

Design of A Training Device Based on Integrative Alternation Teachers While Harnessing Artificial Intelligence

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ABSTRACT

The Moroccan education system has embarked on a supposedly innovative reform, it has been decided to renovate the initial training curricula and to diversify the skills of the training actors, based on a new definition of training processes. The Ministry of Education has opted for the establishment of a training system based on integrative training by investing in digital culture and artificial intelligence. For this purpose and through this study, however modest it is, we want to know the results of this experiment, to check the validity of this device and its implementation on a practical level.

What is the prevalence of integrative alternation as an approach to professionalization of training? What is its added value in the initial training curriculum for future secondary school teachers? Have actors assimilated retrospective alternation as a promising concept that encourages change at both the conceptual and practical levels?

Are the conditions for achieving this new form of thinking about training really required? Have they generated new training practices? Have they encouraged trainees to mobilize their resources through processes of reflexivity and conscious metacognition?

Key words : Initial training - Reform - digital culture - Design - artificial intelligence - Professionalization - Integrative alternation - iteration – reflexivity

1. INTRODUCTION

Since October 1999, the Moroccan education system has been engaged in a vast program of reforms whose foundations and

orientations are defined in the "National Charter for Education and Training" (CNEF), which has underlined the improvement of the quality of education and training. To achieve this, it has been decided to renovate the initial training curricula, in order to strengthen and diversify the skills of the training actors.

The strategic vision of Moroccan leaders can be summarised in the following areas: the modernization of curricula, the adoption of the skills-based approach, the introduction of a modular training system based on work-study programs.

The major concern of the promoters of educational policy in Morocco and its implementation was to train a sufficient number of teachers to cope with the growing number of children reaching school age. This situation has led to a focus on quantity over quality. After the Moroccanization of the staff and the training of the teachers in sufficient numbers, it became necessary to take care of the effectiveness of the teaching by insisting on the qualitative aspect. To achieve this goal, the (DFC) has opted for a radical reform of the training system by introducing a strategy aimed at the professionalisation of teachers [1].

This professionalisation is based on the following principles:

- Teacher training is a professional training.
- Professional training starts from the analysis of the real activities of the teacher, based on an evolutionary perspective.
- Vocational training involves learning in real-life work situations. Initial and in-service training of teachers is a strategic parameter for the development of education systems and the improvement of their performance [2].

The (CNEF) pays special attention to the teachers as the main actors of the education system and the process of their training: "The commitment and quality of teachers depends on

the renewal of the school. Quality means good initial training, effective continuing education, appropriate teaching methods and an adequate assessment of educational performance [3].”

The (DFC) undertook a review of initial teacher training schemes at both primary and secondary school level. This review is part of a global process which, in the long term, should lead to the review of all the curricula of initial training.

1.1 The Big Challenge

Increasing the efficiency of the education system, meeting the quality challenge by modifying teaching content have become, today, the imperatives guiding education policy in terms of training. For many years, we have been talking about improving the quality of education and looking at ways to move from a quantitative perspective, focusing on school flows, to a more qualitative results-oriented perspective. Renewing the profile of teachers so that they are able to play an active and creative role and turn them into agents of development for any future action of change.

To this end, the leaders of the nation have promoted a reform that more closely touches the profile of the main actors of the education system, which is the future teacher during the training period. This rethinking of training and redefine its content is supposedly innovative.

To achieve this goal, the (DFC) has implemented a new training programme to articulate two worlds, that of authentic teaching and that of teacher training. The purpose of this research is to know the results of this experiment and to check the performance of this programme and its implementation on a practical level.

What is the prevalence of integrative alternation as training approach?

What is its added value in the initial training curriculum of future secondary school teachers?

Have actors assimilated retrospective alternation as a promising concept that encourages change at both the conceptual and practical levels?

Is the integrative alternation implemented by the managers at the level of the CRMEFs and implemented by the users in accordance with the requirements and postulates that are recommended by the experts in the field?

Have the conditions of realization of this new form of training generated new training practices?

Have they encouraged trainees to mobilize their resources through processes of reflexivity and conscious metacognition?

2. THEORITICAL FRAMEWORK

Alternation is a subject of study that has been of concern to researchers for many years. This research seeks to explore and shed lights on integrative alternation as a concept. Reformers have and still use this concept to articulate the two apparently disjointed worlds of training and work. However, few studies have focused on the study of this training from within the initial training of future teachers.

2.1 From Juxtapositive Alternation to Integrative Alternation

A concept without its attributes is an empty word; it is really a concept only when its attributes give it essence and identity. By disregarding one of its attributes, one runs the risk of emptying the concept of its value and its profound meaning.

Some authors recommend us to implement in the workplace the knowledge acquired at the training centre by imposing a hierarchy between the two areas of training and by offering a nobility to the theoretical knowledge over that of the practical knowledge. We are talking here about the alternation so-called juxtapositive and deductive.

The classical model based on the juxtaposition of theoretical training and authentic practical training requires as attributes:

- The training spaces,
- The distribution of roles,
- The nature of acquired knowledge

This model is similar to the old ones in its conception of teaching trainees knowledge and know-how, and then applying them to the blocked internship without taking into account the reality of the exercise of the profession. The process is linear, hierarchical, and unidirectional.

Since the mid-1990s, a new concept of alternation, called "integrative", is gradually spreading to other training systems. This conception postulates that the relationship between knowledge and skills is played out in the investment of the learner and his knowledge in action, as well as in his ability to develop a reflective approach to this action. The integrative alternation as it was conceived by Malglaive, Schön, Kolb ... is of different nature. The new attributes given to this concept are summarized in three distinct dimensions [4].

- The co-construction of pedagogical devices allowing learners to make this reflexive return on their practice
- The establishment of cooperative relations between the teaching teams and the tutorial teams.
- The establishment of a reinforced dialogue between these two teams, around the work situations that make up the trainee learning process.

The issue of integrative alternation requires the co-operation of the trainee with his mentor in a training sequence or with his tutor in a professional situation by re-examining his practices and representations. This is how a dialogue is developed enriching one's experience and practice. Change is not only semantic. It involves changes in postures and practices as it is endorsed by agreements signed between training centres and host institutions.

Depending on how you look at the concept, the attributes may change. If you ever reduce a single element of the set of attributes to simplify the complexity of the process, you could change its essence and identity. Moreover, instead of being in the integrative alternation, one deviates from one paradigm of training to another which is perhaps opposed to it and the desired outcomes are never realized [5].

2.1 Relevant Indicators Guide Us To Accomplish The Alternation Model:

1- The scenario

Apprenticeship is the essential mission of the training centre, but it only makes sense in relation to the authentic situations that take place in the workplace. The context is also pays a educational role; the trainee is the craftsman of his own knowledge. With the help of his tutor, the apprentice would be able build his operational and pragmatic concepts.

2- Articulation

The questions that we need to answer to are: How to reach the unreachable? Who can we overcome this challenge? How to connect and articulate two apparently disjointed worlds? How to concretise the synergy between the different actors concerned by this approach?

3- Mediation

We are not only talking about the mediation of the tutor but also that of the mentor; On their own, the trainees face a number of constraints and obstacles that they can not overcome, but the mediator's support provides them with opportunities to discover the root cause of the problem, the formulation of hypotheses, the search for solutions and alternatives, the transfer and generalization of knowledge.

3. METHODOLOGY

The purpose of this study is to analyse the current state of the initial training of secondary school teachers in the CRMEF. We want to know after nearly two decades of the implementation of the reform, the results of this experiment, to verify the ecological validity of this model and its implementation on a practical level.

The objective of the study is to survey the main actors to whom the project of the reform is aimed at. We decided to undertake a survey among the trainers practicing within the CRMEF. Our ambition is to evaluate the compliance of the effective alternation approach with that prescribed by the founders of the approach.

To have a fairly accurate vision of their performance and to obtain reliable data, we decided to collect all the information concerning the offer of training in college secondary education, content and programs, devices and mediations, etc..

Our sample is made up of people acting at training centers (CRMEF) who provide the coaching function. We limited ourselves to the Casablanca, Rabat, Fez, Taza, Agadir and Marrakech CRMEFs

To this end, we have proposed a form in the form of a Likert scale. It quantifies qualitative information to eventually lead to a score [6].

4. RESULTS AND DISCUSSION

4.1 The targeted parameters of the reform

The information gathered from the surveyed participants shows that the reform did not only concern a singular element in the training curriculum for future teachers. The reform of initial teacher training was unifying and targeted a number of parameters such as: the updating of training programs, the redefinition of content and teaching methods, and more particularly the reconfiguration of the pedagogical renewal of the reform. Table 1 shows information gathered from the surveyed participants

Table 1: Information gathered from the surveyed participants

Dimensions		T1		T2		T3
Investment rate of trainers	Resistance	44 %	Passive engagement	32 %	Implication	24 %
Strategies adopted by managers	Improvisation	38 %	Directionality	36 %	Participative Approach	26 %
The impact of integrative alternation	Weak Impact	38 %	Minor Impact	37 %	Strong Impact	25 %
The coherence of the reform (between saying it and doing it)	Incoherence	37 %	Partial Coherence	39 %	Total Coherence	24 %

4.2 The reconfiguration of the pedagogical architecture has revolutionized the shape without touching the content

The new configuration is explained by - at least at the prescript level - the implementation of a framework that follows a six-monthly path based on modular training. The blocked internship was replaced by professional situations spread throughout the year. Two profiles have been defined, one entry and one exit separated by mastery levels. A round trip is done continuously between two training areas. The trainee tries to articulate his theoretical and practical training through an iteration between two apparently separate places [7].

4.3 A clear imbalance between the prescribed model and the workforce

The professionalisation aimed at bringing the two worlds closer together of the training and the real context of employment illustrates the idea of introducing a new training paradigm. Alternation offers new training practices by encouraging consolidation of the Theory / Practice report, of articulating between modules and professional situations, of forcing all the actors involved in the process to consult one another and to establish new ones. Produced reports have enabled them to be more effective in their missions [8].

Redesign of curricula requires the transition from a teaching logic based on prescriptions to logic of professionalisation based on training engineering; from a training paradigm based on rationalism and positivism to a paradigm based on a constructivist perspective.

The design of training programmes was monopolised from the top down without taking into account either the local context or the actual needs of the trainees. It was the hierarchical top that took the initiative to legitimize the training contents in the form of official bulletins (BO) and impose them on the training centres to be executed to the letter. Currently, the ambition of managers is to encourage practitioners to build curricula by drawing on an engineering approach that begins with an in-depth analysis of the workstation and then the development of the employment and reference framework. These competencies are developed as part of the proposal of teaching units and professional situations in the form of a training reference system.

New curricula are much more focused on building skills and achieving mastery levels than focusing solely on completing a prescribed and dictated program from above.

4.4 The expected change did not take place

The policy of change cannot be improvised. Any reform project needs to be strategic and should be able to go beyond difficult moments to achieve this goal, a futuristic and distant vision is needed that encourages collegiate and consensual approval.

Speed and responsiveness in a changing world are essential to ensure the success of any action to improve human skills. It is first of all about understanding the environment by identifying

the root causes of the problems that caused this complexity. It is through the mastery of complexity that we will be able to propose contingent and provisional remediation plans. Value for money cannot be achieved without the professionalisation of the actors; the building and managing skills is the key to any action to promote the teaching profession.

It's not just about retouching a curriculum to pretend to have done a strategic action. Previous experiences have shown that improvisation in this sector is a source of danger, especially when it comes to human being and their roles. It also a result of the improvisation of controversies and confusions of ideas in its economic terms as well as in operations that are expensive and repetitive.

A singular action from above not shared with users could not have the chance to succeed. Any reform action should take into account three essential steps, the upstream, the ongoing and the downstream of the reform operation.

- Upstream is explained by awareness-raising and awareness-raising actions, the declaration of objectives and the desired effects from the expected reform and training planning actions;
- The next step is a step of accompaniment and supervision to implement the prescriptions recommended by the reform project
- The downstream of the reform will have to be constituted by a rigorous follow-up and by permanent adjustments. It is in this step that the identification of the imperfections and the identification of the axes of improvement

A reform so that it is strategic will have to have a far-sighted vision with long-term goals. A prospective and proactive vision can take advantage of past experiences in order to build new and imaginative concepts. It will have to adopt a transformational style of leadership that values critical thinking and the cooperation of everyone. It will also motivate and involve all actors in teamwork and reform projects [9].

4.5 A call to all teaching staff to join a collective project

For any reform process, the main actor that will guarantee its success is the human factor; whatever his status, his touch is fundamental. Policy makers should mobilize their strategic skills. They should borrow the suitable leadership style that will be appropriate to influence all stakeholders who are tasked with implementing policy and strategic recommendations [10].

Practitioners in the field should participate by joining the collective change project. Their contribution is not a minor task as each one could contribute. The survey revealed three kinds of trainers, those who resist change, those who engage passively and those who are actively involved.

Trainers who have demonstrated a resistance to change are quite obvious when they do not have a clear vision of reform, they consider any action that comes from above a bureaucratic action that does not take into account the reality and as a result, it remains unclear and inoperative.

The sharing of ideas and proposals takes precedence over the way in which the prescriptions are implemented and applied. To this end, the adoption of assertiveness and persuasion to convince and involve the trainer to be a lever for change would be the best way to ensure the success of the reform.

It is not enough to simply raise awareness and educate the trainer by ethical and moral aspects so that he is responsible, it is wise to offer him the means and cognitive and methodological tools so that he is up to date and adept at concretising the recommended principles. In this sense, continuous training of trainers is an effective way to update their skills and to meet the challenges identified.

If one category of trainers needs to be informed, the other category needs to be motivated and motivated in driving change. The ultimate goal for managers is to make all trainers part of a collective project involved in the desired change process. Decisions made by decision-makers should be part of a participative and decisive management style.

The success of a reform project is dependent on collective membership in a common project where any member feels that it is their own project that is in question and that it is their own challenges that have been identified. Moreover, this is only possible when the managers adopt a policy of proximity vis-à-vis the actors by trying to accompany them by an intelligent assertiveness allowing them to feel involved in a conscious and organised way. On the contrary, a bureaucratic style only makes the actors passive and indifferent if not resistant. In addition, managers should develop an incentive and humanising culture that places a high value on human capital; To this end, learning to negotiate and steer reforms is a key priority.

4.6 The paradoxes of the reform between ambition and utopia

Could the integrative alternation that has been put in place generate a strong impact on teaching practices? Those who did not answer in the affirmative certainly wanted a concrete change in teaching practice, and not simply a conformity between the prescript and the workforce.

The integrative alternation by its ideal form advocates a new form of work. Its renewal is explained by the emergence of new practices such as the analysis of professional practices (APP), reflexive thinking (PR), maintenance explicitation (EE), Generally, the failure of any reform project was the result of precipitation and work in the emergency where action always takes precedence over reflection and ultimately leads to either the distortion of the concept or its reduction and the meaning of verdict escapes.

The purpose of the alternation is to develop in the student on both the action schemes and the perception schemes; operative skills and predictive skills; action knowledge and analytical knowledge; professional action and hidden knowledge in professional action; concrete experience and abstract conceptualization; active experimentation and thoughtful observation.

The prescribed integrative alternation values the iteration and the clinical approach. It prepares the subject to be both a consumer and a producer. It ensures that the subject is learning at school and then be a producer and mediator in his place working. The knowledge acquired at the training centre must be tested in the practice of his teaching profession [11].

4.7 Integrative alternation remains a hard-to-reach ideal

It is a question of moving from a juxtapositional alternation to an integrative alternation, the attainment of this objective is not as simple as we might think. The desired impact is far from being up to date because new practices do not arise overnight. They require an intense and rigorous work. They require a heuristic and rational methodology which incites a questioning on the action, a reflection a posteriori on its intervention and a mutual exchange with oneself and with others.

This methodology is inspired by the clinical approach, which values the development of perception patterns, formalization and conceptualization operation. The return to action is not only to identify the problem by looking for possible solutions but it is an approach that promotes the responsibility and autonomy of the stakeholder. It is a new paradigm of training that encourages the subject of being the architect of his own development. It is his job to build his skills and their validation [12].

The development of reflective thinking is not a substitute for academic and scientific thought but it is a complement. it is an alternative that adds to our repertoire to improve and invest. In fact, it is not a question of using the results of in vitro research and of transposing them in vivo without adaptation and validation efforts, nor is it a matter of applying scientific laws that are elsewhere and are strange to the specifics of the human. The impact on teaching practice has not been as expected, prescribes it is ahead of reality, the discourse far exceeds actual practices. This observation explains why negligence vis-à-vis the postulates has taken place. the attributes of the concept were ignored and therefore reductionism was the major factor in the simplicity of the results collected from this experiment.

5. RECOMMENDATIONS

Rethinking the traditional conception of training-employment relations by renewing the grounded idea that states theory first, practice after through a successful marriage between action and reflection, between the delivery and its formalisation and between a hypothesis and implementation.

The challenge is to move from a teaching logic to a logic of professionalisation, instead of thinking separately of the training-employment report, it is wise to reconstruct this report in the form of a unified combination and to link these two variables in a coherent and meaningful whole [13].

Acquisitions and knowledge learned at the training centre only make sense in relation to the reality of the profession, the converse is true. The real practices of the profession have meaning only in relation to the foundations and the theoretical foundations provided at the training centre. A dialogical anchorage should replace the Cartesian mind of the trainee. The knowledge acquired during the training should undergo a validation effort by putting them to the test during their work by exercising the teaching practice. Disciplinary knowledge should be used as a tool to serve the educational act by its operative form. Conversely, a practical discovery in the workplace will only make sense once it has been formalised and conceptualised for transfer or generalisation in similar situations [14].

When the trainee is faced with a problem situation, his workplace becomes a training space that encourages him to look for possible solutions and pragmatic alternatives through a rigorous methodology of problem solving. However, his effort makes sense only by finalizing it and seeking the benefit of the learning. This coming and going between the training and the work inculcates in the trainee through a dialectical issue a reflexive and iterative thought allowing him to widen his field of competences and enrich his academic and professional cultural repertoire. This mode of alliance between learning and production is only a training channel articulating both the abstract and the concrete in a homogeneous totality called alternating training or integrative alternation.

6. CONCLUSION

The integrative alternation perceived and lived by the trainee does not conform to the model prescribed by the founders of the approach. Training programmes value and privilege exclusively disciplinary knowledge. Prescribed curriculum totally ignores professional knowledge. In a perspective of professionalisation of teachers, it is indeed imperative to specify a profile of skills expected to practice the profession

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