Impact of Educational Pathways and Variables on Knowledge Acquisitions and Mobilizations: A Case Study of Fianarantsoa as 2019 Intake through the French language

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Abstract: *This study examines the influence of various factors on students' knowledge acquisition and mobilization at the University of Fianarantsoa for 2019 intake through the French language. The research focuses on the impact of age, gender, previous educational background, institution of origin, and controlled variables on students' ability to acquire, retain, and apply knowledge. The analysis involves regression models and statistical assessments of students' performance in baccalaureate exams and university entrance tests. The results show that students' educational paths significantly influence their ability to capitalize on acquired knowledge, with continuous learning pathways enhancing retention and utilization. The study also explores the relationship between controlled and uncontrolled variables and their effects on students' spontaneous knowledge mobilization. The research underscores the importance of a holistic educational environment, language proficiency, and smooth educational trajectories for promoting knowledge acquisition and application.*

Keywords: knowledge acquisition, mobilization, educational path, language proficiency, controlled variables

1. Introduction

Given the cultural diversity of our country, the transfer of knowledge is a worrying problem in view of all the cultural practices in which students are immersed. Aware of the valorization of human capital as well as physical capital, education is put at the forefront. *It has been proven for a long time that the valorization of human capital …. plays an essential role in economic and social development (*Bank, 1995). The objectives of this article is therefore to measure quantitatively the achievements of students and to evaluate qualitatively the mastery of their achievements during their university studies. Moreover, the evolution of pedagogical techniques has been forced to adapt upstream with the school's production and to fill in downstream the gap created by the exit profile. Faced with the heterogeneous nature of individual schooling decisions, the gap between student's levels is becoming increasingly important and significant, but also student's achievements remain ephemeral. Referring to student's language proficiency in others programs. French is the official language in Madagascar and is also the language of instruction from basic education to higher education. Other research studies have already raised the issue of the French language being a factor of success or an obstacle to education (Institut Français Madagascar, 2012). At the council of Europe's Unity of Language Policies, a platform was designed for foreign language teaching resources stating that "language education does not stop at language as a subject. A mastery of the language of schooling is also necessary in all other subjects, sometimes erroneously considered as "non - language subjects" (Conseil de l'Europe, 2009). Our reflection has therefore been directed towards the variability of school results based on French language results. A state of research that allows us to survey all educational programs at both the basic and higher levels: without claiming to be an exhaustive study. Beacco (2010) stated that "*any constructions of knowledge in a school context, regardless of the disciplines considered, involves language work. It* is therefore, a question of measuring the quantity of student's achievements in relation to their ability to use French language in a provoked or spontaneous situation.

2. Objectives

1) The main objective of this study is to thoroughly understand the influence of factors such as age, gender, previous educational background, institution of origin, as well as variables controlled by students, on their ability to acquire knowledge in a specific educational environment.
2) Concurrently, this research aims to examine whether the reputation of higher education institutions and their socio - economic characteristics have a significant impact on students' cognitive performances, taking into account both controlled and uncontrolled factors.
3) Furthermore, the study aims to analyze how the use of educational resources, such as participation in classes, membership in the university library, book choices, and access to material resources, influences both the initial acquisition of knowledge and its subsequent utilization in the educational process. Thus, this research intends to

provide an in - depth insight into the complex mechanisms that govern the acquisition, mobilization, and application of knowledge in the current educational context.

3. Literature Review

The literature on the mobilization and capitalization of knowledge reveals a considerable number of positions, including those of Xavier Roegiers (Roegiers, 2003) and Perrenoud Philippe (Perrenoud, 2020), both of whom have undertaken research on the mobilization of knowledge evaluated in terms of skills. *"the total mastery of a piece of knowledge probably includes the ability to use it wisely, and therefore to contextualize it, to complete it, to nuance it, to relativize it according to the situation".*

In this context, Philippe Perrenoud stipulates that mastering one's knowledge must tend towards a rational action in relation to the individual. The integration pedagogy developed by Xavier Roegiers deals with this question from a perspective that takes precedence over the skills - based approach. An opinion of Philippe Gagnaire and François Lavie holding to rely on the resources of the student to enrich his experiences. In this perspective that this reflection was oriented by addressing another facet of mobilization and capitalization of learning according to the personal factors of the student and his resources. The competency based approach developed by Xavier Rogiers advocates the importance of the situation in which learning is highlighted, as an opportunity to exercise the competency or as an opportunity to evaluate the competency.

On the other hand, in this study, it is a question of referring firstly to a situation provoking the capitalization of acquired skills and secondly to a situation allowing the spontaneous mobilization of acquired skills. It is also unavoidable to base oneself on cognitive resources (Perrenoud, 2020) including knowledge, know - how, and interpersonal skills (Roegiers, 2003) as well as material resources, making the competence approach obvious. This study was based on the resources owned by students that help them assimilate their learning. Another study classifies student evaluations on the basis of three possible sources, combined to very different degrees, according to each teacher namely: the performance that the student produces under standardized examinations, performances that the student produces outside of standardized examinations. conditions, reports written by external people about student's performance (Frank, Jenkins, & Pepper, 2000).

This paper will however focus on the study of the correlative relationship between the different factors controlled and uncontrolled by students in a given situation in the process of capitalization and mobilization of prior learning. In this same line of thought, research has already been undertaken on the observation of the difference in the learning outcomes of students from different institutions has little impact on the quality of cognitive learning, whereas the socio - economic effects on careers are strongly dependent on the type of institution attended. In other words, access to reputable institutions does not necessarily ensure significantly higher cognitive achievement, but it does augur, no doubt through the signal effect of this pathway, for a better professional future (Roumainville, 2002).

All these existing literatures privileging the reflection on the process of acquisition of knowledge as well as its mobilization have fed our reflection by focusing much more on the effect of high school in higher education alongside the uncontrolled variables (age, gender, previous schooling) and variables controlled by students (participation in French course, library membership, frequency of library attendance, type of book borrowed from the library, material resources).

4. Methodology

In order to observe the mobility of student's achievements and to understand the rationality of their decisions in the second year of the bachelor's degree in social sciences, management - economy at the university of Fianarantsoa for 2019 intake, were taken as the study population and data collection was carried out on the basis of questionnaires of closed and open types. According to the above preferred mode of analysis, the spontaneous mobilization of student's learning depends on his age, academic background, academic performance; and motivation to expand his field of thinking. However, we cannot ignore other explanatory variables from previous studies on the capitalization and mobilization of learning, such as the study by Basano, Viviana Graciela and others (Basano, Graciela, & De Clement, 2015).

This study. The methodology adopted by this study was quantitative. In other words, the variables selected as indicators of the mobilization of prior learning are quantitative measurement variables. In order to access a central tendency on the indicators stimulating the spontaneous use of these assets, it was essential to privilege the principles of causality through the regression analysis between the different scores taken as independent variables and the mobilization of assets in a spontaneous and provoked way. Given the initial questions, the chosen method of analysis carried out using SPSS software is simple and multiple regression analysis, aimed at confirming or refuting the hypotheses.

Firstly, the intention is to perform an influence test between the capitalization of students' acquired knowledge (baccalaureate grade and test grade) based on their gender and age, their previous educational background, their originating institution, and finally their overall average in the baccalaureate exams.

Secondly, the focus will shift to regressing the variables *notefrs*, corresponding to the grade in French for the oral presentation of the final thesis defense evaluated according to the CECRL4 and *notemem*, which corresponds to the grade obtained in relation to the use of concepts related to fundamental subjects' knowledge. These two variables constitute the set of students' acquired knowledge, spontaneously explained based on the frequency of consulting documentation centers, membership in documentation centers 5 types of borrowed literature, material resources, class participation, originating institution, previous educational background, and finally

gender and age.

5. Results

Firstly, an influence test will be conducted between students' knowledge capitalization (grade obtained in the baccalaureate exam and university entrance test) and their sex and age, prior academic history, original educational institution, and overall average in the baccalaureate exam.

Secondly, the dependent variables *notefrs (*grade in oral French during the defense of the end - of - studies thesis) and *notemem (*grade obtained on the usage of concepts related to acquired knowledge in fundamental subjects), representing the students' spontaneous knowledge acquisition, will be regressed against the frequency of visiting documentation centers, membership in documentation centers (university library), types of

borrowed books, material resources, participation in courses, original educational institution, prior academic history, sex, and age.

Regression analysis between the baccalaureate grade and the variables not controlled by students
The main objective of multiple regression, going beyond simple correlation, is to accurately describe the strength of this association for both predictive and explanatory purposes (Mohamed, 2017). This involves analyzing the influence of factual variables such as age and gender, as well as partially controlled variables like previous educational background and the student's original institution, within a given educational context such as baccalaureate exams (baccalaureate grade) and university entrance tests. In other words, the objective of this analysis is explanatory, aimed at assessing the contribution and direction of influence of Independent Variables on Dependent Variables

Table 1: Influence of age, gender, educational background, and institution on the grade obtained in the baccalaureate examination

Explanatory variables	DV *notebacc*				DV *notemem*			
	Standarized betas	Sig	R	R2	Standarized betas	Sig	R	R2
Constant	**0.000**							
Gender	0.027	0.522			0.004	0.922		
Age	0.16	0.007	0.358	0.128	0.022	0.721	0.081	0.007
Institution	0.015	0.729			0.025	0.591		
Educational background	0.448	0			-0.086	0.17		

This involves analyzing the influence of factual variables such as age and gender, as well as partially controlled variables such as previous educational background and the institution of origin of the student, in a given educational context such as the baccalaureate exams (*notebacc)* and university entrance tests. In other words, the objective of this analysis is explanatory in nature, aiming to assess the contribution and direction of influence of Independent Variables on Dependent Variables. In summary, age and educational background appear to be significant factors in explaining variations in scores obtained in the baccalaureate exams (*notebacc),* while for scores related to concepts (*notemem),* only age seems to have a significant influence, albeit weak.

Relationship between uncontrollable personal factors and controlled factors, controlled factors as predictive performance indicators for spontaneous mobilization of acquired knowledge through multiple regression analysis.
The objective here is to determine the extent to which variables not controlled by students (*age and gender*) or partially controlled (*originating institution and academic path),* as well as variables completely controlled by them, can be considered as predictive performance criteria (providing better prediction) for the spontaneous mobilization of their acquired knowledge, as indicated by their scores in oral French and their scores in using concepts related to core subjects during their final thesis defense. To measure the ability to translate complete or partially explanatory variables in relation to the observed situation, and to mitigate the risks of variable overlap, the suitable analytical process is multiple regression analysis. In this context, each hypothesis will be tested using a linear

regression equation model.

Hypotheses
H1a Student - related factors (*age, gender, academic path, originating institution*) have a positive influence on the spontaneous mobilization of acquired knowledge in the French language and can be represented by the following equation model:

$$notefrs = \beta_0 + \beta_1 age_i + \beta_2 gender_i + \beta_3 academicpath_i + \beta_4 institution_i + \varepsilon_i$$

H1b Student - related factors (age, gender, academic path, originating institution) have a positive influence on the spontaneous mobilization of acquired knowledge in core subjects and can be represented by the following equation model:

$$notemem = \beta_0 + \beta_1 age_i + \beta_2 gender_i + \beta_3 academic_i + \beta_4 institution_i + \varepsilon_i$$

avec $k < n$
$\varepsilon_i \sim N(0, \sigma^2)$
ε_i non corrélé avec ε_j avec $i \neq j$
ε_i non corrélé avec $X_{1i}, X_{2i} \dots X_{ki}$

The programming for calculating values for random variables will be performed using the SPSS software, which includes data from the 500 surveyed students regarding the quality of their acquired knowledge. Additionally, a set of variables will account for the observed differences in the quality of acquired knowledge. The analysis conducted using the SPSS software yielded the following results.

Table 2: Overall results

Explained Variable Models	Grade in Oral French *(notefrs)*	Grade obtained on usage of concepts *(notemem)*
Categories	500	500
R2	0.050	0.036
Adjusted R2	0.042	0.028
Standard Error of Estimate	1.587	1.767
Significance Level	0.00	0.01
Durbin - Watson Test	1.865	2.007

There is a significant and directly proportional statistical relationship between the two dependent variables and the predictor models. 5% of the variability of the French grade (*notefrs*) is predicted with the models such as age, gender, home institution and student background, while the grade for the dissertation (*notemem*) is predicted at 3%. In this case, the very low values of the coefficient of determination R2 demonstrate that the models can be retained with relatively limited explanatory power. The ANOVA test below therefore allows us to reject the H0 hypothesis in the case of the two dependent variables and to affirm that age, gender, institution of origin and background can predict the quality of students' prior learning.

Table 3: Analysis of variance of the two dependent variables (notefrs and notemem)

ANOVA3					
Model	Sum of squares	df	Mean square	F	p - value
1 Regression Residues Total	65, 811 1246, 547 1312, 358	4 495 499	16, 453 2, 518	6, 533	, 000b
a. Dependent variable: grade in oral French					
b. Predictors: (constant), pathway, gender, school of origin, age					

The two variables of institution of origin and background are the variables that reached the level of statistical significance required by the traditional threshold of 0.05, allowing us to claim that the institution of origin and the previous educational background each have a specific impact on the variable mark for French at the dissertation defense. We therefore find that both variables are significant, but that the variability explained by background is greater than that explained by gender. Consequently, we can accept, without great risk (p - value = 0.000) of being wrong, that at least the career path variable is a predictive index of performance on the mobilization of quality learning.

ANOVA3					
Model	Sum of squares	df	Mean square	F - value	p - value
1 Regression Residues Total	57, 327 1545, 223 1602, 550	4 495 499	14, 332 3, 122	4, 591	, 001b
a. Dependent variable: grade obtained on usage of concepts					
b. Predictors: (constant), pathway, gender, school of origin, age					

In summary, this table presents the results of a three - factor analysis of variance to assess how the predictor variables (path, gender, school of origin, age) influence the scores obtained on the use of concepts. The very low p - value (0.001) in column F - value indicates that at least one of the predictor variables has a significant effect on the scores obtained. Taking into consideration the level of significance, we can conclude that the student's pathway has a very strong predictive performance on the spontaneous mobilization of students' acquired knowledge.

6. Discussion

The first section of the analysis highlighted the impact of different explanatory variables on students' grades in a prompted situation. This is presented in relation to the scores on official exams prior to entering higher education. A statistically significant relationship at the 1% threshold exists between the grade obtained in the baccalaureate exam and the grade achieved in the test. Regression analysis, through the statistical evaluation of estimated coefficients, asserts that acquired knowledge is capitalized upon in a prompted situation (exam), but in the short term. The student's educational pathway is the most influential factor determining their ability to recall their acquired knowledge in a prompted situation: the more continuous the student's educational journey, the more predisposed they are to capitalize on their knowledge. Knowledge acquired during high school studies is assimilated during the university entrance test; this is evidenced by the observation that baccalaureate exam scores increase by 0.47 points in relation to scores on the university entrance test. The following figure illustrates the process of knowledge capitalization through various faculties, progressing from acquisition, through capitalization, and culminating in its mobilization.

Knowledge capitalization
Based on the integrated learning method developed by Xavier Rodgers in 2003, and considering how we assess students through the baccalaureate exam, we find that students mainly retain what they have learned based on their educational background (Roegiers, 2003). This means that a student's school experience has a big impact on what they retain, more than their ability to remember. In other words, if a student follows an uninterrupted school career and doesn't have to repeat years, they will learn better. What they learn, such as the rules of grammar in French, or information in their subjects of study, is linked to what they have already learned. It's as if they're adding bricks to a wall that's already under construction: knowledge is added and fitted together. Influenced by continuous schooling: knowledge is initially capitalized by the acquisition of the grammatical component

through language teaching (Freiderikos & Jolanta, 2012). Afterwards, students will expand their knowledge. For example, they learn not only the grammatical rules in French, but also how to apply them in sentences. The learning path also helps to improve retention. If a student follows a continuous path, they can concentrate on learning, rather than spending time revising what they have already learned. In short, the integrated learning method shows that the educational pathway is very important for learning and retaining knowledge. The smoother and more seamless a student's path, the easier it is to retain. And with a solid foundation, new knowledge is added to old knowledge to form a solid and complete understanding.

The Knowledge Capitalization Process: The process of knowledge capitalization entails the evolution of knowledge utilization over different periods, ranging from induced situations like exams to the spontaneous application of knowledge, and perpetuated through long - term skill development. Therefore, the measurement of knowledge capitalization evolves following the subsequent steps: inducing a situation to capitalize on knowledge, then mobilizing the capitalized knowledge in a spontaneous situation, and finally, employing acquired knowledge in the professional domain on a long - term basis.

Knowledge Capitalization Process in an Induced Situation: This refers to the process of exploiting acquired knowledge in specific situations, particularly induced situations like exams. The objective is to assess how effectively students can apply what they have learned in such situations. While exams may not provide a complete picture of a student's understanding, they offer insights into their ability to use their knowledge effectively.

Spontaneous Mobilization of Acquired Knowledge: This pertains to students' capacity to use learned concepts without direct prompting. This occurs in the medium term and involves the natural and precise application of acquired knowledge. For instance, students may use economic concepts learned in class to compose significant research papers or employ proper grammatical rules to craft well - structured theses. This also encompasses the effective use of language to communicate their ideas, such as during the public defense of their thesis.

Long - Term Utilization of Acquired Knowledge: This concerns the lasting impact of education. In the long run, students not only apply their knowledge but also develop skills from that knowledge. These skills become an integral part of their professional competency. It involves more than just mechanical memorization; it entails transforming knowledge into practical skills that contribute to students' professional success.

7. Conclusion

In conclusion, this study highlights the crucial significance of the educational journey in the capitalization and mobilization of students' knowledge. The findings underscore the positive and significant influence of factors such as age, gender, institutional origin, and academic background on students' academic performance.

Specifically, the analysis reveals that the continuity of the educational path enhances the retention and utilization of acquired knowledge. This approach aligns with the perspective of an integrated pedagogical approach, where learning is progressive and revolves around the effective use of the French language as a catalyst for knowledge across various disciplines. By also considering material resources and active student participation, this research underscores the importance of cultivating a holistic educational environment to maximize knowledge acquisition, retention, and application. In light of these findings, it is evident that the smoothness of the educational journey and proficiency in the French language play a pivotal role in building a strong foundation of knowledge and skills, thereby promoting both professional and personal development of students.

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