



## Identification Of The Innovation Practices Factors In Pedagogy In High School Education

**Radouane Aboufirass\***

\*Corresponding author, Laboratory of Analytical Chemistry and Physico-Chemistry of Materials, Department of Chemistry, Faculty of sciences Ben M'sik, Hassan II University of Casablanca, BP 50069, Casablanca Morocco.

**Said Lotfi**

Laboratory of Education and Training Sciences, Evaluation of Sport Sciences and Didactic of Physical Activity, Higher Normal School, Hassan II University of Casablanca, BP 50069, Ghandi, Casablanca Morocco.

**Mohammed Talbi**

Laboratory of Analytical Chemistry and Physico-Chemistry of Materials, Department of Chemistry, Faculty of sciences Ben M'sik, Hassan II University of Casablanca, BP 50069, Ghandi, Casablanca Morocco.

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### Abstract

Research in educational innovation has generally focused on teaching practices. Innovation in our society carries many identities. In the collective imagination, it refers to our own representation of what is new. In our research work, we have focused on identifying the factors of innovation in the field of qualifying secondary education. We used a questionnaire of 78 items, structured in 5 areas: the conditions, the moments, the reasons, the domains, and the objects of experimentation of the new actions in teaching-learning. This questionnaire is administered to a sample of 149 teachers. We proceeded by a descriptive and exploratory research of mixed qualitative and quantitative type) The results of which showed the existence of personal factors and those which are in relation to the context and the working conditions in educational establishments, and which are points of reflection on the logic of school innovation. We can deduce that an analysis of the relationships that teachers have with innovation opens heuristic perspectives in terms of research and training in education.

**Keywords:** Educational innovation, teacher, process, innovation factors.

## Introduction

Once seen as dangerous, innovation as a process is now seen as a desired and valued reality in Western societies. The economic and entrepreneurial fields have popularized its use (Bédard et al 2010). Despite the difficulties experienced by the education system in disseminating educational successes and truly stimulating innovation among its stakeholders, many local and isolated initiatives are helping to modify the educational landscape, in particular thanks to the information they gain from discussions between colleagues and reading of textbooks and educational journals. However, for a few years now, the question, even the problematic, of innovation has been present in all sectors, market and non-market, of the so-called pure sciences such as human and social science (Dasgupta, S. 2003).

In a system which generates a lot of innovation, the actors of education must integrate innovation as a necessary component of their evolution, relating to the status and challenges of the teaching function in National Education. In education, since the early 1990s, several studies have focused on pedagogical innovations, but little in the field of secondary education where, however, the movement towards innovation is clearly felt. This begs the following questions: what exactly does innovation mean? And how is it interpreted in secondary education? What are the key issues? the definitions of the term innovation abound; (Slater, M. 1999) even asserts that it is rather the "definition" that which would allow consensus, which is lacking.

Indeed, many interviews that we have conducted with teachers, since 2018, on the way they live their profession and their involvement, it emerges that the statutory comfort specific to any public servant turns out to be a factor overdetermining behaviors in the face of novelty in that it provides comfortable job security.

This article aims to provide answers to these questions by presenting reflections on the innovative dynamic that educational actors in schools have developed from their experiences as practitioners and contributors in educational action. This work illustrates the interrelationships between the variables involved: the factors involved in pedagogical and curricular change, as well as the actors' perception of these factors of change. In this perspective, we propose to consider innovation as a process, characterized by the generation, acceptance, and implementation of innovation - new ideas, processes, products, or services. With regard to innovation in education, this represents a deliberate activity, aiming to introduce novelty in a certain context; it is educational because it aims to significantly improve the preparation of pupils / pupils through interaction and interactivity (Shavinina, L. V. (Ed.). 2003)

## Theoretical Frame

The object of study relating to the field of pedagogical innovation is at the crossroads of several sciences in this case the learning theories which are numerous, let us quote the interactionist theories of reference including research in social psychology of development and acquisitions related to interactive learning. We refer to (Martí, E. 1996), and his socioconstructivist theory on the proximal zone of development in which he explains that in school learning and development are both. (Lourenço, O., & Machado, A. 1996) theory of genetic equilibration, which develops the concepts of assimilation and accommodation, which are the two main functional invariants of evolution. And a third socio-cognitive theory from (Carroll, W. R., & Bandura, A. 1985) who developed the theory of socio-cognitive learning by observation (ASCO). The notion of pedagogical innovation, at the heart of which lies the teaching-learning dynamic, takes on a particular meaning when " it is combined with the program approach and when reflection affects all of the training activities of a course or a significant part of these activities (Bédard et al 2010) op cit.

## Methdology

### Target Population

We questioned 149 teachers of both sexes (98 male and 51 female), whose teaching tenure is on average 15 years, providing 8 subjects taught (math, physics chemistry, history geography, language, accounting, Physical and Sports Education, Belonging to public establishments (middle school, high school) 82.5%, universities 13.42%, and private 04.02%. All subjects have specialized academic and pedagogical training.

### Measuring tool

We used a questionnaire to identify the factors of conducting an innovative practice, containing 75 questions structured in 5 categories: the conditions of innovation (11 questions), the direct factors of innovation (20 questions), the reasons for innovation (10 questions), areas of innovation (13 questions), objects of innovation (21 questions). The procedures for Likert-type questions from 1 to 4. Administration is carried out online during the second semester of the year.

### Data analysis

The data are analyzed by ANOVA II, chi 2 ( $p < .05$ ) by comparing the frequencies of the variables, we examined the relationship of the causes and factors of innovation in the field of teaching learning and the perception of teachers in this area

## Results and Discussion

### Conditions of Experimentation of New Actions in Teaching-learning

The aim is to identify the conditions for testing new actions in teaching-learning, the results of which are presented in Table 1.

Analysis of the data shows three main determinants for experimenting with an innovative practice, the percentage of which is greater than 80%: the teacher's motivation, the theoretical knowledge on the subject to be tested, the availability of equipment and facilities and training. Specific within a project framework.

similarly the comparative analysis of the data (Table 1) shows four parameters that significantly distinguish the statements of innovative teachers compared to other teachers, namely the development of personal projects (chi-square = 3.930, DOF = 1,  $p = 0.47$ ) and team (chi-square = 7.545, dof = 1  $p = .006$ ), availability of equipment and facilities (chi-square = 6.639 dof = 1,  $p = .010$ ) and specific training in a project framework (chi-square = 4.799, dof = 1,  $p = .028$ )

Table 1. Conditions for experimenting with new teaching-learning actions according to teachers

Settings	Innovation vs No Innovation						Test of Khi 2 $p < 0.05$
	<i>no innovation</i>		<i>innovative action</i>		<i>Total</i>		
	n	%	N	%	n	%	
Motivation of the teacher	70	47.9%	741	50.7%	144	98.6%	Ns
Theoretical knowledge on the subject to be tested	70	47.9%	72	49.3%	142	97.3%	Ns
Equipment and facilities	71	48.6%	65	44.5%	136	93.2%	
Specific training within a project framework	57	39.0%	68	46.6%	125	85.6%	.028
Team project development	40	27.4%	57	39.0%	97	66.4%	.006
Innovative project framework (with remuneration)	39	26.7%	50	34.2%	89	61.0%	Ns
Personal project development	35	24.0%	48	32.9%	83	56.8%	.047
An innovative institutional project framework (without remuneration)	37	25.3%	44	30.1%	81	55.5%	Ns
Authorization from the administration	31	21.2%	41	28.1%	72	49.3%	Ns
Authorization from inspector	34	23.3%	31	21.2%	65	44.5%	Ns
Try in action without prior thought	24	16.4%	21	14.4%	45	30.8%	Ns

### Factors Pushing the Experiment of New Actions in Teaching-learning

The aim is to identify the factors pushing the teacher to innovate, the results are presented in table 2.

The analysis of the data shows five factors considered to be very important, the percentage of which is greater than 70%: increasing the performance, or student learning, the appearance of new features in the school curricula and educational guidelines, the intention is to want to break

with routine and make their work easier, to make him comfortable.

Through the comparative analysis of the data, we identified four conditions that significantly push teachers to take innovative actions: the concern to increase either student learning or performance, dissatisfaction with student performance or marks and the concern to break with the pedagogical routine. Teachers do not agree on undertaking innovative activities at the end of their professional career (chi-square = 7.846, dof = 1, p = 0.005)

Table 2. Factors pushing the teacher to experiment with new teaching-learning actions

Settings	Innovation vs No Innovation						<i>Test khi2</i> p<0,05
	<i>No innovation</i>		<i>Inovative action</i>		<i>Total</i>		
	N	%	N	%	N	%	
Increases student achievement or ability	54a	37,20%	66b	45,50%	120	82,80%	14
Increases student learning	49a	33,60%	67b	45,90%	116	79,50%	1
Appearance of new program, textbooks, official texts, Educational guidelines	53a	36,30%	51a	34,90%	104	71,20%	Ns
Make work easier, make it comfortable	47a	32,20%	56a	38,40%	103	70,50%	Ns
Break with routine	43a	29,50%	60b	41,10%	103	70,50%	5
Dissatisfaction with student performance (or grade)	43a	29,50%	56b	38,40%	99	67,80%	39
the teacher pursues diplomat training	47a	32,20%	50a	34,20%	97	66,40%	Ns
At the end of an internship or training	44a	30,10%	53a	36,30%	97	66,40%	Ns
Dissatisfied with student behavior in class	47a	32,20%	46a	31,50%	93	63,70%	Ns
Encountering difficulties (obstacles) in teaching	40a	27,40%	49a	33,60%	89	61,00%	Ns
At the start of a professional career	44a	30,10%	39a	26,70%	83	56,80%	Ns
Teamwork	35a	24,00%	46a	31,50%	81	55,50%	Ns
Inspector or head of establishment gives advices	39a	26,70%	37a	25,30%	76	52,10%	Ns
Department (notes) requests changes	41a	28,10%	33a	22,60%	74	50,70%	Ns
Colleague tells them about his teaching practices	32a	21,90%	39a	26,70%	71	48,60%	Ns
At the end of the school year	25a	17,10%	36a	24,70%	61	41,80%	Ns
At the start of the school year	27a	18,50%	33a	22,60%	60	41,10%	Ns
At the end of professional career	18a	12,30%	35b	24,00%	53	36,30%	5
The teacher is a woman	17a	11,60%	27a	18,50%	44	30,10%	Ns
the teacher is a man	19a	13,00%	21a	14,40%	40	27,40%	Ns

### Reasons to Experiment New Actions in Teaching-learning

Analysis of the data relating to the reasons announced by the teachers (Table 3) shows seven motives of capital importance (> 70%) pushing for innovation including four which relate to

teaching (the improvement of teaching, didactic experimentation, the general level of the pupils and the realization of a new project) and three are psychological (personal curiosity, personal challenge and the need to break from the routine))

The comparative analysis of the data in Table 3 shows that teachers engaged in innovation stand out significantly compared to other teachers, at the level of two reasons: the heterogeneity of the pupils (chi-square = 3,980, ddl = 1, p = 0.046) and personal curiosity (chi-square = 6.676, dof = 1, p = 0.010).

Table 3. Reasons for testing new actions

	Teacher engaged in						<i>Test de khi2</i>
	<i>No innovation</i>		<i>Innovative actions</i>		<i>Total</i>		
	N	%	N	%	N	%	p<0,05
improving teaching	61a	42,10%	68a	46,90%	129	89,00%	Ns
the general level of the pupils	54a	37,20%	60a	41,40%	114	78,60%	Ns
didactic experimentation	55a	37,90%	60a	41,40%	115	79,30%	Ns
the realization of a new project	52a	36,10%	59a	41,00%	111	77,10%	Ns
personal curiosity	43a	29,70%	58b	40,00%	101	69,70%	0,01
the personal challenge	49a	33,80%	56a	38,60%	105	72,40%	Ns
the need of a break from the routine	48a	33,10%	53a	36,60%	101	70,00%	Ns
student heterogeneity	34a	23,60%	47b	32,60%	81	56,00%	0,046
the failure of some students	51a	35,40%	44a	30,60%	95	66,00%	Ns
the institutional obligation	32a	22,20%	32a	22,20%	64	44,40%	Ns

### Experimentation Domains of New Actions in Teaching-learning

The experimentation domains of the new actions favored by the teachers are presented in Table 4.

Analysis of the fifteen data relating to the areas of interest for the experimentation of new actions in education, more than 70%, these are learning methods, teaching methods, didactics (concepts, teaching materials, assessment and grading methods), the college domain and finally the high school domain. The other remaining areas are between 65.8% and 82.9%.

Two areas in the comparative analysis of the data (Table 4) significantly distinguishing the statements of innovative teachers compared to other teachers, namely: forms of student organization (chi-square = 12.363, dof = 1, p = 0.000) and the field of high schools (chi-square = 3.967, dof = 1, p = 0.046).

However, we noted the absence of a statistically significant relationship between the thirteen other areas of possible innovation action and the perception of the two categories of teacher (innovator and non-innovator).

Table 4. Fields of experimentation of new actions by teachers

Settings	Innovation vs No Innovation						Test khi2
	<i>No innovation</i>		<i>Innovative action</i>		<i>Total</i>		p<0,05
	N	%	N	%	N	%	
Teaching methods	70a	47,90%	71a	48,60%	141	96,60%	Ns
Learning methods	69a	47,30%	73a	50,00%	142	97,30%	Ns
Teaching materials	67a	45,90%	64a	43,80%	131	89,70%	Ns
Didactics: concepts, procedure	65a	44,50%	70a	47,90%	135	92,50%	Ns
During the college period	62a	42,50%	66a	45,20%	128	87,70%	Ns
Assessment and grading method	61a	41,80%	67a	45,90%	128	87,70%	Ns
During the high school period	58a	39,70%	68b	46,60%	126	86,30%	0,046
During the primary period	57a	39,00%	64a	43,80%	121	82,90%	Ns
Student and Teacher Documents]	53a	36,30%	60a	41,10%	113	77,40%	Ns
Program and manuals	53a	36,30%	60a	41,10%	113	77,40%	Ns
During the university period	47a	32,20%	59a	40,40%	106	72,60%	Ns
School organizations	45a	30,80%	54a	37,00%	99	67,80%	Ns
Forms of student organization,	40a	27,40%	61b	41,80%	101	69,20%	0

### The Objects of Experimentation of New Actions in Teaching-learning

The aim is to identify the most important objects in which teachers can experiment with new actions and which are presented in Table 5.

The analysis of the 21 data relating to the most interesting axes in which teachers can experiment with new actions (table 5), it emerges from the main objects whose percentage is more than 70%: teaching and learning methods, creation teaching materials and documents (workbooks, daily, others) and students (tasks, behaviors, performance, autonomy)

Comparative analysis of the data (Table 5), shows two areas significantly distinguishing the statements of innovative teachers compared to other teachers: development of teacher documents (workbooks, daily, others), methods to reduce the teacher effort.

Certain objects are below the interests of the teachers by a percentage lower than 30%, but they are statistically significant like: the methods of control of the class group, the performance increase or the marks in the controls and the examinations (competition) and finally the methods of managing student indiscipline

However, we noted the absence of a statistically significant relationship between the other axes of possible innovation actions and the two categories of teacher (innovator and non-innovator) ( $p > 0.05$ ).

Table 5. Objectives for testing new actions

Settings	Innovation vs No Innovation						Test de Khi2 p<,05
	<i>No innovation</i>		<i>Innovative action</i>		<i>Total</i>		
	N	%	N	%	N	%	
Teaching methods	721	49,30%	70a	47,90%	142	97,30%	Ns
Learning methods	70a	47,90%	72a	49,30%	142	97,30%	Ns
Creation of teaching materials	71a	48,60%	68a	46,60%	139	95,20%	Ns
Students (tasks, behaviors, performance, autonomy)	63a	43,20%	70a	47,90%	133	91,10%	Ns
Elaboration of teacher documents: (Workbooks, daily, others)	71a	48,60%	62b	42,50%	133	91,10%	0,02
Method for relieving the teacher of the effort of teaching	68a	46,60%	62b	42,50%	130	89,00%	0,39
Using multimedia tools to teach	61a	41,80%	64a	43,80%	125	85,60%	Ns
Didactic methods: new concepts, Approach	60a	41,10%	63a	43,20%	123	84,20%	Ns
Method of communication and relationship with students	61a	41,80%	60a	41,10%	121	82,90%	Ns
Method for managing class time	58a	39,70%	62a	42,50%	120	82,20%	Ns
Presentation methods for explaining the instruction lesson	57a	39,00%	62a	42,50%	119	81,50%	Ns
Student notebooks,	58a	39,70%	60a	41,10%	118	80,80%	Ns
Teaching team working method	58a	39,70%	60a	41,10%	118	80,80%	Ns
Discipline management	59a	40,40%	58a	39,70%	117	80,10%	Ns
Program and textbooks	51a	34,90%	59a	40,40%	110	75,30%	Ns
Student assessment methods (grid, grading, scale)	53a	36,30%	56a	38,40%	109	74,70%	Ns
Method of organizing groups and teams into classes	54a	37,00%	55a	37,70%	109	74,70%	Ns
Method for controlling student behavior	40a	27,40%	45a	30,80%	85	58,20%	Ns
Class group control method	14a	9,60%	31b	21,20%	45	30,80%	0,03
How to increase performance or marks in checks and exams (competition)	8a	5,50%	30b	20,50%	38	26,00%	0
Method for managing student indiscipline	6a	4,10%	23b	15,80%	29	19,90%	0,01



## Discussions

The aim of this study is to identify the factors and conditions relating to innovative action in the field of teaching-learning. We have analyzed five dimensions: conditions, possible factors, reasons, possible fields and the most important objects for carrying out new actions in teaching-learning according to two categories of teachers: innovative or non-innovative.

Our results in the field of innovation conditions have shown that the parameters controlling the teacher's action relate on the one hand to the motivation of the teacher being the main actor in the process of pedagogical innovation. This psychological factor was the subject of study by which highlights the impact of educational innovation “its figures, its meaning and its challenges” in the development of personal and socio-professional skills. That he maintains with the world and therefore with himself. It is a development of distinct attitudes towards innovation; attitudes, in the sense understood by social psychologists, that is to say a state of mind, a general psychological predisposition.

Our results also showed that theoretical knowledge on the subject to be tested is the logic of didactic knowledge and the skills targeted and its specific training in an innovative project framework. Innovation is steeped in culture and context. These are decisive in its implementation, because the culture of an establishment is built by the actors, most of the time in an unconscious way (Paquay, L. 2007). Indeed, it sometimes happens that the failure of an innovation is mainly due to a lack of consideration of the culture of the school establishment).

The second axis concerning the factors pushing innovation, the teachers confirm the application of institutional innovations whose meaning is to increase the yield, the capacities, the learning of the the student in general, it was also noted that educational innovation is a break with routine. Driving these actors to open up to new ideas, to experiment with practices, it is not the fact of innovating or not, because innovation in itself never constituted a guarantee of efficiency and progress, but this is essentially the dominant logic of his professional implication. It sometimes happens that certain professors perceive innovation proposals as real sacrileges, because we question the practices or structures that they considered as untouchable, which creates in them a real resistance to change. This resistance is for some a maturing phase which it is important to take into consideration .

Our results concern the axis of the reasons for pedagogical innovation, the heterogeneity of the learners, it is a primordial logic in the teaching-learning action. Teaching centered or focused on the learner constitutes the first characteristic of an innovative program since it is situated more in the learning paradigm than in that of teaching Barr, (R. B., & Tagg, J. 1995). From then on, the learner is brought to play an active role since he becomes the main constructor of his knowledge. (Fleurance, P. 1991) the qualification of the aid logic, it consists in taking into account the heterogeneity of the pupils (in terms of acquired knowledge, reference culture,

learning pace and personality) and to seek modalities personal support (individual support, need group, level group, etc.) to respond to their difficulties.

Our results in the field of objects of innovation the teachers have valued the pedagogical and didactic field, while focusing on the form of student organization. We believe that the structure of the class can be a factor of mobilization and interactivity facilitating the learning process among students. Innovation is rooted in a culture and a context. These are decisive in its implementation, because the culture of an establishment is built by the actors, most of the time in an unconscious way (Paquay, L. 2007) *op cit*. Indeed, it sometimes happens that the failure of an innovation is mainly due to a lack of consideration of the culture of the school establishment (Deriaz et al 1998) *op cit*.

We observed in our study that the objects of innovation are divided into two categories: the most interesting are often related to the pedagogical and didactic framework. While the less interesting objects refer us to control and discipline in the classroom, performance enhancement or marks in the controls and exams (competition). Things that therefore generate negative habits such as the lack of freedom of expression, development, and creativity in learners. This new shared vision frees teachers, allows them to focus their creative energies and lightens the burden of a constant demand for performance. So, teachers find a taste for learning rather than being masters, because when you feel you are master in a field, you tend to believe that you no longer need to learn. And when learning stops, people start to want to protect the status quo, engaging in behaviors that are incompatible with positive relationships. When we limit these, the educational environment is affected (Covey, S. R., & Merrill, R. R. 2006). It is in this sense that responsibilities will be shared thus allowing the development of the educational environment based on principles; we move and harmonize energy by focusing it on the educational environment that empowers and trusts students.

## Conclusion

Aware that not all innovations are successful, that the worst can rub shoulders with the best, if only because many practices have meaning and relevance only in the context that gave birth to them and under their direction of those who created them, many teachers are reasonably attached to practices that they believe have proven successful. They are now lucidly suspicious of major reforms as well as innovators, and when in doubt, they often prefer caution or even abstention.

It does not raise the question of the survival of the school system. The proof is that several colleagues have been organized on the theme of educational innovation, but the recommendations are never taken into account in future reforms. It is left to the initiative of its actors and is more readily imposed in the form of adjustments and adaptations of practices to the needs of students.

Following our research, we identified factors likely to be avenues for deepening and developing our education system through innovative actions. We identified factors directly

related to the person. The teacher is the main actor in this process, so his motivation and commitment are crucial in any innovative action. Other factors that emerge from our research are around the most interesting teaching and learning theories that are often related to the pedagogical and didactic framework. While the least interesting objects refer us to control and discipline in the classroom, performance enhancement or marks in the controls and exams.

Additional work is necessary to verify our conclusions, using a larger sample containing the different profiles, by sex, age and specialty, to weight the results. It is also recommended to develop experimental approaches with metrological tools such as direct observation, assessment scales, to assess the valence of openness to the innovation process or its resistance. In this sense, we recommend a psychosocial study of the innovation process in schools. Whatever it is, innovation has a life cycle: it is born, it lives, it dies. At least a minimum time so that there can be an evaluation, even if "all innovation carries in itself its own obsolescence" (Najeh, H., & Zouaoui, M. 2015). There is an interesting line of research to explore here.

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