

# GUIDED WEEKLY REFLECTION PAPERS

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## Abstract

The experience gained by our team of educational innovation with the implementation of the “Weekly Reflection Papers” has led us to diversify and make more flexible the employed methodology. The modified tool, applied during the academic year 2010-2011, was called “Guided Weekly Reflection Papers”. The aim of this modification has been the development of certain abilities and skills of the students, with particular emphasis on their ability to integrate, review and apply knowledge in a critical and reflective way. The professors guide the student’s work through a series of questions on which the students must apply the most significant concepts studied each week, to prove the acquisition of such aptitudes and skills.

Keywords: guided weekly reflection paper, reflective practice, teaching-learning tool, feedback process.

## 1 INTRODUCTION

The current educational context calls for an alternative to conventional teaching based on an active and reflective student-centred learning (1). With this purpose a group of professors of the University of Alcalá, in different knowledge areas such a Sciences, Pharmacy, Engineering and Music Education, carried out an experience called “Weekly reflection papers” (WRP) since 2007. Each lecturer adapted the methodology to the peculiarities of the subject, students and spaces where the matter was taught. The results of this experience were presented at several conferences in Educational Innovation (2, 3).

In order to improve certain abilities and skills of the students to integrate and apply the acquired knowledge in a critical and reflective way (4,5), the group of lectures implemented some changes in the methodology, which constitute the aim of the present work. This communication describes firstly the methodology previously employed by our group together with the study of the obtained results and, afterwards, presents the new methodology and the partial results obtained so far.

## 2 METHODOLOGY

### 2.1 Previous studies

#### 2.1.1 Key points

The methodology applied by the team of teachers during three academic years (2007-2010), with the flexibility required for the implementation in diverse academic contexts, can be summarized in the following key points:

1. Participation of students in this Project is voluntary, but is strongly recommended on account of its utility as a learning tool.
2. Students write and hand in the Weekly Reflection Paper to the lecturer periodically (week, fortnight, topic unit), in which they present a clear and concise exposition of the most relevant concepts studied in this period, as well as a reflection about the difficulty of the subject, the evolution of their knowledge or any other point of interest.
3. The style and structure of the papers is totally free. Both the clarity to express the ideas and the level of personal communication achieved are considered to be key elements in writing the papers.

4. Once they have been checked, the lecturer returns the papers as soon as possible with a view to clarifying concepts, correcting errors, marking the works and responding to the students' comments. This feedback is one of the main features of this exercise in Educational Innovation.
5. The results are statistically analysed to find out the correlation between the number and quality of the works prepared by the students and the final marks obtained.
6. Students evaluate this activity by means of a final questionnaire in which they state their opinion about the Weekly Reflection Papers.

### 2.1.2 Evaluation of the results

The Weekly Reflection Papers as innovative tool has been implemented during three academic years, which allowed us to have a global overview about the influence produced in the learning process. Once the team of professors analysed the results, together with the analysis of the students questionnaires and despite the heterogeneity of the subjects taught, the existence of several common points were found. **Figure 1** shows these results, expressed as a SWOT scheme (3).



**Figure 1.** SWOT scheme for the Analysis of Previous Results.

#### *Strengths*

First of all, we found a better communication between professors and students. These last were able to express ideas, make suggestions, ask questions and give opinions, all of which would otherwise have remained unaired.

Lecturers could gradually check progress in the teaching-learning process and therefore focus it appropriately ("feedback process") without having to wait for the exam.

The students considered the writing of Weekly Reflection Papers a personal commitment, which they fulfilled thanks to constancy and perseverance in their work throughout the academic year, which meant that they were always "up to date with the subject".

The activity allowed the students to correct mistakes and to distinguish clearly what they had understood and what they had not along the learning process, without having to wait for the eve of the exam.

It helped them develop their capacity to understand by means of reflection and to express themselves coherently in written form using scientific terms.

It enhanced students' active participation in lessons.

Writing the Weekly Reflection Papers made students more autonomous and more confident in their own perception of the subject.

### *Weaknesses*

The main goal pursued in applying this activity was the development of the ability to synthesise and select the most important items of knowledge taught. However, this goal was not always accomplished, at least at the expected level, since often the WRP were a mere transcription of the notes taken in class.

The greatest deficiency was observed to be the students' scant capacity to reflect and think critically. They have great difficulties in establishing relationships with the knowledge acquired in other related subjects.

A clear correlation between the writing of WRP and the final marks obtained by the students was not always easy to be found.

### *Opportunities*

Because this activity was implemented by an interdisciplinary Educational Innovation group, the opinions of lecturers from different knowledge areas could be contrasted. This fact enormously enriches us, as teachers, within the framework of the European Higher Education Area (EHEA), since increases our ability as a team work and our personal relationships as much as it provides us a continuous learning chance.

It enhanced the possibility of interacting with students who are not usually participative in the class.

WRP allow the lectures to continuously follow the student's comprehension of the subject hence we can say that increases the lecturer perception in the teaching-learning process.

### *Threats*

Due to the high number of students in most of the subjects, the time required for the lecturer to correct each week the WRP is extremely long, only compensated for the advantages described above.

For some students the writing of WRP was deemed to be a waste of time, a repetitive activity, in which, the effort employed was not worthwhile. For some students the obstacle is the lack of motivation to make any extra work.

Another students, despite of considering the WRP as an interesting activity, adduced not having enough time to prepare them.

In summary, both students and lecturers valued the experience extremely positive despite the effort and time required. They think that it should be continued into the future but including certain modifications based to the previous results.

## **2.2 New methodology: Guided Weekly Reflection Papers**

After considering the previous analysis, and in order to overcome the weakness and threats of the former methodology, we tried to diversify and make more flexible this last to introduce the students in a process of more active and participative learning, which motivates and encourages them to achieve more significant and reflective knowledge and generates interest in emergent topics.

The aim of this modification has been the development of certain abilities and skills of the students, with particular emphasis on their ability to integrate, review and apply knowledge in a critical and reflective way; the modified tool was called "Guided Weekly Reflection Papers" (GWRP). The professors guide the student's work through a series of questions on which the students must apply the most significant concepts studied each week, to prove the acquisition of such aptitudes and skills (6).

As in the former methodology, once the students finished the filling of each "Guided Weekly Reflection Papers", the professor corrects and returns them in the shortest possible time. Each lecturer monitors the activity by filling in a table in which the number of papers handed in by each student and the corresponding mark are included. On the basis of these data the degree of participation in the activity

is statistically analysed, together with its influence on students' attendance at classes and exams, and its relation to the final marks obtained.

### *2.2.1 Changes in the Methodology*

The changes accomplished in the new methodology are focused on encouraging the students to write the WRP in an enthusiastic, original and interesting way, avoiding the mere repetition of the notes taken in class, but at the same time, not following a classical "question-answer scheme" as in an exam.

The main changes introduced are:

The professor suggests the fundamental points for the students to follow when writing the GWRP, instead to make the scheme of the whole content taught in the class. This is especially useful in the occasions in which the amount of new knowledge imparted is too wide so that the scheme the students should write would be too long, and as a consequence too tedious for the professor to correct.

The students have to apply the concepts developed during the week to solve some questions or problems stated by the lecturers. This point will provide the information about the level of understanding of the knowledge reached by the students.

They also have to find solutions to situations of the real life by means of the learned concepts. Or explore beyond the walls of the classroom to discover where around them is it possible to find the material presented by the teachers. Taking as example the subject Chemistry, we could ask the students where in the real world can they find saturated hydrocarbons or carboxylic acids; probably they never before came to the idea of relating what they learn in class with what they can find in the kitchen of their houses.

In some of the subjects the stated questions were oriented to solve certain problems which might appear in a professional future situation.

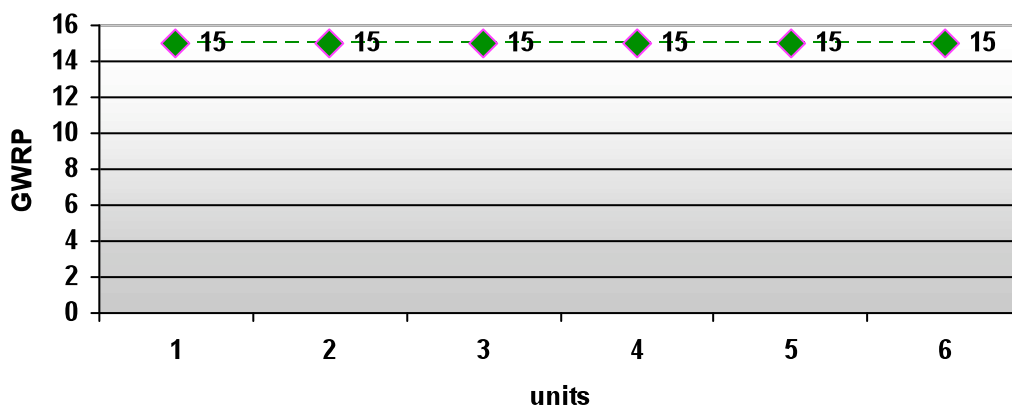
Finally, the students have to search correspondence among related concepts taught in other parts of the same subject or, specially, in other subjects. It is necessary to avoid studying the topics as isolated compartments.

### *2.2.2 Analysis*

Since our Educational Innovation team started this new experience in January 2011, only some of the teachers had the opportunity to implement the new tool in the subjects which took place in the second semester of the academic year 2010-11. The rest of the lecturers are now starting to carry out the experience. In order to better analyse the results so that clearer conclusions can be drawn, it will be necessary to finish this course, or, even better, to implement this new tool during at least two or three academic years, as we did with the previous WRP. Therefore we will present in this section the complete results of only two lecturers of our group after the students having performed the new Guided Weekly Reflection Papers (GWRP) during a semester, and the preliminary impressions of the rest of our team, based in the few GWRP written this academic year by the students.

### Complete statistical results

**Pharmaceutical Technology:** The experience was offered to 51 students registered in the subject Pharmaceutical Technology (character optative, Faculty of Pharmacy). **Figure 2** shows the constant participation of 15 students (more than half of the habitual participants in the class) along the half semester in which the experience was implemented.



**Figure 2.** GWRP presented in the subject Pharmaceutical Technology in the course 2010-11.

The analysis of the results obtained with the application of the Guided Weekly Reflection Papers (GWRP) summarized in **Table 1** shows a clear correlation between the number of GWRP written by the students and their level of knowledge acquired, proved by their higher grades.

Grade	0 GWRP	1-2 GWRP	3-4 GWRP	5-6 GWRP
Merit				2
Excellent				1
Good	4			11
Pass	17			1
Fail	7			
No show	8			
<b>Total</b>	<b>36</b>			<b>15</b>

G.W.R.P. = Guided Weekly Reflection Papers presented

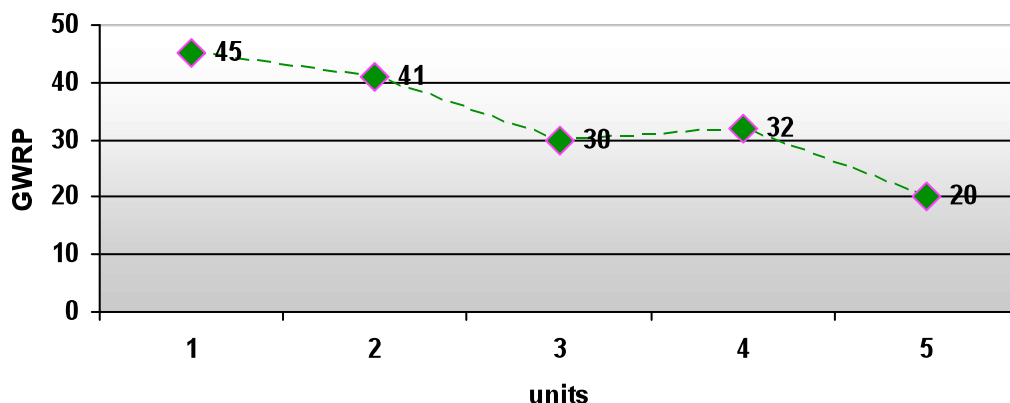
**Table 1:** Grades obtained by the students in the subject Pharmaceutical Technology during the course 2010-11 towards the GWRP presented.

From the participant students, none failed and only one had a low passing mark (Pass). Two Merit, one Excellent and eleven Good make evident how the GWRP help the improvement in the learning process. All the students involved in the process expressed in the last part of the papers that the reflective practice help them to have a deeper understanding of their own teaching process.

**Advanced Organic Chemistry** (core subject of 4th year in Chemistry degree): The activity was carried out in the first part of the subject. This part falls within the area called Physical Organic Chemistry, a constantly changing and evolving field. GWRP is a highly positive and enriching tool,

particularly in this multidisciplinary topic which is eminently practical and therefore requires on-going, critical and reflective learning.

A direct relationship between the writing of the papers and the results achieved is clearly observed. 35 students handed in more than 50% of the total possible papers. It is easy to check that the better marks are obtained by them (**Figure 3 and Table 2**). GWRP were particularly useful for revising previously taught concepts and the relation with other knowledge areas. Participating students were seen to be highly committed and valued the experience positively



**Figure 3.** GWRP presented in the subject Advanced Organic Chemistry in the course 2010-11.

<b>Grade</b>	<b>0 GWRP</b>	<b>1-2 GWRP</b>	<b>3-4 GWRP</b>	<b>5 GWRP</b>
<b>Merit</b>				1
<b>Excellent</b>			1	1
<b>Good</b>	5	4	9	7
<b>Pass</b>	16	4	5	5
<b>Fail</b>	15	1	3	
<b>No show</b>	49	2	2	1
<b>Total</b>	<b>85</b>	<b>11</b>	<b>20</b>	<b>15</b>

G.W.R.P. = Guided Weekly Reflection Papers presented

**Table 2.** Grades obtained by the students during the course 2010-11 in the subject Advanced Organic Chemistry during the course 2010-11.

### *Qualitative results*

Both the conclusions drawn by the lecturers whose results are described in the above paragraph and the first GWRP collected by the lectures who are now starting with the new tool, lead to the same impressions.

The open questions stated to the students each week offer a wide range of diverse answers and enormously enrich students and professors.

Along the solving process the students shall consult books, web sites, and other different sources in order to find the required information. This is, unfortunately, a habit scarcely extended among the students, which can be considerably improved by this method. Moreover the writing of GWRP

increased their curiosity leading them to explore some topics which had not been taught in class and as a consequence going further than the strictly required for the evaluation and qualification.

They have to observe the world around them with a scientific and critical sight to discover where all the new learned concepts were "hidden" or which are the possible applications of all the recently acquired knowledge.

Very often the topics we suggest to be solved by the students present not a unique solution but a variety of correct answers. This is one of the most important achievements of the tool towards the lecturers. On one hand it prevents the repetition of similar scheme of concepts, which makes the correction by the professor much less tedious and more attractive. On the other hand open us the opportunity to get to know answers that we would have never thought. Sometimes we, as teachers, have been nicely surprised by the solutions or opinions expressed by our good students. Towards the students, this variety of plausible answers also prevents the copy of each other's answers, because it would be much easier to notice it.

### **3 CONCLUSION**

In summary, despite having only preliminary results, the GWRP as a teaching innovation tool provides a higher engagement of the students with the teaching-learning-process and it gives us the opportunity to improve the quality of the teaching-practice. The large cost in terms of time and effort required both for professors and students it is compensated for the more conscientious, reflexive and autonomous learning and for the better grades obtained.

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