

RAISING COLLEGE STANDARDS: CONTINUING EDUCATION

M. El Mourabit¹ A. Lougman² A. El Kasri² H. Darif³ F. Bouizzal³ Y. El Merabet¹
Y. El Madhi⁴

1. SETIME Laboratory, Faculty of Science, Ibn Tofail University, Kenitra, Morocco
marouanelmourabit@gmail.com, youssef.elmerabet@uit.ac.ma

2. Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, labderrahim80@gmail.com, amina.elkasri@gmail.com

3. Biology and Health Laboratory, Ibn Tofail University, Kenitra, Morocco
darif.hajar@gmail.com, fatima.bouizzal@gmail.com

4. EES Laboratory, CRMEF, Rabat, Morocco, youssmad@yahoo.fr

Abstract- In Morocco, numerous efforts have been made to improve the quality and the effectiveness of teacher qualification programs through in-service training due to the problems of high drop-out rates in secondary schools. Our main aim is to develop the participation of teachers in the rabat sale kenitra region in induction and qualification programs. To achieve this, data are collected through a comprehensive questionnaire covering these two factors (initiation and qualification). This questionnaire shows high reliability (Cronbach's $\alpha=0.777$). Our sample is comprised of 105 teachers (balanced sex ratio) with an average age of 35.83 ± 1.08 years. The results show that 78.1% of teachers confirmed their active participation in an introductory continuing education program, and 18.1% of participants indicated that they were currently taking part in a qualification program. There is a strong correlation between these two programs. However, 72.4% have never attended a conference or seminar. This situation calls on those in charge to amplify their efforts, while facilitating access to participation in order to improve the quality of both trainer and student.

Keywords: Continuing Education, Introduction, Qualification-Teaching, Teaching Professions, Questionnaire.

1. INTRODUCTION

In-service training for teachers contributes to their pedagogical practice while guaranteeing the quality of education. It highlights the need for teachers to update their knowledge, new teaching methods and skills throughout their careers in order to improve their teaching and students' learning strategies. Ongoing teacher training brings benefits to their practice and makes a positive contribution to education and It also enables teachers to build new teaching models to improve their work [1, 2] and enhance student learning [3, 4]. In general, in-service training for teachers is beneficial to their personal development and their adaptation to changes in teaching and the improvement of teaching practices and student

learning outcomes [5]. In contrast to urban teachers, in-service teacher training in rural areas presents challenges due to limited opportunities and the remoteness of training sources [1]. However, whatever the circumstances, teacher satisfaction with in-service training varies, with some being both satisfied and dissatisfied [2]. In the USA, officials are calling for reform of teacher training, stressing the need to improve professional development [3].

In Morocco, the Moroccan authorities in the field of education for sustainable development place great importance on upgrading human resources throughout the education sector. The main objective is to enhance the effectiveness of their continuing education and to promote their interest and capacity for reflective practice, which is one of the most important components and drivers of their personal development. Despite the efforts made by those in charge of the education sector in Morocco, many problems and obstacles persist such as the availability, involvement, and teacher's motivation, the choice of quality and adaptability of training courses to the levels of the trainers, the follow-up of periodic training courses and, above all, the lack of time to travel to attend these ongoing training courses in person. MOOCs such as Coursera, EdX, Udacity and FUN offer teachers a suitable alternative to solve this problem. Reliable teacher training initiatives are essential to innovation in the education system, but teachers need to change their attitude towards teaching [6]. The aim of our study is to contribute to a better understanding of the current state of teachers' continuing education [7].

2. MATERIALS AND METHODS

2.1. Population and Study Area

The study is prospective qualitative in nature and involves epistemological deductive reasoning in the form of an interpretation conducted in the kenitra region between 2021-2022. It is aimed at secondary school teachers in the Rabat- Sale- Kenitra region.

2.2. Collecting Data

Data collected, based on a two-part questionnaire (Table 1):

- Personal socio-demographic factors: sex, age, marital status, and personal professional factors:
- Professional category, type of service (full-time, part-time), length of service in the job, etc.

- The second part deals with the in-service training received by the teachers surveyed. The test includes the following items while answering the question "Over the last 12 months, have you taken part in in-service training activities? If so, please indicate their duration in days".

Table 1. Items for continuing education

	Item	Question	Modality
DI	Item1	Do you have a degree in [Specialty]?	Teaching professions Educational Sciences No
	Item2	Did the training you received from your company include the following elements?	Content of material(s) Teaching practice
	Item3	How many hours did you spend teaching during your last week? in minutes	
DII	Item4	Have you followed an initiation program: [I have followed/am following an initiation program]	Oui Non
	Item5	I took part in formal initiation.	Oui Non
	Item6	I attended a general administrative presentation.	Oui Non
DIII	Item7	Did you participate in any continuing education activities? Courses/workshops	Oui Non
	Item8	Duration in days "Courses/workshops"	<3days >3days 0 days
	Item9	Did you take part in continuing education activities?	<3days >3days 0 days
	Item10	Did you participate in continuing education activities? Study visits to other establishments duration.	<3days >3days 0 days
	Item11	Did you participate in continuing education activities Study visits to companies, public services or non-governmental? Organizations	<3days >3days 0 days
	Item12	Have you participated in any of the following continuing education activities? [Continuing education activities in companies, public services or non-governmental organizations]	<3days >3days 0 days
	Item13	Have you completed a qualification program or participated in a professional network, research or mentoring? [I have followed a qualification program (leading to a diploma)]	Yes No
DIV	Item14	Have you followed a qualification program or participated in the activities of a professional network, research or tutoring? [I have participated in the activities of a teachers' network focused on in-service teacher training]	Yes No
	Item15	Have you followed a qualification program or participated in the activities of a professional network, research or tutoring? [I have done individual or group research on a subject related to my profession]	Yes No
	Item16	Have you taken part in a qualification program, professional network, research or tutoring? [I have taken part in tutoring, peer observation or coaching activities officially organized at my school]	Yes No

2.2. Statistical Tool

The data collected were entered into Excel and, after filtration, transferred to an SPSS software medium (trial version). Results are expressed as percentage frequencies for qualitative traits and as mean ± standard deviation for quantitative traits. Chi-square and correlation tests were performed with errors of 5%.

3. RESULTS

3.1. Socio-Demographic and Professional Characteristics of Respondents

Table (2) presents the results of the comprehensive analysis of participants' demographic and professional characteristics. The data reveal that there is a fair gender

distribution among the teachers, with 52.4% (n = 55) being female and 47.6% (n = 50) being male, indicating a balanced male-female ratio. As far as marital status was concerned, the majority of respondents, in particular 53.3% (n = 56), said they were married. Conversely, when examining the average age of the sample, it was observed.

That the mean age was 35.83 ± 1.08 years, with the youngest participant being 21 and the oldest 60. This age distribution showed a Gaussian pattern, as indicated by a skewness coefficient of 0.66 and a Kurtosis value of 0.65. Furthermore, when examining the age range, it was found that 59.1% (n = 61) of participants were aged between 25 and 45. A further 21.9% (n = 23) were under the age of 25, while a small fraction of teachers, in particular 8 people, were over 55. In addition, a large majority of those

surveyed, over 57%, confirmed that they were in full-time employment, devoting over 90% of their working hours to their professional commitments. On the other hand, a minority, representing less than 10%, declared that they worked part-time, devoting less than 50% of their working hours to their profession.

In terms of length of service, it was found that 53.3% of participants had worked for a period of between 1 and 5 years, while 11.4% had worked for over 20 years. This information highlights the different levels of experience within the teaching profession among those surveyed. In conclusion, analysis of the data provided in Table 2 provides valuable information on the demographic and professional characteristics of the respondents, contributing to an overall understanding of the sample population.

Table 2. Description of demographic and professional characteristics

Variable	modality	or	%
Gender	Men	50	47.6
	Woman	55	52.4
	Total	105	100.0
Marital status	Single	49	46.7
	Marie	56	53.3
	Total	105	100.0
Type of teaching (full or part-time)	Between 50% and 70%.	14	13.3
	Between 70% and 90%.	20	19.0
	Less than 50% of sales	11	10.5
	More than 90% of	60	57.1
	Total	105	100.0
Length of service	1 to 5 years	56	53.3
	6 to 10 years	26	24.8
	11 to 20 years	11	10.5
	20 years to go	12	11.4
	Total	105	100
Age	<25 years	23	21.9
	25 > 35 years	38	36.2
	35 > 45 years	24	22.9
	45 > 55 years	12	11.4
	>55	8	7.6
	Total	105	100.0

3.2. Continuing Education Test Study

In order to guarantee the credibility and reliability of the questionnaire used in this in-depth study, a meticulous and thorough evaluation was carried out with regard to the internal consistency of the dimension mentioned above. This evaluation is carried out with the utmost care and precision, and it aimed to measure the degree of interdependence between items on the same scale through the use of the highly valued Cronbach's alpha coefficient, which serves as a statistical measure. It's worth mentioning that this particular index posted an extraordinarily high value, reaching the impressive figure of 0.777, far exceeding the established norm. Further analysis reveals that Dimension I achieved an exceptional internal consistency value of 0.820, reinforcing its validity and reliability. Similarly, Dimension II, although slightly lower in comparison, still retained a commendable value of 0.718, confirming its credibility and robustness.

3.2.3. Dimension I: Identification of Surveyed Teachers

This dimension includes the elements clearly defined in Table 3. It should be noted that a significant proportion

of the educators who took part in the survey, precisely 33.3%, had a degree in the teaching professions, while 12.4% held a degree in education sciences and 54.3% had no specialized degree. As for the training, most of these teachers had undergone within the institutional framework, a large majority (63.8%) answered in the affirmative indicating that it encompassed subject content as well as pedagogical practices applied to the subjects taught. Conversely, the remaining 36.2% confirmed that this training focused solely on pedagogical practices.

It should be noted, however, that a significant proportion of teachers, 56.2%, reported spending more than 20 hours on teaching during the last full working week. In addition, 25.7% of educators spent between 15 and 20 hours teaching, while 18.1% spent less than 15 hours in the past week. The chi2 test, a statistical measure used to assess association between variables, revealed a robust correlation between item 1 and item 2 ($\phi_2 = 10.16$; $p < 0.006$), as well as a link between item 2 and item 3 ($\phi_2 = 18.51$; $p < 0.000$). Notably, among the cohort of teachers who indicated that they had taught for less than 15 hours, an overwhelming 78.95% said that their training integrated subject content as well as pedagogical practices applied to the aforementioned subjects. This compares favorably with the 74.58% reported by those who said they had taught for more than 20 hours.

In contrast, among teachers with a diploma in the teaching professions, 57.14% received training specifically focused on pedagogical practice, while 42.86% received training in both subject content and pedagogical practices. Conversely, among the cohort of educators without specialized degrees, an overwhelming 75.44% received training that focused primarily on subject content in addition to pedagogical practices. Clearly, then, the training received varies from teacher to teacher, depending on their respective qualifications and the number of hours they devote to teaching.

Table 3. Description of Dimension I

Item	Modality	Or	%
Item1	Teaching professions	35	33.3
	Educational Sciences	13	12.4
Item2	No	57	54.3
	Content of material(s)	63	63.8
Item3	Teaching practice	38	36.2
	< 15 hours	19	18.1
	Between 15 and 20 hours	27	25.7
	>20 hours	59	56.2

3.2.2. Dimension II: Introduction to Continuing Education

Dimension II is concerned with the introductory phase of a continuing education program when a person begins his or her initial teaching position. It's worth noting that the overwhelming majority of teachers, 78.1% in particular, answered in the affirmative when asked if they were following an induction program. Conversely, just 26.7% admitted to having taken part in informal introductory activities, while 74.3% had attended a full administrative presentation conducted by the institution. However, it is important to note that the average score for this dimension, when the various items are added up, with an average of

4.79 points (minimum score of 3 and maximum score of 6). To better assess and categorize the scores, they were transformed into Z scores, which enabled them to be classified into three distinct categories: low initiation for scores below -1, moderate initiation for scores between -1 and 1, and best initiation for scores above 1. Interestingly, 24.8% of teachers indicated that they had not participated in informal initiation activities or attended a general administrative presentation of the school. In contrast, only 12.4% of teachers reported that they had had a good introduction to their teaching position by actively participating in such activities (Table 4).

Table 4. Description of Dimension II

Item	Modality	Or	%
Item4	Yes	82	78.1
	No	23	21.9
Item5	Yes	28	26.7
	No	77	73.3
Item6	Yes	78	74.3
	No	27	25.2

3.2.3. Dimension III: Participation in Continuing Education Activities

Dimension III in question demonstrates an impressive level of reliability, as evidenced by the Cronbach's alpha test result of 0.89. It's worth noting that a significant proportion of teachers, specifically 78.1%, demonstrated their active involvement in continuing education activities by participating in courses, workshops or other educational programs. These activities are specifically designed to improve their knowledge and skills in the subjects they teach, as well as in teaching methodologies and other related aspects of education. Furthermore, it is interesting to note that in this group, 34.14% of teachers devoted less than 3 days to such activities, while a large majority of 65.96% committed to longer periods exceeding 3 days.

Interestingly, when we look at teachers' participation in continuing education activities of a different nature, such as conferences or seminars, the figures differ. Only a small percentage (7.6%) attended conferences or seminars for less than three days, while a larger percentage (20%) devoted more than three days to these events. Surprisingly, however, the vast majority (72.4%) have never attended a conference or seminar at all. Clearly, improvements can be made to encourage more teachers to participate in such knowledge-sharing events (Table 5).

In addition, it's worth mentioning that a minority of teachers, specifically 5.7% and 15.2%, said they had taken part in study visits to other institutions for durations of less than 3 days and more than 3 days, respectively. These visits provide teachers with valuable information and experience from different educational contexts, enabling the exchange of ideas and practices. It should be noted, however, that the vast majority of teachers - over 85% - have never organized study visits to companies, public services or non-governmental organizations, nor participated in any activities within these establishments. This suggests a potential opportunity for educators to explore and integrate external experiences into their teaching practices for the benefit of their students' education.

Table 5. Description of Dimension III

Items	Modality	n_i	%
Item7	Yes	82	78.1
	No	23	21.9
Item8	<3days	28	34.14
	>3days	54	65.96
Item9	<3days	8	7.6
	>3days	21	20
	No	76	72.4%
Item10	<3days	6	5.7
	>3days	16	15.2
	No	83	79
Item11	<3days	3	2.9
	>3days	10	9.5
	No	92	87.6
Item12	<3days	5	4.8
	>3days	10	9.5
	No	90	85.7

3.2.4. Dimension IV: Qualification

The results of the description of dimension IV characterizing qualification programs are presented in the table below. It should be noted that only 18.1% of participants indicated that they were currently involved in a qualification program or actively participating in professional networks, research activities or mentoring initiatives. In addition, 21.9% of respondents indicated that they were involved in a teacher network that focuses specifically on the advancement of continuing teacher education. Interestingly, a significant 32.4% of respondents indicated that they had participated in independent or group research concerning their respective professions. In addition, 59% of respondents revealed that they had participated in formal tutoring, academic observation or coaching activities organized by their educational institutions (Table 6).

The average score for this dimension is obtained by summing the scores corresponding to each item. To better evaluate and categorize the scores, they were transformed into Z scores, which enabled them to be classified into three distinct categories: low qualification for scores below - 1, moderate qualification for scores between -1 and 1, and best qualification for scores above 1. The breakdown shows that 16.2% had a low qualification and 13.3% had a better qualification, while 70.5% showed an average qualification.

Table 6. Description of Dimension IV

Item	Modality	Or	%
Item13	Yes	19	18.1
	No	86	81.9
Item14	Yes	23	21.9
	No	82	78.1
Item15	Yes	34	32.4
	No	71	67.6
Item16	Yes	62	59
	No	43	41

3.3. Global Analysis

The results of the principal component analysis are shown in the figure below (Figure 1). It is worth mentioning that the two components alone have the capacity to absorb 44.64% of the overall data. In addition,

the selection process applied to the data revealed the existence of two distinct and independent groups. The first group, Group 1, is located on the positive side of Axis 1. This particular group comprises a collection of articles, in particular articles 5, 9-15. It is important to note that Group 1 is mainly made up of teachers who have actively participated in various formal activities, conferences or seminars. In addition, these teachers are actively involved in organizing visits to numerous establishments, and in carrying out study visits to companies, public services or non-governmental organizations. It's also worth mentioning that the teachers in this group have successfully completed a comprehensive qualification program. In addition, they have carried out independent research, either individually or in collaboration with other individuals or groups, focusing on subjects directly related to their respective professions.

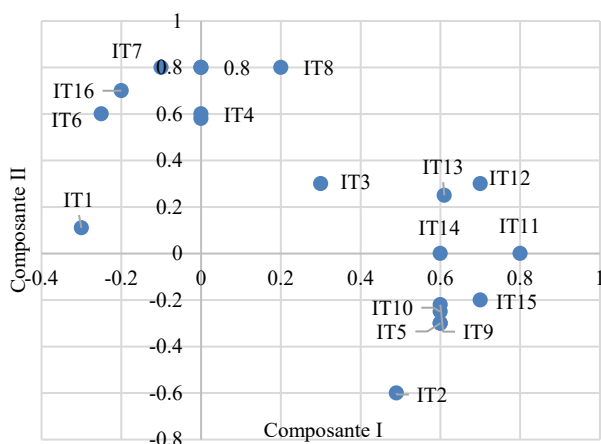


Figure 1. ACM presentation

By contrast, the second group, known as Group 2, is located on the positive side of axis 2. This particular group comprises a set of elements, namely 4, 6, 7, 8 and 16. It's important to note that Group 2 is made up of teachers who have successfully completed an induction program. In addition, these teachers have actively participated in a general administrative presentation and have undergone further training through various courses and workshops. It's also worth mentioning that teachers in this group have completed a qualification program, or have been actively involved in professional networking, research or mentoring. In addition, they have also taken part in tutoring, academic observation or coaching activities have been officially organized at their respective institutions.

In summary, the principal components analysis, as illustrated in the above figure, highlighted the nature of the data and facilitated the identification of two distinct groups. Group 1, located on the positive side of axis 1, comprises teachers who have made a significant contribution to their professional development through various formal activities and independent research.

On the other hand, Group 2, located on the positive side of Axis 2, is made up of teachers who have actively participated in induction programs, continuing education and various activities related to professional networks and mentoring. These results provide valuable information on

teachers' characteristics and preferences, contributing to a better understanding of the teaching profession as a whole.

The positive correlation between the score on the initial dimension and the qualification level of continuing education is supported by a correlation coefficient of 0.324, as indicated by the statistical analysis. This result, significant at the $p < 0.001$ level, highlights the link between these two dimensions. More specifically, it suggests that a higher score on the initiation dimension, which indicates a good introduction to continuing education, is associated with better qualification results. This suggests that a well-established foundation in the early stages of continuing education is likely to help improve qualification levels.

4. DISCUSSION

The subject we have begun to explore in greater depth concerns the levels of introduction and qualification of teachers in the field of continuing education. Continuing education, as a multi-faceted concept, encompasses a wide range of aspects such as the advancement of science and technology, the mastery of knowledge and the development of personal qualities expected to be of extreme use to individuals throughout their lives. 78.1% of teachers answered in the affirmative, indicating their active participation in an introductory program to continuing education. As described by [8, 9], teachers from various countries have expressed their desire to participate in continuous professional development (CPD) activities and programs, demonstrating their active participation in these initiatives. In addition, a study conducted among teachers in Pennsylvania found that nearly all of the teachers surveyed reported participating in discretionary continuing education activities, demonstrating their active engagement in these programs [10].

According to [11], in Europe, continuing education is considered as an unequivocal cornerstone of the education system. In the Moroccan context, continuing education is an issue of great concern. Since 2000, the competency-based approach has been adopted, with particular emphasis on the integration of information and communication technologies (ICT), an essential aspect that requires the provision of adequate training for teachers [12]. However, a review of our research study reveals a rather discouraging statistic, as only 18.1% of participants indicated that they were currently involved in a qualification program or actively participating in professional networks. However, the implementation of these qualification programs presents challenges, such as the quality of educational institutions, the qualifications of future students, and the distribution of graduates [13]. The United States, as a country with a growing number of immigrants, has a high demand for well-trained English as a second language teachers, emphasizing the importance of qualified teacher training programs [14].

This regrettable situation is indicative of the obstacles to development and stagnation that have accompanied the reforms implemented in teacher training institutions [15]. This predominant problem requires the preparation of competent practitioners with a thorough understanding of

intercultural issues, enabling them to subsequently provide high-quality teaching as educators [16, 17]. Our study found a strong correlation between induction and qualification ($r=0.324, p<0.001$), suggesting that induction can provide a solid foundation for qualification. Thanks to the various educational initiatives undertaken by Morocco, baccalaureate results have improved significantly in recent years. However, the problem of high school dropout rates persists [18]. The language of instruction in the Moroccan education system has been a controversial topic, with calls for the inclusion of English as a parallel language to French [7]. In essence, the Moroccan education system faces a myriad of challenges, which include not only structural weaknesses, but also the pressing need to improve policies and support scientific research efforts [20-22]. These developments reflect efforts to improve the quality and effectiveness of teacher qualification programs in Morocco [23, 24].

5. CONCLUSION

Decision-makers in Morocco are increasingly focusing on investing in quality education to develop human capital. It is essential to identify and overcome the main barriers that are impeding progress in this respect. In-service training is identified as an extremely effective approach for the ongoing professional growth of high school teachers in the nation. Our study involved thorough research that not only addressed many unanswered questions but also shed light on different aspects of this crucial issue. The results confirmed that teachers were actively participating in induction programs, in-service training, and other professional development activities, including engaging in networks and mentoring.

Even though authorities have worked hard, these initiatives are still not fully implemented among the majority of teachers. It is crucial to continue improving the skills and impact of educators by making in-service training more accessible and promoting a culture of ongoing learning and growth in Morocco's education sector. By tackling the current obstacles and increasing opportunities for participation in these programs, the nation can effectively prepare its educators to guide a highly educated and proficient next generation.

REFERENCE

- [1] A. Rabelo, "The Continuing Education of Early Childhood Education Teachers in a City in the Interior of Rio de Janeiro, Brazil", *Arts and Humanities Open Access Journal*, Vol. 5, Issue 2, pp. 113-114, Rio de Janeiro, Brazil, June 2023.
- [2] D. Sabirova, "Continuous Teacher Education: Quality Assurance", *Procedia - Social and Behavioral Sciences*, p. 244, Kazan, Russia, 2014.
- [3] P. Nivedita, "In-service Teacher Education Programmes - An Overview", *Scholarly Research Journal for Humanity Science and English Language*, Vol. 10, Issue 53, Sirsa, Haryana, India, p. 13370, 1 October 2022
- [4] A. Castaman, "Continuing Teacher Training of Professional Education", *Regae: Rev. Gest. Aval. Educ.*, Vol. 2, No. 3, p. 8, Rio Grande do Sul - Campus Sertao, Brasil, June 2013.
- [5] M. Moreira, "Peer Instruction: Continuing Teacher Education in Higher Education", *Procedia - Social and Behavioral Sciences*, Mackenzie Presbyterian University, p. 38, Brazil, January 2016.
- [6] D. Knapczyk, "Continuing Teacher Education through Distance Learning and Audio Graphics", *T.H.E. Journal Technological Horizons in Education*, Vol. 10, p. 34, No. 4, 1993.
- [7] M. El Mourabit, F. Bouizal, Y. El Madhi, Y. El Merabet, "Well-Being and Job Satisfaction of Secondary School Teachers and Associated Factors: Case Study", *International Journal on Technical and Physical Problems of Engineering (IJTPE)*, Issue 58, Vol. 16, No. 1, pp. 227-232, March 2012.
- [8] S. Bilac, "Teachers' (dis) Satisfaction with Continuing Education", *Metodicki Obzori* 11, Vol. 6, p. 24, Brazil, 2011.
- [9] A. Tokuyama, "The Role of the University in Service Education of Teacher", *Peabody Journal of Education*, The Hyogo university Ldrary, Vol. 60, No. 4, p. 82, Hyogo, Japan, 1993.
- [10] A. El Karfa, "Teacher Education for Sustainable Development: Principles and Implications", *European Journal of Educational Studies*, Vol. 30, No. 3, p. 30, 2020.
- [11] H. Mondal, "Changing Role and Services in 21st Century's Information Societies", *Assistant Librarian (Elite Institute of Engineering and Management)*, Vol. 60, No. 9, p. 34, 2022.
- [12] S. Sysoeva, "Continuing Professional Education: Foreign Experience", *Implementation of the Continuing Education Concept in the European Educational Area: Regulatory Provision*, No. 2, Vol. 63, p. 79, Ukraine, 2020.
- [13] J. Khouna, "Introducing Educational Games in the Teaching of Physics in Moroccan Secondary Schools", *IOSR Journal of Research and Method in Education*, Faculty of Sciences DharMehraz, Sidi Mohammed Ben Abdellah University, Vol. 3, p. 20, Morocco, July 2017.
- [14] M. Imouri, "Multicultural Education Integration in Teacher Training Programs: Towards Affirming Diversity in Morocco", *American Journal of Qualitative Research*, Vol. 5, p. 28, 2021.
- [15] M. Echcharfy, "Exploring Intercultural Awareness among Moroccan EFL Pre-service Teachers", *Journal of English Language Teaching and Linguistics (JELTL)*, Vol. 7, p. 106, El Jadida, Morocco, April 2022.
- [16] M. Ouardani, "Issues in Teachers' Professional Development (TPD) for EFL Teachers in Morocco", *Moroccan Scientific Journal*, Vol. 3, p. 20, Lycee Hassan 2, Morocco, 2020.
- [17] A. Essayad, "Predicting the Baccalaureate Student's Admission: The Influence of Teacher and Administration", *ITM Web of Conferences*, ENSA Agadir, No. 40, Morocco, 2022.
- [18] O. Haman, "The Moroccan Education System, Dilemma of Language and Think-Tanks: The Challenges of Social Development for the North African Country", *The Journal of North African Studies*, Vol. 5, No. 10, p. 19, January 2021.

BIOGRAPHIES



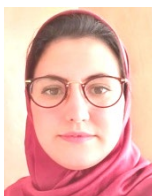
Name: Merouane
Surname: El Mourabit
Birthdate: 12.02.1989
Birthplace: Sidi Kacem, Morocco
Bachelor: Teaching Professional of Physical and Chemistry, Department of Physics, Ibn Tofail University, Kenitra, Morocco, 2014

Master: Teaching and Chemistry, Department of Physics, Ibn Tofail University, Kenitra, Morocco, 2016
Doctorate: Student, Physics, Obstacles to Professional Training of Teachers in Relation to their Ideas about Science, Teaching and Learning, SETIME Laboratory, Ibn Tofail University, Faculty of Sciences, Kenitra, Morocco, Since 2020
Research Interests: Didactics of Physics, Sport



Name: Abderrahim
Surname: Lougman
Birthdate: 14.08.1980
Birthplace: Sidi Kacem, Morocco
Bachelor: Experimental Science, Ouhoud High School, Sidi Kacem, Morocco, 1999

Master: Teaching and Didactics, Charles de Gaulle University, Lille III, France, 2017
Doctorate: Student, Didactics, Educational Sciences and Professions of Teaching and Training in Mathematics and in Experimental Sciences, Ibn Tofail University, Kenitra, Morocco, Since 2019
Research Interests: Didactics of Physics and Life, Earth Sciences



Name: Amina
Surname: El Kasri
Birthdate: 05.02.1990
Birthplace: Beni-Mellal, Morocco
Bachelor: Industrial Electronics and Computing, Department of Physics, Polydisciplinary Faculty, Sultan Moulay Slimane University, Beni-Mellal, Morocco, 2013

Master: Teaching and Training Professions in Physics and Chemistry, Department of Physics, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2017
Doctorate: Didactics of Sciences and Education Sciences, Department of Chemistry, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2023
Research Interests: Teaching-Learning, ICT, Chemistry, Physics, Simulation
Scientific Publications: 4 Papers



Name: Hajar
Surname: Darif
Birthdate: 20.12.1985
Birthplace: Khemisset, Morocco
Bachelor: Animal Biology, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2006

Master: Degree in Wastewater and Health, Department of Biology, Ibn Tofail University, Kenitra, Morocco, 2008
Doctorate: Biology and Health, Ibn Tofail University, Kenitra, Morocco, 2017
Research Interests: Biology
Scientific Publications: 15 Papers



Name: Fatima
Surname: Bouizzal
Birthdate: 11.09.1993
Birthplace: Tifelet, Morocco
Bachelor: Animal Biology, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2014

Master: Human Biology and Health, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2018
Doctorate: Student, Professional Health, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, Since 2020
Research Interests: Didactics of Sciences, Health



Name: Youssef
Surname: El Merabet
Birthdate: 01.01.1982
Birthplace: Sidi Kacem, Morocco
Bachelor: Physics, Electronics and Industrial Systems, Faculty of Sciences, Ibn Tofail University, Kenitra Morocco, 2005

Master: Computer Science and Telecommunications, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2008
Doctorate: Science, UTBM of Belfort, France and AMP, UIT of Kenitra, Morocco, 2009
The Last Scientific Position: Assoc. Prof., Department of Physics, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, Since 2013
Research Interests: Didactics of Physics, Sport
Scientific Publications: 50 Papers, 1 Book, 6 Theses



Name: Youssef
Surname: El Madhi
Birthdate: 12.02.1978
Birthplace: Kenitra, Morocco
Bachelor: Animal Biology, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 1993

Master: Engineering Environment, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2000
Doctorate: Environment and Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco, 2006
The Last Scientific Position: Teacher-Researcher, Ministry of Higher Education, Scientific Research and Innovation, Regional Center for Education and Training Professions, Rabat Sale Kenitra, Morocco, Since 2011
Research Interests: Didactics of Physics, Sport
Scientific Publications: 73 Papers, 2 Books, 13 Theses