



## Implementation of the portfolio during the pediatric internship for 6<sup>th</sup> year medical students

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### Abstract

The objectives of our work are to experiment with the Portfolio as a pedagogical device for teaching 6<sup>th</sup> year medical students during their pediatric internship, as a preliminary step to the implementation of this tool in order to improve the supervision of the pediatric internship

**Material and Methods:** The research involves 31 students who are assigned to Pediatrics and who practiced their internship between April-July 2015.

The assignment includes the collection of work during the internship period according to the PF model of a skills inventory (bibliographic session, gestures, presentation...). The material support for the Portfolios is limited to the internship notebooks and tablets with internet connection. An ECTS-type questionnaire exploring student satisfaction with teacher supervision in this pedagogical device was filled out at the end of the internship with open-ended questions.

**Results:** Content analysis of the portfolios shows that the documents archived are mainly clinical observations and reports of various activities of the internship. The majority of students: 85.4% 13.6% (n=26±4) are motivated. They have satisfactory answers for the different items of their training and have acquired a certain degree of self-evaluation and self-direction.

**Conclusion:** Our exploratory work on the implementation of the Portfolio allows us to verify: its acceptability by the trainees and their compliance with its realization, and its contribution to the improvement of clinical supervision: feedback and formative evaluation of competencies during clinical placements.

**Keywords:** portfolio, 6<sup>th</sup> year medical students, clinical internship, pediatrics

### Introduction

The portfolio (PF) is "the ongoing, reflective, and organized collection of a variety of authentic products that document a student or professional's progress, goals, efforts, attitudes, accomplishments, talents, interests, and development over time." It has developed progressively in the university education environment as a pedagogical device for training as well as for assessment. The FP is used as a systematic support of the learning process (portfolio-based learning) [1, 2]. Its use is developed in training programs in a learning paradigm that emphasizes the learner in the analysis of information, a problem to be solved or a project to be developed in interaction with his teachers. The learning plan is a document that contains information and objective traces of the learning achieved and serves as a basis for the evaluation process (portfolio-based assessment) [3, 4]. The use of the FP helps the student to develop the metacognitive component and reflexivity. Moreover, we appreciate the importance of the "reflective" component in the FP within the framework of a system focused on the development of professional expertise in health [1]. The assessment of professional competence must be carried out in a context of a high degree of authenticity and must be spread out over time in order to identify the development. The FP meets these requirements, however, the actual impact of the FP on competency development is incompletely documented in

health sciences education, and questions remain about the place of the FP in the evaluative process [5, 6]. On the other hand, an electronic portfolio device has been proposed that has positive effects on student motivation by conferring a perceived ability to self-direct [7].

The context of our research work is the implementation of a new pedagogical device, the FP, in the integrated teaching of Pediatrics.

In this pedagogical project, we propose the implementation of a new pedagogical innovation, the FP, with the aim of improving students' learning while developing their cognitive and metacognitive knowledge, reflective clinical practice (personal experience) with the acquisition of new clinical skills useful for a physician.

This pedagogical innovation has raised many questions from instructors and students:

What about the transposition of this Anglo-Saxon process into the training culture in Morocco? How will the trainees experience this new pedagogical device? How do 6<sup>th</sup> year medical students appropriate the FP? How does the construction of the FP contribute to the transformation of the trainees' identity and skills (FTEs)? Does it make it possible to demonstrate the acquisition of skills?

At the end of this course, we put forward proposals on the elements to be designed in the training of EFA. This will allow for the development of skills acquisition and reflexivity in the portfolio process.

**Material and Methods**

**Purpose of the study**

The objective of our research is to implement FP among 6th year medical students during their pediatric internship (full-time externs: FTEs), to identify the students' and teachers' views on FP, its advantages and the difficulties in

implementing it (Table.1).

The Ethics Committee for Biomedical Research at Mohamed VI University at the Faculty of Medicine and Pharmacy in Rabat has issued a favorable opinion for the implementation of this research project (IRB Approval).

**Table 1:** Description of the study

| Concerned                    | Description  | Goals   | People  |
|------------------------------|--|---|---------|
| File of learning student     | Collection of student's work   | Follow the student's progress to better   | Student |
|                              | demonstrating progress over a period of time (testifying to his learning and its activities related to the teacher | understand the mentor's learning To teach the student to be autonomous To help the student become aware of his learning | Student |
| Presentation supervisor File | Presentation of some works   | Helping students talks About their learning   | Teacher |
| Evaluation File              | Choice of accompanied Comments productions   | Demonstrate the level of development of a skill or several skills   | Teacher |

**Inclusion criteria**

The context of the study is for trainees who are 6th year medical students also called full time externs (FTE). They are assigned to the pediatric department on a full-time basis for their 2-month pediatric internship.

**Study Duration**

The study was conducted in two periods according to two EFA groups. Its duration is 4 months:

The 1<sup>st</sup> group includes 20 student interns (FTE) who practiced their Pediatric internship between the April-May 2015 Period.

The 2<sup>nd</sup> group consists of 11 student interns (EFA) who completed their Pediatric internship in the June-July 2015 period.

**Study Location**

The study took place in the Pediatric Service 4, which includes the following specialties: Cardiology-Nephrology-Rheumatology-Pediatrics at the Children's Hospital-Rabat.

**FP Type**

In our work, it is a selective FP responding to specific objectives defined by the teacher in charge. We tried to follow the FP model of the spine which proposes that a repertoire of skills (bibliographic session, gestures, presentation the material support of the FPs used was limited in our study to the internship notebooks and tablets with internet connection. Because we were in an exploratory period, we limited the work instruction to the collection of a limited number of works during the internship period.

**FTEs Questionnaire**

We addressed open-ended questions to FTEs students: What does FP mean to you in terms of content and work to be done? Have you ever collected FP documents? If so, which ones? Have you taken ownership of the Portfolio?

**Portfolio Supervision Arrangements**

The students were supervised by the teacher in charge. A preparatory session was done during which recommendations were made to the students. This is to show how the professional activities performed by the student were used for learning purposes. This is a cognitive approach to which the teacher gave various instructions to help him/her such as:

**Real-life experience**

What does the student need to learn? What are the problems posed?

How can the student do this learning? What lessons can the student learn for future practice?

In this pedagogical approach centered on the FP, we used different techniques that could help the student in his learning process and reflective practice: Brainstorming, semi-directive interview, inter-student evaluation. A single tutor-teacher supervised the work of the FTEs.

The supervision of the students by the teacher was evaluated using a seven-point questionnaire: where the items entitled (Appendices 1 and 2) were scored on an ECTS-type scale: (0: Unsatisfactory, 1: Average, 2: Satisfactory, 3: Good, 4: Very good, 5: Excellent, 6: Superior). The learners' evaluation grid resembles the Bordage grid [8].

**Statistical analysis**

The averages were established using Excel and SPSS 10 (Satisfaction rate).

**Results**

Among the work that is done by our participants (FTEs): clinical observations and bedside presentations are done by 12 FTE, clinical case presentation - development of interesting cases in the classroom is done by 2 FTEs, bibliographic research in the classroom is done by 6 FTEs and role-playing (Physician/Patient) is practiced in the classroom by 11 FTEs.

The FTEs' responses to the questionnaire were all identical: they are not familiar with the use of FP in clinical practice.

We collected the work done by the FTEs, which was able to give the traceability, the follow-up and the path of acquisition of the skills. We noticed that the realization of the FP corresponds to an additional work and the trainee became aware of it (this answer came back several times: work, additional investment to give).

**Content Analysis of Trainee Portfolios**

The nature of the documents archived in the PF of our students is as follows:

Clinical observations with which the student was confronted. The information documented allowed the student to address several aspects of medical action (clinical diagnosis, paraclinical, doctor-patient relationship,

therapeutic education, deontological and ethical aspects) Report on various activities in which the student participated in the course of his/her professional practice: presentation, bibliographic research, reading and interpretation of biological and radiological assessments. Interviews with parents, child, assisted procedural tasks: technical gestures: nebulization, catheterization, ascites puncture, lumbar puncture. The evaluation developed from the FP was essentially formative. We have noted that this type of evaluation has caused some students to withdraw from their activities (no note-taking, no observations). On the other hand, two-thirds of the students were motivated and volunteered for the activities and were able to acquire a certain degree of self-

evaluation and self-direction during the course. We noted a high frequency of FTEs who were satisfied with this educational arrangement. There was also a high frequency of satisfactory responses from EFAs for the various training items during their practicum (Figure.1). Each heading refers to the evaluation items and teacher supervision of FTEs during the practicum.

Qualitative analysis of the supervision of the students by the teacher was evaluated in responses to a questionnaire: (Response rate: 85.4% ± 13.6% (n=26±4) (Extremes: 61.2%-96.7% (n= 18-29)) of trainees who are at least satisfied with the training in the portfolio instructional device (Questions 3 to 10) (Table.2).

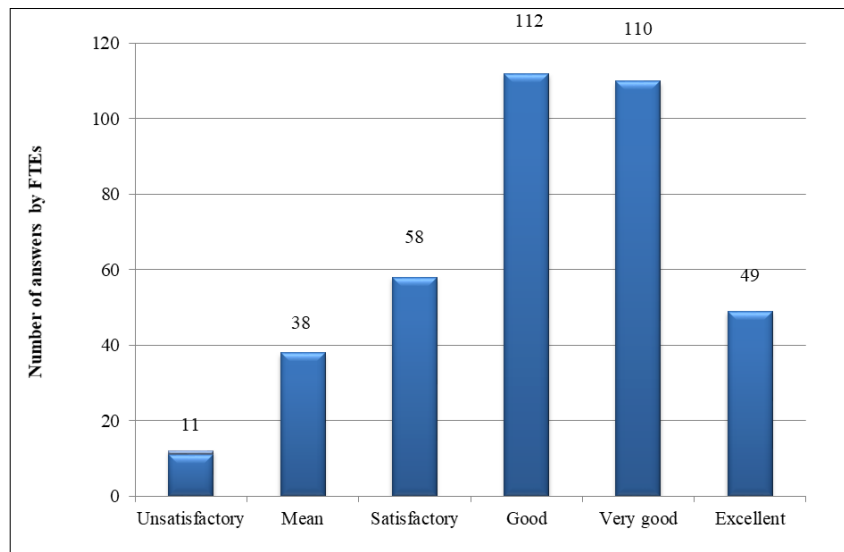


Fig 1: FTEs satisfaction with teacher supervision ratings in the framework of the portfolio educational system

Table 2: Frequency of responses for the different items with an ECTS type scale satisfactory and above (N=31)

| Different FTEs Training Items   | Number (n) | Frequency (%) (n/N) |
|---|------------|---------------------|
| 1. Quality of the student's relationship with members of the health care team   | 25         | 80.6                |
| 2. Clarification by the teacher of your and his/her expectations for the course (definition of responsibilities, roles, evaluations etc.) | 31         | 71.4                |
| 3. Direct observation by the teacher of my questioning skills and examine the patients  | 29         | 93.5                |
| 4. Discussion with the teacher of my clinical approach:   | 30         | 96.7                |
| 5. Teacher emphasis on key elements for each patient  | 30         | 96.7                |
| 6. Teacher's ability to stimulate my interest and curiosity   | 30         | 96.7                |
| 7. Teacher identification of my study needs and for further study   | 30         | 96.7                |
| 8. Teacher demonstration of diagnostic decision making and evidence-based therapies   | 29         | 93.5                |
| 9. Assessment at the end of the visits (gaps, inpatient MT)   | 29         | 93.5                |
| 10. How to conduct a clinical observation (departmental staff)  | 30         | 96.7                |
| 11. Bibliographic research  | 19         | 61.2                |
| 12. Role-playing  | 19         | 61.2                |

**Discussion**

The analysis of our results shows that the majority of students have a favorable impression of the Portfolio as a learning tool. Nevertheless, we find that although the content of the FP that is completed by the trainees is structured, their reflection is only documented for some of them. Most FTEs are motivated and volunteer for the activities. They have acquired some degree of self-evaluation and self-direction during the internship. The curriculum of medical studies at the Faculty of Medicine and Pharmacy in Rabat includes theoretical courses and internships from the 3<sup>rd</sup> year of Medicine. Then from the 6<sup>th</sup>

year onwards, these students (FTEs) do only the practical training.

Pediatrics is one of the mandatory rotations that FTEs must complete. However, we have reported that FP is a favorable learning tool during postgraduate health professional training. In addition, some authors have shown the improvement of learning through FP in undergraduate students [9, 10].

Learning in a work environment is one of the effective ways to translate theory into clinical practice. This has been translated into active reflection for some students and constructive feedback by clinicians. The effects of the use of

portfolios on the learning of pre-graduate students have been shown<sup>[11]</sup>. The structure of the FP can facilitate the promotion of self-awareness in our FTEs. Indeed, it constitutes a reflective clinical practice support. Results from other studies show that the FP is an effective instrument for reflective practice<sup>[3, 12]</sup>, although it can be the backbone of effective workplace learning<sup>[13, 15]</sup>.

In our research work, the portfolio is considered a practical and effective learning tool that can support the training of future physicians.

The analysis of the questionnaires of the evaluation of the teacher, by the students of the 6th year of Medicine, shows a high and significant frequency of students who are motivated by the training and who are satisfied with the supervision by the teacher. Hence the need to develop this pedagogical device in hospital internships for authentic training and evaluation of students' clinical skills.

It is important to emphasize the notion of formative evaluation of the learners with a regulation of their learning and their acquired skills.

The importance of setting up learning components and coaching were noted by other reporters. In fact, their thinking went beyond the evaluation of 8 clinical skills to address professionalism<sup>[16, 17]</sup>. In contrast, students (nurses) have been shown to be ineffective in using FP for the development and assessment of their learning and competence<sup>[18]</sup>. In our learners, FP appears to be a simple learning tool among many others: evidence-based medicine<sup>[19]</sup> or the objective structured clinical examination (OSCE)<sup>[20]</sup>. Moreover, FP can be applied to students in reflective teaching, communication and professionalism activities<sup>[21]</sup>. Other authors have emphasized the importance of implementing FP for learning and coaching<sup>[22]</sup>.

In our original work on the implementation of FP in FTEs, we can highlight the importance of the "Learning Portfolio" application. This pedagogical approach encourages learners' self-reflection, teacher supervision and behavioral modification throughout their learning process. The construction of the FP that is evaluated by the tutor, including the personal work and learning tasks that are completed during the practicum, is consistent with the perspectives of authentic assessment.

In our experience, the analysis of our participants' FPs shows the need for accreditation of the "Portfolio" pedagogical device for its implementation within the learning paradigm.

In this study, we tested the effect of portfolio use on trainees' learning. Most of our FTEs adhere to the use of portfolios in clinical training placements. The implementation of the FP in the 6th year medical students is very useful because of an improvement in their learning. Indeed, they have acquired certain attitudes (conception of learning, autonomy, self-confidence and satisfaction).

According to our research, we can confirm the importance of the implementation of learning portfolios because of its educational value for both FTEs trainees than among pedagogical trainers.

### Methodological limitations

Our research is part of a qualitative approach; we collected information from the FP contents and with the help of teacher evaluation questionnaires.

**For the students:** Difficulties in writing in their FP (possibility of assimilating a reflective approach without writing: Time constraint and insufficient supervision (only one teacher for 30 students). Data collection from the group of EFAs after their training. It would be interesting to collect information from learners in the initial phase and after their training. A potential bias is the fact that 6th year medical students finish their internships and are in replacement.

**For teachers:** Mainly time constraint (Care, teaching: and supervision activities). Lack of training staff, hence the involvement of only one group of learners.

### Conclusion

This original study demonstrates the integration of student trainees (FTEs) into the Portfolio implementation project. The construction of the FP by medical students can contribute to identity transformation and skill acquisition. Consistent with constructivist perspectives on learning, contextualized teaching, and authentic assessment, the use of the portfolio as a tool for learning, developing The first introduction to the professional and evaluation system is for 6th year medical students in pediatrics. Our preliminary exploratory work in implementing the Portfolio verifies:

Its acceptability by the trainees and their complaining about its realization and its contribution in the improvement of clinical supervision: feedback and formative evaluation of competences during clinical placements.

Our experience shows that the application of this new pedagogical device leads to student motivation. Thus, we recommend the implementation of the FP as a pedagogical device for learning, professional development and evaluation for 6<sup>th</sup> year medical students in pediatrics.

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

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