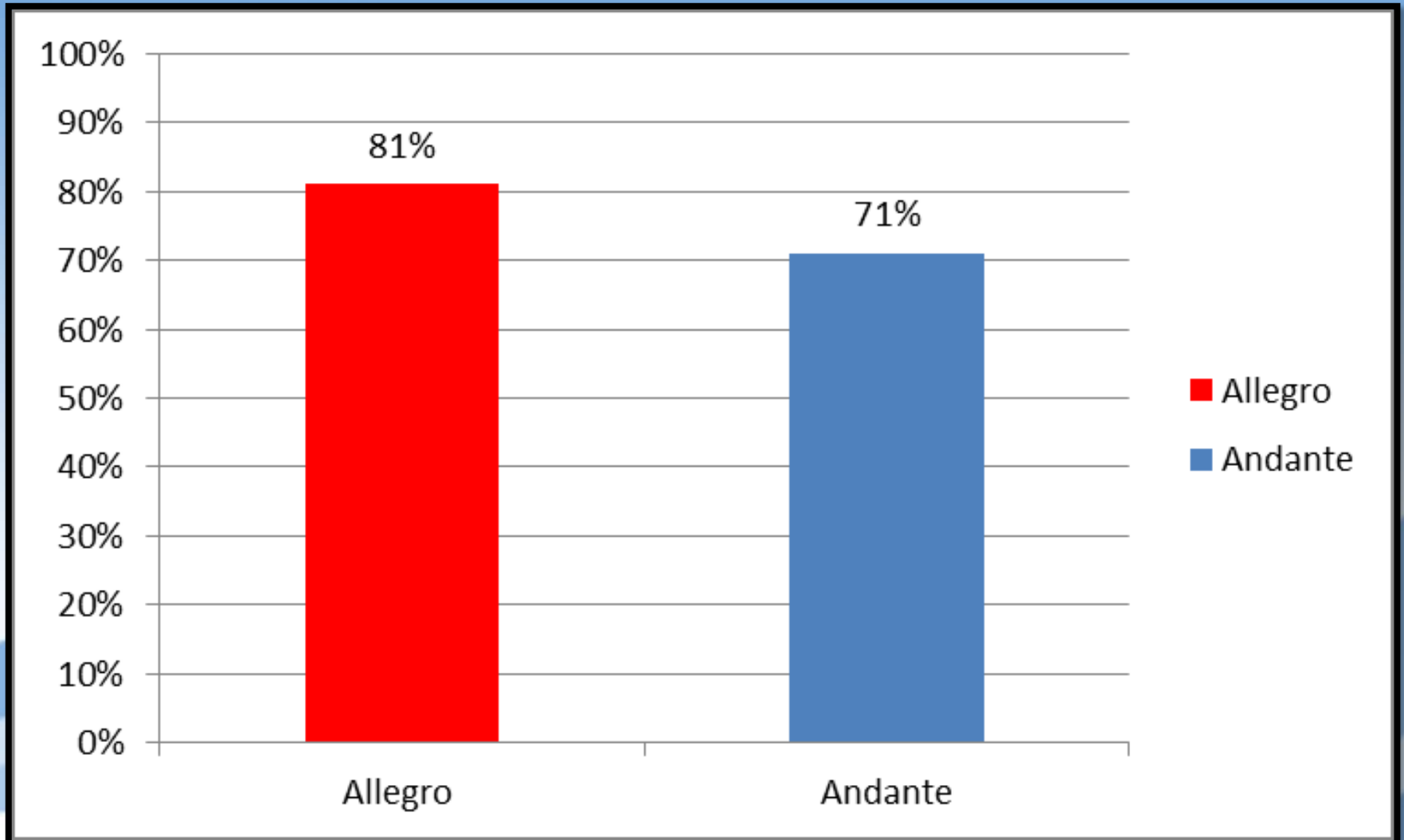
the math answers are more accurate

Allegro	Andante
YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>



HYPOTHESIS 3RD

the math answers are more accurate



CONCLUSION



1. the influence of **the type of music** on the correct rate of Math Answers

the type of music	classical music	pop music
the correct rate	15% higher	

having a good concentration
when listening to classical music



2. the influence of **the effect of tempo** on the correct rate of Math Answers

the type of music	Allegro	Andante
the correct rate	10% higher	

having a good concentration
when listening to Allegro classical music



3. the influence of **the pop music of lyrics** on the correct rate of Math Answers

the lyrics	with lyrics	without lyrics
the correct rate	only a difference of 2%.	

no obvious effect on the students ' answers when listening to pop songs



SUGGESTIONS



SUGGESTIONS

Math Question

Double check the question and results

the type of music

Choose music

that is significantly different



EXPERIENCE



EXPERIENCE

TO do experiments

The main points : double-check the experimental process, plan the complete architecture, etc.

The knowledge of music

Learned that Music can boost concentration

*What I learned
will be invaluable in the future.*



REFERENCE



REFERENCE-NG (表格一張師改 美觀)

1. Minsheng elementary school gifted class 27th
Independent research [CHIN, YI-FAN]

2. <http://iedm.club/posts/%E6%96%B0%E7%A0%94%E7%A9%B6%E7%99%BC%E7%8F%BE%E6%B2%92%E6%9C%89%E6%AD%8C%E8%A9%9E%E7%9A%84%E9%9F%B3%E6%A8%82%E5%8F%AF%E4%B5%A5%E6%8F%90%E9%AB%98%E4%BD%A0%E7%9A%84%E5%A4%A7%E8%85%A6%E8%AA%8D%E7%9F%A5%E8%83%BD%E5%8A%9B%E4%BB%A5%E5%8F%8A%E7%94%9F%E7%94%A2%E5%8A%9B%EF%BC%8CEDM%20Forever%EF%BC%81>

3. <https://www.businessweekly.com.tw/article.aspx?id=9430&type=Blog&p=0>



REFERENCE

4. http://www.emath.math.ncu.edu.tw/e_school/Platform/Paper/paper_list.php

5. I learned that Music can boost concentration





**Thanks For
Listening**

