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The Situational Problem as a Tool for the Digitization of Evaluation: The Case of Life and Earth Sciences

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Abstract: The situational problem is one of the didactic tool used in the organization of learning activities and numerical assessment for the operationalization of the competency-based approach. The new institutional recommendations, in the curricula of Moroccan formal education, particularly in the second cycle of education for scientific disciplines, and specifically for the life and earth sciences, underline the importance of the activities of problem-based learning and assessment, in the development, in learners, of problem-solving skills (a skill of the 21st century). However, our work will assess the ability of learners to solve problematic situations in digital-assisted teaching. This observation led us to take an interest in the practice of problem-based evaluation among EL teachers and to conduct research aimed at elucidating their conceptions of problem-based evaluation. We opted for an exploratory methodology based on a questionnaire addressed to EL teachers as a means of collecting information, with the aim of identifying the degree of coherence and difference existing between what the teacher actually conceives and what that he must design didactically on the evaluation. This research work has made it possible to identify a certain gap in the transposition and digitization of this strategy from upstream (didactic research) to downstream (teaching practice).

Keywords: digitization, evaluation, situation-problem, problematization, problem solving.

情境问题作为评估数字化的工具：生命与地球科学案例

摘要：情境问题是用于组织学习活动和数值评估以实施基于能力的方法的教学工具之一。摩洛哥正规教育课程中的新机构建议，特别是科学学科教育的第二周期，特别是生命和地球科学，强调了基于问题的学习和评估活动在发展中的重要性，在学习者中，解决问题的技能（21 世纪的技能）。然而，我们的工作将评估学习者解决数字辅助教学中问题情况的能力。这一观察使我们对英语教师中基于问题的评价的实践产生了兴趣，并进行了旨在阐明他们基于问题的评价概念的研究。我们选择了一种基于针对英语教师的问卷调查的探索性方法，作为收集信息的一种方式，目的是确定教师实际构想的内容与他必须在评估中设计的教学内容之间存在的连贯程度和差异。从问题情境中学习。这项研究工作使得有可能确定该策略从



上游 (教学研究) 到下游 (教学实践) 的转换和数字化中的一些差距。

关键词：数字化、评估、情境问题、问题化、问题解决。

Introduction

Problem solving is a complex high-level intellectual act; it is also a teaching and assessment strategy used to build learning and to assess it in a digital mode. But there is no problem solving unless there really is a “problem” for the learner; we no longer speak, in this case, of “solving” problems but of a particular situation, the “problem-situation”. Sometimes a teaching-learning strategy, sometimes a strategy for evaluating problem-solving skills, and sometimes the characteristics of a learning situation and numerical evaluation, the problem-situation is often all three simultaneously.

In Morocco (since 2002) teaching, learning and evaluation by problem-situation represent a methodological framework for the operationalization of the competency-based approach, given the effectiveness of this teaching strategy as it makes it possible to improve the results of the learners, and insofar as it makes it possible to prepare citizens capable of integrating and mobilizing their school resources to solve real problem situations in daily and professional life [1].

However, the current situation indicates that young people, products of the Moroccan school, face difficulties in integrating into social and professional life. Consequently, international evaluation reports, based on the ability of learners to solve problem situations, have denounced the poor performance of Moroccan learners in scientific disciplines [2].

At the level of this research, we try exploiting a component that has recently become the object of several didactic researches; it is the practice of digital evaluation of teachers. Thus, we formulate the hypothesis that the gap between the effectiveness of teaching-assessment by problem-situation, and the poor performance of Moroccan learners in scientific disciplines is partly linked to the conceptions of teachers relating to the situational problem as an evaluation tool.

Our overall objective is to analyze the teaching conception of numerical assessment that uses the situational problem. We will not limit ourselves to this analytical approach, but we will integrate it into a global vision of research that involves the design of the designers of the curriculum and textbooks of Moroccan ELs on the same subject.

At the level of this study, will to detect the conceptions of EL teachers relating to the use of the situational problem as a formative numerical evaluation

tool.

1. Conceptual and Theoretical Framework

1.1. Situational Problem in Didactic Research

Several definitions have been given to the situational problem, Meirieu, generalizes the definition of this didactic tool as “a situation in which the subject is offered a task that he cannot conduct without conducting precise learning. This learning, which constitutes the true objective of the situational problem, is achieved by removing the obstacle to the achievement of the task [3].

Therefore, he defines the situational problem as being the organization, by the teacher, of a learning process whose characteristics are as follows:

- It triggers in the learner a desire to learn;
- The learner conducts a task that constitutes a problem for him;
- The task obliges him, by constraints of instructions, to conduct an apprenticeship;
- This learning allows him to construct the mental operation corresponding to the targeted knowledge;
- The learning objective targets the obstacle to learning. We speak of the objective-obstacle;
- The constraints of the task guarantee the construction of knowledge.

1.1.1. The Problem Situation According to Astolfi

Science didactics highlight the crucial role that epistemological obstacles can play in learning. Astolfi [4] defined several features of the situational problem:

- A situation that overcomes an obstacle identified by the learner;
- A concrete situation. This allows learners to formulate hypotheses;
- A situation that allows the devolution of the problem by the learner;
- A situation that arouses the motivation of the learner and leads him to appropriate the intellectual instruments necessary for constructing the solution;
- A situation that offers the opportunity for the learner to express his conceptions and to question them;
- The resolution of the situation must not be out of reach for the learners;
- A situation that invites learners to debate and which triggers socio-cognitive conflicts;
- A situation that allows reflexive feedback to

stabilize resolution strategies.

1.1.2. Significant Features of the Situational Problem

Based on pedagogical and didactic research on the situational problems, Musquer and Fabre have identified significant features of the situational problem [5]:

- It performs a staging of knowledge in which what is to be learned appears at the end of an investigation, a problematization. The situational problem learns new knowledge, preferably of a conceptual nature;
- The situational problem constitutes a trap, or a critical situation. The problem must remain in the zone of proximal development of the learner;
- The situational problem requires that the problem be dealt with by the learner. The devolution of the problem constitutes a condition for committing to its resolution;
- It allows the learner to self-assess their performance without the teacher's intervention. The most important thing is not the success or failure of the task. The main thing is to understand why we succeeded or failed.

2. Digital Assessment

2.1. Situational Problem in Didactic Research

The question of digital evaluation has been debated since 2000 [6]. In the professional sector, digital assessment is a system included in training that allows training without traveling to the place of training and without the physical presence of a trainer. In other words, the evaluation of knowledge and the learning activities occur outside the direct face-to-face relationship, known as “face-to-face” between the trainer and the trainee (trainee).

Several definitions have identified this new paradigm of digital evaluation, among which we distinguish: “Digital assessment is a mode of judgment involved in a distance or face-to-face teaching system that allows everyone to work independently, at their own pace, regardless of where they are, in particular thanks to the techniques provided by technology” [7].

2.2. Types of Digital Assessment

Several researchers have distinguished four types of distance education [8], in particular:

- The enhanced face-to-face: a hybrid form between face-to-face and online, also called work-study training.

- Enriched face-to-face: The face-to-face training time is the heart of the learning here, and the teaching practices are planned online.

- Reduced face-to-face: a very open form of e-learning open training

- The non-existent face-to-face training: it is distance training par excellence [9].

2.3. Characteristics of a Digital Assessment

The digital assessment is an organized, finalized training device, recognized as such by the actors who take into account the singularity of people in their individual and collective dimensions.

Learners are then called upon to conduct the tasks assigned to them at home and submit them electronically or hand to hand to their training organization.

3. Research Methodology

3.1. The Search Problem

What coherence between the conceptions of EL secondary school teachers on the situational problem as a tool for the digital evaluation of learning and the significant features of this didactic tool.

3.2. General Research Objectives

To answer our problem, we opted for a questionnaire divided into two parts: The first part collects socio-demographic information on the teachers surveyed. The second part has two general objectives:

- Detect teachers' attitudes relating to the practice of the situational problem during the digital evaluation process [10].

- Detect the conceptions of teachers relating to the practice of the situational problems during formative digital assessment.

3.3. Specific Research Objectives

These general objectives are broken down into specific objectives based on our problematic research and our theoretical and conceptual research framework. Table 1 summarizes the targeted objectives and the items corresponding to each of these objectives.

Table 1 Objectives targeted by the questionnaire and the corresponding items

The objectives of the questionnaire		Items
Detect teachers' attitudes relating to the practice of the situational problems during the digital evaluation process.	Determine frequency use of this tool during the evaluation.	1
	Detect the moments of its use during the evaluation process.	2
	Determine frequency development of this assessment tool.	3
	Identify resources development of this assessment tool.	4
	Identify the reasons for using this tool during the evaluation.	5
Detect the conceptions of teachers relating to the practice of the situational problems during formative digital assessment.	Identify the epistemological issues of the assessed knowledge.	6
	Detect the status of problematization during a situational	7
	problem	

Continuation of Table 1

Detect the evaluation process through the situational problem.	8
Detect the importance given to the objective - obstacle,	9
Identify the status of the error during its implementation.	10

3.4. The Question Sheet

3.4.1. The Choice of the Questionnaire

We opted for the questionnaire for its adequacy with our research objectives. It makes it possible to collect a large amount of information and to reach a large number of individuals in the target population.

3.4.2. Choice of Questions

We wanted the questions to be vary in their form. Some open questions through which we hope to account for the conceptual structure underlying certain constituent notions of problem-based evaluation. Respondents are invited to answer using their own vocabulary and with their own frame of reference. However, the questionnaire has limitations when it comes to these open questions, we find ourselves faced with answers that are difficult to interpret. This is why we based ourselves on multiple-choice questions (MCQ) to put the respondent in situations that will encourage him to think carefully.

3.4.3. Reference Answers

The reference answers of our questionnaire are identified according to the theoretical framework of the problem situation developed by the team of the Center for Research in Education of Nantes (CREN-France), which attaches importance to the construction of problematized knowledge, and to the mental operations of problem solving during evaluation and learning problem situations.

3.4.4. Testing and Operationalization of the Questionnaire

This questionnaire is constructed with the insight provided by our own reflection and the recommendations of experts in the field of didactics and pedagogy.

Questionnaire test: before the direct administration of the questionnaire, a test allowed us to check its structure, the layout of its items, and the relevance of its vocabulary.

Administration of the questionnaire: the questionnaire was produced on paper and submitted, face-to-face during educational meetings, to the individuals in our sample.

Data collection and analysis procedures: the answers were collected manually and organized in

tables, and the percentages and the graphs were available at the same time on Excel.

3.5. The Choice of the Target Population

The survey population is made up of secondary, middle, and high school EL teachers because the strategy of teaching and evaluation by the problem situation is officially required to be put into practice in class in both cycles. There was a sample of 160 teachers of the second cycle who practiced in two provincial delegations of Morocco (Sidi Bernoussi and Ain-chuk), given that the total number of teachers of the SVT in these two delegations was 384, so the percentage of our sample is significant (41.66%).

Each individual in the population had the same probability of being included in the sample, but it is their desire to participate in this survey and the opportunity to participate in the educational meetings, which we conducted and during which we administered this questionnaire, who determines it. Table 2 presents some information about our population.

4. Presentation, Analysis, and Discussion of Results

4.1. Question 1: Do You Use Problem Situations during the Digital Assessment of Learning?

This question identifies the frequency with which the situational problem is used as an evaluation tool. The results obtained are shown in Table 2.

Table 2 Frequency of use of the situational problem

	Never	Sometimes	Rarely	Often	Always
Effective	1	62	19	62	16
Percentage	0.63%	38.75%	11.87%	38.75%	10%

The application of this didactic tool during the practice of evaluation remains modest with regard to the objectives expected in the official texts, Indeed, there is a gap between the prescribed (the official texts) and the experience (the teaching practices).

4.2. Question 2: When Do You Use the Situational Problem when Practicing Digital Assessment?

This question identifies the moments of use of the situational problem during the evaluation process. The results obtained are shown in Fig. 1.

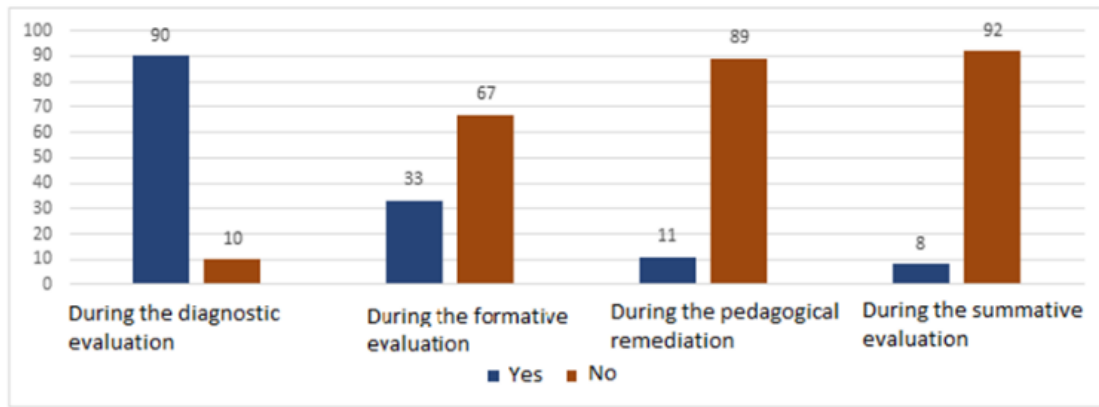


Fig. 1 Moments of the use of the situational problem during the digital assessment process

The answers obtained to this question show that 90% of the teachers see that a problem situation must be proposed at the beginning of the evaluation process as a didactic situation for diagnostic evaluation. 33% of our sample use the situational problem during the formative evaluation and 11% consider it as a remedial tool.

It can be seen that the use of the situational problem decreases from upstream to downstream of the digital evaluation process.

The situational problem can be used during the teaching-learning process and throughout the evaluation process in the digital mode. It makes it possible to engage the learner in a reflection on his approaches to problem solving. Most of the teachers surveyed consider that the situational problem is only a tool to trigger learning, to structure it, or to evaluate their prerequisites, while ignoring that the use of the situational problem when evaluating learning would make it possible to check the ability of learners to mobilize their knowledge to solve real problems.

In terms of practice, and for effective teaching, Roegiers suggests two ways of introducing situational problems [11]: situations upstream (of learning) and situations downstream (of integration) of learning. This author specifies that the introduction of situations in the evaluation process in a school system requires a high level of training and motivation of teachers, sufficient equipment and material in schools, and a reduced number of pupils per class.

4.3. Question 3: Do You Develop Problem Situations Yourself during the Digital Assessment of Learning?

This question identifies the frequency with which problem situations are developed during the evaluation process. The results obtained are shown in Table 3.

Table 3 Frequency of development of the digital evaluation situational problem by teachers

	Never	Sometimes	Rarely	Often	Always
Effective	4	62	25	51	17
Percentage	2.52%	38.99%	15.72%	32.08%	10.69%

The answers to this question show that only 10.69%

of our sample always develop evaluation problem situations by themselves, while the largest percentage (38.99%) only develops it sometimes. A small number, that is 2.52%, never conceive of it and use ready-made problem situations.

The justifications put forward by the teachers as to the difficulties of developing problem situations during the evaluation are explained by the lack of time and resources, by the overload of school programs, and especially the lack of continuous training on the subject.

4.4. Question 4: Specify the Resources Used to Design a Digital Assessment Situational Problem

This question identifies the resources used by the teachers for the elaboration of an evaluation situational problem. The results obtained are shown in Figure 2.

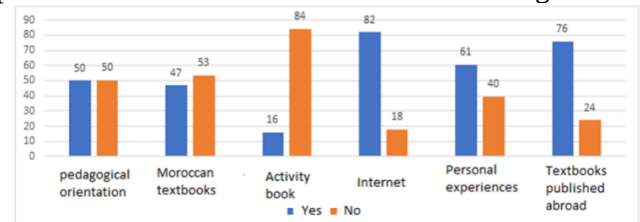


Fig. 2 Results of the resources used to develop the situational problem (Developed by the authors)

The results show a diversity of resources used by teachers when developing their evaluation problem situations. Indeed, we note that the most used resources are the Internet with a percentage of 82%, and in the second place, textbooks published abroad (76%). Pedagogical orientations and Moroccan textbooks are used with an almost equal percentage (50%, 47% successively).

The dependence on the Internet is because it provides websites that present banks of assessment problem situations, discussion and sharing forums, exercises and documents, and of course problem-situations of learning constructions ready to carry and modify to use them during the evaluation.

4.5. Question 5: For What Reason(s) Do You Use the Situational Problem during the Digital Assessment?

This question identifies the reasons why teachers use problem situations during assessment. The results obtained are shown in Figure 3.

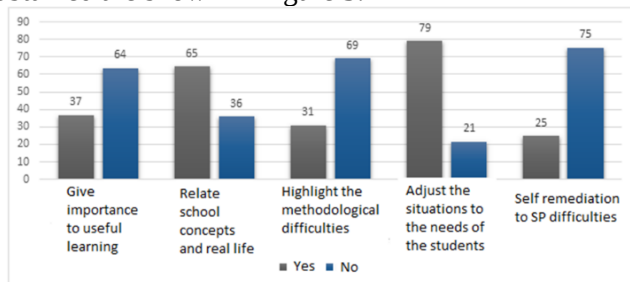


Fig. 3 Reasons teachers use SP in digital assessment (Developed by the authors)

The answers to this question show that the overwhelming majority of teachers questioned (79%), use the situational problem during the evaluation to adjust the teaching to the learning needs, and 65% admit that the use of the situational problem is to relate school concepts to real life. While only 37% believe the importance of this didactic tool in the pragmatic sense of learning in the life of the learner. A percentage of 31% justifies the use of the situational problem during the evaluation to highlight the methodological difficulties of problem solving. And a small number (25%) of teachers use the situational problems as an assessment tool for self-remediation of problem-solving and problem-solving difficulties.

Moreover, the majority of the teachers questioned to reduce the use of the situational problem at the beginning of the evaluation process (as a diagnostic evaluation), to adjust the teaching to the learning needs. This reflects the confusion made by teachers between the different types of situational problems. The teachers consider that the latter is limited only to situations of exploration [12]. While the latter are only one type among others of problem situations [13]. These results are compatible with the results of question 2 relating to the moments of use of the situational problem during the evaluation process.

The majority of teachers are far from taking into consideration that the use of the situational problem as a didactic teaching tool aims at the development of problem-solving skills, and thus its use as an evaluation tool makes it possible to highlight the methodological difficulties of problematization and resolution all the more so as it allows the learner to be involved in a reflection on his learning processes and on his ability to exploit it to self-remediate his difficulties.

4.6. Question 6: How Do Teachers Conceive of the Didactization of the Problem When Planning a Formative Assessment Situational Problem?

This question is asked to know if the teachers try identifying the epistemological stakes of the concepts

targeted by the situational problem of formative evaluation. It is a question, in our case, of understanding how the teacher conceived the problematization of knowledge (epistemological conception). The results obtained are shown in Table 4.

Table 4 Results of teachers' epistemic conceptions of knowledge when developing a formative numerical assessment problem situation

When designing a situational problem for the formative evaluation of a concept	Effective	Percentage
I look historically for the problems that led to the construction of this concept	11	6.92%
I am looking for the problem that this concept currently poses in EL and in other disciplines	24	15.09%
I contextualize a problem relating to this concept in a framework known to the learner	106	66.67%
I look in manuals and programs for the device to evaluate this concept	16	11.32%
Others	0	0%

The majority of teachers, ie a rate of 66.7%, said that when planning a situational problem for formative evaluation, they sought to contextualize the problem in relation to the concept in a context known to the learner. 11.3% affirm the search for a device, ready to wear, from school textbooks. Only 15.09% and 6.9% of teachers, or a total of 22.01%, who demonstrated an epistemological conception in the didactization of the problem when planning a formative assessment problem situation. These teachers affirm their affinity to look historically for the problems that led to the construction of a notion (historical approach) or to look for the problem that the notion currently poses in EL and in other disciplines (interdisciplinary approach).

4.7. Question 7: What Are the Teachers' Intentions during the Formative Assessment of Problem-Based Learning?

This question is asked to know the approach recommended during the formative evaluation of learning by problem situation. Is it problem-building or problem-solving? the answers to this question are presented in Table 5.

Table 5 Results of the construction/problem-solving tension during the formative numerical assessment by problem situation

My intention during the formative evaluation by the situational problem	Effective	Percentage
Learner solving a problem.	72	45.28%
The identification of a problem by the learner	43	27.04%
The success of the learner in the task that is asked of him	31	19.5%
Make the learner understand why he failed	13	8.18%
Others	0	0%

A large number of teachers, i.e., a rate of 45.28%, affirm that their intention during the formative evaluation by situational problem is the resolution of a problem by the learner. 19.6% of teachers reveal that their intention is the learner's success in the task requested. Therefore, the majority of teachers, a rate of 64.88% (= 45.28% + 19.6%), advocates a problem-solving approach. 37% of teachers consider the importance of the learner's problem identification and cognitive activity.

4.8. Question 8: What Are the Conceptions of the Teachers Relative to the Formative Evaluation Approach by Situation-Problem?

This question is asked to know the approach recommended by the teachers during the evaluation by situation-problem, the answers to this question are presented in Table 6.

Table 6 Teachers' conceptions of the formative numerical assessment process by the problem situation

During a situational problem of formative evaluation	Effective	Percentage
I announce a general knowledge, and I invite the learner to verify it.	9	5.66%
I start from several facts or observations, I specify the problem to be solved, I guide the learner to formulate a hypothesis to confirm it and arrive at knowledge.	87	54.7%
I start from the learners' conceptions, I question them in a context that the learner knows, I give them the freedom to question and trial and error, and then to verify or refute to lead to knowledge.	49	30.82%
I start from the components of a reality to build reality (from simple to complex)	14	8.81%
Others	0	0%

During their formative evaluation by situational problems, several teachers, i.e., a rate of 54.7%, affirm that they start from several facts or observations; they specify the problem to be solved, and then direct the learner to formulate a hypothesis to confirm it and thus lead to knowledge. 8.8% of our sample claim to start from the components of a reality to build reality (from simple to complex). Therefore, 63.5% of teachers, i.e. the addition of the two previous percentages, use the inductive approach in a privileged way in their practice of formative evaluation by the problem situation. This empiricist and positivist approach, which takes observation as a starting point, is still very significant among EL teachers. And this classic way of conceiving the practice of the evaluation situation-problem justifies the difficulties encountered by Moroccan learners during international evaluation situations.

Therefore, we can conclude by emphasizing the

inductive and empirical tradition characterizing the conceptions of a large number of EL teachers during the implementation of a situational problem of digital evaluation.

Question 9: How are the obstacles to learner learning interpreted by EL teachers during formative digital assessment problem situations?

This question is asked to know the interpretation given by the teachers to the obstacles during the formative evaluation by situation-problem, The results obtained are shown in Table 7.

Table 7 Results of the consideration of obstacles during the formative evaluation by problem situation

The difficulties encountered by the learners during the situational problem of formative evaluation are interpreted as:	Effective	Percentage
A lack of culture or knowledge of the learner on the subject.	60	37.74%
A malfunction in my planning for the situational-assessment problem.	22	13.84%
The presence of obstacles that I must not make visible to the learner.	23	14.47%
The presence of obstacles that I must make visible to the learner.	54	33.96%
Others	0	0%

Several teachers, a rate of 37.7%, affirm that the obstacles to learner learning are interpreted as a lack of culture or knowledge of the learner on the subject.

Others, at 13.8%, say that the obstacle is interpreted as a malfunction in their planning for the assessment problem situation, more than half of the teachers questioned, i.e., a rate of 51.5%, do not know that one of the essential characteristics of a situational problem is the presence of obstacles, and that the learner's conceptions, i.e., their habits of thought, constitute obstacles. These teachers are unaware that the obstacles when designing a situational problem constitute a necessity that must be taken into account.

5. Synthesis

The analysis and the discussion of the results of the questionnaire allowed us to detect the conceptions of EL teachers relative to several criteria of the evaluation situation-problem.

- The first part, in relation to the attitudes of teachers vis-à-vis the use of the situational problem, allowed us to draw the following conclusions:

- The application of this didactic tool during the practice of evaluation remains modest in terms of the objectives expected in the official texts.

- The use of this tool decreases from upstream to downstream of the evaluation process. Most of the teachers surveyed consider that the situational problem is only a tool for evaluating the prerequisites

(diagnostic dimension) to adjust teaching to the needs of learning, while ignoring the fact that the use of the situational problem evaluation allows them to check the capacity of the learners to mobilize their acquired knowledge to solve real problems (pragmatic dimension), as they neglect that the use of the situational problem during the formative evaluation of the learnings would make it possible to engage the learning in a reflection on its approaches to problem solving and to highlight the methodological difficulties of problematization and resolution to promote self-remediation (formative and regulatory dimension).

The majority of teachers are far from tailor-made evaluation problem-situations, and most base themselves on ready-made situations. The justifications put forward by the teachers as to the difficulties of developing problem situations during the evaluation are explained by the lack of time and resources, by the overload of school programs, and especially the lack of continuous training on the subject.

Teachers' dependence on the Internet is because it provides websites that present banks of assessment problem situations, discussion and sharing forums, exercises, and documents, and many obviously problem-situations of constructions of learning ready to carry and to modify to reorganize them and to make them to measure according to the difficulties of learning like situations of formative evaluation.

The second part, that of the coherence between the conceptions of the teachers relating to the situational problem as a formative evaluation tool and its didactic significant features, allowed us to draw the following conclusions:

The conceptions of the majority of the teachers questioned are far from taking into consideration that a situational problem can be significant insofar as it refers to an epistemological reflection on the knowledge of the discipline (history of knowledge, the conditions of their elaboration, their interdisciplinary nature, etc.).

The conceptions of the majority of the teachers questioned privilege the evaluation of the resolution of the situational problem to the detriment of an evaluation of the capacity to problematize.

The empiricist and positivist traditions seem to characterize the conceptions of the teachers questioned during the practice of the problem situation during the formative evaluations.

Many teachers are unaware that obstacles are a necessity that must be taken into account when practicing the situational problem of formative evaluation.

The error does not occupy a real place in the conception of the teachers questioned.

The implementation of the situational problem of evaluation of problematization skills by teaching activity is far from being that granted by didacticians.

6. Conclusion

Faced with the ambiguity of official texts, the inadequacy of initial training, and the lack of continuous training, teachers may have the impression of responding to what they are asked to do without, however, appealing to a real situation - digital evaluation problem. They practice this strategy during evaluations with their spontaneity and their own interpretation of this learning and evaluation tool. Numerical assessment by situational problems is in itself complicated and difficult, and if teachers are allowed to believe that what they design corresponds to what they must design, there is no reason for them to question their ways to do. Therefore, we should not be surprised that teachers find it difficult to set up a situational problem in their practice of digital assessment.

This work studies the conceptions of secondary school life and earth science teachers regarding problem-based assessment. We were inspired, in our approach, by research in didactics and pedagogy, which attaches importance to problematization, and to the mental operations of problem solving during numerical evaluation problem situations.

6.1. Limits of Research

Like any research work, ours has the following limitations:

- Our research focused on 160 EL teachers. It is of an exploratory nature, which does not make it possible to generalize the scope of the results obtained. However, taking into account the diversity of our sample on the academic, professional, and socio-demographic level, we are entitled to suggest that the conceptions of the teachers surveyed on this strategy and the difficulties encountered reflect an image almost close to the reality of a large part of EL teachers in Morocco in general.

- A second limit is related to the responses of the respondents, which are not all justified, so we found ourselves unable to interpret them.

6.2. Insights from the Research

The reflection initiated in this work needs to be extended and pursued with subsequent research on the direct observation of the teaching practice of this tool during the digital evaluation of learning. It would be interesting to extend this research by extending it in time and space. Several avenues are available to us:

- How is the initial and continuous training of teachers about the situational problem as an evaluation tool carried out in the places of training?

- What are the conditions of training that can act on the implicit epistemology of teachers, whose empiricist character we have seen?

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