

WELL-BEING AND JOB SATISFACTION OF TEACHERS AND ASSOCIATED FACTORS: CASE STUDY

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Abstract- In the world of work, professional well-being refers specifically to personal feelings linked to the exercise of one's profession. The degree of professional well-being can be measured by means of general satisfaction questions. The profession of teacher represents a challenge for an entire generation insofar as it contributes to the development of society. However, it also has its advantages and disadvantages. Our aim is to focus on the professional well-being of this profession and the factors associated with it. A survey of teachers in the Rabat-Sale-Kenitra region was carried out using a questionnaire (*cronbach index*=0.907). The results show that the average age is 35.83±1.08 years; 52.4% (*n*=55) are female and 53.3% (*n*=56) are married. In addition, the teachers showed satisfaction with themselves and their school (satisfaction rate is 73%). They believe in their profession and have the impression that it is valued in society, because if they had to do it over again, they would choose it again. Despite the efforts made by those in charge of education, the professional feelings of secondary school teachers suggest very general avenues for promoting well-being at work in their place of work

Keywords: Satisfaction, Determining, Factor, Well-Being, Teacher, Rabat Sale Kenitra.

1. INTRODUCTION

Joining the work force is an important step in a person's life. However, teaching is an exciting and demanding profession, with both advantages and disadvantages [1, 2]. To train a teacher is to train a professional in a complex social function [3]. To be a teacher is to transmit knowledge, to give a taste for it, to share a passion for a subject and to consider the needs and possibilities of each pupil in order to increase their chances and arouse their interest [4]. In Morocco, middle and high school teachers work in the classroom, according to the school calendar, which varies from 20 to 24 hours a week, depending on the subject taught. The creation of the CEMETs in 2012, was a necessity for the abrupt changes in teacher recruitment and training policies: creation of the CRMEFs in 2012,

however, from 2018 a new restructuring of training (bachelor's degree in education + 2 years' training at the CRMEF) has been introduced.

As a result, a great deal of patience and physical and psychological strength are required to work in this field profession [5]. In 2015, the Moroccan parliament adopted a framework law on the education, training system and scientific research, inspired mainly by a strategic vision for 2015-2030 [6, 7]. Therefore, to succeed in this strategy, professional knowledge is mandatory, including academic knowledge, experience-based knowledge, routines and action scenarios, and implicit theories. To enter into the activity of the teaching profession, to access the reality of practice, we need to start with what's going wrong, the problems, the difficulties, the conflicts, the suffering... without forgetting that when nothing happened, it actually went well. The teaching profession can be faced with a number of obstacles, such as lack of hierarchical support; child-king and parent-sovereignty; salary, lack of student motivation and stress, malaise [8].

Moreover, despite the teacher's efforts to integrate new didactic learning devices, students encounter obstacles in acquiring concepts [9]. In Morocco, according to the national survey on households and education [10], which attempts to answer the question of the attractiveness of the teaching profession. Moreover, only 8.8% of parents would like their children to opt for this profession, in contrast to China, where over 50% of parents encourage their children to become teachers [11]. The aim of our study is to find out how satisfied high school teachers are with their choice of teaching profession,

2. METHODOLOGY

2.1. Study Population

The study is qualitative in nature and involves deductive and epistemological reasoning in the form of an interpretation conducted in the Kenitra region between 2021/2022. It is directed at teachers of secondary at region Rabat-sale-Kenitra.

2.2. Data Collection

Data collected based on a two-part questionnaire:

- The first covers personal socio-demographic factors: gender, age, marital status, and personal professional factors: professional category, type of service (full-time, part-time), seniority in position
 - The second part deals with professional well-being, which refers specifically to personal feelings about working in the profession. The degree of professional well-being can be assessed by means of general satisfaction questions. The test includes the following items while answering the question "To what extent do you agree or disagree with the following statements?" Using the following Likert scale: strongly agree: 1; agree: 2; somewhat agree: 3; disagree: 4 strongly disagree: 5.
 - The advantages of being a teacher far outweigh the disadvantages.
 - If I had to do it all over again, I would choose teaching again.
 - If possible, I would like to move to another establishment.
 - I regret my decision to become a teacher.
 - I wonder if I would not have been better off in another profession.
 - My school is a great place to work and I would recommend it to other teachers.
 - I have the impression that the teaching profession is valued in society.
 - I am satisfied with my work in this establishment.
 - Overall, I am satisfied with my work.
- Data collected under absolute anonymity and following verbal authorization from the respondents.

2.3. Statistical Tool

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

3. RESULTS

3.1. Demographic and Professional Characteristics of Respondents

Table 1 shows the results of the descriptive analysis of respondents by demographic and professional characteristics. It shows that 52.4 % (n=55) were female teachers, against 47.6% (n=50) male teachers (sex ratio is balanced). On the other hand, 53.3% (n=56) of respondents are married. However, the average age of respondent was 35.83±1.08 years, with a minimum of 21 and a maximum of 60. The age distribution was Gaussian (skewness coefficient = 0.66 and kurtosis = 0.65). Furthermore, 59.1% (n=61) were aged between 25 and 45, while 21.9% (n=23) were under 25 and 8 teachers were over 55. In addition, over 57% of stated that they work full-time (over 90% of full-time working time) and less than 10% work part-time (less than 50% of full-time working time). While 53.3% have been with the company between 1 and 5 years, 11.4% have been with the company for over 20 years.

Table 1. Description of demographic and professional characteristics

Variable	modality	n _i	%
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)	Less than 50% of sales	11	10.5
	Between 50% and 70%	14	13.3
	Between 70% and 90%	20	19
	More than 90%	60	57.1
	Total	105	100
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. Study of the Satisfaction Test

Responses to the questions asked were organized according to a liker scale. The reliability of the questionnaire was assessed by measuring the internal consistency of this dimension. Internal consistency, which reflects the way in which items on the same scale are interrelated, was assessed using Cronbach's alpha coefficient. This index is very high, at 0.907 (above the norm) (dimension 1 = 0.928 and dimension 2 = 0.882). The two dimensions absorb on average 51.92% of the total variation, with an eigenvalue of 6.38 for dimension 1 and 5.04 for dimension 2 (Table 2).

Table 2. Total variation, with an eigenvalue

Dimension		Variance represented		
		Inertia	% of variance	
1	0.928	6.380	0.580	57.997
2	0.882	5.043	0.458	45.845
Total		11.423	1.038	
Average	0.907a	5.711	0.519	51.921

a. Cronbach's mean alpha is based on the mean eigenvalue., KMO+0.685, P<0,000

3.3. Exploratory Factor Analysis

Table 3 shows the results of the distribution of respondents according to their response to the items in this test. On the question "The advantages of the teaching profession more than compensate for its disadvantages", 66.7% confirmed that they disagreed or strongly disagreed, compared to 33.4% of teachers who saw themselves as agreeing.

As for the question "If I had it to do over again, I would choose the teaching profession again", 68.8% agree or strongly agree with this, against 31.4% who do not, 69% of teachers confirmed that if they had the chance, they would change schools. Over 90% agreed or strongly agreed that they regretted becoming a teacher, and over 64% of teachers asked whether they would not have done better to choose another profession. 73.4% of teachers expressed satisfaction with their workplace.

Table 3. Frequency of respondents' choices

Items	Strongly agree	Agree	Not agree	Disagree at all
Item1	1	34	34	36
%	1	32.4	32.4	34.3
Item2	4	68	19	14
%	3.8	64.8	18.1	13.3
Item3	5	17	67	16
%	4.8	16.2	63.8	15.2
Item4	3	12	57	33
%	2.9	11.4	54.3	31.4
Item5	5	25	61	14
%	4.8	16.2	63.8	15.2
Item6	2	66	24	13
%	1.9	62.9	22.9	12.4
Item7	4	49	37	15
%	3.8	46.7	35.2	14.3
Item8	7	70	18	10
%	6.7	66.7	17.1	9.5
Item9	9	76	11	9
%	8.6	72.4	10.5	8.6

3.4. Principal Component Analysis

For a joint analysis of all the items in this test, we used principal component analysis (PCA). The two components alone absorb 53.17% of the total variation. In addition, two distinct groups were reformulated (Figure 1):

- Group 1 is on the positive side of axis 1, defined by items 1, 2, 7, 8 and 9. The teachers in this group expressed satisfaction with themselves and their school. They believe in their profession and feel that it is valued in society, because if they had to do it over, they would choose it again.
- Group 2 is on the positive side of Component 2, which is defined by items 3, 4 and the teachers in this group expressed regret at their decision to become teachers and were in favor of changing the school. These two groups are independent.

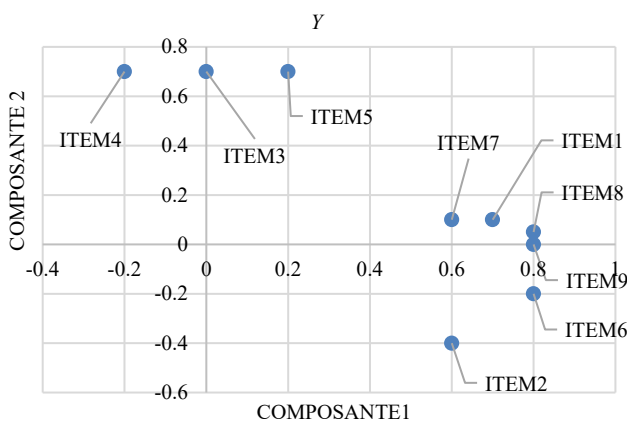


Figure 1. Projection of items according to the two components

3.5. Breakdown by Category

To better distinguish the groups with an attitude of regretting the choice of the teaching profession, we add up the scores corresponding to the different scales chosen. The mean score was 28.43±0.51, with a minimum score of 17, a maximum score of 44 and a median of 28. However, the distribution of scores was normal (asymmetry coefficient = 0.815 and kurtosis = 1.204). On the other

hand, we transformed the data into centered reduced values (Z score) = $(X_i - \text{mean}) / \text{standard deviation}$.

* $Z < -1$: proud of her job as a teacher

* $-1 < Z < 1$: to watch

* $Z > 1$: is not proud of her job as a teacher

Figure 2 shows the distribution of respondents by degree of satisfaction with their choice of teaching profession. In fact, 8.6% (n=9) were proud to have chosen this profession, compared with 12.4% (n=13) who were not, while 79% were in a doubt zone, as they may change their mind over time.

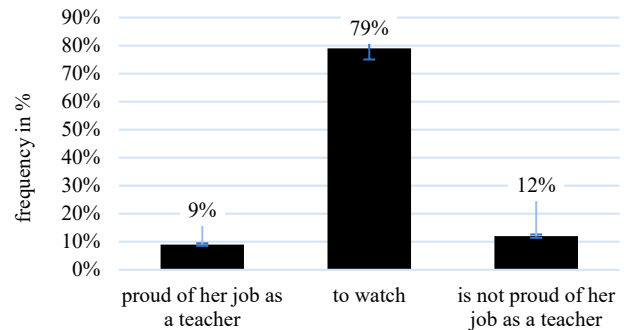


Figure 2. Distribution of respondents by degree of pride in choosing the teaching profession

3.6. Search for Determining Factors

Table 4 shows the results of the chi2 test of independence between the test categories and certain demographic and occupational factors. There is a significant relationship between marital status, type of teaching (full or part-time), age and job tenure and job satisfaction ($p < 0.05$).

Table 4. Search for determining factors

var	moy	PWB			TO	Khoi2
		<-1	-1<>1	>1		
SM	Single	6	33	10	49	7.82* ($p < 0,018$)
	Marie	3	50	3	56	
	Total	9	83	13	105	
TS	50% and 70%	2	10	2	14	19.95** ($p < 0,003$)
	70% and 90%	1	14	5	20	
	Less 50%	4	5	2	11	
	More 90%	2	54	4	60	
	Total	9	83	13	105	
Age in years	<25	3	16	4	23	14.13* ($p < 0,05$)
	25<>35	5	26	7	38	
	35<>45	1	21	2	24	
	45<>55	0	12	0	12	
	>55	0	8	0	8	
Total	9	83	13	105		
LS	1 to 5	6	41	9	56	9.20* ($p < 0,05$)
	6 to 10	3	22	1	26	
	11 to 20	0	8	3	11	
	>y 20	0	12	0	12	
	Total	9	83	13	105	

where,

PWB: Professional well-being

*: significant difference

** : highly significant difference

SM: Status matrimonial

TS: Type of service (full- time or part- time

LS: Length of service

Furthermore, among the teachers who showed satisfaction with their job, 6 were single, compared with 3 who were married. As for seniority, 9 out of 9 satisfied teachers have been in the job for less than 10 years, and are less than 45 years.

4. DISCUSSION

Concerns about the recurring problem of recruiting secondary school teachers raise, at a deeper level, questions about accessing to the job and the feeling of commitment to teaching [12, 13]. Being a teacher is a more complex, intense and risky profession, but one that brings pride and a sense of psychosocial well-being [14]. Teaching in a vocational high school means working in a context that is more than academic, since it involves qualifying students while preparing them for one or more professions [15, 16]. However, there is a wide range of modes and motivations for taking up this position, and on the other hand, the effects of professional socialization, which leads teachers to face up to the realities they discover at different stages of their career. In our sample, 68.8% of teachers were highly satisfied with their choice of profession. This result is comparable to that reported in a survey conducted in France by [17], where more than half of the students surveyed said they had decided on the teaching profession before the Bachelor's degree. On the other hand, in our study the professional satisfaction rate of the teachers surveyed reached 73.4%, a result comparable to that found by [18], following his survey of teachers, about their professional assessment (satisfaction rate is 80%).

Contrary to what was described in his synthesis article [19] where the profession of professor became more complex, a complexity arising from both the diversification of audiences and that of missions. The study conducted by [20] in the provincial direction of the Ministry of Education D'ELKELAA of SRAGHNAS showed that the low degree of satisfaction and involvement of teachers is significantly related to a negative perception of the workplace. Depending on the work of having, [21] «a class that rolls» can be seen as an ideal of the trade. The work carried out by [22, 23] in Belgium revealed a professional dissatisfaction generally explained by a loss of attractiveness of the teaching profession, which is not only related to the salary conditions or the external prestige of the profession but also linked to the heart of their profession.

The majority of teachers surveyed work full-time (over 90%) compared with only 10% who work part-time a little more often. According to the full-time work [24] ensures a strong professional stability that repercuss on the conditions of family life. Professional satisfaction appears significantly associated with marital status, age, service arrangements and seniority [25, 26]. In terms of motivations for becoming a teacher, 50.5% opted for the question "I feel that the teaching profession is valued in society". According to [27], the data collected from his respondent on the motivations to which FW-B teachers attached the most importance when choosing this profession were their contribution to society (80%). On the

question "If I had it to do over again, I would choose teaching again", 72% of teachers agreed. This figure is comparable to that reported by [27].

Overall, teachers with more than 20 years' seniority say they are less satisfied with their job than novice teachers, confirming the positive mindset that this satisfaction should help retain teachers in the profession. According to [28] the work of in France and according to the statements of the staff interviewed, rural establishments are smaller and are characterized by a more peaceful school climate. Contrary to what was described by [29]. On the other hand, to overcome the obstacles, it is necessary to integrate new motivational learning tools such as ICT and engage learners in active learning [30]. Indeed, in Morocco, the evolution of the school public, the multiplication of expectations vis-a-vis the school and the teachers makes the work more complex and difficult in many school contexts.

5. CONCLUSIONS

The teaching profession is one of the most difficult professions that requires a multiplier effort and a high level of precision. Our study showed that most interrogators are satisfied with their choice of profession. Indeed, the evolution of the school public, the multiplication of expectations vis-a-vis the school and the teachers make the work more complex and difficult in many school contexts. The work on teacher satisfaction shows that high satisfaction generally has favorable effects on teacher performance, which affects student performance. With training spreading the idea that the teaching profession has become more complex, this can create additional concerns and expectations. Faced with the constraints experienced by the secondary education sector in Morocco, officials should set up effective initiatives such as in-service teacher training and the granting of internships. Similarly, a factor called social must be well studied and that in each institution concerns the relations between colleagues. This has a strong influence on satisfaction with the establishment, leading to more individualism, mistrust, and hypocrisy. This leads to certain dissatisfaction. Thus, mobilize interest, motivation, positive affect and natural communication to make the teacher a full-fledged moderator and not just a consumer of imposed ideas.

ACKNOWLEDGEMENTS

The authors sincerely thank Provincial Directorate of National Education Raba, Sale and Kenitra.

REFERENCES

- [1] P. Rayou, L. Ria, "Training New Teachers. Around Statutes, Organization and Professional Knowledge", Education and Societies, No. 1, pp. 79-90, 2009.
- [2] C. Lapointe, P. Sirois, "Critical Perspectives on Political and Scientific Discourses on Academic Achievement", Education and the Francophonie, Vol. 39, No. 1, pp. 1-6, 2011.
- [3] A. Le Bas, "Vocational Education and Teacher Training", Research and Training, Vol. 48, No. 1, pp. 47-60, 2005.

- [4] L. Druelle, "Be a Teacher Today", Project, Vol. 282, No. 1, pp. 44-46, 2010.
- [5] J. Artes, F. Pedraja Chaparro, M. del Mar Salinas Jimenez, "Research Performance and Teaching Quality in the Spanish Higher Education System: Evidence from a Medium-Sized University", Research Policy, Elsevier, Vol. 46, No. 1, pp. 19-29, 2017.
- [6] V. Symeonidis, "Teacher Competence Frameworks in Hungary: A Case Study on the Continuum of Teacher LEARNING", European journal of Education, Vol. 54, No. 3, pp. 400-412, 2019.
- [7] R. Porlan Ariza, E. Garcia Garcia, A. Rivero Garcia, R. Martin del Pozo, "Barriers to the Professional Training of Teachers in Relation to Their Ideas on Science, Teaching and Learning", Aster, Vol. 26, pp. 207-235, 1998.
- [8] C. Helou, F. Lantheaume, "Difficulties in the Work of Teachers. Exception or Constituent part of the Profession?", Research and Training, Vol. 57, pp. 65-78, 2008.
- [9] P. Laszlo, M. Oustinoff, "To be a Scientist is to Learn to Translate the Word of Things", Hermes, No. 1, pp. 113-120, 2010.
- [10] Y.E.K. El Allame, A. Kaaouachi, "The Internationalization of Moroccan Higher Education: Achievements, Intended and Unintended Outcomes, and Future Prospects", In Unintended Consequences of Internationalization in Higher Education, pp. 156-173, 2023.
- [11] M. Postic, "Motivations for the Choice of the Teaching Profession", French Journal of Pedagogy, pp. 25-36, 1990.
- [12] P. Perier, "A Vocational Crisis? Access to the Profession and Professional Socialization of Secondary School Teachers", French Journal of Pedagogy, pp. 79-90, 2004.
- [13] M. Comstock, J. Supovitz, M. Kaul, "Exchange Quality in Teacher Leadership Ties: Examining Relational Quality Using Social Network and Leader-Member Exchange Theories", Journal of Professional Capital and Community, Vol. 6, No. 4, pp. 395-409, 2021.
- [14] J. Hunzicker, "Professional Development and Job-Embedded Collaboration: How Teachers Learn to Exercise Leadership", Professional Development in Education, Vol. 38, No. 2, pp. 267-289, 2012.
- [15] A. Jellab, "Vocational High School Teachers and Their Teaching Practices: Between Fighting School Failure and Student Engagement", International Journal of Sociology, Vol. 46, No. 2, pp. 295-323, 2005.
- [16] B.W.L. Packard, M. Leach, Y. Ruiz, C. Nelson, H. DiCocco, "School-to-Work Transition of Career and Technical Education Graduates", The Career Development Quarterly, Vol. 60, No. 2, pp. 134-144, 2012.
- [17] P. Perier, "Becoming a Teacher of the First or Second Degree: Interests and Uncertainties of Students of School Democratization", Research Papers on Education and Knowledge, Vol. 17, pp. 47-7, 2018.
- [18] S. Temam, N. Billaudeau, M.N. Vercambre, "Burnout Symptomatology and Social Support at Work Independent of the Private Sphere: A Population-Based Study of French Teachers", International Archives of Occupational and Environmental Health, Vol. 92, pp. 891-900, 2019.
- [19] A. Jellab, "Teaching in Secondary School in an Age of Uncertainty: Between Institutional Prescriptions and the Invention of one's Profession on a Daily Basis", Administration and Education, Vol. 4, pp. 27-39, 2020.
- [20] T. Mino, P.P.K. Heto, "Educating Humans", Journal of Interdisciplinary Studies in Education, Vol. 9(SI), pp. 33-55, 2020.
- [21] F. Carraud, "The Paradoxes of 'beautiful work' of First and Second-Degree Teachers in France", International Journal of Education of Sevres, Vol. 84, pp. 125-133, 2020.
- [22] C. Maroy, "Loss of Attractiveness of the Profession and Teaching Discomfort - The Case of Belgium", Research and Training, Vol. 57, pp. 23-38, 2008.
- [23] P. Perier, "The Attractiveness of Teaching Professions in France (and Elsewhere) Some Elements of Analysis", Learning and Teaching Today, Vol. 12, No. 2, pp. 37-41, 2023.
- [24] P. Givord, M. Guillerm, O. Monso, F. Murat, "How to Measure Segregation in the Education System", Education and Training, Vol. 91, pp. 21-51, 2016.
- [25] H. Gaziél, M.M. Wasserstein-Warnet, "Factors Influencing Teacher Job Satisfaction in Different Organizational and Socio-Cultural Contexts", Education Sciences-For the New Era, Vol. 38, No. 4, pp. 111-131, 2005.
- [26] C. Lison, J.M. De Ketele, "From Satisfaction to Professional Morale of Teachers: Study of Some Determinants", Journal of Educational Sciences, Vol. 33, No. 1, pp. 179-207, 2007.
- [27] V. Quittre, V. Dupont, D. Lafontaine, "TALIS 2018-Become a Teacher", <https://hdl.handle.net/2268/237943>, 2019.
- [28] L. Bocognano, A. Charpentier, C. Raffaelli, "Which Specificities for the Teaching Profession in Rural Areas?", Education and Training, Vol. 102, pp. 449-481, 2021.
- [29] M.B. Boumediane, F. Benabdelouahab, R.J. Idrissi, "Teaching of Physical Sciences in Moroccan Colleges: The Obstacles and Difficulties Encountered", International Journal on Technical and Physical Problems of Engineering (IJTPE), Issue 50, Vol. 14, No. 1, pp. 116-123, March 2022.
- [30] K.A. Bentaleb, S. Dachraoui, T. Hassouni, E. Al Ibrahim, A. Belboukhari, M. Cherkaoui, "Effectiveness of Integration of New ICTs in Teaching/Learning of Quantum Concepts", International Journal on Technical and Physical Problems of Engineering (IJTPE), Issue 51, Vol. 14, No. 2, pp. 314-321, June 2022.

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