1.4 Reading 1

A. Lee el texto[3] que sigue.

Understanding Science: An Overview

To understand what science is, just look around you. What do you see? Perhaps your hand on the mouse, a computer screen, papers, ballpoint pens, the family cat, the sun shining through the window …. Science is, in one sense, our knowledge of all that — all the *stuff* that is in the universe, including the tiniest subatomic particles in a single atom of the metal in your computer's circuits, the nuclear reactions that formed the immense ball of gas that is our sun, and the complex chemical interactions and electrical fluctuations within your own body that allow you to read and understand these words. But science is not just a collection of knowledge. Just as importantly, science is also a reliable *process* by which we learn about all that stuff in the universe. Science is, in fact, different from many other ways of learning because of the way it is done. Science depends on testing ideas with evidence gathered from the natural world.

Science helps to satisfy the natural curiosity with which we are all born: Why is the sky blue? How did the leopard get its spots? What is a solar eclipse? With science, we can answer such questions without resorting to magical explanations. And science can lead to technological advances, as well as helping us learn about enormously important and useful topics, such as our health, the environment, and natural hazards. Without science, the modern world would not be modern at all. Still, we have so much to learn. Millions of scientists all over the world are working to solve different parts of the puzzle of how the universe works, peering into its nooks and crannies and deploying their microscopes, telescopes, and other tools to unravel its secrets.

[3] Fuente: https://undsci.berkeley.edu/understanding-science-101

B. Contesta las siguientes preguntas sobre la información del texto.

1) ¿Qué actividades humanas o cosas de la realidad nos ayudan a comprender lo que la ciencia es?
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2) ¿Es conocimiento lo mismo que ciencia?
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3) ¿De qué depende hacer ciencia?
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4) ¿Cómo manifestamos nuestra curiosidad para explicar la realidad?
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…………………………………………………………………………………………
5) ¿Cuál es la relación entre ciencia y tecnología?
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6) ¿Por qué no se puede vivir sin hacer ciencia?
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C. Practising new vocabulary / Práctica de vocabulario nuevo

Combina cada palabra/frase con su versión en castellano. Una ya está resuelta.

a) understand	*recolectada …*
b) ballpoint pens	*peligros, riesgos . .*
c) shining	*manchas …*
d) knowledge	*rincones y recovecos* ***N***

e) stuff	*bolígrafos …*
f) allow	*revelar, aclarar …*
g) reliable	*utilizando*
h) learning	*aprendizaje*
i) gathered	*brillando*
j) are born	*indagando, investigando*
k) spots	*cosas*
l) hazards	*permitir*
m) peering into	*confiable*
n) nooks and crannies	*conocimiento*
o) deploying	*nacemos*
p) unravel	*comprender*

D. Open discussion / Debate abierto

- **Which of these scientific discoveries/inventions of the past have had the most influence on the present? Why are they the most influential?**

  ¿Cuáles de estos descubrimientos/inventos científicos del pasado han tenido la mayor influencia en el presente? ¿Por qué son los más influyentes?

ELECTRICITY – ANTIBIOTICS – RADIOACTIVITY – THE PERIODIC TABLE – THE PERSONAL COMPUTER

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E. Science checklist.

Lee la siguiente lista de ideas. Marca con una X las que consideras se relacionan con la ciencia. Trasládalas al castellano.

	Science focuses on the natural world, not on the supernatural.
	Science is simply a collection of facts.
	Science uses testable ideas.
	Science and technology are interconnected.
	Science is not based on evidence and observation.
	The progress of science depends on interactions within the scientific community.
	Science contributes to technological development.
	Scientists actively seek evidence to test their hypotheses.

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¿Qué has notado sobre el vocabulario visto hasta ahora? ¿Te resulta fácil o difícil de comprender las ideas en inglés?

Muchas de las palabras del lenguaje científico-técnico en inglés son muy similares o prácticamente idénticas en su ortografía y significado a la versión de esas mismas palabras en castellano. En el caso del léxico científico, la gran mayoría deriva del latín y del griego. Ejemplos:

- *science* = ciencia (del latín “scientia” y quiere decir “conocer”)
- *technology* = tecnología (del griego τέχνη (se pronuncia “téchnē”) y quiere decir “arte, oficio o destreza”)

- *development* = desarrollo (del latín "des" que quiere decir deshacer una acción y "arrollare" que significa envolver. Literalmente se traduce "desenvolver": la idea de que el ser humano tiene capacidades que puede potenciar para desenvolverse como persona)
- *theory* = teoría (del latín "theoria" y éste a su vez del griego θεωρία (theōríā), y significa "especulación, contemplación")
- *signal* = señal (del latín signālis y "signum")
- *electricity* = electricidad (del latín "electrum", y a su vez del griego "élektron", que significa "ámbar")

PALABRAS TRANSPARENTES

Los términos transparentes son palabras de diferentes lenguajes que tienen un mismo origen etimológico y una similitud en cuanto a escritura o pronunciación. Observemos los ejemplos que siguen en sus versiones en inglés y en castellano:

- Science focuses** on the **natural** world, not on the **supernatural**. It **uses** testable **ideas = La **ciencia** se **enfoca** en el mundo **natural**, no en lo **sobrenatural**. **Usa ideas** comprobables.

- Science** is **based** on **evidence** and **observation**. **Scientists actively** seek **evidence** to test their **hypotheses = La **ciencia** se **basa** en la **evidencia** y la **observación**. Los **científicos** buscan **activamente evidencia** para comprobar sus **hipótesis**.

De todas formas, hay que tener cuidado ya que no todas las palabras de otros idiomas que se asemejen (en escritura o pronunciación) a una palabra de la lengua materna poseen el mismo significado. En ese caso, estamos hablando de lo que se denomina comúnmente como "falsos amigos" o **falsos cognados**. Ejemplos:

- *design* = diseño o diseñar (NO "designio" o "designar")
- *large* = grande o grandes (NO "largo" o "largos")
- *actually* = en realidad (NO "actualmente")
- *lecture* = ponencia, conferencia (NO "lectura")
- *actual* = real (NO "actual")
- *assist* = ayudar, asesorar (NO "asistir")
- *fabric* = tela (NO "fábrica")
- *realize* = darse cuenta (NO "realizar")
- *support* = dar apoyo, apoyar (NO "soportar")

[Escriba aquí]

- **¿Conoces algún otro falso cognado? ¿Cuáles?**

  ………………………………………………………………………………………………
  ………………………………………………………………………………………………
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- **Relee el texto "Understanding Science: An Overview" y busca 6 ejemplos de palabras transparentes. Encuentra también un falso cognado.**

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1.5 SCIENTIFIC-TECHNICAL DISCOURSE / EL DISCURSO CIENTÍFICO-TÉCNICO

El discurso científico-técnico es aquel utilizado por la ciencia y la tecnología para expresar nuevos descubrimientos, teorías, hipótesis, estudios, análisis y exposición de técnicas. Al hablar de discurso científico-técnico nos referimos a aquellas variedades lingüísticas que están fuertemente marcadas por la utilización de terminologías especializadas- junto con otros símbolos no lingüísticos[4]- y que se muestran indispensables para la transmisión de conocimientos especializados en los ámbitos técnicos y científicos.

Las lenguas especializadas surgen dentro de la lengua común, con la que comparten la mayoría de los rasgos de carácter estructural –morfología, uso muy frecuente de la voz pasiva, complejidad en la sintaxis-, pero se diferencian de ella en que su objetivo último es el de cubrir las necesidades específicas de comunicación formal y funcional que se plantean en cada una de las profesiones u oficios de los diversos ámbitos técnicos y científicos.

Así, observamos cómo los científicos (desde un químico, un físico, un economista, un médico, hasta un ingeniero industrial, un ingeniero en mecánica, un ingeniero aeroespacial, etc.), poseen en común una lengua con características muy cercanas entre sí, e incluso pueden llegar a compartir un gran número de términos; por ejemplo, la palabra *flow* en inglés significa "flujo", y puede ser usada por diferentes especialistas:

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[4] El empleo de códigos complementarios del lenguaje verbal: apoyos gráficos (diagramas, mapas, etc.); símbolos que sustituyen a conceptos (fórmulas); lenguajes formales especiales (lógica formal, lenguajes de programación informática).

- *flow of neutrons* = flujo de neutrones
- *magnetic flow* = flujo magnético
- *process flow* = flujo de procesos
- *monetary flow* = flujo monetario
- *blood flow* = flujo sanguíneo
- *fluid flow* = flujo de fluidos

Estos ejemplos, entre tantos otros, demuestran que el significado de la palabra "flow" es específico en cada ámbito correspondiente. Es precisamente ahí, en cada contexto disciplinar, donde los términos aparecen irremediablemente ligados a sus significados según la especialización.

1.6 TYPES OF SCIENTIFIC-TECHNICAL TEXTS / TIPOLOGÍA DE TEXTOS CIENTÍFICO-TÉCNICOS

De acuerdo con el fin de la comunicación científica, existe una clasificación de textos cuya estructura responde a su tipo. Una misma información puede presentarse como ponencia o póster si es para un evento; como artículo si va a ser publicada, como tesis si se presenta como resultado final de una investigación, etc.

A. **Text types / Tipos de texto**

   Combina cada imagen[1] con un tipo de texto científico-técnico. ¿Cuál es el propósito comunicativo de cada tipo de texto? ¿Qué características los distinguen?

ESSAY (ENSAYO) – THESIS (TESIS) – USER MANUAL (MANUAL DE INSTRUCCIONES) – RESEARCH REPORT (INFORME DE INVESTIGACIÓN) – LECTURE (PONENCIA) – MONOGRAPH (MONOGRAFÍA) – POSTER – RESEARCH ARTICLE (ARTÍCULO DE INVESTIGACIÓN)

[1] Dominio público (CC0) / Google Imágenes
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A.

RESEARCH ARTICLE

European Journal of Education and Pedagogy
www.ej-edu.org

Examining Multiple Intelligences and Performance of Science, Technology, Engineering, and Mathematics (STEM) Students in the Specialized Subjects

Jomar C. Cabuquin

ABSTRACT

This study generally examined the multiple intelligences of the Senior high school (SHS) students under the Science, Technology, Engineering, and Mathematics (STEM) strand and their performance in the specialized subjects. Descriptive and comparative research designs were utilized to measure the variation among the identified study variables. It involved 193 STEM students (composed of 94 males and 99 females) who were selected using complete enumeration sampling. Secondary data on students' performance in the specialized subjects and an adopted Multiple Intelligence Inventory survey questionnaire were employed to collect the data. The T-test for two independent samples was likewise used to examine the significant difference between the performance in the specialized subjects of students with STEM strand as their preferred choice and those who do not prefer STEM. Based on the results, interpersonal intelligence was shown to be the most dominant intelligence type among STEM students, whereas logical intelligence was determined to be the least dominant. On the specialized subjects' performance, the students demonstrated very good to superior performance in pre-calculus, general biology, and basic calculus subjects. Meanwhile, the study indicated no significant difference in the specialized subjects' performance between students with STEM strand as their preferred choice and those who do not prefer STEM. Career guidance orientation for students must be reinforced so that they can be advised on what career track or stand to take in senior high school. Future related studies are suggested to further substantiate the results.

Keywords: Multiple Intelligence, Senior High School Students, Specialized Subjects, STEM Strand.

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*Corresponding Author

I. Introduction

The Science, Technology, Engineering, and Mathematics (STEM) strand of the Senior High School (SHS) curriculum's school strand that does not correspond to their intelligence type.

For many years, intelligence has been linked to academic performance (Al Hosni & Manthari, 2021; & Aydin, 2019).

B.

ENGINEERING SYSTEMS MONOGRAPH

THE INFLUENCE OF ARCHITECTURE IN ENGINEERING SYSTEMS

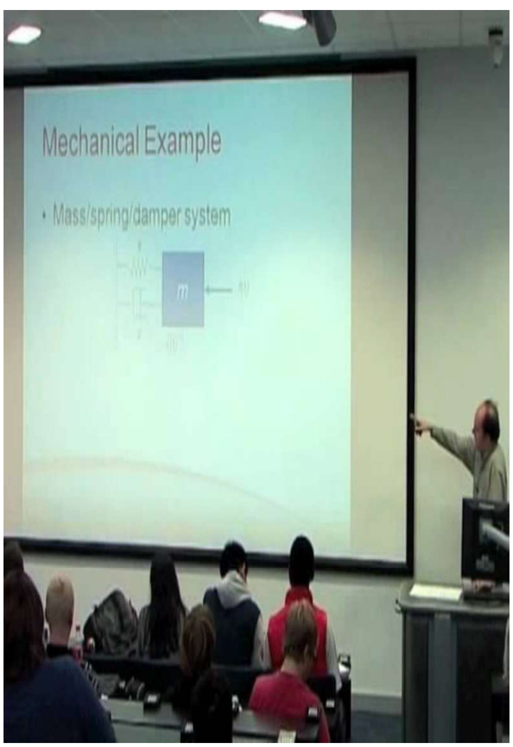
The ESD Architecture Committee

Edward Crawley, Olivier de Weck, Steven Eppinger, Christopher Magee, Joel Moses, Warren Seering, Joel Schindall, David Wallace, Daniel Whitney (Chair)

MIT esd

March 29-31, 2004

C.



D.

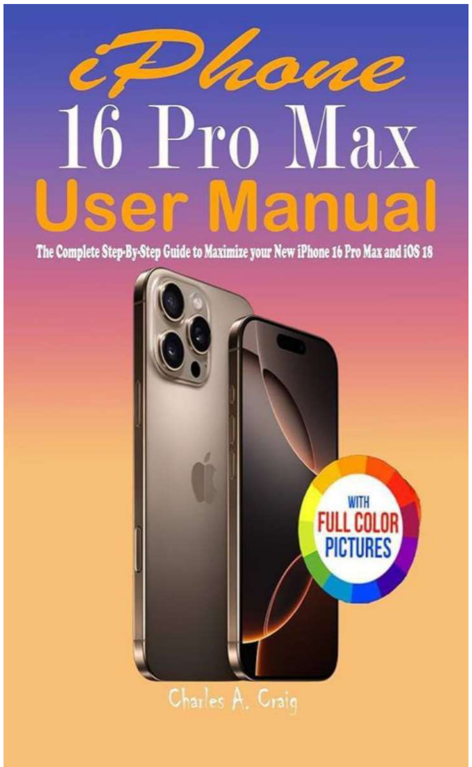
THE UNIVERSITY of EDINBURGH

MSc Dissertation in Electrical Power Engineering

Development of a Real-Time Power Network Emulator

Yujie Li
S2025160
School of Engineering
University of Edinburgh
August 2021

E.



F.

An Investigation of a self monitoring for a Li-Po Battery for Application on Autonomous Mobile Robot

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Abstract—Mobile robots can be used in many applications, including exploration in an unknown area such as carpet cleaning, pickup and delivery, search and rescue, and entertainment. Energy limitation is one of the most important challenges for mobile robots. Robots usually carry limited energy so energy conservation is vital. This paper presents an approach for energy-efficient of mobile robots. So, battery management is the important things that we need to consider. In this paper, two parameters that we need to consider are current and voltage. By measuring both parameters, the energy discharge can be calculated and gives the robot an indication of how much longer a battery will continue to perform before it needs recharging. By monitoring its battery status, the robot can detect when its energy level is low. In that case it can drive to a charging station, connects himself and gets recharged. When its energy level is high again, it resumes working.

***Keywords-** Energy efficient, Autonomous mobile robot, battery monitoring, battery management, energy limitation*

I. INTRODUCTION

One of the most important parts of an autonomous mobile robot is its power management. A system was developed to determine when the break (cut off) during discharging of Li-Po battery so that the autonomous mobile robot can return to a charging station for battery recharge. The design of this system is a car-like mobile robot with two mini wheels on each side of the robot and one ball caster wheel at front of the robot.

The discharge parameters are the battery voltage and the battery capacity. The values of these two discharge parameters are functions of the battery suitability to the load. Using microcontroller-based circuit with current and voltage sensors did achieve the battery management process. The current sensors monitor the current delivered from the battery during the discharge time.

The power of the autonomous mobile robot cannot be managed unless its battery is fully monitored and supervised. In the past, monitoring a battery was done by building a circuit to monitor the battery level. The circuit only indicated the high or low voltage of the battery. The battery cells may break at any time if it is not supervised such as over discharged or overcharging.

The popularity of LiPo batteries is growing, and they are now the preferred power source for most consumer products such as laptop computers, cell phones and may also power the next generation of electric vehicles. The main advantages of LiPo battery cells are that they have about four times the energy densities of nickel cadmium or nickel metal hydride batteries. Li-Po batteries are very lightweight and pliable, and can be made to almost any size or shape. They can be banged around, punctured, dropped or run over by a car and still not explode, making them more resistant to physical trauma than most batteries.

However, there are various safety issues and disadvantages regarding LiPo batteries. It has been found that overcharging and overheating will destroy the battery. Charging and storage instructions are very specific to these batteries, and should always be followed closely. Besides that, poorly made and damaged LiPo battery cells can develop internal shorts or contamination giving rise to serious problems. If a LiPo battery is bulging or misshapen, it should never be charged or used again. Therefore, the battery management system is very important to overcome all the problems and it is highly needed.

A. Research Objective

- To study and evaluate the performance and power consumption of a Li-Po battery that is used to operate a mobile robot.
- To study the discharging and the characteristics of the Li-Po battery for an autonomous mobile robot application.
- To measure current and voltage so that the energy discharge can be calculated and determine when the break (cut off) the main supply.

B. Scope and limitations of the study

- This project focuses on monitoring the voltage and current value of a Li-Po battery during discharging.

G.

H.

EDUCATION: Southampton conference

Engineering education in the 21st century

Howard Allen looks at the challenges ahead, based on discussions at the recent engineering education conference

'Engineering' was defined as a creative synthesis which requires problem-solving, in which there are no unique answers, but only compromise solutions

The big picture

The Structural Engineer Volume 78/No 17 5 September 2000 17

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