

IMPACT OF ENVIRONMENT ON LIMITS OF PROFESSIONAL AUTONOMY IN CONTEXT OF EDUCATIONAL ENGINEERING

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Abstract- This study focuses on the effect of the school environment on the professional autonomy of teachers and their pedagogical practices in teaching French at the qualifying secondary cycle in Morocco. The objective of the study is to evaluate the impact of the school environment on teachers' ability to make independent pedagogical decisions and develop their educational practices, as well as the effect of these changes on teaching quality, using a sample of 104 French teachers from various secondary schools. The results indicate that the school environment, namely school policies, administrative support, and collaboration among colleagues, has a significant impact on teachers' professional autonomy and their pedagogical engineering. The study showed that the dynamics of the school environment can enhance teachers' autonomy, especially when the necessary institutional support is available and the innovation and experimentation of teaching methods are encouraged. The study recommends providing a flexible school environment that supports teachers' autonomy and promotes teaching innovation by improving administrative support and implementing training programs focused on developing critical thinking skills and strengthening teacher collaboration. It also recommends integrating artificial intelligence (AI) and Internet of Things (IoT) devices into the school environment, as these technologies are transforming French language teaching by creating a flexible, efficient, and more cost-effective environment. This integration provides a modern response to contemporary challenges while enhancing the effectiveness of French language teaching and promoting teachers' professional autonomy.

Keywords: Teacher Autonomy, School Environment, Educational Policies, Pedagogical Innovation, Quality of Teaching.

1. INTRODUCTION

The professional autonomy of teachers is a major area of interest in the field of education and represents a crucial aspect of the development of teachers and the quality of their teaching. It refers to teachers' ability to

make informed and independent decisions and to exercise control over their own pedagogical practices, drawing on their professional experience [1]. "The teaching profession is increasingly becoming a complex and evolving role, yet educators are expected to confront this complexity to adapt to this changing context" [2].

In the Moroccan educational context, particularly for French teachers at the secondary qualifying level, this professional autonomy and the pedagogical engineering they implement are influenced by various factors related to the school environment.

The integration of educational technologies such as AI-driven platforms, IoT devices, and cloud-based solutions plays a key role in enhancing teachers' professional autonomy. These tools enable personalized teaching, automate certain administrative tasks, and provide real-time feedback, thus strengthening teachers' efficiency and autonomy.

This study examines the impact of the school environment on teachers' professional autonomy and their pedagogical practices in French language instruction at the secondary qualifying level. The central question is as follows: does the school environment dynamic positively or negatively influence the enhancement of teachers' professional autonomy, the development of their pedagogical practices, and, consequently, the quality of student learning?

In other words, will secondary-level French teachers be able to improve their professional autonomy and teaching practices by transforming their school environment?

These are the questions we will attempt to answer through this research. We will highlight the various institutional, cultural, and contextual aspects that can either promote or hinder the acquisition of the highly desired professional autonomy, not only by French language teachers but also by various official directives from the Ministry of Education.

2. LITERATURE REVIEW

2.1. Concept of Professional Autonomy of Teachers

Professional autonomy refers to a teacher's ability and freedom to make decisions regarding teaching methods, the selection and adaptation of course content, and the assessment of students, without excessive intervention from the administration or regulations of higher authorities [3, 4]. It also includes the teacher's freedom in curriculum design, allowing for greater customization of content based on the specific needs of students and the local educational context. It is often associated with competence, motivation, and job satisfaction [5]. Autonomy is essential to encourage innovation, teacher engagement, and the quality of student learning [6, 7]. Teachers who enjoy autonomy in managing their classrooms are more likely to experiment with diverse teaching strategies and adapt classroom organization to the specific dynamics of their students. Autonomous teachers are more inclined to innovate and adapt their teaching to the individual needs and expectations of their students [7].

From then on, the concept of the professional autonomy of teachers has evolved to emphasize critical reflection, contextualized practices, and the teacher as a researcher, thereby promoting independence in curriculum development and pedagogical approaches [8]. This also includes greater autonomy in student assessment, where teachers can use continuous and diversified evaluation methods to meet educational objectives while considering the individual characteristics of each student.

the professional autonomy of teachers will then expand to refer to teachers' independence in decision-making and the application of professional knowledge in their classrooms, requiring legal and institutional support for more effective teaching practice [3]. Furthermore, a flexible institutional framework that provides legal support is essential for allowing teachers to fully exercise their autonomy, especially in the face of administrative and regulatory constraints. This aligns with recent conceptualizations of teachers' professional autonomy, defined as the ability to make informed pedagogical decisions, promote student empowerment, and engage in reflective practices, despite various challenges faced in the field [9].

However, several contextual factors influence the professional autonomy of French language teachers, both in Morocco and abroad. Teachers perceive this autonomy as the ability to make independent decisions, especially in managing their classrooms and preparing lessons. However, their leeway in curriculum design and assessment is often limited by centralized directives that do not always allow for adaptation to local specificities.

Moreover, this autonomy is not merely the absence of control but is shaped by relationships within the school environment and the broader educational context [10]. Relationships between teachers, administration, and colleagues play a key role in how autonomy is perceived and exercised. A collaborative environment can thus strengthen this autonomy, while a more rigid context may hinder it. Additionally, "IoT devices, such as smart sensors and tech kits, provide teachers with tools to

collect real-time data on student performance and the school environment. This enables teachers to make more informed decisions about teaching methods, enhancing their ability to personalize instruction and innovate in their practices" [11].

This precise, concise and comprehensive conceptual approach will be the subject of our study, which will focus on the influence of the school environment on the professional autonomy of teachers and their teaching practices.

Not to overlook the critical role of AI tools and IoT devices that allow teachers to adapt their pedagogical strategies to meet their students' specific needs. These educational technologies provide additional support for teachers' autonomy by reducing their administrative workload and fostering innovation and pedagogical decision-making.

2.2. Previous Studies regarding the Influence of the School Environment on Professional Autonomy of Teachers

The school environment indeed has a significant influence on the professional autonomy of French language teachers in secondary education. Teachers cannot effectively work or cultivate their professional autonomy without continuous interaction with their school environment. However, this environment persistently shapes their capacity to make thoughtful decisions and develop teaching practices that lead to a more engaging and productive school experience.

Several studies have been conducted on this topic, highlighting the various dimensions of this interactive relationship between the school environment and the professional autonomy of teachers. Thus, the study conducted by Wu (1998) shows that the schoolwork environment has a significant impact on the professional autonomy of teachers. A lack of support from supervisors and high work pressure markedly affects teacher's ability to exercise their professional autonomy effectively [12].

This observation is supported by another study by Pearson (1998), which indicates that teachers have limited authority over their work environment. This has a considerable impact on their professional autonomy due to the influence of external decision-makers and a lack of satisfaction and pleasure in their workplace [13]. Similarly, the study by Bustingorry (2008) highlights that the school environment significantly influences the professional autonomy of teachers, emphasizing the need to establish support structures to promote independent planning and more reflective practices that are more effective [8].

The same influence was demonstrated in a study by Guangwei Feng (2016) that explains that the school's ecological environment, shaped by national policies and internal management, clearly and significantly influences the professional autonomy of teachers. This affects their ability to exercise their rights and make informed, independent decisions, thus hindering the acquisition of their professional autonomy and the development of their teaching practices [3].

Even recent research, such as the study by Demir (2023), confirms the significant influence of physical facilities as well as intra- and extramural factors on the professional autonomy of teachers and motivation levels [14]. Added to this is "the integration of IoT technologies in classrooms, which has also highlighted the importance of using real-time data to enhance teachers' decision-making processes. These IoT tools have enabled the collection of data on the physical environment and learning, which teachers have used to create personalized learning scenarios, thereby strengthening their autonomy in the classroom" [11]. An optimized management of space and resources ensures better course organization.

All of these studies regarding the impact of the school environment on teachers' professional autonomy reveal key similarities, particularly regarding the influence of working conditions and school climate on teachers' autonomy and job satisfaction. However, our research aims to be complementary, adding a unique perspective by examining the positive or negative effect of school environment changes on the professional autonomy of French language teachers in secondary education.

Our study proposes introducing this variable (change in the school environment) into the formative process for teachers, if only to allow them to experience diverse teaching situations within different school environments throughout their professional careers. This could foster their implicit involvement and enhance their professional autonomy, by encouraging them to make informed and thoughtful decisions whenever they face situations-problems, due to this iterative and repetitive change in the school environment.

3. METHOD

3.1. Participants

The study focused on a sample of 104 French language teachers at the secondary qualifying cycle, comprising 36.5% women and 63.5% men. These teachers possess varying levels of experience in the educational and pedagogical field, ranging from 5 to over 30 years. The majority of participants (with between 5 and 15 years of experience) are followed by those with less than 5 years of experience and those with more than 15 years of experience in teaching French at the secondary level. The teachers are distributed across various high schools in the Kingdom of Morocco, with 82.7% in the public sector and 17.3% in the private sector. Most of them have taught in multiple institutions, representing 88.5% of the total sample.

3.2. Study Instrument

In this study, we used a digital questionnaire consisting of approximately 16 questions, aimed at shedding light on the topic of "the influence of the school environment on professional autonomy of teachers." The questions were divided into two main areas to explore the issue from different perspectives. The first area focused on assessing the quality of the school environment in which the teachers work. The second area delved into the

impact of this environment on the professional autonomy of teachers, examining influential factors such as school policies, experimentation, and innovation, official guidelines, initial and continuing training programs, as well as administrative and pedagogical evaluation. Finally, the last research axis was dedicated to teachers' opinions to express the challenges they face in their attempts to enhance their professional autonomy, along with formulating their proposals to improve this autonomy within their institutions.

It is worth noting that the questionnaire included a set of closed questions asking participants to choose answers from predefined options, as well as open-ended questions aimed at gathering personal opinions and suggestions from the teachers. The questionnaire was distributed via social media and WhatsApp groups for teachers, to reach a broad and diverse sample that reflects the reality of the impact of the school environment on the professional autonomy of teachers, with a particular emphasis on French language teachers at the secondary level. We also conducted semi-structured interviews with around twenty participants (20 teachers) to deepen our understanding of the inevitable impact of the school environment.

3.3. Data Analysis Process

In the analysis and interpretation phase of the results, we used SPSS software (version 25) to process the collected data. This software allowed us to calculate the percentages of participants' responses, thereby facilitating the comparison of these responses within specific groups. Appropriate statistical tests, such as the t-test, were employed to assess the significance of the observed differences between groups, particularly between teachers in public and private schools. Additionally, we used Pearson correlation coefficients to explore the relationship between the studied factors and their effects on teachers' professional autonomy. This enabled us to identify significant correlations, enhancing the interpretation of our results.

4. RESULTS

At this stage, we propose to present the results of the study through two main and complementary areas, which are as follows:

- Area 1: The Work Environment in Educational Institutions.

The results of the questionnaire, related to the work environment in educational institutions, show a variation in participants' responses but generally reveal the influence of this environment on teachers' performance and professional satisfaction. Specifically, 9.6% of teachers rated the school environment as excellent and very favorable, 59.6% found it to be good, and 30.8% considered the working conditions to be average. To verify the statistical significance of these differences, we used t-tests to compare teachers from public and private schools.

The results show a statistically significant difference ($p < 0.05$) between the two groups regarding their evaluation of the school environment, as shown Figure 2.

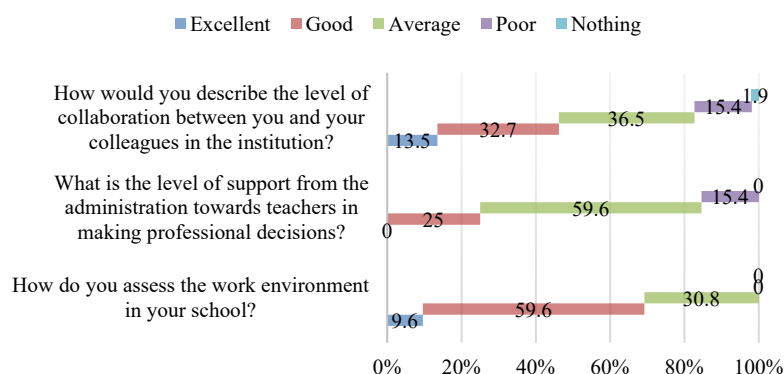


Figure 1. Assessment of the work environment in educational institutions

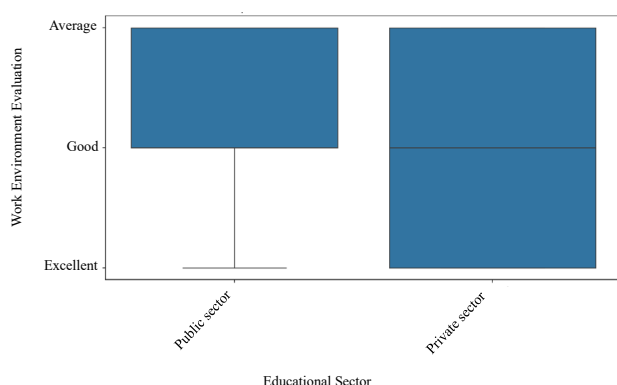


Figure 2. Comparison of work environment evaluation between public and private sector teachers

The results in the above figure compare the evaluation of the work environment between teachers in the public sector and those in the private sector. It is observed that the average evaluation of the work environment is deemed favorable in both sectors, although the private sector appears to have a slightly better overall evaluation. In the public sector, evaluations range from "Average" to "Good," whereas in the private sector, they seem to be more concentrated in the "Good" category, with low variability. This difference may indicate that private school teachers perceive their work environment more positively than their counterparts in the public sector, which could be attributed to differences in working conditions, available resources, or the organizational culture of each type of institution.

In terms of administration, 75% of the teachers surveyed expressed dissatisfaction with the support they receive from their institutions' administration. Among them, 59.6% felt that the support was average, and 15.4% rated it as weak, while only 25% of teachers reported receiving good support from their administration.

The study sample also showed a clear divergence regarding the level of cooperation with colleagues in the school environment. Indeed, 46.2% believed that this cooperation strongly influenced their professional autonomy, with 13.5% describing this relationship as very influential and 32.7% finding it influential. The remaining 53.8% reported that the influence was either relative or nonexistent.

To verify the impact of the school environment on their professional autonomy, we asked the sample about their freedom to choose teaching methods and improve lesson planning based on student needs, without external intervention. Their responses tended to be predominantly positive, as shown in Figure3.

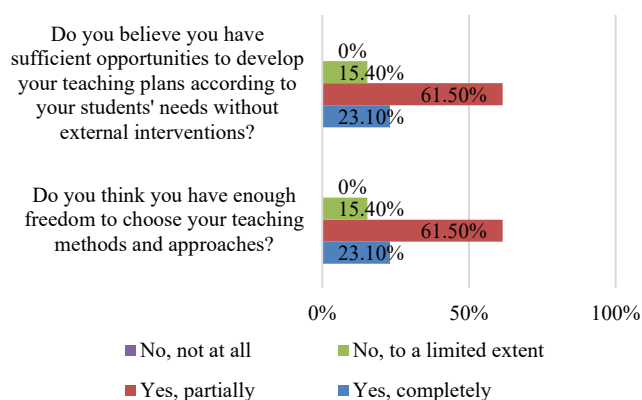


Figure 3. The School Environment and Teachers' Freedom in Choosing Teaching Methods and Responding to Student Needs

The graph indicates that French teachers enjoy a certain degree of freedom in choosing their teaching methods according to student needs. Specifically, 61.5% feel that they have relative freedom, 23.1% believe they have sufficient freedom and space for their professional autonomy, and 15.4% consider this freedom to be very limited. To deepen our understanding of the impact of the school environment on this autonomy, we conducted semi-structured interviews with a subsample of teachers. The qualitative data collected reveal that the perception of this freedom varies depending on the teachers' experience. Indeed, those with more years of experience generally feel more capable of innovating, despite administrative constraints, while less experienced teachers express a more pronounced sense of limitation in their pedagogical choices.

• Area 2: Professional Autonomy

The results from Figure 4 show that the school environment has a varying impact on the professional autonomy of French teachers at the secondary level.

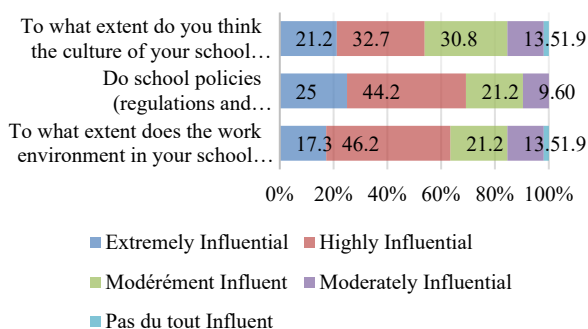


Figure 4. The Impact of the school environment and its factors (work environment, school policies, and school culture) on professional autonomy

Specifically, 17.3% of teachers believe that the work environment in their institution has an exceptional effect on their professional autonomy, while 46.2% consider this impact to be significant. In contrast, 21.2% rated its effect as moderate, and 13.5% indicated that its impact was weak. Finally, 1.9% of teachers judged that the work environment does not affect their professional autonomy.

Regarding school policies, including laws and administrative procedures, 25% of teachers stated that these policies have an exceptional influence on their professional autonomy, and 44.2% view them as very influential. However, 21.2% estimated that the impact is moderate, and 9.6% indicated that the effect is weak, with no opinions asserting an absence of influence. Concerning school culture, 21.2% of teachers reported that it exceptionally influences their ability to make pedagogical decisions, 32.7% believe it has a strong impact, 30.8% rated this effect as moderate, while 13.5% indicated that its influence is weak, and 1.9% believe it has no effect.

These results demonstrate that the impact of the school environment on the professional autonomy of teachers varies based on several factors, such as school policies, work environment, and school culture, with clear variation between perceptions of strong, moderate, or weak influence.

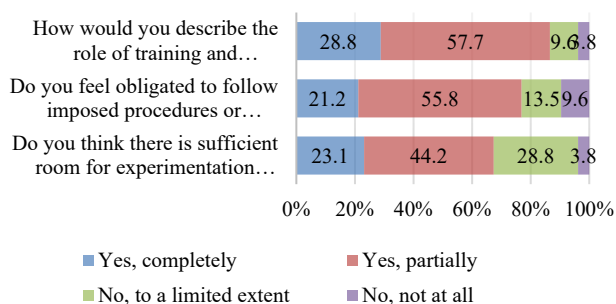


Figure 5. Teachers' opinions on the influence of imposed procedures and the possibility of innovating in teaching methods within the school

To better understand the influence of these factors on the decisions of French teachers at the secondary level, we also surveyed the sample regarding their opinions on

administrative laws and procedures, and their ability to move beyond conventional teaching methods to adopt innovation and experimentation, as shown in Figure 5. The results from Figure 5 show a divergence in teachers' opinions regarding the space available for innovation in teaching methods and the obligation to adhere to imposed procedures that limit their professional autonomy. Regarding whether teachers have sufficient space for experimentation and innovation, 23.1% of teachers believe that this space is "completely" available, while 44.2% consider it to be "partially" available. In contrast, 28.8% of teachers feel that this space is "limited," and 3.8% think that it does not exist at all.

However, the majority of teachers, if not all, recognize the role and importance of integrating information and communication technologies (ICT), which they believe play a crucial role in modern education by transforming teaching practices and facilitating access to a multitude of educational resources. Additionally, the integration of AI-driven platforms and IoT devices, such as interactive whiteboards and presence sensors, allows teachers to analyze data in real-time, enabling them to personalize learning activities for each student according to their learning pace. These technologies enhance teaching quality by optimizing pedagogical decision-making, which fully supports and improves the professional autonomy of French language teachers.

To enrich our analysis, qualitative data from interviews with teachers were included. These interviews provided deeper insight into the daily challenges faced by teachers, who highlighted institutional obstacles and material limitations that restrict their autonomy, while also acknowledging the opportunities for innovation brought by the integration of ICT and various AI-driven pedagogical tools. Regarding the obligation to follow imposed procedures that might limit their professional autonomy, 21.2% of teachers indicated that they must follow them "completely," while 55.8% stated that they follow them "partially." Additionally, 13.5% estimated that this obligation is "limited," and 9.6% affirmed that there is no obligation to follow these procedures.

Concerning the impact of training and orientation programs on their professional autonomy, 28.8% of teachers consider that these programs "completely" influence their autonomy, while 57.7% believe they influence it "partially." By contrast, 9.6% of teachers feel that the influence is "limited," while 3.8% judge that these programs have no impact.

Regarding the influence of school evaluations (by administration or pedagogical trainers) on the freedom to make pedagogical decisions, the results indicate that most teachers feel a significant impact, this was confirmed by 15.4% of teachers who estimated this impact to be very strong, and 50% who also judged it to be very significant. Furthermore, 26.9% indicated that the influence was moderate, while only 7.7% felt that the influence of evaluation was weak. Striking fact, no teacher stated that evaluation had no effect, clearly highlighting the influence of school evaluation on pedagogical decision-making.

To what extent does school evaluation (by the administration or the educational advisor) influence your freedom to make pedagogical decisions?

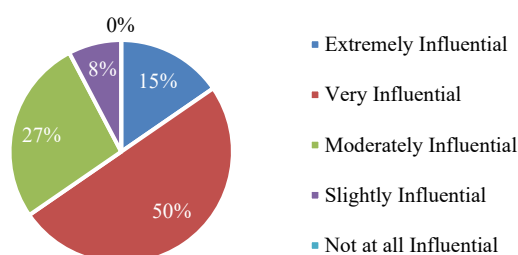


Figure 6. Degree of influence of school evaluation on teachers' freedom of pedagogical decision-making

These results indicate a clear variation in teachers' opinions regarding the factors influencing their professional autonomy. This autonomy is variably affected by imposed procedures, training and orientation programs, and school evaluations. This underscores a limited space for innovation, as expressed by a significant portion of sample through their responses to questionnaire.

It is worth noting that the majority of teachers explicitly or sometimes implicitly express their approval of integrating ICT into their teaching practices. They believe that in the context of secondary education in Morocco, these tools not only diversify teaching methods but also encourage the professional autonomy of French language teachers. By integrating ICT, teachers can personalize their pedagogical approach, promote interactivity in the classroom, and develop essential digital skills among learners. Moreover, these technologies provide opportunities for collaboration and sharing best practices among teachers, thereby enhancing their professionalism and their ability to adapt to the demands of an ever-evolving educational environment. This dynamic influences not only the quality of teaching but also the motivation and engagement of teachers, which are fundamental elements for their professional autonomy.

In conclusion, the addition of these statistical analyses and qualitative data allows for a more nuanced understanding of the factors influencing teachers' professional autonomy, particularly regarding administrative constraints and opportunities for innovation in their pedagogical practices. The adoption of a mixed methodological approach, combining quantitative and qualitative data, offers a richer perspective and helps to better identify the elements that impact teachers' ability to adapt to students' needs. In addition to the previous descriptive results in the two areas, we analyzed the correlation between the various factors influencing teachers' professional autonomy, and the results are in Table 1.

Table 1 illustrates the correlation relationships among four factors influencing teachers' professional autonomy: the work environment, school policies, school culture, and school evaluation. It highlights how each factor interacts with others, thereby allowing for a better understanding of elements that may foster or restrict teachers' professional autonomy.

Table 1. Pearson correlation coefficients between the studied factors and their effects on professional autonomy

Factors	Work Environment	School Policies	School Culture	School Evaluation
Work Environment	1	+0.78**	+0.71**	+0.34*
School Policies		1	+0.67**	+0.36**
School Culture			1	+0.30*
School Evaluation				1

*Correlation is significant at the 0.05 level (two-tailed)

**Correlation is significant at the 0.01 level (two-tailed)

The strong positive and significant correlation between the work environment and school policies ($r = +0.78^{**}$) suggests that a favorable work environment is generally associated with school policies that encourage teacher autonomy. This can be explained by the fact that institutions creating a conducive environment tend to adopt policies that value teachers' pedagogical freedom, thus enhancing their sense of autonomy. The significant correlation between school policies and school culture ($r = +0.67^{**}$) also indicates that policies promoting autonomy tend to support a positive school culture. Such a culture can encourage innovation and pedagogical creativity, creating an inspiring framework that motivates teachers to explore adaptive and innovative teaching methods.

Regarding the relationship between school culture and school evaluation, the moderate correlation ($r = +0.30^{*}$) suggests a partial but not definitive influence. This implies that while school culture may influence evaluation practices, it does not play a central role, and this relationship could be moderated by other contextual variables. The weak correlations between school evaluation and other factors, such as the work environment ($r = +0.34^{*}$) and school policies ($r = +0.36^{**}$), indicate a limited relationship. This could mean that school evaluation is influenced by factors other than the work environment or school policies, or that it depends on specific contexts.

In summary, these results highlight the importance of the work environment and school policies for the development of a positive school culture, which can, in turn, play a role in supporting teachers' professional autonomy. The limited impact of school evaluation on other factors suggests that it may be an independent area requiring particular attention to align its practices with those that foster pedagogical autonomy.

5. DISCUSSION

The results of this study indicate that the school environment has a significant impact on teachers' ability to exercise professional autonomy, particularly regarding the choice of pedagogical methods and the development of their practices. The data reveal that the majority of teachers feel the influence of their school environment on their autonomy, with 46.2% considering this impact as important, while a smaller proportion rates this impact as weak or nonexistent. These findings align with the study by Wu (1998), That highlighted that a lack of support from supervisors and high work pressure diminish the capacity of teachers to make independent decisions [12].

Moreover, it appears that school policies, including regulations and administrative procedures, strongly influence the professional autonomy of teachers. Approximately 44.2% of participants believe these policies have a considerable impact, although 21.2% perceive this impact as moderate. This reflects the challenges teachers face in balancing the demands of educational institutions with their desire for professional freedom. These results corroborate those of the study by Pearson (1998), which showed that teachers often feel limited authority over their work environment, affecting their professional autonomy [13].

School culture also plays a crucial role in the level of autonomy. About one-third of teachers believe that this culture significantly affects their ability to make pedagogical decisions. However, there is a disparity in perceptions regarding the extent of this impact, which may indicate differences between institutions in supporting innovation and critical thinking. This observation aligns with the study by Osse Bustingorry (2008), which emphasized the importance of school culture in fostering teacher autonomy and improving their practices [8].

Regarding the capacity for innovation in teaching methods, approximately 28.8% of teachers feel limited, while 44.2% believe they have some freedom to innovate. However, procedures imposed by the administration still constitute an obstacle to full autonomy, with 55.8% of teachers stating they must follow these guidelines. These results are supported by the study by Guangwei (2016), which demonstrated that national policies and internal management of educational institutions influence teachers' freedom to make decisions [3].

Finally, it is clear that Training and orientation programs play a crucial role in influencing teachers' autonomy. Approximately 60% of participants indicate that these programs partially affect their ability to make independent pedagogical decisions, highlighting the need to enhance these initiatives to strengthen teachers' autonomy in their daily practices. This is confirmed by Demir (2023), who stressed the importance of professional development in supporting teachers' autonomy and innovation [14]. Additionally, integrating AI-driven platforms and IoT devices is essential for enabling teachers to analyze and optimize data in real time [15]. Such technologies provide language teachers with interactive tools that deliver insights on student engagement and performance, allowing for dynamic content adjustment and greater freedom to utilize pedagogical strategies that meet students' needs.

By reducing the burden of administrative tasks like attendance management and assignment tracking, these technologies free up more time for creativity and student-centered approaches. They also facilitate immersive learning experiences, such as virtual environments for language practice, fostering both innovation and student engagement. By providing resources that support adaptability and personalized learning paths, these technologies enhance professional autonomy, creating an environment where teachers can better align pedagogical strategies with student needs, thereby improving teaching effectiveness and innovation [16].

It is also important to mention that the use of IoT-enabled collaboration tools (such as interactive whiteboards and digital platforms) can facilitate teamwork among teachers. For example, sharing lesson plans and resources through a cloud-based system allows educators to co-create and innovate, thereby strengthening their professional autonomy.

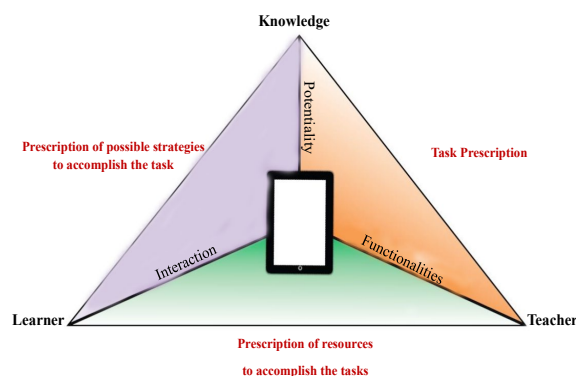


Figure 7. The didactic environment of an instrumented learning situation [17]

This model illustrates the didactic environment in an instrumented learning situation, where various elements such as the teacher, student, and knowledge interact within a technology-supported educational space. The diagram shows how potentiality, functionality, and interaction intertwine to shape a dynamic learning environment that can enhance teacher autonomy. The presence of digital tools allows for a flexible structure in which teachers can better prescribe tasks, resources, and strategies tailored to their students' needs. This reflects how technology can support both pedagogical innovation and personalized learning, fostering a more autonomous and adaptable teaching practice. It is with this perspective that the term "professional autonomy" is used to refer to the conditions and possibilities offered to the teacher to guide their professional actions in their own way, in such a way that it is self-regulated through metacognitive processes, thus highlighting the importance of autonomy in managing teaching and learning [18].

Based on these results, it is clear that the school environment, with its various elements, directly influences the professional autonomy of teachers. Although there have been some improvements in this regard, it is still necessary to increase the flexibility of procedures and promote pedagogical innovation. These results are particularly significant for French language teachers in Moroccan secondary education, as they urgently need a school environment that supports their professional autonomy and allows them to make pedagogical decisions tailored to needs of their students.

Moreover, improving school conditions, including adequate administrative support and strengthening a positive school culture, can contribute to enhancing the quality of education and increasing teachers' motivation, which will positively affect student performance. "Research shows that learning environment parameters play a crucial role in students' academic performance. A

properly controlled learning environment provides optimal conditions for enhancing their learning capabilities" [19]. To strengthen the autonomy of French language teachers, it is crucial that educational administrations provide increased support to teachers by reducing bureaucratic constraints and enabling them to make more independent pedagogical decisions.

Furthermore, it is necessary to support innovation in education by offering resources and equipment that facilitate teaching and learning experiences. Similarly, classroom engineering, which refers to the design and organization of learning environments, plays a crucial role in the professional autonomy of French language teachers at the qualifying secondary level in Morocco. Indeed, a proper arrangement of educational spaces, combined with suitable resources, allows teachers to better meet the diverse needs of their students. This, in turn, enhances their ability to tailor their teaching to the specific needs of students [20]. It would also be beneficial to reevaluate existing educational policies to ensure their alignment with the needs of teachers and students, thus enabling teachers to practice their autonomy more effectively. When teachers are free to design innovative activities and pedagogical strategies, they are more likely to experiment with new teaching approaches that enhance student engagement.

By taking these measures, we can improve teachers' working environment, enhance their autonomy, and, consequently, achieve better educational outcomes. This would surpass the constraints associated with school infrastructures, limited resources, and rigid standards imposed by institutions that may hinder creativity. A well-thought-out classroom engineering that encourages collaboration, interaction, and student autonomy could thus enhance teachers' capacity to exercise their profession with greater freedom and effectiveness. By creating an environment conducive to experimentation and innovation, schools contribute not only to teachers' autonomy but also to improving students' academic outcomes.

6. CONCLUSIONS AND SUGGESTIONS

This study represents an important step towards understanding the complex relationship between the school environment and the professional autonomy of French language teachers in the Moroccan secondary education system. Through the analysis of various influences exerted by the school environment, such as educational policies, administrative support, and institutional culture, we have provided clear insights into the factors affecting teachers' ability to make independent educational decisions.

The results indicate that improving the school environment can significantly enhance teachers' autonomy, which, in turn, leads to improved quality of teaching and learning. This requires a concerted effort from all stakeholders, including educational administrations, teachers, and policymakers, to ensure sufficient support that fosters teachers' freedom to innovate and adapt pedagogical engineering to their teaching methods based on students' needs.

Therefore, it is crucial to reevaluate current educational policies and propose effective training programs aimed at strengthening the autonomy of teachers within their school environments. These programs should focus on developing critical thinking skills and encouraging collaboration among teachers. Additionally, it is necessary to invest in classroom engineering and establish institutional support structures that contribute to creating a positive and motivating school environment.

In conclusion, this study highlights the importance of teachers' professional autonomy in improving their pedagogical practices and enhancing teaching and learning outcomes, particularly through appropriate pedagogical engineering that addresses students' needs. Furthermore, the integration of educational technologies, such as digital platforms and the Internet of Things (IoT), provides crucial support for teachers, enabling them to optimize their methods and resources. We hope that the findings of this research will stimulate discussions on how to reinforce this autonomy within the Moroccan educational system, ultimately leading to better academic outcomes for both teachers and their students.

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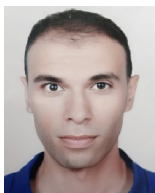
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