ARTIFICIAL INTELLIGENCE, STARTUPS AND ENGLISH LANGUAGE: WHAT POTENTIAL UNINTENDED EFFECTS ON HIGHER EDUCATION, SCIENTIFIC RESEARCH AND LABOR MARKET?

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Abstract: Three recent decisions were made to assign new missions to Algerian universities: promoting startups, supporting the use of artificial intelligence, and adopting English as a language for teaching. However, these three missions will likely have many negative effects that could prevent the intended goals from being reached. This research paper aims to highlight these potential negative effects by conducting an inductive thematic analysis based on an examination of related decrees, instructions and laws. The results revealed that supporting artificial intelligence may decrease efforts by students and professors in research, which could affect their skills. Encouraging students to create their own startups may impact the level of wage labour in Algeria, especially given the large number of measures simultaneously undertaken by other ministries to promote entrepreneurship. Additionally, the use of English could reduce the use of the national languages, facilitate migration, and widen the gap between skills and labour market requirements. These potential negative effects must be addressed to prevent them from occurring. Therefore, strengthening cooperative efforts between ministries may eliminate the predicted negative effects that entrepreneurship supportive measures might cause to the labour market. On the other hand, revealing the potential risk related to the use of artificial intelligence highlights the necessity of providing guides and laws. Finally, if an assessment concludes that the use of English will affect negatively national languages, then a set of measures must be undertaken to preserve them.

Keywords: Algerian universities, Artificial intelligence, English language, Startups, Negative effects.

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1. Introduction

Naturally, any public intervention has its own effects, which can be intended or unintended, and desirable or undesirable. If the effects are undesirable, public manager will face a situation requiring the remediation of damages, incurring additional time, more resources, and strenuous efforts.

Therefore, every public decision, project, program or policy needs to be evaluated in terms of its effects before being implemented. This process is part of what is called "Ex ante evaluation", which is crucial for answering numerous questions:

- What negative effects could a public policy, project or program cause?
- Given these effects, will the main problem be resolved, persist, or worsen?
- How can we deal with these effects if they occur?

The more specific and detailed answers public managers can find to these questions, the more value the implementation phase of public interventions (regardless of their field or scope) will bring, and the more values damages will be prevented.

Besides the significant role of government in various sectors and the substantial level of spending, Algerian evaluation practices still require more governmental interest. Since evaluation missions are generally undertaken by bodies specializing in public finance auditing (like the Court of auditors and the General Inspectorate of finance), their primary aim is to analyze the efficiency of public spending after it has occurred.

Therefore, there's a need to focus on ex ante evaluations, whether internal or external, Additionally, the various stakeholders must be involved in this process, especially ministries as they are the parties responsible for designing and implementing public interventions.

This research paper aims to highlight the importance of ex ante evaluation in before implementing any public policy or program, focusing specifically on the Algerian higher education and scientific research policy.

The reasons for choosing this particular policy are often, but the most import is that the ministry in charge recently made three crucial decisions simultaneously, making it the most relevant case study.

The ministry of higher education and scientific research has adopted a new insight and perspective for its policy. Firstly, it's focusing on making the university a source of innovation and creativity. The process includes encouraging students at all degree levels (bachelors, masters and PhD students) to create their own startups, either individually or in a group. This initiative was the main subject of ministerial instruction 1275, issued on September 27, 2022, which outlines the modalities for preparing graduation thesis project to obtain a "university certificate- starup" for students in higher education institutions.

Secondly, the ministry is keeping pace with the latest developments in technology and industry, often referred to as the Forth Industrial Revolution, by involving Algerian universities in promoting the use and development of artificial intelligence (AI) programs and tools among students and professors. This perspective has been embodied by creating "Houses of Artificial Intelligence" in a number of universities.

Finally, the ministry is promoting the use of English as teaching and research language. This aims to enhance professors', researchers' and even students' ability to share ideas, perceptions, and insights with people worldwide, thereby boosting the contribution of Algerian universities to scientific development in various fields.

In fact, these three measures are strongly interconnected. The most obvious link between the first and the second measure is the focus on the value students can add added to the Algerian economy by creating startups that utilize artificial intelligence. At this stage, the use of English becomes a necessity due to its widespread use in this field globally. Therefore, the university will be the key actor achieving the Algerian government's ultimate goal: diversified and developed economy.

The more public decisions bring about significant changes, the deeper their effects will be. From that perspective, many important questions arise regarding the future effects of the aforementioned measures. The most important among them are the following: Are public authorities in charge of these measures aware of what could be affected? How? And when? In other words, were these measures subjected to any ex ante evaluation? If so, did this evaluation reveal any potential negative effects? What are these undesirable effects? And how are they supposed to be dealt with them if they occur?

This research paper aims to highlight some predicted undesirable effects that could arise in the long term after implementing the three aforementioned measures. These effects must be considered and handled with precaution to avoid any loss. In achieve this, this study seeks to answer one main question:

What are the undesirable effects that can occur as a result of implementing the three new measures related to artificial intelligence, startups, and English language in Algerian universities?

2. Literature Review

Focusing on both the theoretical and practical side, numerous studies exist on ex ante evaluation of public policies and programs (World Bank, 1989; United Nations, 2016; European Commission, 2014; Petra & Kenneth, 2010; Hassen & all, 2016).There are also studies related to the evaluation of its effects (European Commission, 2007; Daniela & Gabriela, 2017; Adam & al., 2019).

Regarding the three public decisions, related recent studies will be mentioned and analyzed separately bellow.

2.1. The ministerial instruction N°1275

Since its issuance on September 27, 2022, the ministerial instruction N°1275, which outlines the modalities for preparing graduation thesis project to obtain a "university certificate- starup" for students of higher education institutions, has been the subject of a large number of studies. The majority of these studies focus on the analyzing the role of university incubators in promoting entrepreneurial spirit among students and their contribution to enabling students to create their own startups by providing the necessary guidance from the first step to the last (Ourda, 2023; Maroua, 2024; Ahmed & al., 2024; Zaineb & Farid, 2024; Fatiha & Fatiha, 2024; Mohamed Samir, 2024; Nadjiba & Khadidja, 2024; Wassila & Redhouan, 2024).

On the contrary, this research paper focuses on analyzing some predicted undesirable effects of the ministerial instruction on the Algerian labor market.

2.2.Supporting Artificial Intelligence

Artificial intelligence is increasingly recommended across all fields, including higher education and scientific research. Scholars are becoming more and more interested in AI due to the revolution it has undergone in recent years. However, judging AI as either it is good because it simplifies human life (Abdelmalek & Rawia, 2024; Linda & Souhaila, 2022; Abdelkader, 2024; Zakaria, 2024), or bad due to its negative practices, particularly when the debate focuses on replacing human with robots (Mohamed, 2024), is a complicated task.

The most crucial aspect in this context is the necessity of considering moral values while contributing to AI technology development (Benali & khaled, 2024; Bennin, 2024; Wafa & Hala, 2024; Mohamed, 2024). This is precisely the insight this study aims to reveal and analyse in the case of Algeria.

2.3.English as teaching an researching language

In contrast to the first and the second public measure, studies related to the analysis of the use of English as teaching and research language in Algerian universities are few.

In their study, Siham and Bouabdallah (2024) attempted to analyze to what extent English language is used in scientific research by a sample of professors from the university of Oran

01 estimated at 50 professor. The study's results have shown that the use of English in the scientific research has positive effects on research and researchers in Algeria. However, it did not reach the required level due to dominant use of Arabic and French language.

From a different insight, one of the most important goals of this research paper is to analyze the potential undesirable effects of using English as teaching and research language in Algeria, especially on the work market.

3. Methodology

In order to reach the research goals, this study is based on a qualitative analysis of the latest measures undertaken by the ministry of higher education and scientific research. The different related documents (instructions, presidential and executive decrees, and laws) are the principal sources of data. Therefore, it seems to be appropriate to consider the inductive thematic analysis the main research methodology for this study due to its relevance with the purpose of predicting the various potential undesirable effects.

4. Undesirable Effects of Public Programs and Policies: Prevention is Better than Cure

In public management, Practical experiences have shown that unexpected or undesirable effects are very likely to occur. In many cases, unpredicted effects may lead to the loss of public policy or program's effectiveness, or even its reason for existence. Therefore, measures taken to correct negative effects may require greater efforts to mitigate their impact, whether material, moral or related to time. Many historical examples in this regard could be mentioned.

In 1935, Australia resorted to importing cane toads from America to combat beetles that were damaging agricultural crops, particularly sugar cane farms. While this was the intended outcome, what actually happened was unintended and highly undesirable. Cane toad has since become an environment threat due to many factors: (1) its ability to kill predators with venom secreted through its skin, (2) its high reproductive capacity estimated at about 70.000 eggs per year, and (3) its long lifespan, which can extend up to 15 years (Chloé, 2024). Because of these features, cane toads are considered as a pest, and their negative effects persist to this day.

In contrast to the first example, where the solution stimulated other issues, the Second example will illustrate several cases in which public decisions have exacerbated the main problem. This phenomenon is known as the "Cobra Effect".

The Indian government, aiming to minimize the dangerous, offered a reward for each cobra hunted and killed. However, the unexpected reaction of the Indian people was to start raising cobras to be better rewarded. The government soon noticed that the cobra population was not only failing to decrease but was actually increasing. This forced them to implement corrective measures to address this unintended adverse effect.

India wasn't the only country to fall into this trap. Many other governments have experienced similar "Cobra Effects". Examples include Vietnam's program for fighting rats, Mexico's decision to reduce air pollution, and Northern Ireland's supporting program for renewable energy heating use (ES consulting, 2021).

Based on these and other examples, it is clearly important to analyse different unintended effects to better understand how to deal with them. In this stage, it is evident that the more public managers can predict unintended effects while designing or elaborating programs or policies, the better these effects will be controlled, and consequently, damages will be reduced. This can be achieved by conducting ex ante evaluation of potential unintended effects, involving all stakeholders in the process, and utilizing the appropriate methodologies.

As the case study for this research paper, it is necessary to mention that Algerian higher education and scientific research policy, programs and decisions needs to be the

subject of an ex ante evaluation. Undertaking three major and sensitive decisions simultaneously could create a degree of complexity in their effects, and consequently, in the damages and remediation requirements if those effects prove undesirable.

5. Promoting Entrepreneurship or Reducing it?

At first glance, supporting the creation of startups in Algeria through the adoption of instruction No1275 appears to be a factor in economic development, thus reducing the unemployment rate by providing new jobs. However, a deeper analysis of this decision, especially in the light of other decisions undertaken by other ministries, responsible for related fields, may reveal many potential undesirable effects on entrepreneurship in Algeria in the long run.

Firstly, in 2022, the government has founded the unemployment grant by issuing the executive decree No. 22-70 and entrusting its application to the Ministry of Labour, Employment and Social Security. This grant represents a type of public subsidy allocated to young, jobless citizens who do not have any fixed income.

An amount of money, initially estimated at 13.000 DZD and raised to 15.000 DZD per month (Executive decree No 22-70 Amended and supplemented, 2023) is sent to the account of those who meet the conditions for the unemployment grant. This continuous till they find decent jobs match their skills and qualifications. As a result, government has created a new alternative for jobless people, distinct from entrepreneurship and wage labour.

Secondly, another decision was made a year later. This measure intends to promote entrepreneurship by following a new approach: founding and supporting freelancing.
The roots of this decision trace back to the COVID-19 pandemic when it become incredibly difficult for the economy to function normally. Firms and individuals found themselves isolated and unable to conduct purchases and sales, which created a favourable environment for express mail service companies to thrive. Algerian society became accustomed to these types of transactions even after the economy recovered. This led to a significant development in e-commerce, encouraging jobless Algerian citizens to work from home to maximize profits by reducing business creation costs (like rent, taxes, etc.).

In order to regulate transactions and encourage unemployed people to become freelancers, the government created a new entity called **"National Agency for freelancer"** which has been tasked with this mission. A freelancer is provided with card that allows him to work legally, pay reduced tax rates; and make social insurance installments (Principal Law for freelancer, 2022).

All the preceding advantages may be stimulating factors for jobless citizens to prefer self employment instead of waiting for a job and simply being an employee.

Encouraging Algerian jobless citizens to create their own companies was not the only target for government decisions; even public administrations employees were included.
Finally, a third crucial decision was adopted in 2023: Executive Decree No.23-93, which outlines to terms and conditions for employees to benefit from leave to create a business. Public administration employees are now allowed to request a one-year leave, exceptionally extendable for a maximum of six months if, they were interested in creating their own companies **(**Executive decree No 23-93**, 2023). In fact, that new measure represents another sort of support for entrepreneurship.

All the previous arrangements are moving in the same direction: supporting the creation of more firms, and consequently providing more domestic goods and services. However, given that the prices of goods and services are increasing while the level of wages remains relatively stable, especially in the private sector, there will be one factor adversely affected: wage labour.

As a job seeker, being an employee no longer represents an attractive opportunity. In such a situation, receiving the unemployment grant, which provides a monthly amount almost equal to the salary one might earn from hard daily work, would be the better choice.

Moreover, with all advantages provided by the government, business creation will be the second choice, if not the first. Thus, the majority of people looking for a job will be either businesses creators or unemployment grant beneficiaries.

At this stage, we can expect several significant long term effects, such as an increase in the number of businesses created, a rise in the number of unemployment grant beneficiaries, and a higher demand for labour. Additionally, the labor supply will likely decrease.

But the question here is: will firms find people willing to work for them if the majority of jobless individuals intend to create their own businesses? If firms cannot hire more employees, they will be unable to reach their goals or make profits. As a result, they may lose some important investment opportunities, which could even lead to bankruptcy in severe cases.

6. English for Higher Education and Scientific Research: What Potential Effects?

Since languages are considered the means by which people communicate and exchange ideas, feelings, perspectives, etc., it is necessary for any population to learn them if the purpose is to cross borders and go beyond limited insights. Learning foreign languages represents a contributing factor to exploring, analyzing, taking advantage of, and, if necessary, improving thoughts and ideas in different fields.

Higher education and scientific research represent one of the fields that must focus on foreign languages, especially those most frequently used for publishing research papers and participating in international conferences. Nowadays, English has become the language most often used to obtain information directly from its source, share ideas by publishing research papers, and communicate in the international conferences. Therefore, researchers must acquire the various related skills, including: reading, listening, speaking and writing.

By acquiring the aforementioned abilities, scholars in all countries will be highly connected, which may allow them to enhance their learning, teaching and research skills.

In Algerian universities, two main languages have been used in teaching for the last decades: Arabic and French. Arabic was widely used in social sciences, economics, politics, geography and history, Islamic sciences, etc. French, on the other hand, was used in architecture, veterinary medicine, biotechnology, biology, information systems, medicine and pharmacy sciences, nutrition sciences, etc. The use of English was limited to the department of English studies, and in a restricted number of research papers published or presented at either national or international conferences.

In order to improve the scientific and research level of Algerian universities, the ministry issued the instruction No. 1433 on September 28, 2022, related to promoting the use of English language in higher education and training. This instruction reflects the ministry's view of English as a key factor contributing to the openness and improved visibility of Algerian universities worldwide. This approach initially focused on teachers, offering them the opportunity to learn English at Intensive Centers for languages or to pursue bachelor's degree in English (Ministry of higher education and scientific research, 2021).

The transition from a restricted to a wider use of English can have significant and profound effects on higher education and scientific research. An analysis of the different expected effects has revealed two types of: positive and negative.

In fact, the use of English as a language for teaching, training and research will essentially contribute essentially to achieving many valuable accomplishments such as building strong links and relationships, keeping pace with the latest developments in various fields and sciences, commonly contributing to publishing research papers or conducting international research projects, being a part of the science production process in the different

fields, and finally, training future generations on how to be strongly involved in the international context, which will be important for them to improve their skills and enhance their ability to seize opportunities.

When discussing public measures, the most critical cases are those characterised by producing a negative effect instead of a positive one. The use of the English language within Algerian universities may be considered one such critical case due to the profound change it brings and the rapidity of its implementation. Therefore, many significant negative effects are likely to occur and thus need to be highlighted. The most important of these are: widening the gap between skills and labor market requirements, facilitating migration; and risking the loss of cultural identity.

After graduating, bachelors will seek a decent job that aligns with their majors and skills. However, a persistent and very serious problem has been the existing gap between the language used in their training and the language generally used in business. Changing the language of education and training to English is likely to further complicate this problem.
To illustrate this, consider the example of accounting and finance major. Students are generally taught and trained generally at the university in Arabic. However, upon graduating, they often find that firms and administrations use French to prepare accounting and financial documents. This, leaves them struggling to find a job due to a lower proficiency in French, or they have to work considerably hard to master it after being hired.

If it is difficult to get student accustomed to English, it will likely be even harder to convince firms and businesses in Algeria to adopt the language. So, the question here is how administrations will deal with that fact concerning taxes, social insurance, credits, and so on. Therefore, public managers must act coherently and involve different stakeholders in this process to ensure that negative effect is addresses as quickly as possible.

Moreover, improving students', professors' and researchers' English skills will help build bridges connecting Algerian universities with the foreign ones. These bridges should facilitate the exchange science and technology. Additionally, due to the rapid growth of developed economies and the difficulty for Algerian graduates to find jobs that match their ambitions, they often consider migration as alternative. However, being taught and trained in Arabic or in French can limit their international job opportunities.

In fact, the language gap may represent an obstacle for students and graduates. However, it is in the Algerian economy's favour that they remain in the country, contributing to its development by creating values, investing, and meeting the need of labour market.

By mastering foreign languages, especially English, the Algerian economy is likely to risk losing its most skilled people due to migration. This could cause a significant shortage in the local labor market and negatively affect the economic development process. Therefore, it is important for public managers to be aware of this potential brain drain from Algeria to the rest of the world in search of better job opportunities.

Finally, switching the language of educating and research to English will probably affect the cultural identity in the long run. People may become accustomed to learning and working solely in English. As a result, they might find it unnecessary to master other languages, believing that all their ambitions, goals, and plans can reach only with just one language. Consequently, national languages risk being either occasionally used or even abandoned in the long term.

7. Supporting the Use of Artificial Intelligence in Higher Education: Artificial Intelligence Vs Human Intelligence!

Artificial intelligence became recently a field of a considerable interest for the Algerian government in general, and both ministries of higher education and start-ups in particular. That interest manifests itself in three essential forms: the creation of the National

School of Artificial Intelligence, the establishment of Houses of Artificial Intelligence, and the organization of scientific conferences on Artificial intelligence.

To keep chase with science and technology development, a national school of artificial intelligence was created in 2021 by Presidential Decree No. 21-323. This school is tasked with training students who have excelled in the baccalaureate exam in various majors related to artificial intelligence (Presidential Decree No 21-323, 2023).

While the National School of Artificial Intelligence, as previously mentioned, is dedicated to training specialized students in that field, the Houses of Artificial Intelligence play a different role, yet focus on the same objectives. Their main role is to encourage students to be interested in, use, and develop artificial intelligence tools and programs in the benefit of the Algerian economy. The academic year 2023-2024 was designated "the year of artificial intelligence" in Algeria by the ministry, marked by the creation of 17 House of Artificial Intelligence across the country and the installation of the Scientific Council for Artificial Intelligence on Jun 26, 2023 (El Bilad Newspaper,2023).

The interest in artificial intelligence in Algeria has also been embodied also in a wave of national and international conferences organized to discuss that topic **(Apendix.1).**
In only 2024 alone, at least 15 conferences on artificial intelligence were organized in both national and international levels in Algeria. These conferences covered an significant number of fields, including: languages, legislation, economic diversification, higher education, marketing, transportation, tourism, and information technologies, etc. However, the viewpoints presented and defended varied between a supportive and cautious/fearful perspective. Some conferences focused on how to support the use of artificial intelligence to provide solutions to various problems. Others, on the other hand, emphasized the need for caution, by, firstly, providing legal frameworks, and secondly, clarifying concerns about finding the most appropriate relationship between the creative human being and the machine with its tremendous capabilities.

The point of view adopted by the researcher in this context is relative one, balancing support and caution. This is because artificial intelligence has proven its tremendous ability to solve many dilemmas in a number of sensitive specializations and, thereby addressing numerous of the long-standing human problems, especially in the medical field and diseases treatment.

However, this topic still has an aspect that must be taken into account: the risk of a decline in human intelligence, especially in education, in general, and higher education in particular. Fundamentally, human development is linked to the mental activity that distinguishes people from the other creatures. Thus, when using and developing artificial intelligence tools, it is necessary to consider developing, rather than replacing or dispensing with it.
Based on this point of view, it is necessary to pay attention to what public measures can cause as negative effects by its support for using artificial intelligence techniques, especially those used for writing dissertations and research papers. In fact, that requires the adoption of clear legal framework and ethical foundations that must not be exceeded to avoid it occur.

8. Conclusion

The ministry of higher education and scientific research's good will in adopting three sensitive decisions simultaneously, aiming to contribute to the development and diversification of Algerian economy, may indeed yield many positive effects in the short run. However, we cannot deny the potential negative effects that could occur in the long run. This research paper has led to several important findings, the most significant are the most significant of which are:

- It has been proven at the international level that public decisions, projects, programs and policies may cause unexpected and undesirable effects that may unintentionally make the main problem worse;
- The instruction No.1275 is the sole public measure supporting entrepreneurship in Algeria; numerous other significant measures have been undertaken by other ministries with the same purpose. As a result, this will likely influence the level of wage labor negatively in the future, especially in the private sector;
- The increased use of English as the language of teaching and research in algerian universities is likely to cause some negative effects in the future, such as widening the gap between skills and work market requirements, increasing migration rates, and reducing the use of national languages;
- Artificial intelligence is indeed receiving extensive support in Algeria, not oly through the establishment of specialized institutions like the high school and houses of Artificial intelligence, but also through the frequent organization of national and international conferences.

From that perspective, and basing on the research paper's findings, it is important to highlight the importance of taking measures aiming to:
- Taking into consideration the evaluation of the expected negative effects of any public intervention before they occur.
- Supporting coordination between the different ministries concerned with the development of entrepreneurship in Algeria to ensure that the undertaken measures will not cause any negatives effects that compromise their effectiveness.
- Providing protective measures to prevent entrepreneurship supporting policies from causing significant negative effects on the level of wage labor.
- Protecting the Algerian economy from brains drain by making sure that the Algerian labor market provides opportunities commensurate with the ambitions and efforts of its skilled workforce.
- Preserving the cultural identity by adopting encouraging measures for the use of Algerian official languages.
- Determining the boundries between the use of human intelligence and the artificial one by providing ethical frameworks, guides, laws, etc.

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Appendix.1. Sample of national and international conferences organized by Algerian universities in 2024.

Object of the conference	Type	Organizing university	Date
The service of artificial intelligence in human life through intelligent robots.	National	University of Ben Youcef Ben Khadda-Algiers 1	April 15
Digital transformation and artificial intelligence applications in social and human sciences	International	University of Mohamed El Bachir El Ibrahimi- Bordj Bou Arreridj	April 23
Legal aspects of medical liability and the challenges of artificial intelligence	International	University of Ben Youcef Ben Khadda-Algiers 1	April 28
Artificial Intelligence and its applications in business in Algeria: Reality and Challenges	National	University of Hassiba Ben Bouali-Chlef	May 08
The role of artificial intelligence in supporting and enhancing local and national tourism as an option towards achieving economic diversification - requirements, reality and prospects	International	Tissemsilet University	May 25-26
Artificial intelligence between technical development and the legal challenge	National	University of Mohamed Sedik Ben Yahia-Djijel	May 27
Uses of artificial intelligence as a guarantee of the quality and competitiveness of higher education and scientific research institutions	National	University of Algiers 3	May 29-30
The role of artificial intelligence in activating the circular economy in the water sector in Algeria	National	University Center of Morsli Abdellah-Tipaza	October 02
Transformations of modern society between artificial intelligence and human creativity	National	University of August 20, 1955-Skikda	November 20
The use of artificial intelligence and its role in embodying administrative digitization - reality and challenges	International	University of Mohamed Boudiaf-M'sila	November 25-26
Artificial intelligence and its role in enhancing digital marketing in light of the challenges of reality and the bets of the future	National	University Center of Morsli Abdellah-Tipaza	December 02
The future of human security in light of artificial intelligence techniques	National	University of Mohamed Lamine Debaghine-Setif 2	December 3-4
Integrating artificial intelligence into higher education: concerns, implications, and future directions	International	University center of Abdelhafid Boussouf-Mila	December 9-10
Artificial intelligence in open and distance education	International	University of Continuing Education-Algiers	December 11
The Arabic dictionary of artificial intelligence: filling the need and enhancing the status of the Arabic language	National	University of Mohamed Lamine Debaghine-Setif 2	December 17-18