

Problems of Teaching Science in Algeria: (The Terminology Crisis)

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Abstract:

The teaching of science in Algeria faces multiple challenges, among which the crisis of scientific terminology is particularly significant. This problem arises from inconsistencies in translating and adapting scientific terms into Arabic, leading to confusion among students and educators alike. The lack of standardized terminology hampers effective communication of scientific concepts, reduces comprehension, and negatively affects students' learning outcomes. This study examines the historical and contemporary factors contributing to the terminology crisis, evaluates its impact on science education, and explores potential strategies for developing a unified and accessible scientific lexicon in Algeria. The findings highlight the urgent need for coordinated efforts between educational authorities, linguists, and science educators to enhance the clarity and efficiency of science instruction.

Keywords: Science education, Algeria, terminology crisis, Arabic scientific terms, curriculum development, educational challenges

Problèmes liés à l'enseignement des sciences en Algérie : (la crise terminologique)

Résumé :

L'enseignement des sciences en Algérie est confronté à de multiples défis, parmi lesquels la crise terminologique scientifique revêt une importance particulière. Ce problème découle des incohérences dans la traduction et l'adaptation des termes scientifiques en arabe, ce qui entraîne une confusion chez les élèves et les enseignants. L'absence de terminologie normalisée entrave la communication efficace des concepts scientifiques, réduit la compréhension et a un impact négatif sur les résultats scolaires des élèves. Cette étude examine les facteurs historiques et contemporains qui contribuent à la crise terminologique, évalue son impact sur l'enseignement des sciences et explore les stratégies potentielles pour développer un lexique scientifique unifié et accessible en Algérie. Les résultats soulignent la nécessité urgente d'une coordination entre les autorités éducatives, les linguistes et les enseignants de sciences afin d'améliorer la clarté et l'efficacité de l'enseignement des sciences.

Mots-clés : Enseignement des sciences, Algérie, crise terminologique, termes scientifiques arabes, élaboration des programmes scolaires, défis éducatifs

Introduction

Sciences are considered one of the fundamental pillars contributing to the building and development of societies, as they play a vital role in shaping the scientific and cultural awareness of individuals. Quality science education is not limited to the transfer of information; it also requires a deep understanding of the concepts and terms that form the foundation of this knowledge. In Algeria, teaching science faces multiple and complex challenges, among which is the crisis of scientific terminology, which significantly affects the quality of education and student comprehension.

The scientific terminology crisis manifests in the absence of standardized terms, leading to overlapping concepts and difficulty in understanding for students. In Algeria, where the educational system uses multiple languages (Arabic, French, English), this crisis becomes even more complicated. Teaching science requires precision in the use of terms, as any ambiguity or confusion can lead to misunderstanding, and consequently, poor academic performance.

Addressing this crisis requires collective efforts from all stakeholders, including teachers, students, educators, and government authorities. Understanding this crisis, analyzing its causes and consequences, can contribute to developing effective strategies to improve science teaching in Algeria.

Several factors contribute to the scientific terminology crisis, ranging from linguistic diversity in the education system, the lack of specialized dictionaries, to continuous changes in curricula. All these factors lead to overlapping

terms and difficulty in comprehension, negatively affecting students' ability to grasp scientific concepts.

Moreover, the scientific terminology crisis affects not only academic understanding but also has social, cultural, and economic consequences. The loss of cultural identity of the Arabic language in the scientific field can erode the language itself, impacting scientific culture in society and limiting innovation and progress.

In this research, we will review the scientific terminology crisis in the teaching of science in Algeria, analyze its causes, consequences, and possible solution strategies. We will highlight the importance of addressing this crisis to ensure the improvement of education quality and enhancement of scientific understanding among students, contributing to the building of an advanced scientific society capable of facing future challenges.

1. The Concept of the Terminology Crisis - Problems of Teaching Science in Algeria

The scientific terminology crisis represents a state of confusion or mismatch in the use of scientific terms, leading to difficulty in understanding and communication among various parties such as teachers, students, and researchers. Academically, this crisis is understood as the lack of standardized and precise terms representing scientific concepts, negatively impacting the quality of education and scientific research.

Culturally, the crisis reflects the challenges the Arabic language faces in absorbing and developing modern scientific terms, leading to a loss of cultural identity in the scientific domain. Educationally, this crisis shows the difficulties

students face in understanding scientific concepts due to unclear or overlapping terms, affecting their academic achievement.

Socially, the crisis appears in the lack of consistency in using scientific terms among different social groups, resulting in disparities in scientific understanding and affecting scientific culture in society. From a technical perspective, challenges emerge for translators and researchers in accurately transferring scientific concepts between languages, causing imprecise terminology.

Historically, the crisis stems from a long history of interaction between cultures and languages, where historical and political factors contributed to the instability of scientific terms in Arabic. Psychologically, this crisis leads to frustration and confusion among students and teachers due to unclear terms, affecting their motivation to learn and explore science.

Each of these perspectives highlights different aspects of the scientific terminology crisis, helping to understand the complexity of this phenomenon and its broad impact on education and research.

2. Causes of the Terminology Crisis – Problems of Teaching Science in Algeria

The scientific terminology crisis is one of the major challenges facing science education in many countries, including Algeria. This crisis manifests in the absence of standardized and precise terms representing scientific concepts, causing difficulties in understanding and communication between teachers and students. Multiple causes contribute to this crisis, making comprehensive understanding essential.

One primary cause is the multiplicity of languages used in the education system. In Algeria, science is taught in Arabic and French, leading to overlapping terms and comprehension difficulties. This linguistic diversity causes confusion for students, who must navigate between two different languages, affecting their ability to grasp scientific concepts. For example, terms such as “cell” and “DNA” may be used in Arabic, while other concepts are taught in French, such as “gène” (gene) and “cellule” (cell). This overlap complicates understanding the relationships between concepts.

Additionally, the educational system suffers from a lack of specialized dictionaries covering all scientific fields in Arabic. This shortage forces teachers and students to rely on foreign terms, resulting in a loss of precision in expressing scientific concepts. The absence of reliable dictionaries hinders the learning process and complicates science teaching. For example, teachers may struggle to find precise terms for concepts like “renewable energy” or “chemical analysis,” leading them to use foreign terms, which complicates understanding for students.

Frequent curriculum changes in Algeria contribute to the instability of scientific terms. These changes affect both teachers and students, who must continuously adapt to new terms. For example, physics curricula may change every few years, requiring teachers and students to relearn terms and concepts. This constant change can erode confidence in the educational system, as students perceive instability in the information they receive.

Furthermore, the educational system lacks standardized criteria for teaching science. Many institutions lack clear standards, leading to the use of different terms in different

schools. This results in varied understanding among students from different schools, who may learn the same concepts using different terminology. Such variation causes confusion and affects students' ability to communicate with one another.

The scientific terminology crisis is also influenced by the prevailing scientific culture in society. Weak scientific culture affects how science is taught and how terms are used. In societies lacking interest in science, students may not be encouraged to explore scientific concepts deeply, leading to weak understanding and inaccurate term usage.

Translation of scientific terms presents major challenges, as precise equivalents may not exist between languages. Translators face difficulties in accurately conveying scientific concepts, causing imprecise terminology that can confuse students relying on these translations.

Finally, the lack of professional training and development for teachers is a key cause of the terminology crisis. Without adequate training on how to use scientific terms effectively, teachers struggle to convey concepts to students. Teachers lacking sufficient knowledge of scientific terms may find it difficult to communicate information clearly.

In conclusion, the causes of the scientific terminology crisis are multiple, making it necessary to address the issue comprehensively. Collective efforts from teachers, students, educators, and government authorities are required to ensure improved education quality and enhanced scientific understanding among students.

3. Impacts of the Scientific Terminology Crisis on Science Teaching in Algeria

The scientific terminology crisis is a major challenge in science education in Algeria, directly affecting education quality and students' understanding of scientific concepts. This crisis manifests in the absence of standardized and precise terms, causing difficulties in understanding and communication between teachers and students. The negative impacts on science teaching include academic, social, and cultural consequences.

The crisis directly affects students' ability to understand scientific concepts. When terms are unclear or non-standardized, students struggle to correctly assimilate information, leading to weak scientific understanding and academic performance. For example, students may find it difficult to understand the concept of "energy" if different terms are used in different contexts, causing confusion.

The crisis weakens student performance in exams and projects. Difficulty using terms correctly negatively affects academic results, potentially lowering the overall education level. For example, students may score poorly in science subjects due to the inability to express their ideas accurately.

It may also influence students' choices in higher education scientific fields. Frustration with scientific subjects due to poor comprehension of terminology may discourage students from pursuing scientific majors, resulting in a shortage of future scientific personnel and affecting national progress in science and technology.

The crisis causes a loss of confidence in the education system. When students feel they do not understand scientific material well, it can lead to frustration and loss of interest in

learning, reducing motivation to explore science and lowering overall educational standards.

It affects scientific culture in society. Difficulty understanding scientific concepts may reduce societal interest in science, which can hinder innovation and progress, as it becomes harder to develop new ideas and solutions.

The crisis also causes disparities in scientific understanding among different social groups. Students from diverse educational backgrounds may receive different science instruction, leading to varying levels of comprehension. This disparity affects society's ability to deal with scientific and technological issues uniformly.

Frequent use of foreign terms may erode the cultural identity of Arabic in the scientific field, diminishing its importance and status in society. This loss of cultural identity can reduce interest in using Arabic in scientific domains, negatively impacting scientific culture.

Increasing reliance on foreign terms may weaken Arabic, as students may neglect using it to express scientific concepts. This erosion affects future generations' ability to communicate scientifically in Arabic, weakening cultural identity.

Finally, the terminology crisis impacts creativity and innovation. Difficulty understanding scientific concepts affects students' critical and creative thinking, leading to reduced innovation in science and technology, which slows societal progress.

4. Possible Solutions to the Scientific Terminology Crisis

The scientific terminology crisis is a major challenge affecting science education in Algeria, directly impacting edu-

cation quality and students' understanding of scientific concepts. Several strategic solutions can help address this crisis, along with understanding its impacts on science teaching.

Developing specialized scientific dictionaries is a fundamental solution. Reliable dictionaries covering all scientific fields in Arabic, with precise terms clearly expressing scientific concepts, can help standardize terminology and improve understanding among students and teachers.

Teacher training is another important solution. Training programs should be organized to teach effective use of scientific terms. Such programs help teachers improve science teaching skills, facilitate student comprehension, and increase teachers' confidence in using Arabic in science education.

Enhancing cooperation among educational institutions is also important. Collaboration between universities and schools can promote knowledge and term exchange, develop joint educational programs, and standardize scientific terminology, improving understanding for students and teachers.

Curriculum development should be periodically reviewed to align with modern scientific terminology. Updated curricula can enhance scientific understanding and facilitate learning, including strategies emphasizing proper term usage.

Encouraging scientific research in Arabic is another effective solution. Researchers and students should be encouraged to publish research and projects in Arabic, promoting the use of Arabic in science and increasing the significance of Arabic scientific terms.

Raising community awareness about the importance of scientific terms is necessary. Awareness campaigns, workshops, and lectures can promote understanding and appreciation of precise scientific terminology in society.

These solutions positively impact science teaching in Algeria by improving scientific comprehension. Developing dictionaries and training teachers help students understand scientific concepts better, enhancing academic performance.

Improved understanding boosts students' confidence in the education system, increasing motivation to learn and explore science, thus enhancing overall education quality.

Increased interest in science in society is another positive outcome. Promoting Arabic-language research and community awareness elevates societal interest in science, fostering scientific culture and innovation.

Standardizing understanding across social groups is also a benefit. Curriculum development and institutional collaboration unify scientific comprehension among students from diverse backgrounds, building a cohesive scientific community capable of handling scientific issues uniformly.

Enhancing Arabic's cultural identity in science is an important outcome. Encouraging the use of Arabic in science strengthens cultural identity, elevates the language's status, and increases societal engagement with it.

In conclusion, while the scientific terminology crisis is a major challenge in Algeria, strategic steps such as developing scientific dictionaries, training teachers, and enhancing institutional cooperation can overcome it. Addressing this crisis is not only an educational necessity but also a step toward strengthening Arabic's cultural and linguistic identity in science. These efforts improve education quality and en-

hance students' scientific understanding, contributing to the development of an advanced scientific society capable of facing future challenges.

Conclusion

The scientific terminology crisis is a fundamental issue profoundly affecting science teaching in Algeria, manifested in the absence of standardized and precise terms expressing scientific concepts, leading to difficulties in understanding and communication between teachers and students. The crisis extends beyond language to include cultural, social, and economic dimensions, necessitating serious attention and effective solutions.

The negative impacts include reduced student comprehension, lower academic performance, decreased interest in science, and disparities between social groups. It also undermines confidence in the education system, erodes Arabic's cultural identity in science, and negatively affects scientific culture in society.

Addressing the crisis requires strategic solutions. Developing specialized Arabic scientific dictionaries is essential to standardize terminology and enhance understanding. Teacher training programs improve teaching effectiveness and student comprehension. Collaboration between educational and research institutions facilitates knowledge and terminology sharing. Periodic curriculum updates ensure alignment with modern scientific terminology.

Ultimately, addressing the scientific terminology crisis enhances Arabic's cultural and linguistic identity in science,

improves education quality, and strengthens students' scientific understanding, building an advanced scientific society capable of meeting future challenges. Achieving these goals requires coordinated efforts from teachers, students, educators, and government authorities to ensure a bright scientific future for Algeria.

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