ARTIFICIAL INTELLIGENCE & EDUCATION

AI Assisted Assessments

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"WHAT GETS MEASURED GETS IMPROVED"
-Peter Drucker

Qualitative

Quantitative

The Devil Lies In The Detail

- **Languages**
  - Grammar
  - Punctuation
  - Comprehension
  - Usage of vocabulary
  - Coherence & fluency
  - Imagination & creativity

- **Math**
  - Accuracy of calculation
  - Speed of solving
  - Application of concepts
  - Critical thinking

The Devil Lies In The Detail

- **Science**
  - Observation
  - Experimentation
  - Classification
  - Analysis & reflection
  - Application

- **Social Studies**
  - Investigation & reflection
  - Cause & effect analysis
  - Application

Making Records Meaningful

- A govt. school maintains records of who scored grade A, A1, A2, B, B1, B2, etc. of all students in all subjects.

- I asked them what do you do with this data?

- They said we keep it for 2 years and then sell the sheets to the raddiwala

- What is the point of the data if it is not put to use?

- Can teachers manually adapt their teaching based on the data?

- This is where AI comes in to enable data to become meaningful

Assessment Challenges

- A class of 40 students
- 5-6 classes for per teacher
- About 250 students per teacher
- Is it possible for the teacher to get into detailed & personalized analysis for every student?
- In traditional assessment there is uniform testing irrespective of student's comprehension & skills
- There is lack of adaptation of evaluation based on student responses
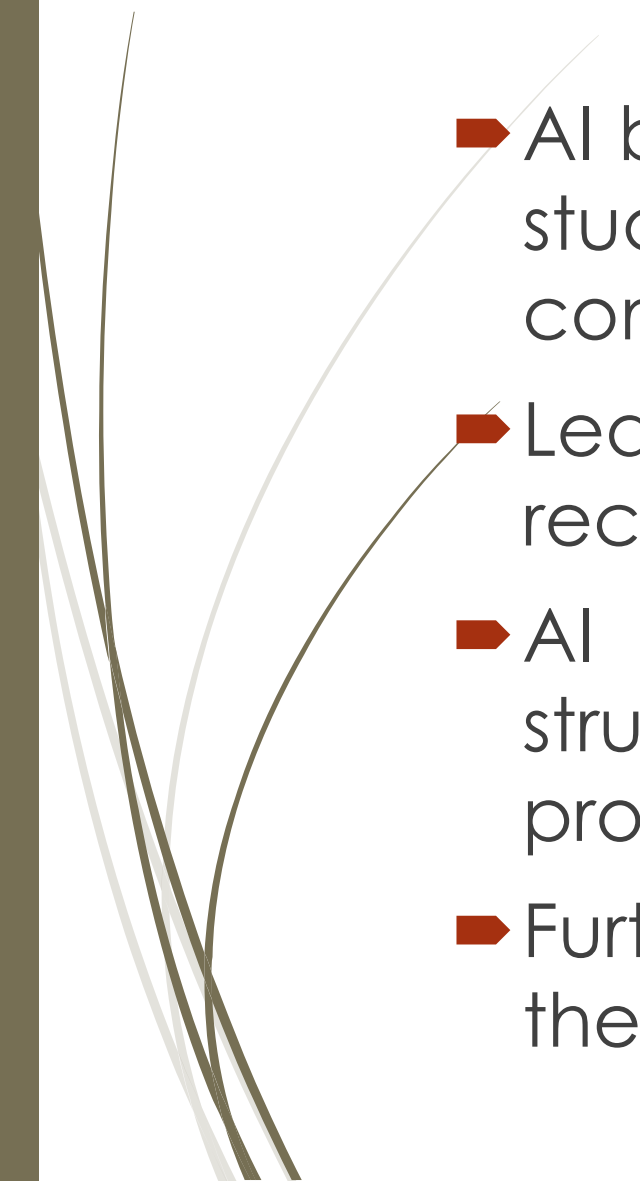- There are biases & personal prejudices in evaluation

Assessment Challenges

- Inconsistency in evaluating subjective responses

- Possibility of human errors in evaluation

- Human evaluation is time consuming & can't provide immediate feedback

- Limitations of the number of times tests can be administered because developing tests manually and grading them manually is a cumbersome & lengthy process

- Teachers' valuable time is consumed in paper checking & report making
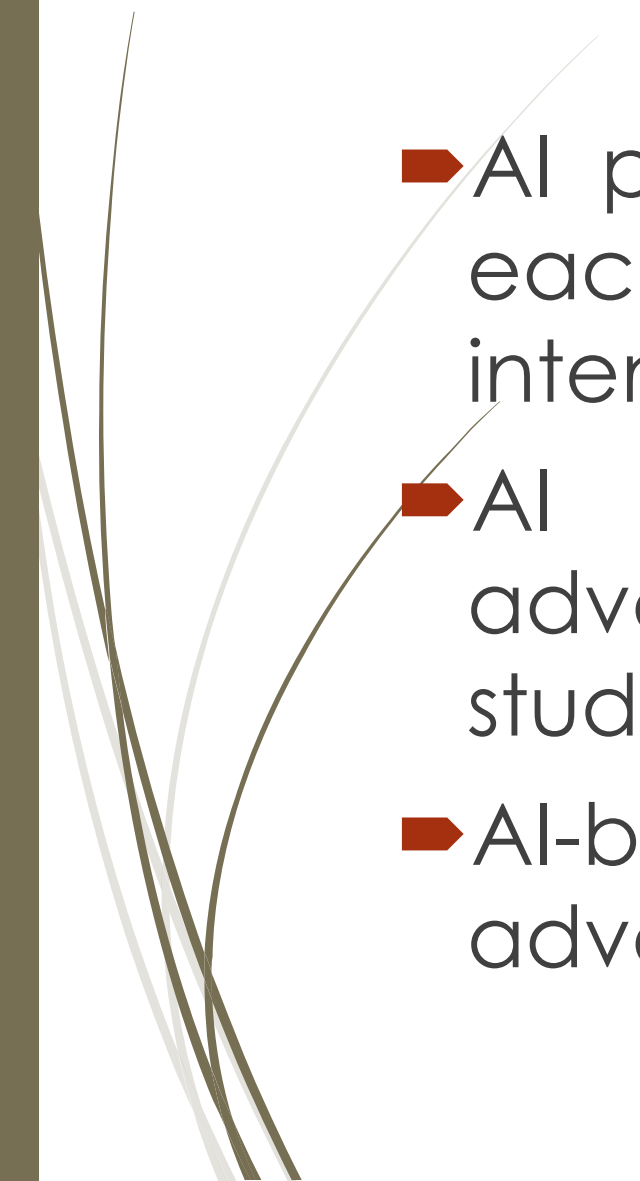
AI Based Grading Solutions

- AI based grading systems have the ability to provide students with highly specific, immediate, comprehensive & customized feedback.

- Learners can view errors, correct responses, and receive an evaluation in real time.

- AI based grading systems have the ability to structure adaptive assessments according to the skill proficiency of each student.

- Further assessments can be personalized based on the learners' performance in the previous one.

AI Based Grading Solutions

- AI based grading can identify students' areas of strength and weakness and provide customized & personalized feedback which empowers students to concentrate on enhancing their weaker areas while building on their strengths.

- AI based grading systems are able to spot patterns in students' responses.

- Educators can better understand areas where students may be struggling and can then modify their teaching methods by identifying common mistakes or misconceptions.
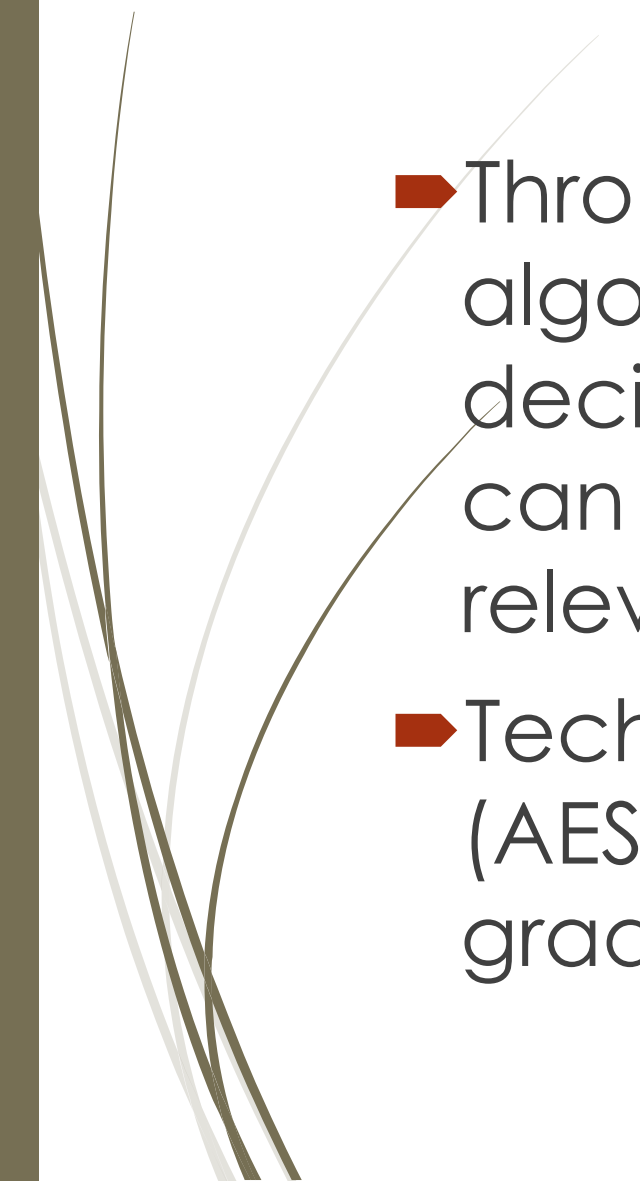
AI Based Grading Solutions

- AI provides impartial evaluation ensuring that each student's work is judged fairly and without intentional or unintentional biases.

- AI enabled grading systems offer the advantage of scalability to grade thousands of student responses in a matter of minutes.

- AI-based grading systems change and advance over time thanks to adaptive learning.

AI Based Grading Solutions

- Through NLP (Natural Language Processing) algorithms, automated grading systems can decipher written subjective textual responses. It can analyze the quality, coherence, and relevance of student answers.

- Technology such as Automated Essay Scoring (AES) uses natural language processing to grade written essays.

AI Based Grading Solutions

- "Nevertheless, the time when AES systems will be able to operate on a par with human judges, with similar levels of connoisseurship for such features as meaning, emotion, originality, creativity, fluency, sense of audience and so on, arguably remains a long way off." —Gardner, O'Leary, and Yuan

- AI based automated grading frees the teachers from progress monitoring and instead can spend more time ensuring learning is more varied and deeper with more creative activities that enhance critical thinking.

AI Based Grading Solutions

- Teachers can utilize the time to build deeper relationships with not so gifted students and give them personalized attention.

- AI based grading systems, because of it being automated, allows for more frequent and comprehensive assessments, providing students with regular & timely insights into their progress and areas of improvement.

- Human inconsistency and errors are eradicated by AI based grading systems which can grade with uniformity and without partiality.

AI Based Grading Solutions

- Vision based AI uses optical systems to grade students' work. Instead of a teacher grading a math equation that a student wrote, for example, the teacher can snap a picture of the equation, and a machine will grade it.

- There are AI systems based on voice recognition also, similar to Alexa & Siri, which can be used to evaluate & grade reading skills of students.

- AI based assessments also entails gamification of the process of evaluation.

AI Based Grading Solutions

- Researchers have embedded formative assessments in games so that students can show, for an example, how well they understand Newtonian physics as they play increasingly difficult levels of a game.

- Introducing challenges, rewards, and recognition tools like leaderboards, make the AI assessment framework a much more engaging and stimulating process for learners.

AI Based Grading Solutions

- While AI has the potential to revolutionize assessments, it is important to note that it should be seen as a tool rather than a replacement for human involvement.

- The role of educators remains crucial in designing the assessment frameworks, setting learning objectives, and interpreting the results.

- AI cannot fully capture the complex nuances of human cognition, creativity, and critical thinking, which are vital for holistic assessment.

- Technology cannot transform a bad teacher into a good teacher.
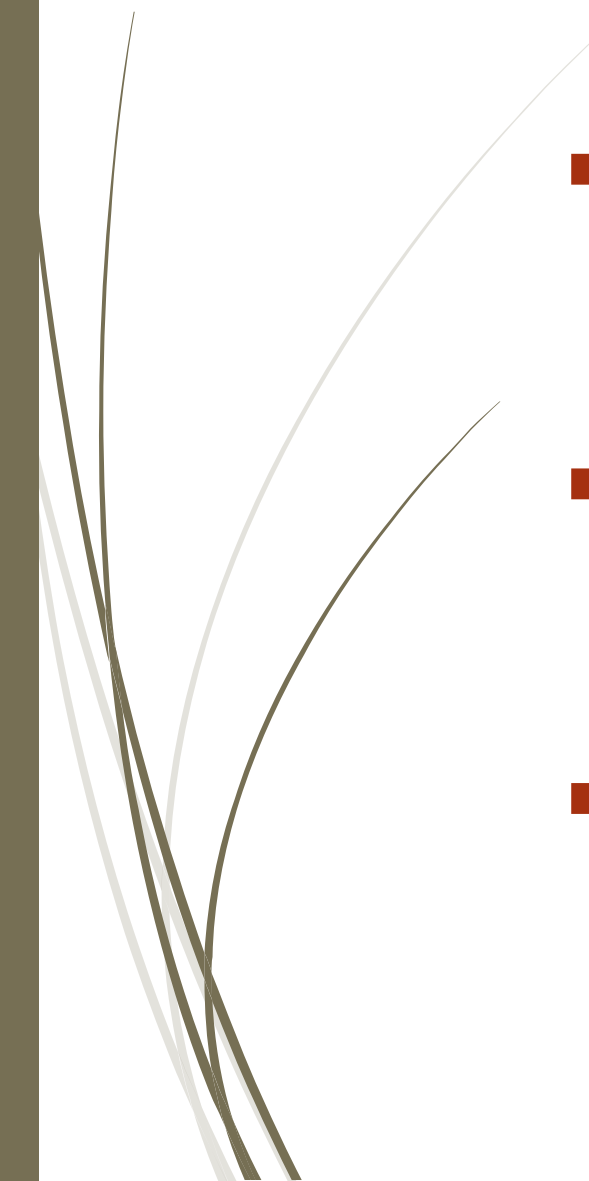
- But it can make a good teacher even better.

Do machines have a heart?

Concerns About
AI Based Assessments

- AI can only learn from its sources, so it takes on the biases, misinformation, and problematic content of the original material.

- AI systems, if not developed and trained impartially & carefully, can perpetuate existing biases in assessments.

- The dominant values frameworks which are harnessed by such AI systems to grade subjective answers may not be the desired perspectives.

Concerns About AI Based Assessments

- There is also an inherent challenge as to how to identify content that is student-generated, machine-generated, or student & machine-generated?

- Already, students are handing in AI-generated essays as their own.

- There are AI based tools available that can detect plagiarism.

AI Content Detectors
{ChatGPT, GPT-3, GPT-4, Bert, Jasper}

- TurnItIn's AI Detection Model
- Winston AI Detection
- Copyleaks AI Content Detector
- GPTZero
- Originality.AI
- Writer's AI Content Detector
- Scribbr's Free AI Detector

EssayGrader

The fastest way to grade essays

EssayGrader is an AI powered grading assistant that gives high quality, specific and accurate writing feedback for essays. Thousands of teachers use EssayGrader to manage their grading load everyday. On average it takes a teacher 10 minutes to grade a single essay, with EssayGrader that time is cut down to 30 seconds That's a 95% reduction in the time it takes to grade an essay, with the same results.

What rubric should we use?

Use default rubrics ⬍

What level are we grading at?

○ Elementary

⦿ Middle school

○ High school

○ College

What type of essay are we grading?

⦿ Persuasive

○ Descriptive

○ Narrative

○ Expository

Class

Select a class ⬍

Class selection is optional, but can help you organize your essays

Name

Enter the essay name

The name field is only required for single file and plain text uploads

Upload type

⦿ Single File

○ Plain text

Supported file types: .pdf,.txt (.txt is preferred)

Grading scale

⦿ Letter system ⑦

○ Point system ⑦

The way the essay is scored.

Choose a single file...   Browse

Grade essay

My School

Type: persuasive

Grade level: middleschool

Graded Date: 11/17/2023

Class: No class found

Essay feedback

The essay feedback report returns a detailed essay evaluation based on the grading criteria used (default or custom rubrics).

Evaluation:

Focus and Structure: D

The essay lacks a clear focus and structure. It jumps from one aspect of the school to another without any logical progression or organization. There is no clear thesis or central idea to guide the reader through the essay.

Introduction: D

The introduction is weak and lacks a clear hook to engage the reader. It simply states basic facts about the school without setting up any expectations for the rest of the essay.

Evidence: D

The essay lacks specific evidence to support the writer's opinions about the school. It would benefit from specific examples or anecdotes to illustrate why the writer likes the school and why it is a great place to be.

Conclusion: D

The conclusion is abrupt and does not effectively summarize the main points of the essay. It does not leave the reader with a sense of closure or a final thought to ponder.

Style: C

The writing style is simple and straightforward, but it lacks depth and sophistication. The language is repetitive, and there is a lack of varied sentence structure and vocabulary.

Mechanics: C

The essay is free from major mechanical errors, but it lacks creativity and flair. It could benefit from more descriptive language and attention to detail to bring the school to life for the reader.

Grammar: C

The essay demonstrates a basic command of grammar, but there are some errors in sentence structure and punctuation that detract from the overall quality of the writing.

Suggestions for Improvement:

- Focus and Structure: Develop a clear thesis statement and organize the essay around specific aspects of the school, such as academics, extracurricular activities, or the school community.

- Introduction: Create a compelling hook to draw the reader in and set up the main points that will be discussed in the essay.

- Evidence: Provide specific examples and anecdotes to support the writer's opinions about the school and make the essay more engaging for the reader.

- Conclusion: Summarize the main points of the essay and leave the reader with a final thought or reflection on the writer's experiences at the school.

- Style: Use more varied sentence structure and vocabulary to add depth and sophistication to the writing.

- Mechanics: Pay attention to descriptive language and detail to bring the school to life for the reader.

- Grammar: Review sentence structure and punctuation to ensure clarity and coherence in the writing.

QuillBot

Paraphraser

Grammar Checker

Co-Writer

Plagiarism Checker

Summarizer

Translator

Citation Generator

| English (UK) | English (US) | Spanish | German | All ⌄ |

Modes: Standard **Fluency** Formal Academic Simple Creative Expand Shorten Custom **Synonyms:** ⊖━○━━━━━━●

My school is my second home

I learn new things every day

I have great teachers and friends

My school has a beautiful landscape

I learn how to be a good citizen

I learn discipline and punctuality

My school is like a second home to me.

Every day, I learn something new, and I have wonderful professors and friends.

My school has a lovely setting.

I'm learning to be a decent citizen.

I am learning the value of discipline and timeliness.

37 Words ❄

Rephrase

⌃ ⌄ 1/5 Sentences • 44 Words ⬇ ⎘

Student Input
HW Q2.B)

Total Points
1 / 3 pts

$$x + 6 = 21$$ ✔️

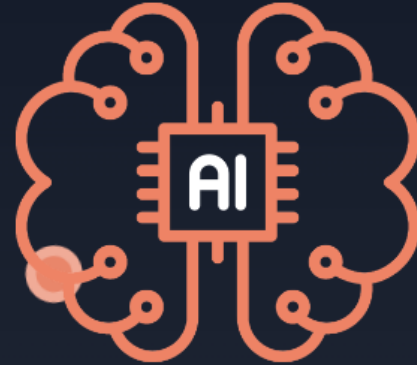$$x = 21 + 6$$ ❌ Wrong operation, it should be
$$x = 21 - 6$$

$$x = 27$$

If you follow this, the correct answer is
$x = 15$

Be careful with equation signs next time! :)

AI Question Generator

Multiple Choice | True-False | Open Ended | Calculation | Fill in the

Blanks | Matching Questions

Blooms Taxonomy Questions

SAT, IGCSE, IELTS, TOEFL

Quizbot is an advanced artificial intelligence question generator

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You can use this template to create Multiple Choice questions from any text, pdf or word document.

Please fill out below to create your questions ↓

How Many Questions? *

3

Level *

High School ▲

Paste your Text *   4439 / 50000

sapiens at the French rock-shelter hunted with bows and arrows as well as with spears, depending on where and what they were hunting. Earlier studies directed by Lombard indicated that sub-Saharan Africans similarly alternated between these two types of hunting weapons

or upload a file (pdf, word) ⓘ

Choose File   No file chosen   ⬆

Difficulty Level ⓘ

Save questions as   💾

↶ ↷ Paragraph ▾ **B** *I* U̲ ≡ ≡ ≡ ☰ ▾ ☰ ▾

TITLE: 3 multiple choice questions at the High School level

1. What significant discovery did researchers make about Homo sapiens who reached Europe around 54,000 years ago?
a. They introduced writing to Europe.
b. They introduced pottery to Europe.
c. They introduced bows and arrows to Europe.
d. They introduced farming to Europe.

2. Which of the following statements is accurate according to the study conducted by Laure Metz and her colleagues?
a. Bows and arrows were found at the site in Grotte Mandrin.
b. The oldest intact bows date back to around 11,000 years ago.
c. The stone points from Grotte Mandrin could not have pierced animal hides.
d. The first Homo sapiens in Grotte Mandrin only hunted with spears.

3. Why does Lombard suggest that Neandertals may not have learned archery from Homo sapiens?
a. Because Neandertals were more interested in spear hunting than archery.
b. Because Neandertals' brains did not enable the enhanced visual and spatial abilities needed for bow hunting.
c. Because Homo sapiens did not want to share their knowledge of archery with Neandertals.
d. Because Neandertals had already developed superior hunting techniques.

ANSWERS:

1.c
2.b
3.b

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Please fill out below to create your questions ↓

How Many Questions? *

5

Level *

High School ▾

Youtube link *

https://www.youtube.com/watch?v=O7Hwhk1

Difficulty Level �ⓘ

Above Average ▾

Output Language ⓘ

English ▾

Number of Versions ⓘ

1 ▾

Generate →

Save questions as

↶ ↷ Paragraph ▾ **B** *I* U̲ ≣ ≣ ≣ ⋮≡ ▾ ⋮≡ ▾

1. What does the first law of thermodynamics outline the relationship between?
a. Heat, volume, and energy
b. Internal energy, work, and heat
c. Energy, pressure, and temperature
d. Work, heat, and pressure

2. How can the first law of thermodynamics be stated as an equation?
a. $Q = \Delta U + W$
b. $W = Q - \Delta U$
c. $Q = \Delta U - W$
d. $\Delta U = Q - W$

3. In which type of process is there no change in volume for a system such that no work can be done on or by the system?
a. Adiabatic process
b. Isothermal process
c. Isovolumetric process
d. Isolated system

4. If there is no change in the temperature of the system, what kind of process is this known as?
a. Adiabatic process
b. Isothermal process
c. Isovolumetric process
d. Isolated system

Answers:
1.b) Internal energy, work, and heat
2.d) Delta U = Q - W
3.c) Isovolumetric process
4.b) Isothermal process

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B Creation

You can use this template to create Blooms Taxonomy creation questions. Please fill out below to create your questions ↓

How Many Questions? *

5

Level *

High School ▾

Paste Your Text *   0 / 50000

According to thermodynamic systems,

heat transfer is defined as "The movement

of heat across the

border of the system due to a difference in

temperature between the system and its

surroundings."

Heat can travel from one place to another ▾

or upload a file (pdf, word) ⓘ

≡ Generated Questions   🖺 🖺 🗐

Save questions as   🖫

↶ ↷ Paragraph ▾ **B** *I* U̲ ≡ ≡ ≡ ☰ ▾ ☰ ▾

5 Blooms Creation questions at the High School level

1. Design a simple experiment demonstrating the concept of conduction, convection, and radiation as modes of heat transfer. Describe the materials you would use, the steps you would take, and how each process is represented in your experiment.
2. Imagine that you are a journalist during the American Civil War era. Write an article explaining the causes of the war, including Abraham Lincoln's stance on slavery and its impact on Southern states.
3. Using evidence from climate studies and global warming trends over the last century, create a persuasive presentation to convince climate change deniers about the reality and impacts of global warming.
4. Develop an educational infographic illustrating how covalent bonding works, include examples of different types of interactions such as σ-bonding, π-bonding etc., and explain why covalent bonding is more common in organic chemistry.
5. Based on Homo sapiens' introduction of bows and arrows to Europe around 54,000 years ago according to recent findings, craft a short narrative story involving these early humans demonstrating their hunting skills using these newly introduced tools.

Answers & Explanations:

1. Answers will vary depending on students' imagination but they should be able to describe an experiment demonstrating each mode of heat transfer with clear procedures for execution.
2. The article should outline major events leading up to the Civil War including slavery controversy and secession by Southern states following Lincoln's election victory due to his

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Create Gardners Learning Style Question from a file

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How Many Questions? *

5

Paste Your Text *   0 / 50000

According to thermodynamic systems, heat transfer is defined as "The movement of heat across the border of the system due to a difference in temperature between the system and its surroundings."

Heat can travel from one place to another

or upload a file (pdf, word) ?

Choose File   text deneme.pdf

Generated Questions

Save questions as

Paragraph   **B** *I* U

Garner's Visual-spatial Questions at the Elementary School level for Visual-spatial students

1. Draw a diagram to explain the different ways heat can travel from one place to another.
2. Use arrows and labels on a picture of an iron and clothes to show how conduction works.
3. Create a simple comic strip that illustrates Newton's first law.
4. Draw a timeline of the American Civil War, including the significant events mentioned in the text
5. Sketch a scene showing Homo Sapiens introducing bows and arrows in Europe, according to the data given.

Answers & Explanations:

1. The diagram should show heat transferring through conduction (direct contact, e.g., pan on stove), convection (fluid motion, e.g., water boiling), and radiation (electromagnetic waves, e.g., heat from sun).
2. The iron should be labeled as an area of higher kinetic energy and the clothes as an area of lower kinetic energy, with arrows indicating that heat is conducted from the iron to the clothes.
3. The comic strip should illustrate a body at rest or moving at a constant speed in a straight line, then being acted upon by an external force which changes its state of motion.
4. The timeline should include significant events like states seceding to form Confederacy, Lincoln's victory in 1860 U.S presidential election triggering secession from states opposing slavery's expansion into western territories, Confederacy seizing U.S forts and other assets within their borders etc.
5. The scene should depict Homo sapiens using bow and arrow for hunting in early European settlements around 54,000 years ago.

Too much of a good thing is not too good

Where there could be 600 employees, only 2 employees operate one of Amazon's warehouses.

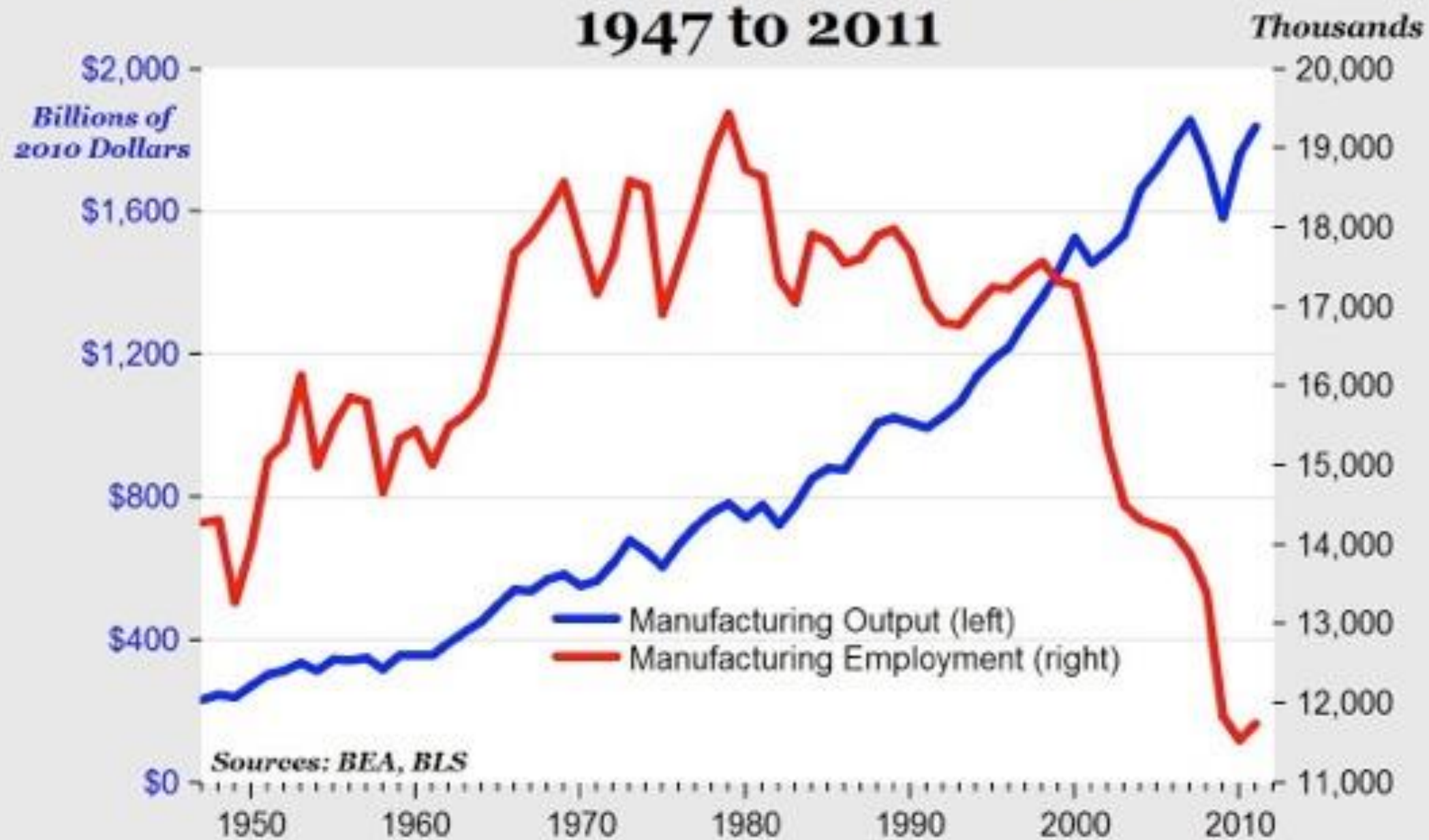Robots run Amazon's warehouse?

Food For Thought

- 60% Indians can't copy or move files in a computer

- 75% Indians can't send emails with attachments

- Can hundreds of millions who are barely literate & live in slums develop the capacity to harness the potential of AI or robotics?

- Are they employable in today's era?

Food For Thought

- Bullock cart to car driver to .....

- Change in kind of job opportunities

- But is this argument a deception?

- Will there be any jobs for drivers in the age of driverless cars?

- Will these drivers be able to update themselves to leverage the potential of AI?

- McKinsey reckons that globally, automation will displace upto 800 million jobs by 2030

Manufacturing Output vs. Employment
1947 to 2011

Thousands

Billions of 2010 Dollars

Sources: BEA, BLS

— Manufacturing Output (left)
— Manufacturing Employment (right)

Automation Could Eliminate 73 Million U.S. Jobs By 2030

Potential number of displaced jobs due to automation by 2030*

236m — China
120m — India
73m — United States
30m — Japan
18m — Mexico
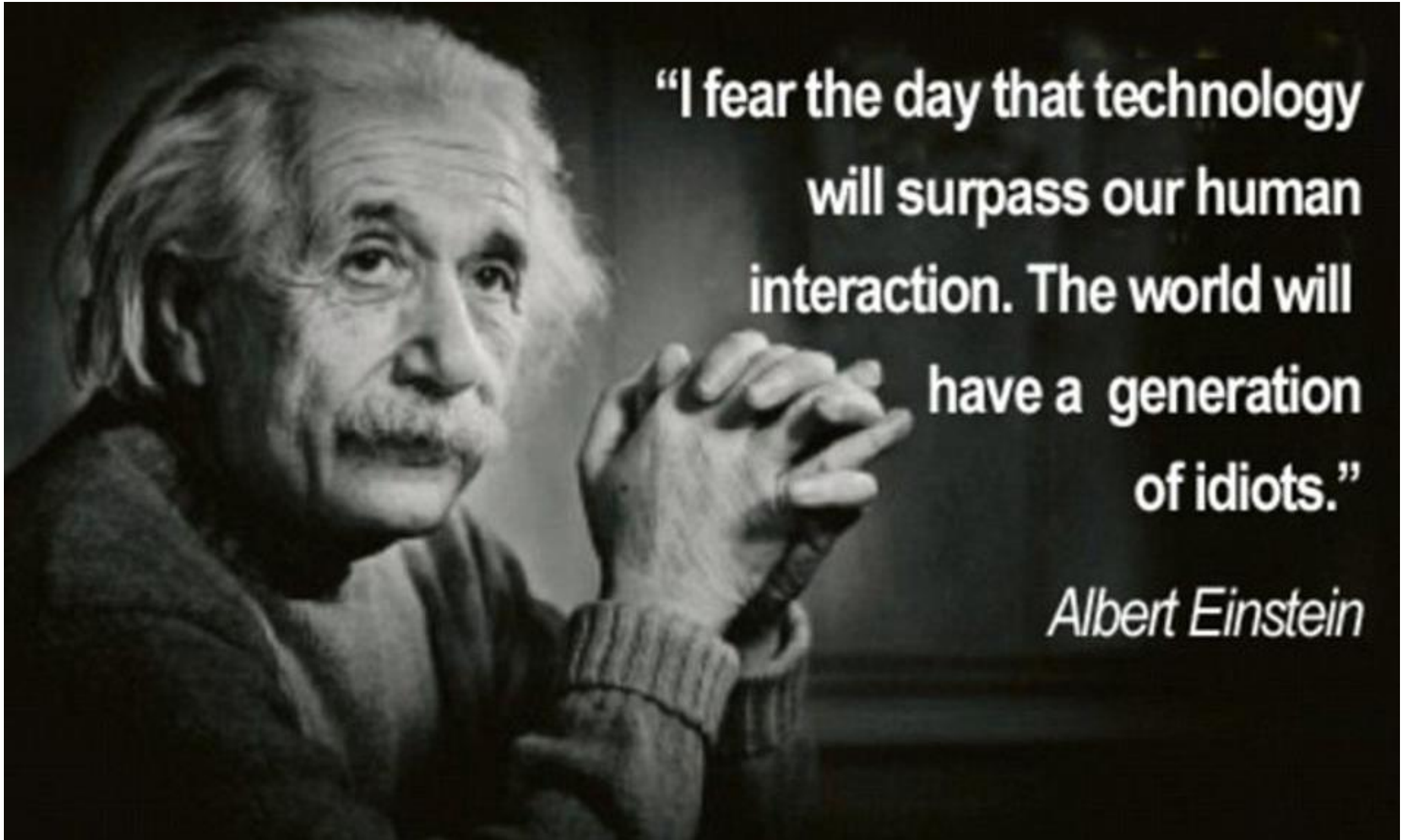17m — Germany

* Rapid automation scenario.
Source: McKinsey

We believe
Allah feeds the birds and insects
He will certainly feed humans as well
But we must strike a balance

"I fear the day that technology will surpass our human interaction. The world will have a generation of idiots."

Albert Einstein

We are advancing in
Technology
Automation
Artificial Intelligence

But our teachers lack understanding of
History
Tradition
Ideology
Vision
(Profound or Superficial)

فکری تنزلی کی شکایت (تنقید براۓ تعمیر)

شکایت ہے مجھے یا رب! خداوندانِ مکتب سے

سبق شاہیں بچوں کو دے رہے ہیں خاکبازی کا

Allama Iqbal (Baal e Jibreel)

Parting Thoughts

- Unfortunately we as a community seem to be cerebrally challenged enough not to be able to distinguish between the superfluous & the ancillary from the essential.

- We naively sacrifice profundity at the supposed altar of mundane expediency.

- We are enmeshed in a reductionist halo masquerading as avant-garde.

Parting Thoughts

- When a myopic thought process rules the roost in any ecosystem it tends to, under the garb of prudence, pull down a potentially profound & comprehensive objective to humdrum & prosaic novelty.

- However, there is only a very fine line which distinguishes discretion from purblind wimpishness.

THANK YOU

جَزَاكَ اللهُ خَيْرًا

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