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Integrative Characteristics in Latin

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Abstract: This article discusses the importance of organizing an integrative educational process, which is considered one of the most pressing issues in education, the reflection of integrative principles in Latin, including the significance of effective methods and means of integrative principles when expressing numbers in Latin. Opinions were expressed regarding its manifestation and uniqueness.

Keywords: integration, correlation, Latin language, numerical vocabulary, medicine, anatomy, term.

INTRODUCTION. Today, one of the primary goals of our education system is to cultivate well-rounded individuals who can contribute to the country's progress through qualities like creativity and productivity in all areas of society, while meeting global standards [11]. In achieving this, the role of integrative education is unparalleled. Indeed, by fostering interdisciplinary connections, a comprehensive understanding, analysis of ideas, and synthesis of perspectives, integrative education helps develop the cognitive-pragmatic potential of every learner. Recognizing the invaluable place of integrative [8] (interdisciplinary and cross-topic) education in the learning process, it is important to apply this approach to teaching Latin as well. From this perspective, there are effective methods within the integrative approach that can be applied to teaching the Latin numerical system, which will undoubtedly yield positive results.

MATERIALS AND METHODS. To explore the integration of Roman numerals in educational settings, we utilized a combination of historical texts, anatomical references, and modern educational tools. The primary material used was the Roman numeral system itself, which is based on seven letters of the Latin alphabet: I, V, X, L, C, D, and M. Each letter represents a distinct value, and combinations of these letters form other numbers. The system was analyzed in relation to its historical usage, cultural significance, and modern applications.

In the classroom, integrative methods were employed, such as the use of anatomical illustrations showing the names of ribs and fingers using Roman numerals. Additionally, students were encouraged to engage in tasks that required them to relate Latin numerals to concepts in geometry, anatomy, and history. Images, organizers, and diagrams were incorporated to reinforce the understanding of Roman numerals.

We also examined the application of Roman numerals in real-life contexts, such as their use in clock faces, legal documents, and film sequences. These methods helped reinforce the relevance of Latin numerals in both historical and modern settings, allowing students to make connections between their learning and the world around them.Numbers, signifying counting and order, hold great importance in our daily lives. In Latin, numerals occupy a distinct place, representing the

quantity and order of items, and answering questions like "how many?", "how much?", and "which in order?".

In line with the overarching aims of our education system, integrative education thus creates an opportunity for students to gain holistic and meaningful knowledge.

In the context of Latin numbers, the Roman numeral system is what we're referring to. This system was developed by the Romans and is based on seven letters of the alphabet: I, V, X, L, C, D, M. Each letter represents a different value, and numbers are formed by combining these letters. For example:

I = 1

V = 5

X = 10

L = 50

C = 100

D = 500

M = 1000

Roman numerals were widely used throughout the Roman Empire and continued to be used in various parts of Europe for centuries after the fall of the Empire. They are still in use today, though primarily in specific contexts like clocks, dates, legal documents, and for denoting chapters or sequences in books.

The numbers in Latin are expressed as follows:

1 - unus, una, unum primus, a, um

2 - duo, duoe, duo secundus, a, um

3 - tres, tria tertius, a, um

4 - quattor quartus, a, um

5 - quinque quintus, a, um

6 - sex sextus, a, um

7 - septen septimus, a, um

8 - octo octavus, a, um

9 - novem nonus, a, um

10 - decen decimus, a, um

11 - undecim undecimus, a, um

12 - duodecim duodecimus, a, um

13 - tredecim teryius decimus, a, um

14 - quattuordecim quartus decimus, a, um

15 - quindecim quintus decimus, a, um

16 - sedecim sextus decimus, a, um

17 - septendecim septimus decimus, a, um

18 - duodeveginti duodevicesimus, a, um

19 - undeviginti undevicesimus, a, um

20 - viginti vicesimus, a, um

30 - triginta tricesimus, a, um

40 - quadraginta quadragesimus, a, um

50 - quinquaginta quinguagesimus, a, um

60 - sexaginta sexagesimus, a, um

70 - septuaginta septuagesimus, a, um

80 - octoginta octogesimus, a, um

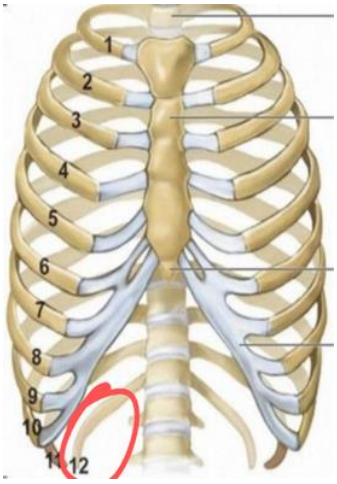
90 - nonaginta nonagesimus, a, um

100 - centum centesimus, a, um

1000 - mille millesimus, a, um [6].

After providing information about the numeral category in Latin, it would be effective to reinforce this knowledge through integrative approaches using images, organizers, various exhibits, and engaging tasks. For example, the numeral category can be integrated with anatomy. The names of the ribs, as human body parts, can be presented sequentially and then displayed in an illustration. The ribs are labeled according to numbers. [4]:

1- costa prima
2-costa secunda
3- costa tertia
4- costa quarta
5- costa quinta
6-costa sexta
7-costa septima
8-costa octava
9- costa nona
10- costa decima
11- costa undecimal
12- costa duodec



The Latin numerals are directly involved in naming the fingers of the human hand:

1. Pollex, or digitus primus (thumb)
2. Index, or digitus secundus (index finger)
3. Medius, or digitus tertius (middle finger)
4. Anularis, or digitus quartus (ring finger)
5. Minimus, or digitus quintus (pinky finger)demonstrating the pronunciation and writing of these numbers, the fingers, as parts of the human body, are shown using models or images. The numbers used to count the fingers are repeated in connection with anatomy to reinforce the topic of numerals. Additionally, Latin numerals are also used to count vertebrae, illustrating the connection to anatomy in the learning process.

Some Latin numerals also integrate with geometry. For example,

- tri (Latin prefix) - consists of three corners;

- penta (Greek prefix) - consists of five corners;

❖ hexa (Greek prefix - hexa (Greek prefix);

- *Oct* (a Greek prefix) – consisting of eight sides.
- Latin numerals were used in ancient Rome to name the months of the year, and this practice continues today:
- September – named as the seventh month in Rome.
- October – named as the eighth month in Rome.
- November – named as the ninth month in Rome.
- December – named as the tenth month in Rome.

Aspects of Integration of Roman Numerals

Language and Writing: Roman numerals were not just used for counting but also for symbolic and decorative purposes. For example, they were used in the dating of years (e.g., MDCCCLXXXVIII for 1888), on clocks (e.g., IV for 4 instead of IIII), and to mark the numbering of monarchs or popes (e.g., King Henry VIII, Pope John Paul II).

Mathematics: The Roman numeral system was used for practical counting and basic arithmetic in the ancient Roman world. However, it was somewhat limited when it came to performing complex calculations or algebraic operations. This limitation became evident when civilizations like the Arabs introduced the Hindu-Arabic numeral system (1, 2, 3, 4, etc.) which was more efficient for calculations. Addition and Subtraction were relatively straightforward in Roman numerals, but multiplication and division were more cumbersome because of the lack of a zero and the positional value system inherent in the Hindu-Arabic numeral system.

Cultural Integration: Roman numerals were deeply integrated into Roman culture, used in everything from the naming of kings and emperors (e.g., Caesar Augustus, Marcus Aurelius) to structural engineering (e.g., the number of Roman legions or milestones along Roman roads).

In art, architecture, and engineering, Roman numerals are used to denote various features like the numbering of arches or the numbering of books in libraries.

The integration of Latin numerals into medieval manuscripts, texts, and church calendars helped preserve their use long after the fall of the Roman Empire.

Influence on Modern Times: While the Hindu-Arabic numeral system (the digits we use today) eventually replaced Roman numerals for most practical applications, Roman numerals still have a presence in modern life. They are frequently seen in:

Clock faces: Roman numerals are still commonly used on traditional clock faces, especially in analog clocks.

Legal and formal documents: They are often used to list sections, chapters, or items (e.g., the preamble to the U.S. Constitution).

Movies and events: For example, the numbering of film sequels (e.g., "Rocky IV") or major sporting events (e.g., Super Bowl LVIII).

Symbolism: Roman numerals were used symbolically as well, where they could represent something beyond mere numbers. For instance:

In architecture: To represent the age of a building or monument, such as the Colosseum, which is dated with a Roman numeral.

In Christianity: Roman numerals are often used in religious texts, inscriptions, or references to holy events or church councils.

In literature: Roman numerals may be used to indicate a division of chapters or sections, like in classic literature (e.g., Chapter III).

Educational and Cultural Continuity: Latin numerals remain part of classical education in the study of Latin and Roman history. In modern education, they are often taught as part of the study of classical languages or as a historical aspect of mathematics and literature.

Roman numerals also represent a bridge between modern readers and the ancient Roman world, allowing us to connect more closely with historical texts, documents, and artifacts.

Limitations of the Roman Numeral System. Roman numerals, while highly integrated in many aspects of Roman life, had several limitations:

No symbol for zero: This made performing arithmetic operations more difficult compared to the positional number system.

No standardized way to represent large numbers: While Roman numerals could be used to write large numbers, the system lacked a clear way to handle extremely large values efficiently.

Lack of a decimal point: This made working with fractions and decimals more complicated.

RESULTS AND DISCUSSION. Our integrative approach yielded several positive outcomes. Firstly, students demonstrated a more comprehensive understanding of Roman numerals when these were connected to other disciplines. For example, the connection between Latin numerals and anatomy—specifically the naming of ribs and fingers—helped students visualize and remember the numbers more effectively. Similarly, when students connected Roman numerals to geometric shapes such as triangles (tri), pentagons (penta), and hexagons (hexa), they not only reinforced their understanding of Latin numerals but also applied them in a mathematical context.

Additionally, students gained a deeper appreciation of the historical and cultural context of Roman numerals. Through discussions about their use in ancient Rome for purposes such as marking the years (e.g., MDCCCLXXXVIII for 1888), on clocks, and in literature, students recognized the enduring legacy of Roman numerals in contemporary society. This interdisciplinary approach encouraged students to see Latin numerals not just as isolated symbols, but as integral components of a broader cultural and intellectual history.

Moreover, the integration of Latin numerals into the study of modern subjects, such as medicine, showed that the knowledge of Roman numerals remains relevant. For instance, in medical terminology, Latin roots and numerals are still widely used. This made students aware of the continued practical application of Latin in various professional fields, reinforcing the value of learning this classical language.

CONCLUSIONS. Although Latin is considered a "dead" language, it is still widely used as terminology across various fields worldwide, especially in medicine. Medical terminology has always evolved alongside advances in medicine. If this alignment is organized using the principle of "integration," it can provide the following benefits:

- It broadens students' worldview.
- It ensures that the lesson process is engaging.
- It facilitates easier and more thorough comprehension of subject material.
- Interdisciplinary and cross-subject connections help students develop knowledge and skills [12]. The integration aspects of Latin numbers (Roman numerals) in the Roman world and

beyond were far-reaching, impacting language, mathematics, culture, and the visual representation of time and dates. Despite their limitations, Roman numerals have endured in specific contexts due to their historical significance and aesthetic value.

The integration of Roman numerals within the framework of interdisciplinary education proves to be an effective strategy for enhancing student engagement and understanding. By connecting Latin numerals to anatomy, geometry, history, and other fields, students not only gain knowledge of the numeral system but also develop critical thinking and problem-solving skills. This holistic approach enriches their learning experience, fosters creativity, and prepares them to meet global standards across disciplines.

In conclusion, the integration of Latin numerals into education is an invaluable tool for fostering a deeper, more meaningful understanding of both the language itself and the world around us. The continued use and study of Roman numerals in various contexts—whether in medicine, law, or the arts—demonstrates their enduring relevance and highlights the importance of interdisciplinary learning in shaping productive, creative, and globally aware individuals.

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