

# Enhancing Learning and Teaching with AI: Strategies, Tools, and Future Trends

利用人工智慧提升學習與教學：策略、工具  
與未來趨勢

## Speaker



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## In this seminar, we focus on :

- 1) Automating **assessment grading**
- 2) AI in **data analysis** to improve teaching strategies and student outcomes
- 3) streamlining **administrative tasks**





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**01教育**

中六學生符仁麒

中六學生郭慧敏

## 嶺南衡怡紀念中學 推AI改卷快而準 每篇5仙

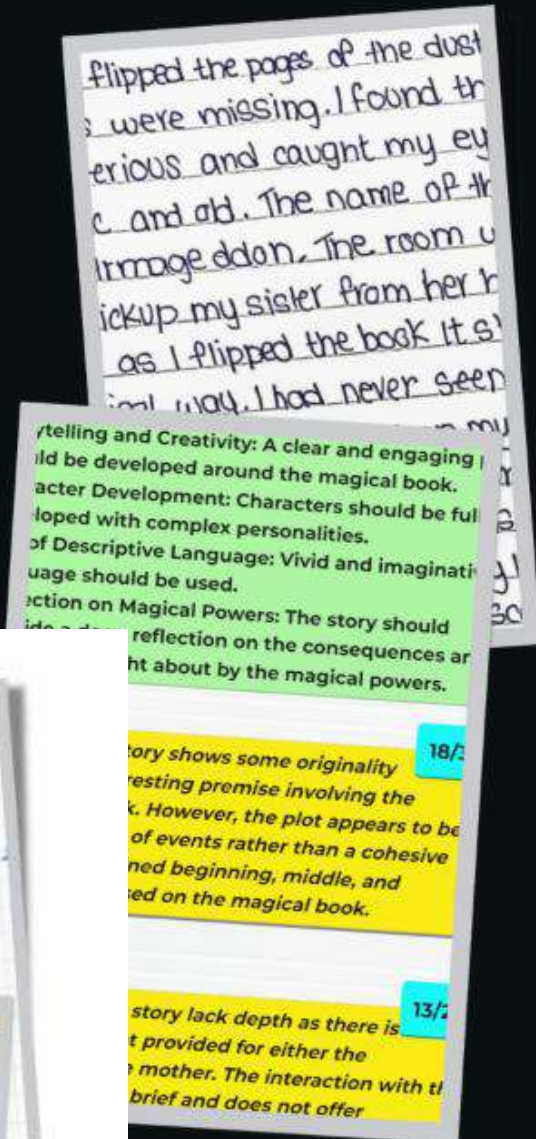
與老師人手閱卷比較  
誤差僅1分

### 學生「佛系」變勤奮 英文肥佬變全級第一

The image shows two students, a male and a female, holding up their tablets which display AI grading software. The background is a classroom setting. The headline is in large, bold, yellow and white text. Below the headline, there is a smaller inset image showing a sample of handwritten English text on lined paper.

lotter in my head  
do not have the  
skills or motivation to become successful leaders. Almost  
think that students in secondary schools are not familiar with  
the knowledge and skills to get good grade in test results.  
So they will get become a poor successful leaders. I don't  
think that some athletes are like we young people are  
good at playing and win the international competitions.





# Automatic Assessment

## Grading using **Graded Pro**

<https://graded.pro/>

### 1 Automatic Assessment

Grades assignments and allows customization of rubrics to align with curriculum goals.

### 2 Google Classroom Integration

Seamlessly works with existing platforms, like **google classroom** for easy operation by teachers and students.

### 3 Handwriting

Graded Pro grades **text, handwriting, art, diagrams, and screenshots** with advanced image recognition to analyze artistic elements and interpret math and scientific symbols.



# How accuracy?

I am writing in response to the <sup>1</sup>entitled  
<sup>2</sup>Discourage teenagers to use social media', <sup>3</sup>dated <sup>4</sup>by  
<sup>5</sup>3rd June. I strongly agree with the writer's opinion.  
<sup>6</sup>In the time and day,  
<sup>7</sup>Social media becomes a hot potato among both <sup>8</sup>youths  
and adults. A majority of people might say  
that social media has endless benefits such as receiving  
information, connecting with <sup>9</sup>others and <sup>10</sup>free entertainment. However,  
in spite of those benefits, social media has some  
loopholes.  
First and foremost, there <sup>11</sup>is the risk of safety.  
Social media is not <sup>12</sup>realized. There <sup>13</sup>is an artificial  
space. Everyone can use their fake <sup>14</sup>identity on social media.  
Therefore, there occasionally appear some news which is about  
catfishing or scamming. If teenagers <sup>15</sup>are scammed, it might

I am writing in response to the letter in my local  
newspaper claiming that today's young people do not have the  
skills or dedication to become successful leaders. Advocates  
think that students in secondary schools are not familiarise with  
the knowledge and skills to get good grades in DSE results  
so they can't ~~get~~ become a ~~success~~ successful leaders. Opponents  
think that young people are  
personal competition  
think that young people

ing to express my own view about the recently letter which  
nowadays teenagers do not have the skills or dedication to  
leaders, I am strongly agree with this point.  
ermost, I think that the most important point of being  
rs is optimistic. Leaders who need to do their best  
ir teammates to keep it, give it a sample, such as Captain  
of sports team must have a big heart. So, the most important point of  
leaders is self-centrous and keep it. Also, there are still have a lot of  
dedication about become a successful leaders, such as hardworking, willing to  
face the difficulties and good at listening to other.

But, today's youngsters are lack of people who have these dedication and  
skills. Students who in this generation are a lot of people like to work by  
themselves, it may because of the period of Covid-19, many youngsters need  
to study on the internet, so they did not have enough communication with  
other. So that they are themselves only and don't know how to be

寫於邊界以外的答案，將不予評閱。  
Answers written in the margin will not be marked.



marked by Teacher



# How accuracy?

## YOUR ANSWER

Dear Editor,

Recently, I saw a letter in your news lack of skills or dedication to be suc

To commence with, majority of the t organise employees. In Hong Kong, graduates have knodrich knowledge organise employees, and make goo prepared to be successful leaders, a

Moreover, teenagers are good at usi replaced by AI. Therefore, young pe competitive in workplace. When yo young people can be all-round lead

Last but not least, young people are poor, middle-discalbed. Some of the

## SOLUTION

Dear Editor,

I recently read a letter in your newspaper titled "Young Generation Unwilling to be Successful Leaders," which claimed that young people lack the skills or dedication to become successful leaders. I strongly disagree with this opinion.

Firstly, many young people today have a strong educational background, which they can use to help companies organize employees effectively. In Hong Kong, numerous business students graduate each year from institutions like CBBA, GBV, and MIT. These graduates possess rich knowledge in management, marketing, and finance. With these skills, young people can help companies organize employees, make efficient use of human resources, and maximize profits. Therefore, young people are well-prepared to be successful leaders and help companies achieve significant results.

Moreover, teenagers are adept at using artificial intelligence. In today's world, technology plays a crucial role in society, and some jobs may be replaced by AI. Young people who are skilled in utilizing AI can improve work efficiency and learn faster, enhancing competitiveness in the workplace. When young leaders face obstacles, they can use AI to find better commercial plans. In short, young people can be versatile leaders.

Lastly, young people place a high emphasis on helping society. Some teenagers organize NGOs to assist the poor and the disabled. Some may even build companies and invent apps to help society. For example, a UST student named Eric invented an app called Goodnote. He wanted to provide a better user experience, so he left school to focus on developing the app. Therefore, young people can be successful leaders and contribute significantly to society.

In summary, young people are the pillars of the future and are well-prepared to be successful leaders. They can make significant impacts on companies and society.

Yours faithfully,  
Chris Wong

Rewritten by AI

# How accuracy?

**Content:** Your letter addresses the requirements of the question effectively. You have provided relevant ideas and supported them adequately. More specific examples and further elaboration could enhance the argument. The letter meets the word count requirement.

6/7

**Language:** Your writing displays a good range of sentence structures and vocabulary. There are minor grammatical errors and mistakes in word choice and form, such as "make" instead of "makes", "are viewed by many people" instead of "is viewed by many people". More attention to accuracy in language would improve the overall quality significantly.

6/7

**Organization:** Your letter is well-organized with a clear introduction, body paragraphs, and conclusion. Cohesive devices are used effectively to link ideas, but some transitions are abrupt. Working on smoother transitions between paragraphs would strengthen the coherence of your letter.

5/7

**Vocabulary Suggestions:** - Artificial space - Psychological health - Catfishing - Cyberbullying - Racial discrimination - Harassment - Dependency on social media - Jealousy - Worldview





## Features



### All Subjects

Our AI accurately evaluates and marks a broad spectrum of academic work, including Mathematics, Sciences, Humanities, English, Computer Science and Art.



### All Curriculums

Supporting a wide range of educational standards, including the US Common Core and Advanced Placement, IB curriculum, UK GCSE and A levels, along with many other global academic frameworks.



### Handwriting

Graded Pro grades text, handwriting, art, diagrams, and screenshots with advanced image recognition to analyze artistic elements and interpret math and scientific symbols.



### Secure and Private

Prioritise the privacy and security of your students' work. Graded Pro implements robust security measures in compliance with GDPR and FERPA to safeguard all data.

# Benefits of AI Automatic Assessment

## Instant Feedback

Uses **GPT-4o** under the hood to deliver highly accurate grading with feedback on students' strengths and areas for improvement.

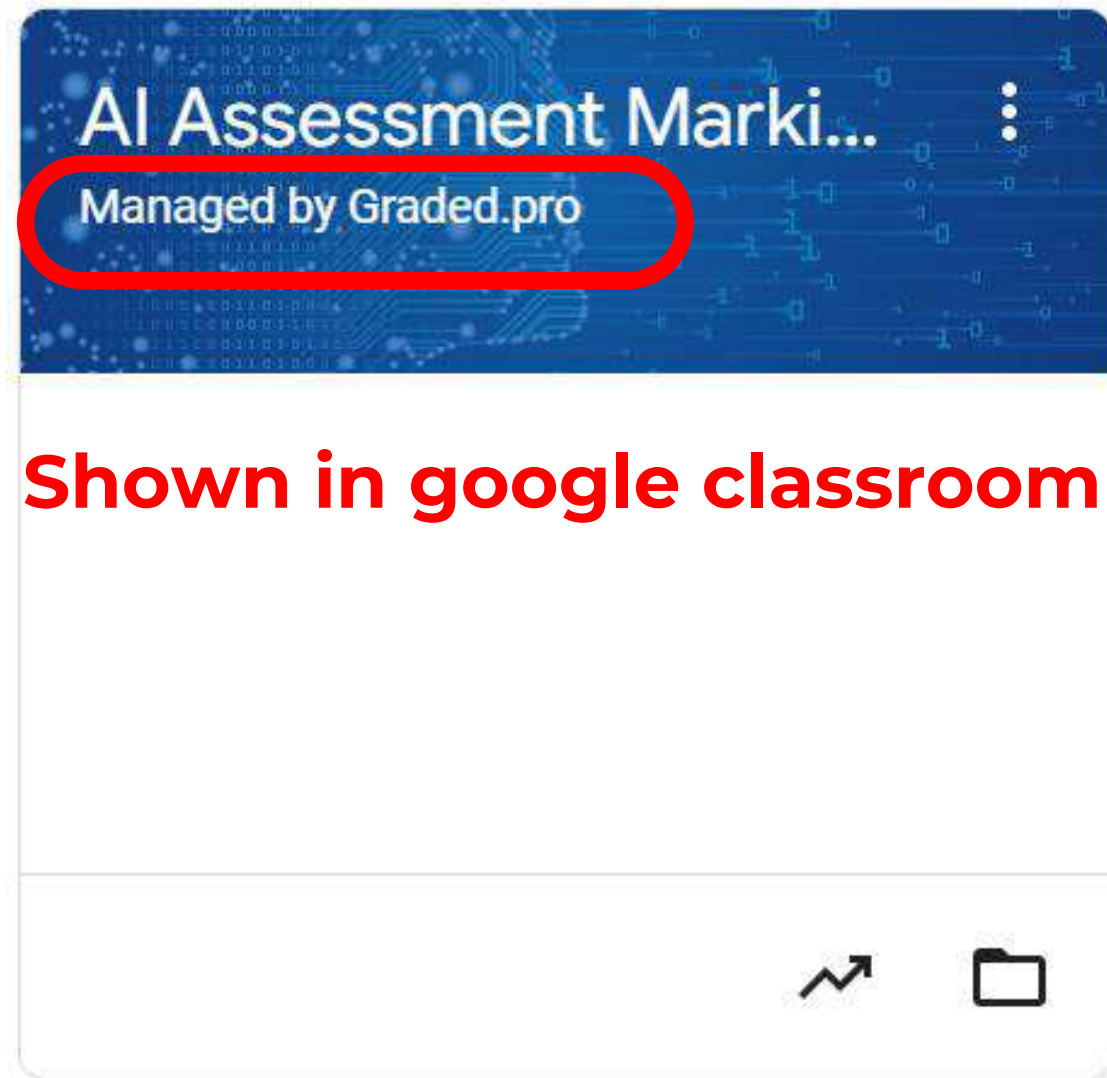
## All Subjects

Evaluates and marks a broad spectrum of academic work, including **Mathematics, Sciences, Humanities, English, Computer Science and Art**

## Cost-Effective

Offers a **low-cost** solution for automated grading and feedback.





# Simple Steps:

1

## Create Account <https://graded.pro/>

Sign up for Graded Pro and receive trial credits to start.

2

## Set Up Classroom

Create a new classroom or link to existing Google Classroom.

3

## Create Assignment

Set up your first assignment within the platform.


4

## Add Rubrics

Import or create marking schemes and rubrics for assessment.



# Set Question

 EDIT ASSESSMENT

Subject

ENG

Points

21

Language








english

Tags (Use special tags to allow extra processing)

Student Age

16

Task

  **B** *I* U     

You saw a letter in your local newspaper claiming that today's young people do not have the skills or dedication to become successful leaders. Write a letter to the editor of the newspaper, expressing your own views.

OK



# Add Marking Criteria

## EDIT ASSESSMENT

Solution / Rubric (Optional)

↶ ↷ **B** *I* U ~~S~~

The mark ranges from 0 to 21 according to the file attached, content 7%, language 7% and organisation 7%.

Give comment to students for improvement,.

Rewrite it in better way.

Please also suggest a list of vocabulary for the topic, and marks achieved in content, language and organisation with explanation.]

P

50 WORDS POWERED BY TINY

EXISTING

ANS\_ANS.pdf

## Upload marking scheme

You can also **PASTE** image from Clipboard inside the editor above or use widget below to upload (PNG,JPG,DOCX,PDF,TXT)



Choose a file or drag it here.

OK



# Marking Criteria

## Paper 2 (Writing)

Marks	Content (C)	Language (L)	Organisation (O)
7	<ul style="list-style-type: none"> <li>Content entirely fulfils the requirements of the question</li> <li>Totally relevant</li> <li>All ideas are well developed/supported</li> <li>Creativity and imagination are shown when appropriate</li> <li>Shows a high awareness of audience</li> </ul>	<ul style="list-style-type: none"> <li>Very wide range of accurate sentence structures, with a good grasp of more complex structures</li> <li>Grammar accurate with only very minor slips</li> <li>Vocabulary well-chosen and often used appropriately to express subtleties of meaning</li> <li>Spelling and punctuation are almost entirely correct</li> <li>Register, tone and style are entirely appropriate to the genre and text-type</li> </ul>	<ul style="list-style-type: none"> <li>Text is organised extremely effectively, with logical development of ideas</li> <li>Cohesion in most parts of the text is very clear</li> <li>Cohesive ties throughout the text are sophisticated</li> <li>Overall structure is coherent, extremely sophisticated and entirely appropriate to the genre and text-type</li> </ul>
6	<ul style="list-style-type: none"> <li>Content fulfils the requirements of the question</li> <li>Almost totally relevant</li> <li>Most ideas are well developed/supported</li> <li>Creativity and imagination are shown when appropriate</li> <li>Shows general awareness of audience</li> </ul>	<ul style="list-style-type: none"> <li>Wide range of accurate sentence structures, with a good grasp of simple and complex sentences</li> <li>Grammar mainly accurate, with occasional common errors that do not affect overall clarity</li> <li>Vocabulary is wide, with many examples of more sophisticated lexis</li> <li>Spelling and punctuation are mostly correct</li> <li>Register, tone and style are appropriate to the genre and text-type</li> </ul>	<ul style="list-style-type: none"> <li>Text is organised effectively, with logical development of ideas</li> <li>Cohesion in most parts of the text is clear</li> <li>Strong cohesive ties throughout the text</li> <li>Overall structure is coherent, sophisticated and appropriate to the genre and text-type</li> </ul>
5	<ul style="list-style-type: none"> <li>Content addresses the requirements of the question adequately</li> <li>Mostly relevant</li> <li>Some ideas are well developed/supported</li> <li>Creativity and imagination are shown in most parts when appropriate</li> </ul>	<ul style="list-style-type: none"> <li>A range of accurate sentence structures, with some attempts to use more complex sentences</li> <li>Grammatical errors occur in more complex structures but overall clarity not affected</li> <li>Vocabulary is moderately wide and used appropriately</li> <li>Spelling and punctuation are sufficiently accurate to</li> </ul>	<ul style="list-style-type: none"> <li>Text is mostly organised effectively, with logical development of ideas</li> <li>Cohesion in most parts of the text is clear</li> <li>Sound cohesive ties throughout the text</li> <li>Overall structure is coherent and appropriate to the genre and text-type</li> </ul>



## Features



### Effortless

Students submit assignments, and Graded Pro employs AI to assess and grade the work. Following teacher approval, feedback is delivered automatically, eliminating the need for manual intervention.



### Submissions

Students can submit their work through our dedicated, user-friendly standalone system. Additionally, teachers have the option to integrate their accounts with Google Classroom, allowing students to submit via that platform.



### Customizable

Adjust feedback to reflect your teaching style with Graded Pro's rubrics and tags. Review and refine the AI grading before returning the work to students.



### GPT 4o

Graded Pro uses GPT-4o under the hood to deliver highly accurate grading, closely mirroring human judgement, and streamlining the grading process for teachers.

# Implementing Graded Pro

<https://youtu.be/lahF53G9CA8>

1

## Sync Assignments

Synchronize Google Classroom assignments with Graded Pro for grading.

2

## Batch Grade

Use the "Batch Grade" feature to automatically assess all submissions.

3

## Review and Edit

Check AI-generated grades and feedback, making edits if necessary.

4






















## Return Grades

Send finalized grades and feedback back to Google Classroom.



# “Graded Pro” Classroom

WARD » CLASSES » AI Assessment Marking

Q3 Letters to the editor about young people	        
<b>Solution</b> ATT_be4149f86971468f9ccbc5b107730c6e.pdf	
Q2 Fashion Club	        
<b>Solution</b> ATT_be4149f86971468f9ccbc5b107730c6e.pdf	
Q1 Community Sports	        
<b>Solution</b> ATT_be4149f86971468f9ccbc5b107730c6e.pdf	

**Assignments**

View Submissions

Batch Return Grade

Batch Now

Edit Assessment

# Graded Pro Classroom - View submission

Sync Submissions

			<div><div></div><div></div><div></div></div>		
NAME		SCORE	ACTION		
z5A01 陳軒瑩 CHAN HIN YING ( s20210131@lhymss.net )					
Feedback : <a href="#">View Feedback</a>			<div>Edit Feedback</div>		
Answers:			14 / 21		
TURNED-IN IMG_0172.jpeg					
TURNED-IN IMG_0173.jpeg					
TURNED-IN IMG_0174.jpeg					
z5A02 張鎧希 CHANG MATTHEW ( s20190005@lhymss.net )					
Feedback : <a href="#">View Feedback</a>			11 / 21		
Answers:					
TURNED-IN S.6EnglishJoint-ClassWritingPartB.pdf					

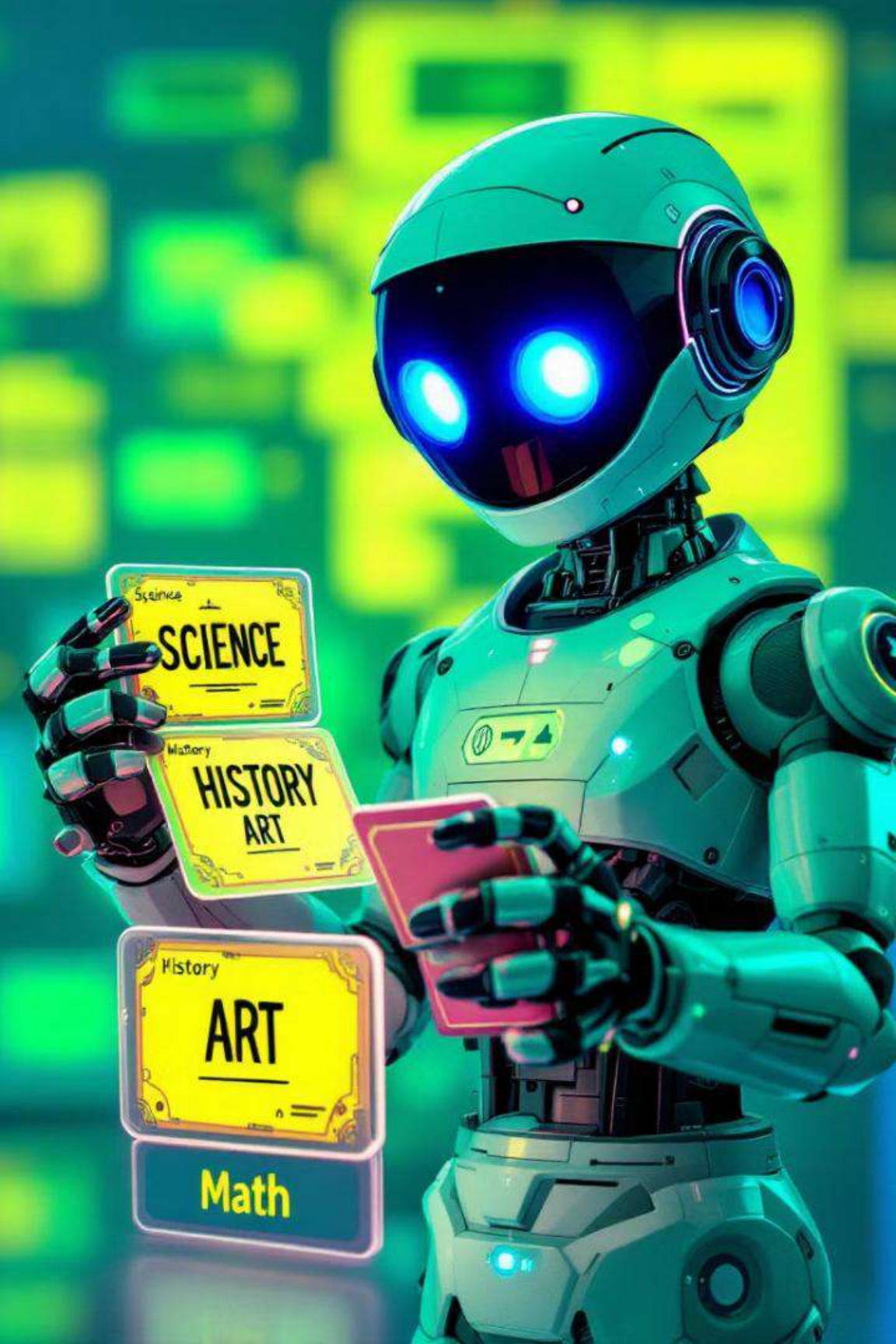




# AI Data Analysis on Teaching & Learning Adjustment

- ✓ Revolutionize education with **AI-powered data analysis**.
- ✓ Analyze student performance data to identify trends and areas for improvement.
- ✓ Use data-driven insights to inform teaching methods and curriculum adjustments





# F0ÑMPÑ ŐR Ő F0MPNŐPNŐŐ İ ŐŐŐN FMPÑNŐŐŐMPŐŐŐ PŐŐŐN



1

## Upload Questions

Simply upload multiple-choice questions to the chatbot.

2

## ÈH İŐŐNŐŐŐŐŐŐŐ

The chatbot analyzes and categorizes each question by topic.

ċ

## HŐŐPNŐP İ ŐŐPŐŐŐ

View questions organized by their appropriate topics.



# Create own Chatbot for Topic Categorization



名稱 \*

需為獨特並介於 4-20 個字符，其中包括字母、數字、破折號、句點和底線。

LHYMSS\_COMPUTER

初始 Bot \*

Claude-3.5-Sonnet

提示詞 \*

指導您的 Bot 如何行動以及回應使用者訊息。請盡可能給予清晰且具體的指令。

[查看提示詞的最佳實踐](#)

你是中學的電腦教師。現在你需要將選擇題分類到適當的課題。用戶將提交一個文件，你需要檢查文件中的每道選擇題，並以表格顯示每一題選擇題編號及其對應的課題。合共有20個課題，見如下：

資訊處理簡介  
數據控制及數據組織  
數據表示

# ICT 電腦輔助學習平台



LHYMSS\_COMPUTER

由 @compailhymss

1 名粉絲

Bot 資訊



380 / 訊息 · 查看詳情

NEW



LHYMSS\_COMPUTER

Poe

Please upload the MC questions for categorization.



ict\_mc\_questions.docx  
DOCX · 67 KB



LHYMSS\_COMPUTER

Poe

我會將這40道選擇題按課題分類，並以表格形式顯示：

題號	課題
1	數據控制及數據組織



# Topic Categorization

LHYMSS\_COMPUTER Poe ...

我會將這40道選擇題按課題分類，並以表格形式顯示：

題號	課題
1	數據控制及數據組織
2	數據表示
3	數據控制及數據組織
4	數據表示
5	數據表示
6	數據控制及數據組織
7	數據表示
8	數據控制及數據組織
9	數據控制及數據組織
10	數據庫





編輯圖片

名稱 \*

需為獨特並介於 4-20 個字符，其中包括字母、數字、破折號、句點和底線。

LHYMSS\_DataAnalysis

初始 Bot \*



Claude-3.5-Sonnet



提示詞 \*

指導您的 Bot 如何行動以及回應使用者訊息。請盡可能給予清晰且具體的指令。

[查看提示詞的最佳實踐](#)

You are a teacher at a college. You need to perform data analysis on students' scores. The user will upload two files: one is the MC (multiple-choice) marksheet with the corrected percentage for each MC question, and the other contains the topics of each MC question. Match the two attached files and conduct data analysis on the scores. Write a report on the strengths and weaknesses of the students in Traditional Chinese.

優化預覽的提示詞





# Upload MC marksheet to Chatbot

No. of Question = 40  
No. of Candidate = 28

Section	Question	Accuracy (%) of Answer			Choice Distribution						Model Answer
		Correct	Incorrect	Missing	A	B	C	D	E	F	
1	1	25 ( 89.3 %)	3 ( 10.7 %)	0 ( 0.0 %)	2 ( 7.1 %)	25 ( 89.3 %)	0 ( 0.0 %)	1 ( 3.6 %)			Choice : B
1	2	16 ( 57.1 %)	12 ( 42.9 %)	0 ( 0.0 %)	2 ( 7.1 %)	7 ( 25.0 %)	3 ( 10.7 %)	16 ( 57.1 %)			Choice : D
1	3	16 ( 57.1 %)	12 ( 42.9 %)	0 ( 0.0 %)	3 ( 10.7 %)	4 ( 14.3 %)	16 ( 57.1 %)	5 ( 17.9 %)			Choice : C
1	4	1 ( 3.6 %)	27 ( 96.4 %)	0 ( 0.0 %)	15 ( 53.6 %)	1 ( 3.6 %)	4 ( 14.3 %)	8 ( 28.6 %)			Choice : B
1	5	9 ( 32.1 %)	19 ( 67.9 %)	0 ( 0.0 %)	16 ( 57.1 %)	9 ( 32.1 %)	1 ( 3.6 %)	2 ( 7.1 %)			Choice : B
1	6	12 ( 42.9 %)	16 ( 57.1 %)	0 ( 0.0 %)	3 ( 10.7 %)	9 ( 32.1 %)	12 ( 42.9 %)	4 ( 14.3 %)			Choice : C
1	7	18 ( 64.3 %)	10 ( 35.7 %)	0 ( 0.0 %)	18 ( 64.3 %)	2 ( 7.1 %)	2 ( 7.1 %)	6 ( 21.4 %)			Choice : A
1	8	20 ( 71.4 %)	8 ( 28.6 %)	0 ( 0.0 %)	2 ( 7.1 %)	3 ( 10.7 %)	3 ( 10.7 %)	20 ( 71.4 %)			Choice : D
1	9	16 ( 57.1 %)	12 ( 42.9 %)	0 ( 0.0 %)	4 ( 14.3 %)	16 ( 57.1 %)	4 ( 14.3 %)	4 ( 14.3 %)			Choice : B
1	10	22 ( 78.6 %)	6 ( 21.4 %)	0 ( 0.0 %)	0 ( 0.0 %)	4 ( 14.3 %)	2 ( 7.1 %)	22 ( 78.6 %)			Choice : D
1	11	17 ( 60.7 %)	11 ( 39.3 %)	0 ( 0.0 %)	5 ( 17.9 %)	0 ( 0.0 %)	17 ( 60.7 %)	6 ( 21.4 %)			Choice : C
1	12	7 ( 25.0 %)	21 ( 75.0 %)	0 ( 0.0 %)	7 ( 25.0 %)	15 ( 53.6 %)	4 ( 14.3 %)	2 ( 7.1 %)			Choice : A
1	13	16 ( 57.1 %)	12 ( 42.9 %)	0 ( 0.0 %)	3 ( 10.7 %)	6 ( 21.4 %)	16 ( 57.1 %)	3 ( 10.7 %)			Choice : C
1	14	27 ( 96.4 %)	1 ( 3.6 %)	0 ( 0.0 %)	27 ( 96.4 %)	0 ( 0.0 %)	1 ( 3.6 %)	0 ( 0.0 %)			Choice : A
1	15	17 ( 60.7 %)	11 ( 39.3 %)	0 ( 0.0 %)	9 ( 32.1 %)	1 ( 3.6 %)	1 ( 3.6 %)	17 ( 60.7 %)			Choice : D
1	16	24 ( 85.7 %)	4 ( 14.3 %)	0 ( 0.0 %)	24 ( 85.7 %)	1 ( 3.6 %)	1 ( 3.6 %)	2 ( 7.1 %)			Choice : A
1	17	4 ( 14.3 %)	24 ( 85.7 %)	0 ( 0.0 %)	7 ( 25.0 %)	9 ( 32.1 %)	8 ( 28.6 %)	4 ( 14.3 %)			Choice : D
1	18	17 ( 60.7 %)	11 ( 39.3 %)	0 ( 0.0 %)	7 ( 25.0 %)	17 ( 60.7 %)	2 ( 7.1 %)	2 ( 7.1 %)			Choice : B
1	19	22 ( 78.6 %)	6 ( 21.4 %)	0 ( 0.0 %)	0 ( 0.0 %)	1 ( 3.6 %)	22 ( 78.6 %)	5 ( 17.9 %)			Choice : C
1	20	6 ( 21.4 %)	22 ( 78.6 %)	0 ( 0.0 %)	11 ( 39.3 %)	1 ( 3.6 %)	6 ( 21.4 %)	10 ( 35.7 %)			Choice : C
1	21	15 ( 53.6 %)	13 ( 46.4 %)	0 ( 0.0 %)	15 ( 53.6 %)	3 ( 10.7 %)	3 ( 10.7 %)	7 ( 25.0 %)			Choice : A

Report Date : 2024-02-29

Page : 1 of 2

Data Analysis LHYMSS\_DataAnalysis  
由 @compailhymss

每月 1 名使用者 · 1 名粉絲

Bot 資訊

Please upload the marksheet

380 /訊息 · 查看詳情

私人

Data Analysis LHYMSS\_DataAnalysis Poe

Please upload the students' MC marksheet and topic.

2324 s6 mockexam ict paper1a qa.pdf  
PDF · 52 KB

題號 主題.docx  
DOCX · 14 KB

Data Analysis LHYMSS\_DataAnalysis Poe

根據學生在模擬考試ICT卷一甲部的表現，我將進行以下數據分析報告：

學生表現強項（正確率70%或以上的題目）：

1. 資料控制及組織 (Q1: 89.3%)
2. 檔案壓縮 (Q8: 71.4%)

ÈH ĠÑŌÑǾPÑŇ ĠMṖM È ŌVĎŘČŔŒĪ ÑŎŎǾP



LHYMSS\_DataAnalysis

Poe

...

根據學生在模擬考試ICT卷一甲部的表現，我將進行以下數據分

學生表現強項（正確率70%或以上的題目）：

1. 資料控制及組織 (Q1: 89.3%)
2. 檔案壓縮 (Q8: 71.4%)
3. 數據庫 (Q10: 78.6%)
4. 軟件-備份程式 (Q14: 96.4%)
5. 網絡拓撲 (Q16: 85.7%)
6. 網絡安全 (Q19: 78.6%)
7. 網絡協定 (Q38: 85.7%)
8. 網絡安全 (Q39: 85.7%)

學生表現弱項（正確率40%或以下的題目）：

1. 資料表示 (Q4: 3.6%)
2. 硬件知識 (Q12: 25%)
3. 網絡協定 (Q17: 14.3%)
4. 程式設計 (Q20: 21.4%)

按主題分析：

## 1. 程式設計

- 整體表現不理想，大部分題目正確率偏低
- 建議加強程式邏輯訓練

## 2. 資料表示

- 表現參差，部分題目表現極佳，部分極差
- 需要重點複習基礎概念

### 3. 網絡相關

- 網絡拓撲概念掌握良好
- 網絡協定知識較弱
- 網絡安全意識尚可

建議：

1. 加強程式設計的教學，特別是邏輯思維訓練
2. 重新檢視資料表示的教學方法，確保學生掌握基礎概念
3. 增加網絡協定的實例教學
4. 針對硬件知識部分，建議增加實務操作環節
5. 可考慮進行針對性的補強課程，特別是正確率低於30%的題目





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Targeted Teaching



Tailor instruction based on  
data-driven insights.

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Automate question  
categorization and data  
analysis tasks.

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Gain deeper understanding of  
student performance and  
learning trends.

# Data Insights to improve educational outcomes using School Data Insight

SCHOOL DATA  
INSIGHTS

<https://schooldatainsights.com/>



## One Sample T-test

**Example: Benchmarking Your School's Exam Outcomes Against the National Average**

To assess the performance of your school, we'll juxtapose your examination results with the national average for comparable tests. This side-by-side comparison will offer useful insights into how your pupils are performing relative to their peers nationwide.



## Chi-Squared test

**Example query: Is there is a statistically significant association between gender and the selection of advanced courses in subjects like mathematics, science, or humanities.**

To answer this query, the Chi-Squared Test for Independence can be employed.



## Linear Regression

**Example query: To assess the impact of class size on student learning outcomes.**

In this scenario, the dependent variable could be a measure of academic achievement, such as test scores, while the independent variable would be the class size. A linear regression model can be fitted to explore the relationship between class size and student achievement.



## Anova Test

The Analysis of Variance (ANOVA) test can be particularly useful for groups of schools interested in comparing the effectiveness of different teaching methods, curricula, or interventions across multiple settings.

ANOVA allows for the comparison of the means of more than two groups to determine if there are statistically significant differences among them.



## Summary Statistics

Summary statistics, such as mean, median, mode, range, and standard deviation, offer a quick and straightforward way for educators to understand the general trends and variations within a dataset, such as student test scores or attendance rates. These simple yet powerful statistical tools offer educators a lens through which to view, interpret, and act upon educational data.



## Predicted Grades

By employing statistical tests to assess the closeness of predicted to actual grades, educators can improve the fairness and effectiveness of their educational strategies.

Accurate grade predictions are essential for effective planning, ensuring fairness, maintaining accountability, fostering student motivation, and optimising resource allocation.



## GÓMÑÑ ĨØÑÑÒÑPÒÖ È NÍÑPØVNŘ



GSÑŎ ØØQÔØR ÑÑÑR ÞÑRO ŠØR Þ ØPØNØPØN ÓÞÑÑQØR ØPØ NŎŎ ØÑPØN RØ  
RØO ÑÑRŘ ŃŎØÞÑÑQØÑRÑÑØØN ÑŠ ŠØR Þ ØRÑQØRØÊ

## Performance Analysis



Offers valuable insights into academic performance on various subjects.

## Question Level Analysis



Provides insights into the effectiveness of each question in a test, highlighting those that were successful and those that weren't, and offering guidance on how to enhance future tests.



GÓVŇŇ ĬǾŇŇ ÑŃPŌŌ ĚŇŇ PǾVŇŘ

## Data Required

Uses datasets of predicted grades and corresponding actual grades attained.

# Analysis

Compares predictions to outcomes, identifying trends and discrepancies.

Let's analyze the given data based on three parameters - Accuracy, MAE (Mean Absolute Error), and confusion matrix for each subject i.e. Maths, English and Chinese.

**Maths:**

- The accuracy value for Maths is around 0.518, which means that about 52% of predictions match the actual results.
- The Mean Absolute Error (MAE) is also 0.518, which points that on average, the prediction is about 51% away from the actual value.
- The confusion matrix implies that there are many misclassified instances. For instance, 16 instances were predicted to be in the third category but actually were in the first category.

	A	B	C	D
1	Maths Predicted	Maths Actual	English Predicted	English Actual
2	2	2	4	4
3	4	3	2	2
4	2	2	3	3
5	4	4	4	4
6	3	3	2	2
7	4	4	3	3

Confusion Matrix for Maths

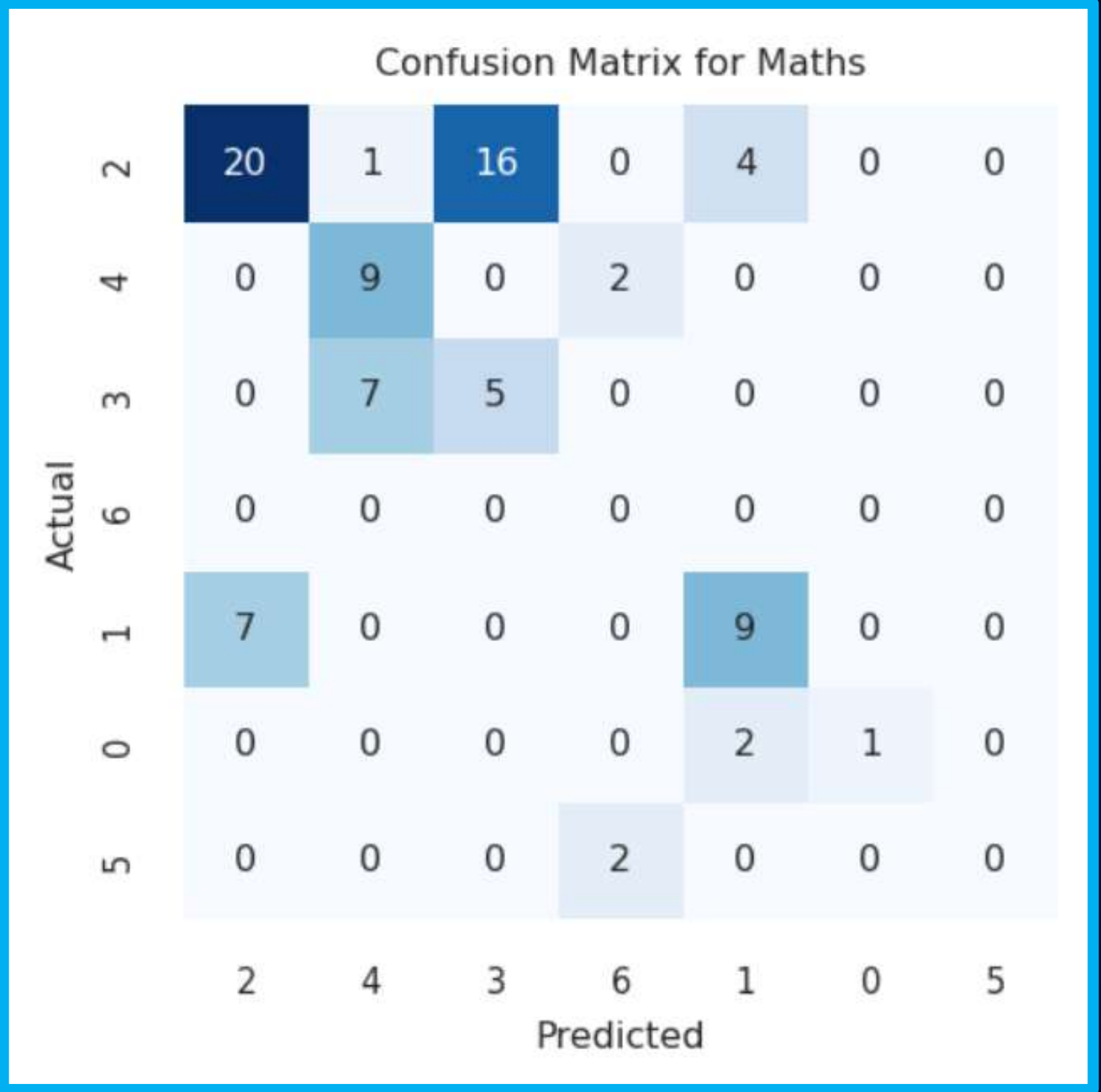
2	20	1	16	0	4	0	0
---	----	---	----	---	---	---	---

Confusion Matrix for Maths

Actual \ Predicted	2	4	3	6	1	0	5
2	20	1	16	0	4	0	0
4	0	9	0	2	0	0	0
3	0	7	5	0	0	0	0
6	0	0	0	0	0	0	0
1	7	0	0	0	9	0	0
0	0	0	0	0	2	1	0
5	0	0	0	2	0	0	0

# Grade Prediction Accuracy

	A	B	C	D
1	Maths Predicted	Maths Actual	English Predicted	English Actual
2	2	2	4	4
3	4	3	2	2
4	2	2	3	3
5	4	4	4	4
6	3	3	2	2
7	4	4	3	3
8	4	4	2	3
9	5	4	5	5
10	3	3	3	3
11	3	2	2	2





# Do^abMdbaf`qfl k >``ro^`v

## Maths:

- The accuracy of the maths predictions is approximately 0.518, which indicates that the math model correctly predicted 51.8% of the total number of observed outcomes.
- The Mean Absolute Error (MAE) is also approximately 0.518, implies that on average the predicted values were 0.518 units away from the actual results.
- The Confusion matrix for math shows several observations:
  - We had 20 true positives for class\_0, meaning 20 times the model correctly predicted class\_0.
  - Class\_1 was correctly predicted 9 times.
  - However, class\_2 was poorly predicted with only 5 correct predictions.
  - Class\_3 was not correctly predicted at any instance.
  - Nine instances of class\_4 were correctly predicted, which is a slight improvement from class\_3.
  - Class\_5 had only one correct prediction.
  - Class\_6 again had no correct predictions.

# THE NCEP IS OVER

1

## DATA

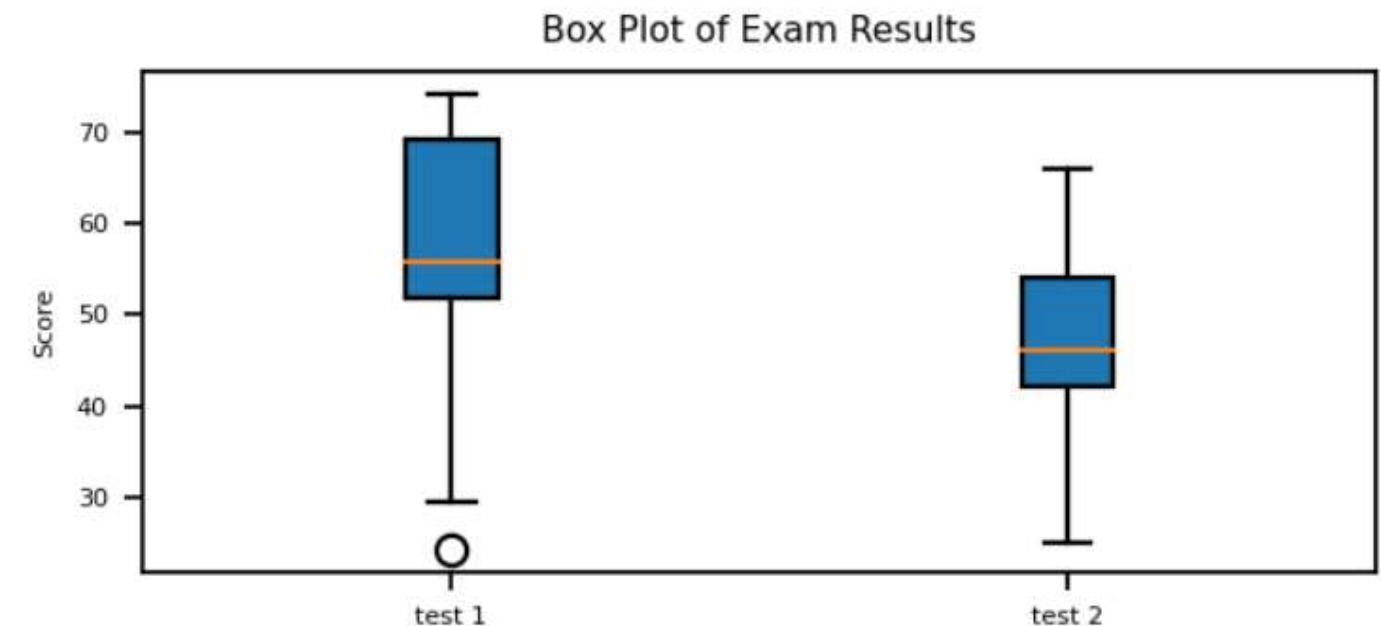
- The scores of students in test 1 and test 2
- The scores of students in different subjects

	A	B
1	test 1	test 2
2	51.9	44
3	51.9	52
4	74.1	54
5	71.4	57
6	69.3	62
7	71.9	66
8	62.5	46
9	41	45
10	62.5	51
11	55.7	42
12	29.5	25
13	55	33
14	24.2	25

2

## Analysis

- Comparing scores of students before and after a particular intervention.
- Assessing the scores of students in various subjects
- Seeing how close mock examination results are to the final exam results.





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## Mean

- The mean of test1 is 55.5 while that of test2 is 47.1. This indicates that the average score of test1 is higher than that of test2.

## Median

- The median score of test1 is 55.7 and for test2, it's 46.0. The median, being the 50th percentile, suggests that half of the respondents scored more than 46.0.

## Mode

- The mode for test1 is 51.9 and that of test2 is 25. This indicates that the most frequent score in test2 is 25.

## Q1 (1st Quartile)

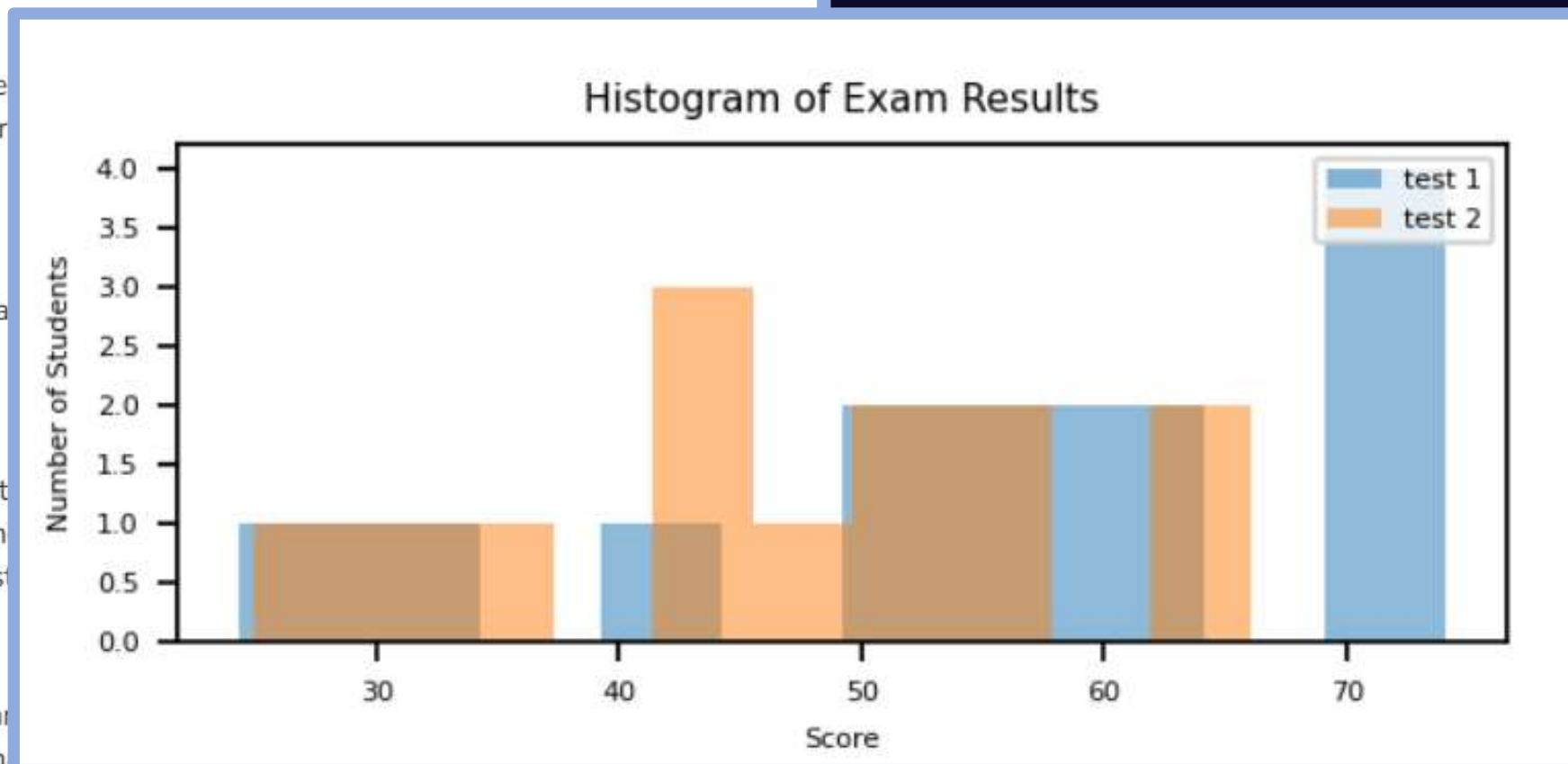
- Q1 value of test1 is 51.9 and test2 is 42.0. Q1, being the 25th percentile, suggests that 25% of the respondents in test1 have scores less than 51.9, whereas in test2 25% of the respondents have scores less than 42.0. This indicates that the bottom 25% of scores in test1 are higher than in test2.

## Q3 (3rd Quartile)

- The third quartile in test1 is 69.3, and in test2 it is 54.0. This suggests that 75% of the respondents in test1 have scores less than 69.3 and in test2, 75% respondents have scores less than 54.0. This indicates that the top 25% of scores in test1 are higher than in test2.

## Standard Deviation

- The standard deviation of test1 is 15.3 and that of test2 is 11.2. A higher standard deviation in test1 compared to test2 shows that the scores in test1 are more spread out from the mean, suggesting higher variability. Test2 scores are closer to their mean, suggesting less variability.



# Item Analysis

1

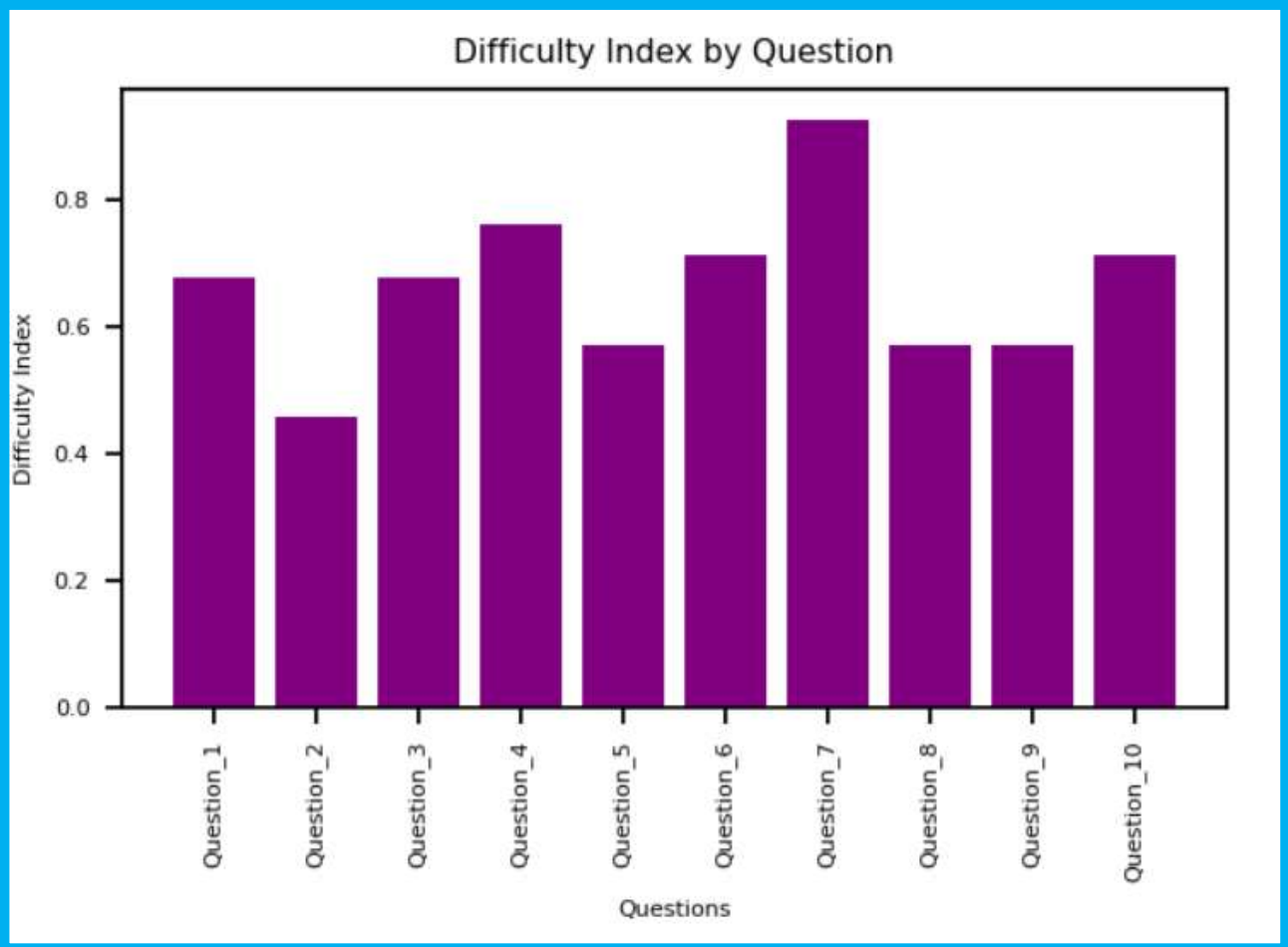
## Item Analysis

Requires marks gained for each question by individual students.

2

## Analysis

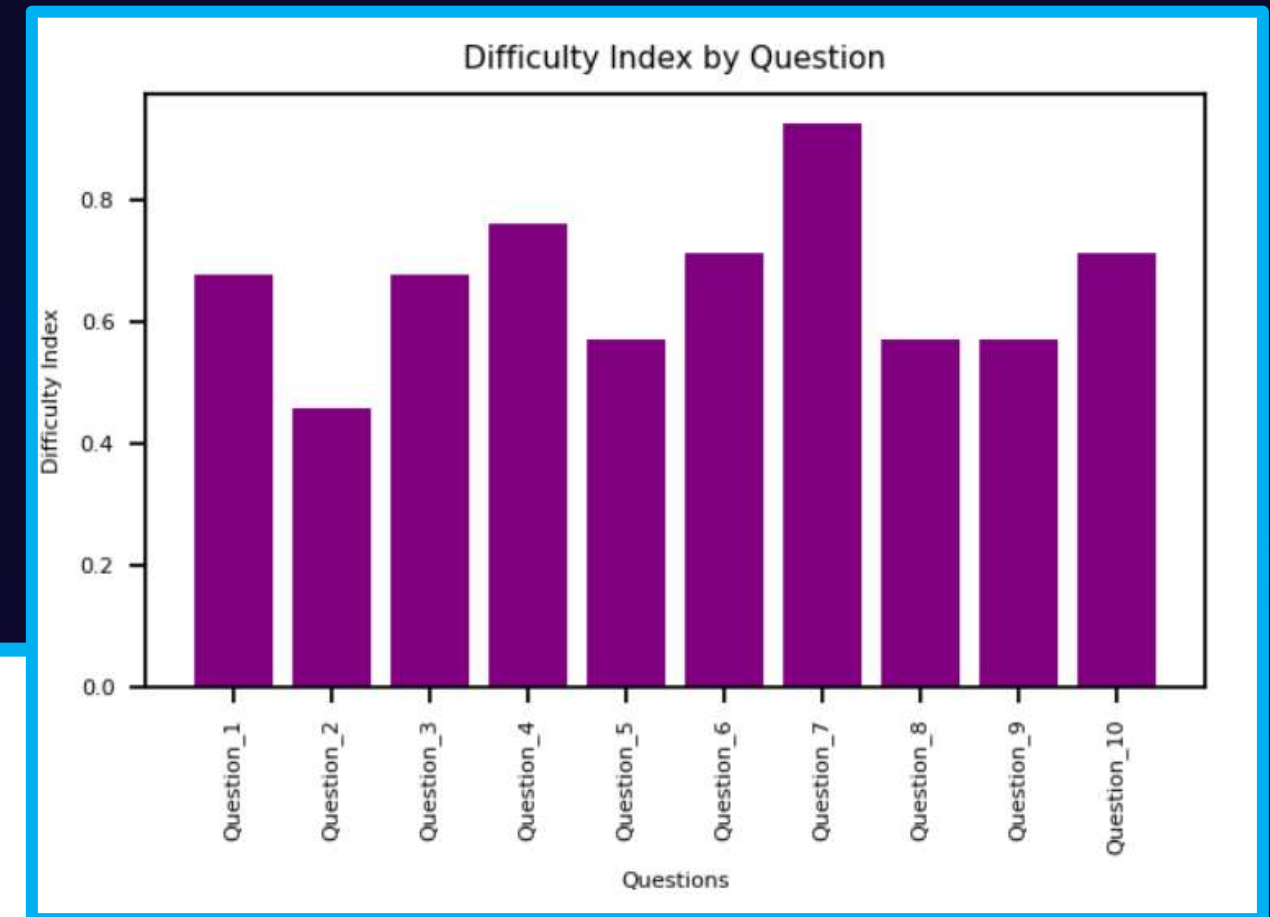
Highlights successful questions and areas for improvement in future tests.



	A	B	C	D	E	F	Questions				
1	Student_ID	Question_1	Question_2	Question_3	Question_4	Question_5	Question_6	Question_7	Question_8	Question_9	Question_10
2	Max_Marks	4	5	4	3	4	3	2	3	1	4
3	1	3	2	3	3	2	1	2	3	1	3
4	2	3	4	1	1	2	3	1	1	1	2
5	3	3	2	3	2	4	1	2	1	1	2
6	4	4	0	2	1	1	3	2	1	0	4
7	5	2	3	2	3	1	2	2	2	0	4
8	6	1	3	4	3	4	3	2	2	1	3
9	7	3	2	4	3	2	2	2	2	0	2



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## Recommendations:

For educators:

- Pay special attention while setting questions similar to question 6, which was not successful in distinguishing between high and low-performing students.
- Questions similar to question 1 should also be examined as they showed a negative discrimination index.
- Try to include more questions in the pattern of questions 3 and 4 as they were able to discriminate well between high and low scorers.

For students:

- Pay more attention to questions of similar patterns or topics like question 2 because it had a lower difficulty index.
- Focus on understanding the concept behind question 7 as it was the easiest question, indicating a fundamental area

