Science Journal of Education
2024, Vol. 12, No. 4, pp. 56-64
https://doi.org/10.11648/j.sjedu.20241204.12

Research Article

Tunisian Doctoral Students between Course Management and Effective Performance

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Abstract

Different teaching models have been used to enhance the teaching and learning process in order to meet the required achievements. This process keeps on changing for decades, particularly with the inclusion of the communicative approach. In this respect, a mooting point concerns how the interactive process of teachers and learners take place for designing course materials. Another vital point to consider is how to evaluate the achievements of a set of pedagogical packages offered for novice teachers in particular, which are merely a part of their constitutive formation and course management. These investigative points are conducted by loading the Tunisian doctoral students with the most effective pedagogical means so that they acquire the desired procedures for course planning and class management. These students are required to teach their classmates, pretending to be learners, within a micro-teaching context. The presupposed teachers are equipped with the necessary teaching means. The experiment consists in a scientific class session followed by a class discussion describing and assessing the presented courses performance. This pursued process represents a pedagogical mechanism for designing a yardstick for mapping out an assessing measure of the courses. It is found that the doctoral students use different cognitive techniques to manage their classes by assigning tasks with different levels of complexities. Finally, it is suggested that the presented courses leave traces of achievements. The doctoral students are able to diversify their pedagogical techniques during class management. What remain at issue are the pedagogical anomalies to avoid for a better teaching performance.

Keywords

Teaching Yardstick, Lesson-Pattern, Pedagogy, Techniques, Task, Tunisian Doctoral Students

1. Introduction

Teaching is not simply providing the students with accumulated knowledge. It is a complex act, which depends on a set of intricate variables packaged together. These variables include a teacher's awareness of how to teach and set the scene of learning. The teacher is expected to prepare different pedagogical alternatives. These alternatives are presumably useful for choosing the best fitted procedures for guaranteeing fruitful lessons and the practical needs of the doctoral students [3]. Before a lesson completion, it is an inevitable to find out the process of teaching. This process is considered as a question of choice rather than a premised educational system, which is conclusively applicable to all courses at any moment [1].

Process is believably intertwined with achievement. One of the rules of teaching in premising the process on achievement is basically considering the students' levels, general and

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Received: 9 February 2024; **Accepted:** 4 March 2024; **Published:** 31 July 2024

specific knowledge in addition to other pedagogical priorities relevant to the lesson. The properties of a lesson differ regarding the field of knowledge. Although a scientific lesson shares some pedagogical features with a language one, their procedures are not implemented in the same teaching manner. This paper is focalized on examining the procedures of scientific lessons for a pedagogical training of doctoral engineering students in Tunisia. It starts with an introductory part followed with theoretical frameworks. Next part is about methodology, which leads to some results and discussion in the light of the courses implementation. A yardstick for effective teaching occurs just before the conclusive part.

2. Theoretical Frameworks

Theories are the backdrops, which motivates the lesson's brightness. They are formed with a system of logicality underpinning the social parameters of talking in a classroom. A theoretical analysis remains conceptual and ineffective if an examination of pedagogy in practice is not considered [9]. The conceptual and the pedagogical interact dialogically. Empirical data collected by a fieldwork is a necessary vehicle for the development of an applied pedagogy for teaching in a marked-oriented direction [7, 12]. However, before examining teaching, it is significant to identify how a lesson is built. A lesson is based on a particularized organization, known as a pattern. If the pattern is designed by a view of discourse, discursive strategies are necessary for directing a scientific lesson talk [13].

A lesson discursive pattern is "predictable" [13], and based on instantaneous talking between teacher and students. Although this type of lesson patterning generates scientific meaning, it is very restrictive and pre-structuring to an interactive lesson. Regarding a personal conducted fieldwork in a scientific classroom, it is observed that doctoral students lack the perception of the suitable genre for teaching. In their micro-teaching training, they show a generic-mixing. The majority of them are confused by the generic properties of research article and speech. Its corollary is manifested in the distribution of talk, and particularly the scenarios of interaction in a classroom. It is possible to look for an interactive classroom by having relatively stable generic properties ensuing discursive patterns, which are more dynamic and unpredictable by organizing free rhetorical acts. These acts depend on the scientific field studied and the students' cognitive capacities for understanding. They sensitize the doctoral students, as potential teachers, to the repercussions of the unawareness of the interrelation of the generic rhetorical acts. These acts are cognitively guiding to the learners' acquisition of a skilful knowledge through choosing the most suitable alternative patterns for teaching.

Framing and reframing the generic rhetorical acts and the discursive dynamics are vital for preconceiving a manageable scientific lesson. Other pedagogical issues are open to a deep conceptual analysis for performing scientific lessons. In the current view, most pedagogical researchers inventory possible means to freeze the clash of theories and practices. They develop principles of teaching through fieldwork studies, which involve SLA theories and classroom examination of how to teach grammar and lexis [8], to process input [8] and how to determine the role of "implicit" and "explicit" knowledge [8] in using English as a second language rather than scientific one.

Other researchers work on how to orient teaching English pedagogically to a specific curriculum by identifying the circumstantial obstacles such as teaching English as a different language from the mother tongue [10]. In Tunisia, there is an urgent need to change the language strategies to teach sciences by using English as a growing phenomenon in the world of industry in general. Raising the problem of teaching science through English in Tunisia is fundamental to redraw the pedagogical scheme of scientific courses in high institutes. In this context, the teaching focal points of learner-centred [15], learning-centred [11], and teacher-centred [4, 6] intersect. These foci are investible in a new scientific-based curriculum.

3. Methodology

Evidently, teachers are provided with a spectrum of pedagogical packages, which are useful for mapping out diversified set of concepts in their minds. They also offer them large alternatives of teaching techniques in order to manage their scientific class courses. Teaching requires some specific tools of how to organize preconceived ways of preparing the best fitted cohesive steps for the expected courses. Preconception loosens the teachers' courses preparation and later their implementation during class sessions. It loads teachers with the necessary communicative tactics, which enhance their interactions with their learners.

The subjects who are asked to prepare and enact the lessons are the Tunisian doctoral students. To avoid ambiguity between the doctoral students and the class students, who are in fact equally the same, the term teacher is chosen to name the former while learners; logically, best fit the latter. The lessons are held in a virtual class with their peers considered as targeted audience. The teaching procedures are principally pivoted on the teacher, the learners, and the presented courses. This triangular dimension is among the most efficient ways to sensitize the lesson presenters as they are really engaged in a close to authentic speech situation. At the same time, it facilitates the evaluation of the courses.

This kind of classroom environment assures that the teaching worries of the lessons' enactors are mitigated by narrowing their opacities of managing classes in the beginning of their careers, regarding their teaching inexperience. Before commencing teaching, the doctoral students are provided with the most useful logistic equipment, ranging from a classroom to a computer for data show projection. The lessons proceed following the different

conventionally known steps, starting with a warm-up, going along the core of the taught data, and ending with a closure. Once each lesson is over, a class discussion is launched. This discussion is premised on a binary classification: the doctoral students are oriented to describe the steps of each lesson; and they are asked to assess the lesson's performance by diagnosing its pedagogical strengths and weaknesses. Both the description and the discussion go together with no arbitrary division. They take the form of an archival document for the purpose of avoiding redundancy in the act of reporting a number of selectively pedagogical points from some lessons. The last phase is basically conclusive. It provides the doctoral students with a yardstick to scale their future pedagogical orientations while teaching and, at the same time, to get rid of potential and existing anomalies, occurring in their courses.

4. Results and Discussion of Courses Implementation

From the very beginning, it is worth noting that all the courses are presented with specific procedures to which the doctoral students are prepared beforehand. They go through all their lessons' steps as they are previously instructed. They are also obviously sensitized how to link their lessons' different parts coherently in a chained pattern with no intrusive points. Sometimes, it is possible to use digression, which may feed the content of the courses and accelerate the learners' understanding. Once the lessons are fulfilled, a class discussion is immediately launched. This phase of the pedagogical training sessions essentially imply an overall assessment of each lesson's performance. All the doctoral students are engaged in describing and discussing the lessons' procedures, from the beginning to the end.

The form and the structure of each of the presented courses are depicted, with a logical demonstration of their placements within the supposedly designed syllabus. The doctoral students are required to mention the course outline and organization, as it is considered the first and the foremost guide for the ongoing process of teaching. The warm up signifies the entrance to the lesson effectively. It loosens the friction of the contact taking place between the teacher and the learners. The doctoral students draw the conclusion that the warm up is the phatic communion stage, which is necessary to the teachers in order to come closer and closer to their learners with some relational prudence. This tactical step is critical during the course proceedings. It reduces the burdening cost, which is laid on the learners' shoulders. Inversely, it increases their linguistically acquisitive benefits and scientifically cognitive processing [5].

4.1. The Pre-Phase Lesson: Types of Introduction

The following step of the lessons' structures is the introduction. Its existence is crucial for setting the scene of the course without which the learners may not grasp the topical area of the literature presented to them. It is essentially the point in which the doctoral students as future teachers are able to get the attention of the learners. Actually, during the lessons, it is proven that the introduction plays the role of calling the learners to pursue the core of the course. At the psychological and the cognitive levels, it accelerates the learners' interests by following the process of how their teachers are gradually preparing the move for the upcoming lessons' steps. More importantly, the doctoral students become aware of how the introduction is a staging area, which encourages the learners to be entirely engaged in the participation of the development of the course content by the orientation of the supposedly recognized teachers.

It is noticed that the introduction takes different forms in all the lessons in question. In some of the presented lessons, the introduction phase occurs by elicitation. In one of the lessons for the electro-engineering learners, the teacher introduces the cutting process as the skill for acquisition by asking a set of questions. The basic question is "How can you deal with a mechanical process?" The learners respond "raw materials." Subsequently, the teacher asks "what is the most important step to succeed in a manufacturing process?" The learners are led to "cutting process". The teacher demonstrates that the cutting process can occur in different ways, ranging from saw cutting to laser one".

Another procedure used to introduce a lesson is technically a semantic map completion. In a biological lesson about the basics of bacteria, the teacher asks the learners to complete a guided spider gram. This introductory task is a kind of brainstorming, which helps the learners activate their background knowledge and jot down the information they know about bacteria, notably related to its benefits, uses, and even its risks on the human health. The learners seem to do their best to answer correctly since the pedagogical procedure of this task is inversely proportional. It increases the learners' motivation and decreases their tension. When asked, the task seems to be at the heart of their needs, and particularly orienting them to do future experiments and research in biology.

Another pedagogical alternative to start an introduction is using the scenario of definition, which narrows down the scope to the main focus of the lesson. It ties the learners' reasoning to the required concepts of grasping the mechanism of how to do things. One of the teachers chooses the topic of corrosion. She asks the learners to define corrosion in order to anchor the most useful concepts preparing them to categorize corrosion, as it occurs in its environment. In the process of its definition, the teacher draws the learners' attention to the effects of oxygen on the environmental variables, notably wet and dry places.

In the same veins, an introduction can be formed with a layered context, departing from a general premise and reaching a specific scope. In a biological lesson, the teacher

introduces the outline of a semester syllabus, which is entitled "Nutritional Immunology". It contains four lessons, which occur in a tripartite division, picturing the interaction of food, bacteria, and immunology. This way of the lessons' portrait is essential for exhibiting a chronological map for the learners, as it is shown in figure 1 below. It simply orients the learners to conceptually schematize the networks of knowledge they are supposed to cover during the whole semester.

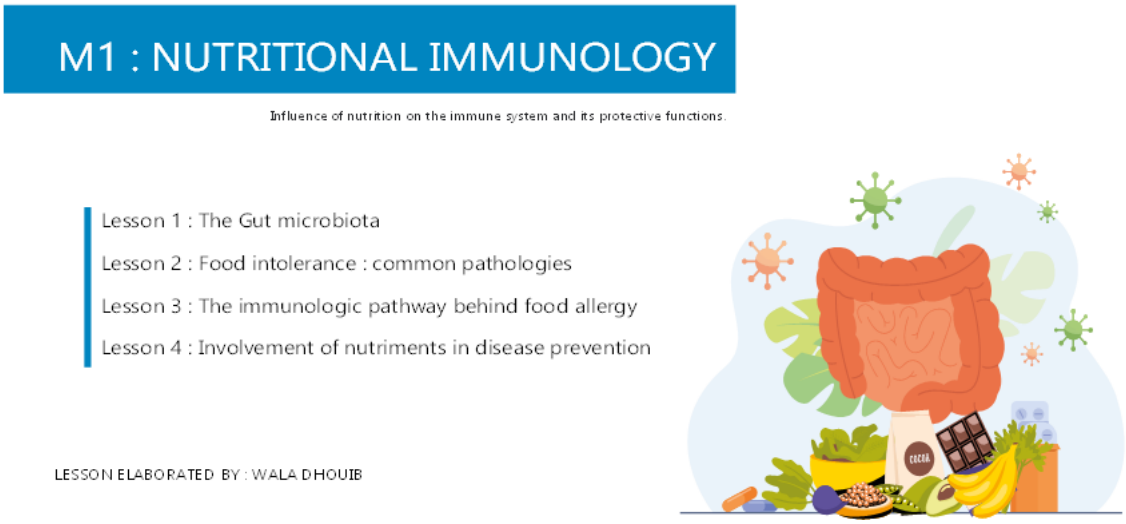

Figure 1. *Syllabus.*

Among the benefits of presenting an established course schedule in a pre-teaching phase is to indirectly urge the learners to read as much literature as they can. This kind of reading enlarges the scope of the learners' knowledge about nutrition and immunology through a guided reading. It also serves the teachers to prepare the learners to the forthcoming courses. Besides, it facilitates the teachers' classroom management as well as knowledge construction within the class. This type of introduction contains a generally contextualized layer since it is based on a semester syllabus mapping. The lower layer of contextualization refers to the topic of the lesson itself. It is entitled "Gut Micro biota". Before the defining the technical term "gut", as one of the basic concepts of the lesson, the teacher localizes its structure within the digestive system of the human body.

By discussing the importance of the lesson introduction phase, the doctoral students come to the conclusion that it is the area in which knowledge is activated, enhancing the lesson pace. Basically, the introduction is the pedagogical tool for the teacher to measure the learners' degree of knowledge in relation to the topic raised in the lesson. It is undeniably a superficial view to consider the introduction as a formal lesson pre-phase. It is an evaluative device for the teacher to detect the lack of knowledge, and even its defects, if it exists in the learners' minds. Many learners have either false ideas or just superficial ones about the academic topic, which is part of their syllabus.

The role of the teacher is crucial in attempting, pedagogically, to engage the learners to fill in the primarily knowledge gap at first, before going deeper into the heart of the lesson. Actually, the teacher is supposed to be with a pedagogical expertise, which is translated into putting the finger on the learners' capacities to start constructing conceptual knowledge about the lesson. The introduction is an indirect knowledge test, which allows the teacher to ensure the functionality of the equation of intensifying the learners' cognitive and perceptual attention to the lesson and at the same time increasing their quality of their later performance.

4.2. At the Core of the Lesson

The introduction paves the way for the content of the lesson through a flexible transition. The doctoral students, as novice ones, explore through a class discussion that the lesson's phases are implemented effectively only if the learners' needs for more in-depth knowledge of the topic are raised in the introduction. The post-introduction phase of the lesson is obviously the setting in which the teacher's pedagogical processing tools and the learners' performance reach its peak. This situation is delicate and intricate at the same time. The pedagogical craft of the teacher is the spark, which may add quality value for the learners by letting them use their scientific repertoire in doing things with the acquired knowledge.

For an acceptable lesson, the teachers are supposed to stick to the most efficient educational communicative principles, which endow the lesson with a live pace for the benefits of the learners. In these veins, it is beneficial to invest some useful theories from applied linguistics in feeding the lesson with the pedagogical tools, which enhance the teaching and the learning environment. The Gricean maxims could be implemented in not only tying the course successive phases

but also in framing the communicative aspects of the lesson taught in a classroom. Briefly, these maxims are elementary in guaranteeing a successful lesson. However, they could be refined with a pragmatic orientation for effective classroom activities. Otherwise, the lesson becomes rigid, actually de-motivating for the learners.

The Gricean maxims work well within a pragmatic context in case they are adjusted to the linguistic properties of communication and more importantly to the immediate speech situation during a lesson. In order to control the flow of a classroom communication during the post introduction phase, it is necessary for teachers to seem credible before their learners; their images are at stake if they fail to do so. This credibility stems from the teachers' qualifications, competence, and trustworthiness. These qualities are overlapping with Grice's maxim of quality, and serve the lesson's management. These lessons are actually tied to the cohering rhetorical means, interweaving the core of the lesson phase into a seemingly logical manner.

Here are some presented lessons, which incorporate some cohering rhetorical means. The core phase of a lesson, which is entitled "Fatigue of Materials: Fundamentals" start with a definition of the concept of fatigue as it is the technical term generating all the lesson's procedures. This concept is highly technical. It deserves many efforts on the part of the teacher to scrutinize its effects on materials in general. The teacher draws a scheme showing the cycle of how fatigue occurs along a temporal line. It is presented in figure 2 below;

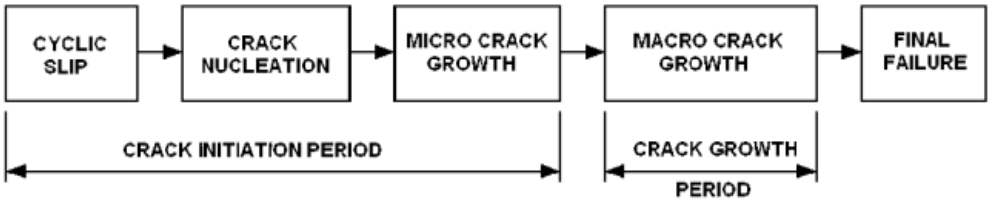

Figure 2. *Crack Cycle.*

The teacher leaves nothing for chance; he gives the learners an idea of how to pursue the cycle of cracking, ending up with fatigue as the last state of materials' exhaustion, particularly after a span of resistance. Fatigue is symbolized by a mathematical language as a completion to the schematic presentation of figure 2. The teacher asks the learners to deduce the meaning of each of the basic cyclical elements of the formula $N_f = N_i + N_p$ After guessing through the teacher's guide, the learners come to the conclusion that N_f stands for "fatigue function", N_i means the crack initiation, and N_p signifies the crack grow.

With reference to the definitional process, it seems that the teacher tends to engage the learners into the lesson content by letting them feel that they are granted a sense of autonomy to guess the definition of fatigue through a permissive trial and error sequence. This pedagogical tactic leads the learners to a cognitive engagement, which sensitizes them to build their own logical reasoning by a deductive mechanism. In this case, the teacher orients the learners, through a rhetorical act of definition, to pursue a line of thought departed from a rule and closed with its applications. Actually, this mode of reasoning makes the learners grasp the technical term fatigue within its authentic contextual applications. This mind-loosening technique helps the learners activate their knowledge construction. It enables them to predict the sequential elements of the lesson through different fatigue grammar of concepts, ranging from slip (as crack initiation), to loading, and to constancy testing.

As it is presented, the beginning of the lesson's core phase requires a well-studied preparation by the teacher. In this interval, the learners' abilities to react to the newly introduced concepts and the timely constructed knowledge take place. Actually, what increases the quality of the learners' acquisition is the interrelation of the rhetorical acts used to enhance the teaching and the learning environment, notably definition, categorization, exemplification, metaphor etc. The efficiency of these acts depends on the capacities of the teachers to preconceive them, and then how to adjust them finely within their lessons through a logical chaining of the knowledge at hand. This period is the most appropriate time for intensifying the interaction of the teacher with the learners.

Psychologically, if the initiation of the lesson is essentially interactive, the learners become more and more persuaded, which is normally manifested in an excess of their internal motivation to follow the course of the classroom animation attentively and actively. More importantly, it boosts the learners' acts of filtering out the fine-line of knowledge acquisition through activating a cognitive mechanism to think and react to the lesson's process. It happens through the teachers' reliance on a set of pedagogically decisive factors. They are principally their perception of their learners' levels, their preconception of how the lessons can proceed fruitfully [14], and their experience even if it is still limited, by definition. Novice teachers have their own access to contact more experienced teachers for a pedagogical support while preparing a lesson through a convenient pattern, which is necessarily suitable for the learners' level of understanding.

The choice of the lesson's pattering is usually a preconceived act designed by the teacher. It is mainly a framing device, which encapsulates the ongoing

orientations of the potential knowledge for learning. At the superficial level, a lesson seems as a classroom discourse, which generates the teaching/learning process with the most efficient pedagogical means for helping the learners scale up their level-plus-one. However, at the deep level, a lesson is a psycho-cognitive act, which is presented artfully by a highly specific mental interaction. Its interactive aspects are clearly marked in the way the lesson is structured and organized for guaranteeing a much more effective knowledge acquisition.

One way of patterning a lesson is the fine-line of problem-solution. Practically, in a mechanical lesson entitled, "The Fabrication of Mechanical Parts" the teacher introduces the cutting process as the main problem just before manufacturing takes place. He engages the learners to guess some possible solutions to reach the fabrication operations by asking different types of questions. Some of them are basically factual. Others are referential in nature. However, the teacher triggers the learners to respond by a series of questions, which are conducive to specialized knowledge. They are essentially based on elicitation. The factual questions are useful for gradually orienting the learners to reshape their knowledge to the technical scene they are facing, particularly the different cutting techniques such as saw-cutting, laser-cutting, water jet-cutting, and wire-cutting. The referential questions are much more creative. They lead the learners to suggest some possible appropriate cutting process autonomously through risk-taking. Following the lesson's procedures, the solution comes by crossing the identification of the properties of the diverse materials, which are available for manufacturing. The learners go through elicitation as a set of questions directing them towards acquiring the skills of the materials' cutting techniques by referring to the grid of the treatment variables, which are quality, feasibility, and cost. In general, it is deduced that elicitation seems the most suitable pedagogical tactic to determine the most useful cutting technique.

Another way of patterning a lesson is, may be, a much more complicated cognitive process than finding a solution to a problem. It is composed of two relational thinking layers. They are featured by cause and effect as two phenomenal types, which are based on motivation and occurrence, meaning how something is manifested existentially in the physical world. The lesson belongs to the field of geology, and it is entitled, "The Relation between Earthquake and Faults". The teacher starts the lesson with a technical definition of an earthquake and a fault. After the learners' attempts to define these newly encountered concepts, the teacher introduces an earthquake as, "a sudden slip on a fault resulting in movements within the earth's crust" while a fault as, " cracks in the lithosphere caused by the stresses as sections of plates moving in different directions". From these definitions, it seems that the lesson is patterned with a causal relation. The teacher invests different pedagogical tools in facilitating the content of the lesson to the learners. Firstly, she plans her lesson through the rhetorical act of defining an earthquake and a fault. Secondly, she categorizes earthquake by referring to its two types, which are essentially the tectonic and the volcanic, with a focus on the tectonic as part of the syllabus outlining. Consecutively, she categorizes a fault by demonstrating its different types through a slide as in figure 3;

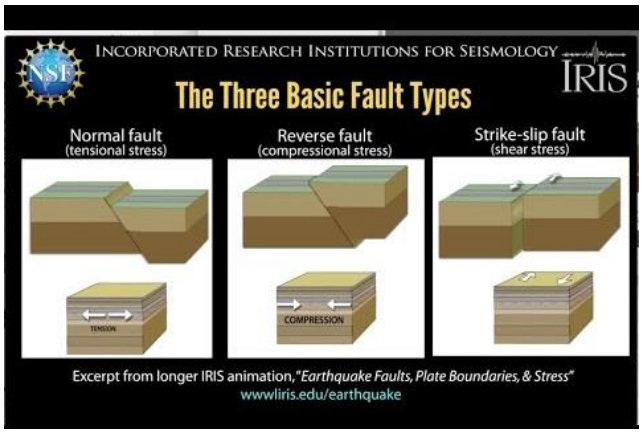

Figure 3. *Fault Types.*

The strength of the lesson appears in how the teacher makes the learners distinguish between the concepts of earthquake and fault in addition to their causal relation. In fact, the distinction of the two concepts increases the learners' perception of the cause and effect relationships. The teacher animates the lesson by a set of slides and some various types of questions, which guide to the knowledge construction and acquisition of earthquakes magnitude and the plates directions.

To end this lesson phase, it seems that pattern is a vital planning construct. It maps out the pedagogical orientations of the teacher's preconception of the lesson as well as the required knowledge for the learners. Pattern is the nucleus of the lesson, which is an essential part of the teaching/learning situation.

4.3. The Post-Lesson Phase: Conclusion

The end part of the lesson is the post-lesson phase, or the conclusion. It is usually built with no rigidly guided structure. It can take different non-exhaustive forms. However, the following are just three samples of how to deal with a lesson's closure. In a biological lesson entitled, "PCR: steps and uses", the teacher chooses a quiz, as it is shown in figure 4;

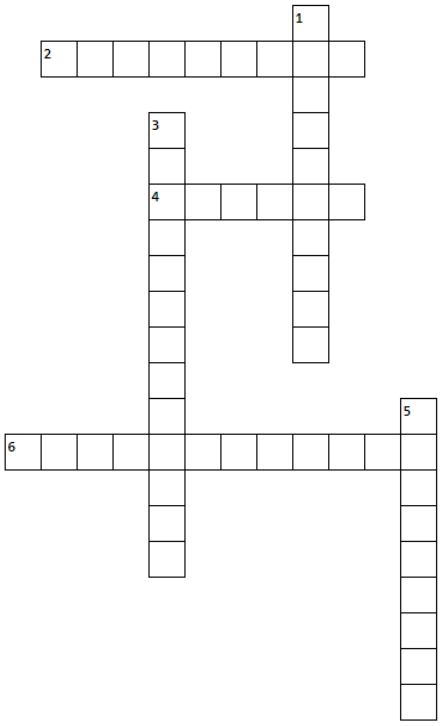

Figure 4. *Cross Words Quiz.*

Down

1. An enzyme which catalyzes the polymerization of nucleotides into DNA.

3. Obtaining an infinite number of copies of DNA from a target DNA sequence.

5. Meaning nearly the same as hybridization.

Across

2. The last step in PCR process.

4. A short, stranded DNA sequence used in PCR.

6. A step of PCR process occurring at 95 ℃.

It is in the form of cross words and the purpose of which is to test whether the learners are able to name the academic terms related to the Polymerization Chain Reaction (PCR) or not. The learners are given some indices, which orient them to guess the right terms and place their letters each in its appropriate box. This type of lesson-ending activity is a pedagogical scale with which the teacher is kept informed of the learners' abilities to master the key biological terms through a class meaning-negotiation.

In another lesson entitled, "Wavelength Celerity of Metal Plates", the teacher chooses a task-based activity in order to test the extent to which the learners grasp the content of the lesson in general. They are given a set of data, which guide them to measure celerity known as the speed of light of the copper plate by counting on the variables of photoelectric threshold and radiation. The theoretical demonstration of the lesson is necessary, but it is inadequate. The learners are not required to get the introduced theories in a vacuum. Assigning task is a pedagogical means of engaging them into doing things in real situations see the Celerity task just below;

Celerity task

The photoelectric threshold of cooper is $\lambda_0 = 0.29\ \mu m$.

1) Set the photoelectric threshold.
2) A cooper plate is illuminated with frequency radiation $\upsilon 1 = 12.10^{14}$ Hz.
   a) Determine the wavelength λ_1 of the radiation.
   b) Specify, with justification, if there is photoelectric effect.
   c) What happens, if the power of the radiation is decreased?
   d) The copper plate is illuminate separately with frequencies:

$$\upsilon_2 = 12.10^{14}\ \text{Hz and}\ \upsilon_3 = 17.10^{14}\ \text{Hz}.$$

   i. Specify the frequency, which gives low kinetic energy of emitted electron.
   ii. Calculated its value.

Essentially, the task goes with the learners' need of applying what they cover during a lesson in a synthesized way.

The conclusive phase of a scientific lesson may occur as a project work. In a biological lesson covering gut macrobiotic, which is a complex community of bacteria living in the digestive tract of humans, animals, and insects, a lengthy task is assigned to the learners. The teacher believes that an effortful assignment is a necessity just after defining gut macrobiotic, covering its mode of actions, health benefits, and its boosted effects. The assignment, as a project work, is formulated as follows: *"prepare a graphical summary of the pathway involving gut macrobiotic of prevention from a disease of your choice"*. It implies a need to fill in the dividing-line between general and circumstantial knowledge. The project work seems to be a bridge crossing the gap of the lesson's theories and applications in the minds of the learners. It is also a suitable occasion for the teacher to get a feedback of the skills the learners have already acquired.

This section is mainly organizational. It covers the basics of how to frame a scientific lesson all along its different mind-guiding phases in a coherent way. Its chronological procedures from the very beginning to the end may avoid the learners' mental disturbance. The learners are easily troubled if their thinking process is not timely chained. The following section is essentially about the pedagogical precautions to take for guaranteeing an effective teaching.

5. Yardstick for Effective Teaching

Briefly stated in this section are elementary thresholds for effective teaching. Theories are the bones of teaching while a lesson implementation is its flesh. Nevertheless, there are some teaching regularities, which are part of the teacher's marketing face. They are sketched out as a yardstick for guaranteeing an effective scientific lesson. It is vital to learn that goals and objectives are the lesson's orienting map

without which no course reaches the harbour of success. The general goals lend themselves to the specificity of objectives. The objectives set the scene of meeting the learners' needs for market-oriented knowledge [2]. The title is of a great importance for designing a clear syllabus and for framing the learners' knowledge. It is no less important than a lesson's segmentation into an introduction, course body, and conclusion.

Lesson's segments are based on the tripartite of evenness, relevance, and coherence. Pedagogically, they are necessary for avoiding manuals vagueness or ambiguity in the minds of the learners. Transitions between the lesson segments and sub-elements may be added as the propeller of the lesson's stream. It is normally achieved by different rhetorical acts, such as definition and classification.

The teacher's strong presence during the lesson is significant for loosening the act of learning by using different types of questions. The level of questioning differs from quizzed questions to project works. Lessons are supposed to be task-based with the matter of choosing the exact question timing. The questioning act is significant for the scenario of the lesson. Teachers are expected to be careful while asking their learners. A task does not bear more than one question. Double-questioning may disturb the learners' thinking in their responses.

Learners' thinking can be guided appropriately providing that a set of conditions are met. The psychological and the material spheres are inseparable. The psychological efforts of the teachers are mainly manifested in the lesson's preparation with pedagogical precaution and sensitivity-resistance. The lessons' materials should not be more than the learners' knowledge plus one. The teacher's behaviour during the lesson is influential. Firstly, the teacher is expected to have self-control habits. Postures and gestures usually convey a semiotic message to the learners. They are supposed to feel that the teacher treats the whole class with no discrimination. Secondly, it is greatly important to know how to use the board or slides. Hand-outs are handed over during the exact timing within the lesson.

6. Conclusion

This paper is illuminating. It is an attempt to demystify the teaching pedagogy of scientific lessons to the Tunisian doctoral students. Pedagogical researches may be opened to how to frame scientific digital lessons to get practical knowledge construction.

Abbreviations

SLA	Second language Acquisition
PCR	Polymerization Chain Reaction
DNA	Deoxyribonucleic acid

Conflicts of Interest

The author declares no conflicts of interest.

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