Research Article

About the association of different methods of learning in the training of medical students in a Pathology Lab

Mona Mlika[1,3]*, Lamia Ben Hassine[2,3], Emna Braham[1,3], Ali Mrabet[3], Faouzi Mezni
[1]Department of Pathology, Abderrahman Mami Hospital, Ariana, Tunis, Tunisie
[2]Internal Medicine Department, Charles Nicolle Hospital, Tunis, Tunisie
[3]University of Medicine of Tunis, Tunisie

*Corresponding author
Dr. Mona Mlika
Email: mlika.zorgati.mona@hotmail.com

Abstract: Every year, we receive in our Department of Pathology 7 groups of medical students in the third year of medical study who try to achieve the educational targets specified in their portofolios. In our department, we use many educational methods varying from traditional to new pedagological ones based on the reflexive view. We targeted to evaluate the efficacy of associating different learning methods in order to achieve the different educational targets. We performed a questionary-based study. The questionary in represented in Table 1 and is fulfilled by the students the last day of their training. The questionary contained 10 questions with 8 rating questions and 2 open ones. A descriptive analysis was performed. The repartition of answers was calculated in numbers for rating questions. Open questions were analyzed using a qualitative method. We anaylsed the pedagogical method according to 2 criteria, their educational impact and their acceptability. This study is about 14 students in the third year of medical studies who pursued their training during the period from January 2013 to March 2014. We based our results on 2 criteria: the educational impact of the pedagological means and their acceptibility. Five students prefered the e-portfolio as a pedagological mean and 9 patients prefered the session of clinical reflection and asked for more sessions. All the students encountered difficulties in fulfilling the items of the e-portfolio despite of the explications of the tutor. All the students appreciated the traditional pedagological means. Only 6 students used individually the e-portfolio. The other students used the e-portfolio with the tutor. All the students appreciated the session of clinical reflection and the resolution of problems. All the students understood the methodology of the e-portfolio but only 10% were able to explain it clearly. Six students justified their lack of motivation by the dichotomy caused by the training in the Department and the courses attended in the university. In conclusion, even if we included small number of students, our results highlight the utility of associating different tools of learning in order to increase the reflective potential of the students, to maintain their motivation and to achieve the different educational objectives especially in a based science speciality like the pathology.
Keywords: Traditional learning, e-portfolio, Reflection, Pathology, Pedagogy.

INTRODUCTION

The scientific research in the pedagological fieldinduced the necessity of adapting the scientific medical curriculum and the students' competences based on the reflexive principle [1]. Classical methods of learning have been supplanted by new ones. The term 'teacher' was replaced by the term 'tutor' and the 'cooling jet' learning was supplemented by a 'targeted learning'. The relationship between the tutor and the student has become transversal instead of vertical. Besides, the progress made in the field of cognitive psychology has changed the learning methods. Reflexive attitude has been reported to play a key role in the learning process. The training of the future family doctors is nowadays based on new recommendations that are, according to the Carnegie Foundation, the self-formation, attending integrated courses and the pursue of excellence [2]. We targeted to evaluate the acceptability of the different methods of learning performed in our Department of Pathology, their efficiency as learning methods and their utility as assessment tools.

METHODOLOGY

Since 2013, we receive every year 14 students in the third year of medical training. The training period lasts 2 to 3 weeks according to the university's recommendations.

Training targets are listed in their university portfolio. These targets were performed by the university pathologists and validated by the pedagogical committee of the University. The objectives are divided into objectives related to

technical skills, the resolution of problems and the ethical attitude. During the training period, the tutor validates the different objectives for every student. The table 1 illustrates the different objectives of training.

Some objectives are related to common pathologies that include lung cancer, pulmonary and lymph node tuberculosis, colorectal cancer, breast cancer, uterus cancer, hydatid cyst and Hodgkin lymphoma.

Population studied
This study is about 14 students in the third year of medical studies who pursued their training during the period from January 2013 to March 2014. We performed a questionary-based study. The questionary in represented in Table 1 and is fulfilled by the students the last day of their training. The questionary contained 10 questions with 8 rating questions and 2 open ones.

Analysis of the results
A descriptive analysis was performed. The repartition of answers was calculated in numbers for rating questions. Open questions were analyzed using a qualitative method. We anaylsed the pedagological method according to 2 criteria, their educational impact and their acceptability.

RESULTS
Planification of the activities in the Department
A diary about the daily activites of the students is availble in the Department and in the e-protfolio on their first day arrival. It contains their repartition in the Department and the different learning activities.

Repartition in the Department
The trainees are maintained into 6 sectors : Reception room, gross examination room, inclusion and coloration room, cut room, unit of cytology and bronchoalveolar lavage and the room of immunohistochemistry.

Learning activities
Different methods of learning are displayed in our Department.
➢ Traditional methods consisting in courses lasting 15 minutes. These courses deal with the pathologies mentionned in the training board.
➢ Learning by clinical reflexion performed approximately twice a week.
➢ A learning by resolution of problems.
➢ A review of the literature about a consensual subject chosen by the tutor and the students according to the objectives of their training.
➢ A lesson of critical analysis of a scientific article chosen during the review of the literature lesson studied in English.
➢ During their training, the students are followed by an e-portfolio that is presented the first day by the tutor.

Traditional learning: courses of 15 minutes are presented about the introduction of the pathology, the use of the microscope, the routine colorations in a pathology lab and the principles of extemporaneous exam, the immunohistochemical study, the bronchoalveolar lavage, a commented lecture of a pathology report, gynecological smears.

New means of learning consist in:
• **Sessions of clinical reflexion:** They are programmed by the tutor. They last 1 hour. A mean of 2 lessons are programmed every 2 to 3 weeks. These lessons start by the establishment of a 'vignette'. The first lesson is generally about chest pain in an adult and the second one is about gynecological smear. The students have to achieve the diagnosis based on a reflexive attitude.
• **Learning by the resolution of a problem :** It is planned into 3 days. The presentation of a problem is presented the first day. The different roles of the students are specified the first day. The second day is dedicated to a collective bibliography session and the students present their work the third day in presence of the chief of the Department and the tutors.
• **The e-portfolio:** key-word and the address of the e-portfolio are delivered to the students the first day of training : Portfolio adress : http://eduportfolio.org/71423
• Interview of the students and feedback

The Table 1 illustrates the first page of the portfolio. The e-portfolio contains different sections :
▪ Introduction and presentation of the portfolio
▪ Objectives of training
▪ Repartition of the interns and program
▪ Presentations
▪ Items to be fulfilled by the students
▪ Learning of clinical reflection
▪ Resolution of health problem
▪ Review of the literature and article chosen
▪ Auto-evaluation

Introduction and presentation of the portfolio: It deals with the presentation of the portfolio, an explication of its history and the aims of its use.

Objectives of the training: The different objectives are listed in the training board delivered to the students by the university.

Repartition of the interns and program: The repartition of the trainees and the program are available in the e-portfolio and available in the Department.

Presentations and courses: The different presentations and courses are available in the portfolio.

Items to be fulfilled by the students: Four items have to be fulfilled by the students : the role of the extemporaneous examn, the role of the gross

examination, the importance of the validity of the different technical steps, ethic problems.

Learning by clinical reflection: The vignette is available in the portfolio.

Learning by the resolution of a Health problem: The problem is available in the e-portfolio.

Bibliographic session: During this session, an article is chosen by the students and commented during a second session.

Self-evaluation: Drafts of self evaluation are available in the e-portfolio.

The results were classified according to 2 criteria: the educational impact and the acceptability.

Educational impact

Five students prefered the e-portfolio as a pedagological mean and 9 patients prefered the session of clinical reflection and asked for more sessions.

➢ **Self engagement of the learning process**

All students appreciated the self evaluation draft available in the e-portfolio. All of them encountered difficulties in fulfilling the items of the e-portfolio despite the explications of the tutor. They attribute their difficulties the the lack of time and a lack of motivation. Only five students fulfilled all the items. All the students aprreciated the bibliographic session and the process of choice and comment of the article.

➢ **Engagement of the tutor and disponibility**

One tutor was responsible for the training of the students. All the students appreciated his disponibility.

Acceptability

All the students appreciated the traditional pedagological means. Only 6 students used individually the e-portfolio. The other students used the e-portfolio with the tutor.

All the students appreciated the session of clinical reflection and the resolution of problems. All the students understood the methodology of the e-portfolio but only 10% were able to explain it clearly. Six students justified their lack of motivation by the dichotomy caused by the training in the Department and the courses in the University.

Table 1: First page of the e-portfolio (The different objectives of training)

Objective	Studied	Evaluated
Objectives related to technical skills		
1. Verify that specimen received (identity of the patient, date of birth, sex, site, date and hour) and the nature of the sample and clinical informations.		
2. Regarding the specimen received: • verify the adequacy of the conditioninog the specimen according to their future use: extemporanepus exam or routine exam • Respect the means of prevention from infectious risk • Vérify the fixation of the samples, the adequacy of the duration of fixation, the volume of fixator • Respect the means of preventionfromchemicalrisk. • Explain to the patient or to the doctor, the delay of the results		
3. Fullfil the draftused in the lab relative to clinical informations, paraclinical tests and the results of the exam asked for.		
4. Interpret the results of : • Gynecoligical smear • Granulomatous inflammatory process and discuss the different differential diagnoses • Small cell lynphome and deduce the prognosis according to the phenotype • Hodgkin lymphoma		
5. Practice the following acts : • Identify according to the gross examination of a specimen, the major prognostic elements: state of the limits, lymphnodecurretage. • Yse the microscope to read the slides of common pathologies.		
Objectives related to the resolution of health problem		
6. Discuss the case of common pathologies		
7. Retrieve from pathologic report the prognostic factors related to common pathologies		
Objectives related to attitude		
8. Have an ethical attitude towards the other students and the team of the lab		
Objectives related to scientific information		
9. Realize a critical analysis of a scientific article and a bibliographic research		

Table 2: Questionary

	6 (very satisfied)	4 (satisfied)	2 (soso)	0 (not satisfied)
Global appreciation				
Learning				
Duration				
Interest of the presentations				
Quality of presentations				
Quality of reflexive session				
Quality of the problem resolution session				
Pedagologicalmaterial -Equipment -Projected documents				
What was your favorite pedagological method : A / e-portfolio B/ Reflexive session C/ Resolution of problem session D/ Presentations				
What isyour opinion about the e-portfolio ?				
Other comments :				

DISCUSSION

This article deals with the necessity of combining different pedagological means in order to maintain the motivation of the trainees. Traditional educational means were accepted and appreciated by all the students. The sessions lasted 15 minutes and focused on takehome messages. All the students appreciated the reflection session and the session of resolution of the problem. Concerning the e-portfolio, only 6 students were motivated and usedit individually. The other students used it especially to download the presentations. They justified their difficulties in fulfilling the items of the e-portfolio by the lack of time. This article highlights the necessity of maintaining traditional pedagological means in addition to new ones, especially in basic science like the Pathology.The e-portfolio seems to be the less interesting according to our students. There are many types of e-portfolio in the literature : the '*shopping trolley*' contains every individual production, the '*toast rack*' portfolio contains variable production according to the training period, the '*cake mix*' portfolio contains every reflections of the students, the '*spinal cord*' portfolio contains different competences [3]. In our Department, we use a combined e-portfolio based on the training objectives and integrating items to fulfill by the students and self-evaluation drafts. In spite of the difficulties encountered by our students in adopting the e-portfolio, it remains an important pedagological mean which changed the paradigm of education. According to the 4 levels of competences established by Millar (to know, to know how, to show how and to do), the e-portfolio allows to evaluate the 4 levels [4, 5]. The success of an e-portfolio project depends on many factors : the clarification of the educational targets to the students [6], the integration of different activities of learning [7, 8], the flexibility of the means of learning according to the students' need [6], the establishment of a constructuive relationship between tutors and students [9], an educational backgroung of the tutor [10, 11], the necessity of a regular face-to-face between tutors and students in order to maintain their motivation [11] and the training of tutors [6]. In fact, the motivation, the training and the availability of the tutor are mandatory. The tutor plays a key-role in the establishment of the e-portfolio and some authors recommend the multiplicity of the tutor in roder to help the students to benefit from a « mentoring network » [12]. Concerning the necessity of a face-to-face, it is controversial especially facing the experience of the North American universities. In fact, these universities prone the electronic learning based on the cognitive style of the student. The latter could by analytic accepting low structured e-portfolios or general prefering well structured e-portfolios [13]. Some e-portfoliosprojetcs failed. The reasons reported were the time-consuming pedagological methods, lack of motivation or the inaccessibility of tutors [14]. In our Department, the lack of interest tothe e-portfolio may be due to the lack of time or the lack of individual work. In fact, it is mainly the result of a collective work than an individual one. The lack of autonomy of students may be pointed. The degree of autonymy of the students was discussed by many authors. Some authors advocate the necessity of a total liberty of the student to fulfill the e-portoflio and others suppose that a total liberty results in superficial and non constructive reflection [15]. Some authors prefer to mix imposed documents and individual ones in an e-portfolio [15]. Our study is a qualitative study based on a questionary with a qualitative analysis of the results. Inspite of the lack of objectivity of our results, we can suppose that the multiplicity of the pedagological means could maintain the interest and the motivation of the trainees.

CONCLUSION

According to this study, the association of traditional pedagological means and new ones may be necessary in the training of medical students in a

Pathology lab. The attractive aspect of the traditional means may be bue to the essence of the Pathology as a speciality. In fact, in opposition to clinical medicine, pathology may seem dificult to understand with many shaded areas.

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