Behaviours and working strategies judged useful for improving the quality of higher education: Results of chemistry students' judgments at the Faculty of Science Ben M'sik-Casablanca

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Abstract

In this study, we are mainly interested in the level of students' satisfaction about their courses quality, as well as the different strategies judged useful by students to improve higher education. A total of 302 chemistry students of different levels from the first year to the Master participated in this survey; they are between 18 and 28 years. The analysis of the results shows that student's dissatisfaction is patent and the teachers are not interested enough to motivate their students. For this, students can engage in personal actions to improve their general culture, to expand their field of knowledge and improve their chances of employment.

Keywords: Quality of teaching, chemistry students' motivation, behaviours and working strategies, Moroccan university.

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1. Introduction and problematic

Today, nearly all higher education teachers are facing a major problem: the lack of motivation of students. All levels are concerned and most teachers are not sufficiently interested to motivate their students. This problem is a fact that may have been too often neglected and which it is more than urgent to attack it. This research is situated in the broad framework of aid to success but its intention is limited to the study of an affective variable related to the student, the university motivation.

In the learning context, it is a dynamic state based on the perception that a learner can have of himself and his environment that pushes him to a choice of activity, to engage in it and persevere in accomplishing in order to arrive at the goals (Viau, 1994).

Other definitions: 'Motivation is usually defined as the action of forces, conscious or unconscious that determines behaviour'. Houssaye (1993); 'Create working conditions that allow students to pass from his impotence acquired to a quality engagement in the activities proposed to him' Bernard (1998).

Students should, therefore, be part of quality evaluation process actors of higher education, as well as the internal control organisms and external evaluation. However, the term quality is still the subject of lively debate (Vial, 2001). The concept of quality is a trap concept, as it is at the same time, today, very much used and documented, and, at the same time, very ambiguous.

It is about a concept which has a great success in the problematic framework of 'the quality assurance'. Quality assurance is regarded as 'a capital challenge for the establishments of higher education' (Rege-Colet, in press). We mean by this the union of all that is necessary (strategies, attitudes, actions, proceedings) to guarantee and improve the quality (OCDE, 1999, p. 34). How then we define quality? For the OCDE (1999, p. 224) is the 'characteristic of that which serves well his aim'.

We can envisage in this sense two aspects:

- Adaptation (subordination) to the objectives, we can then talk about the pertinence.
- Realisation of these objectives, in this case, we can talk about efficiency.

Thus, 'The evaluation of the ratio between goals and their realisation is at the heart of the issue of the quality' (OCDE, 1999, p. 56). This allows certain authors to affirm that the quality of education is defined by the attainment of objectives considered desirable (Duru-Bellat, 2007).

The principles of a teaching of quality. For example: (Romainville and Coggi, pp. 172/173.):

- Principle 1: adaptation to the finalities of the university formation.
- Principle 2: taking account of the concrete diversity of students.

Under these conditions, two concrete characteristics of a 'didactic of quality' could be:

- Production of expected effects.
- Response to individual and collective needs of students.

As part of helping students to find motivation during their university career, we took the initiative to analyse judgments and appreciations made by students about the quality of their courses, the behaviour of studies and the different work strategies judged useful to improve higher education according to chemistry students at the Faculty of Sciences Ben M'sik-Casablanca.

2. Method

2.1. Participants

A large group of 302 chemistry students from the Faculty of Science Ben M'sik participated in this study, including 193 girls and 109 boys with an age range from 18 to 28 years, and a mean of 21.5 years, distributed according to the levels from S2 to the Master.

Table 1. Distribution by gender

	Secondsemester (S2)	Fourthsemester (S4)	Sixthsemester (S6)	Master	Total	Age (mean)
Female	40	73	46	34	193	21.45
Male	33	32	31	13	109	21.68
Total	73	105	77	47	302	21.56

2.2. Measures

In a research work, 'The survey by questionnaire consists in posing, in writing, to subjects a series of questions relating to a situation, to their opinions, to their expectations …' (N'da, 2002). This method requires that responses be written. In general, the survey by questionnaire aims to verify hypotheses by analysing social phenomena that can be studied from the information given by individuals.

In our work, we preceded using two types of questions: closed questions and open questions. Our anonymous questionnaire is composed of 61 questions divided into eleven themes.

In this study, we are mainly interested at the level of students' satisfaction about their courses quality, well as the different strategies judged useful by students to improve higher education.

2.3. Procedure

The survey was conducted in May 2014 and we collected 302 completed questionnaires of the 350 copies distributed. The questionnaires were distributed to students at the end of the course. A period of 10 minutes was devoted to the presentation of the questionnaire, its goals and how to respond. Then, the following 30 minutes were allowed for students to complete the questionnaire. The questionnaires were collected immediately by the experimenter.

2.4. Analysis

After the data collection, we used SPSS 20 software for data processing and analysis. Our interest in this study is focused on the level of students' satisfaction about their courses quality, as well as the behaviours and working strategies judged useful by students to improve higher education.

2.4.1. Judgments made about the quality of the courses

For this question, it had to say to what extent certain statements might be applied, on a scale of 5 values, since 'at no course' until 'at all courses'. The answers will be retained as percentages, opposing the two lowest values (at no course + few courses = rare) to the two highest values (most courses + all courses = frequent). The following table can give us some important information:

Table 2. Response to the question: To what extent the following statements are they applied to the courses that you take this semester?

	S2		S4		S6		Master		Total	
	Rare (%)	Frequent (%)	Rare (%)	Frequent (%)	Rare (%)	Frequent (%)	Rare (%)	Frequent (%)	Rare (%)	Frequent (%)
The educational objectives are clearly defined	72.3	12.3	72.2	8.3	78.3	10.1	54.5	2.3	70.8	8.8
The courses are understandable and pertinent	36.4	16.6	46.1	8.9	36.8	11.8	45.4	9.1	41	11.8
The teachers ensure that the content of the course is understood	35.5	20.9	37.7	22.1	45.3	23.4	45.2	7.1	40.4	19.6
Teachers give some examples to help students understand	33.3	38.1	37.7	23.4	40.9	30.3	40.9	22.7	38	28.8
Teachers are interested to motivate their students	36.4	27.3	42.3	20.5	49.2	25.4	48.8	11.6	43.7	22.1
The relationship of the content of courses with other disciplines are evidenced	40.9	26.2	51.3	12.1	54.5	22.8	57.1	11.9	50.6	18.5
The practical interest of the topics is demonstrated	60	20	59.4	10.8	46.9	29.7	65.1	9.3	57.3	17.9
Teachers provide summaries	52.3	27.7	62.8	19.2	73.1	19.4	72.8	15.9	64.6	20.9
Teachers explicit the elements of the course that will be in the exams	57.6	27.3	56	10.7	58.5	21.5	62.8	23.2	58.2	20.1
Teachers recommend students to privilege a scientific approach to problems	46.1	23.8	55.7	20	53.9	22.2	59.5	16.7	53.4	21

Teachers show students how to apply research methods	60.3	25.4	63.5	16.2	51.6	25	57.1	2.4	58.4	18.5

We see that the results are going in the same direction for all the items, the response 'rare' dominates at all levels in the faculty, with a strong domination in six cases:

- Students estimate that the educational objectives are not clearly defined (especially for students in S6 (78.3%));
- Students affirm that teachers rarely provide summaries of courses (especially for students in S6 (73.1%) and for those who are in the Master (72.8%));
- Demonstration of the research methods application to the students is rarely encountered at the faculty (especially for S4 students (63.5%) and S2 students (60.3%)).
- The explanation of the courses elements that will be in the exams is considered as a situation rarely applied at the faculty (especially for Master students (62.8%)).
- The demonstration of practical interest of the subjects is also considered as a situation rarely applied at the faculty (especially for Master students (65.1%)).
- Teachers rarely recommend students to focus on a scientific approach to problems (especially for the students of the Master degree (59.5%)).

On these points, student dissatisfaction is patent (it is strongly remarked in Master students which is coherent with results obtained previously and which affirms that 'student motivation does not appear the same way in the faculty; university students usually enter to the university with a strong motivation. However, it decreases over time. Examination of these results shows that students of the first year affirm to have a high motivation to take their courses, while those in the master affirm less motivated' (Osma & Radid, 2015).

However, the other five items that remain and even if they are not classified as strongly rare situations, we cannot neglect them and they can be classified as averagely rare situations since we have percentages ranging from 38% to 50.6%. And what is remarkable is that only 22.1% of teachers who are interested to motivate their students, a situation that really requires very urgent intervention!!

The gender does not introduce any significant variation in this series of responses.

2.4.2. The degree of student satisfaction of their examination marks

Response to the question 'To what extent are you satisfied with the marks obtained until now during your studies'? (Scale from 0 = totally dissatisfied to 6 = completely satisfied). Averages of answers.
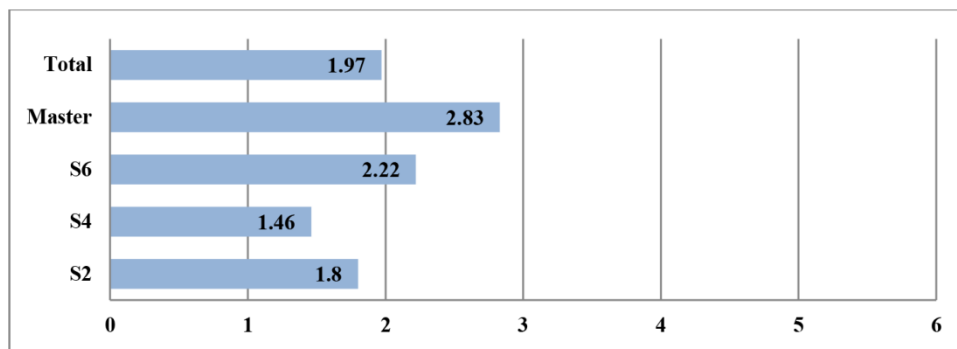
Graph 1. Degree of student satisfaction of their examination marks according to the levels of study

According to the results obtained, it is clear that all the students are very dissatisfied with their marks obtained (only 1.97). The gender does not introduce any significant variation in this series of responses.

2.4.3. Strategies of work and behaviours of studies
2.4.3.1. Strategies developed during studies

Beyond the teachings and the work provided by the training models, students can engage in personal actions to improve their general culture, to expand their field of knowledge, improve their chances of employment...

Several proposals relating to possible practices are suggested and the students must indicate if they resort on it, and with which frequency (sum of the responses Yes, sometimes and Yes, often).

Table 3. Sum of the positive responses of the question: Do you use the following possibilities in a goal to improve your knowledge or your qualification?

|	S2 (%)	S4 (%)	S6 (%)	Master (%)	Total (%)
Courses and seminars in other branches	32.8	30.9	38.6	39.5	34.9
Language courses	52.4	66.7	70	83.7	66.8
Offers of specialised courses (e.g., about the art of speaking...)	41.7	42.5	48.2	33.3	42.1
Public conferences	41.7	50	56.7	46.3	48.9
Aid for the professional insertion	63.3	73.3	63.9	75.6	68.8

The responses differ significantly between levels and in all the items. In general, students seem less interested by courses and seminars in other disciplines. Conversely, they seem relatively more interested by professional insertion and language courses (Master's students are more motivated to follow these strategies to improve their knowledge or qualification with percentages going until 83.70% for the item 'language courses' and until 75.60% for the item 'aid to professional insertion'.

The students of S6 are most interested by public conferences (56.70%) and specialised courses (48.20%).

The students add like strategies to improve their knowledge or their qualification: the use of the Internet, computer science and the traineeships.

According to the gender, the girls seem most interested by the aid for the professional insertion (nearly nine points of variation), and by the language courses (nearly six points of variation). Contrary, the boys are the most interested by the public conferences, by the specialised courses and by the courses and seminars in other branches (with variations going until more than six points of difference).

2.4.3.2. Obligation of traineeships
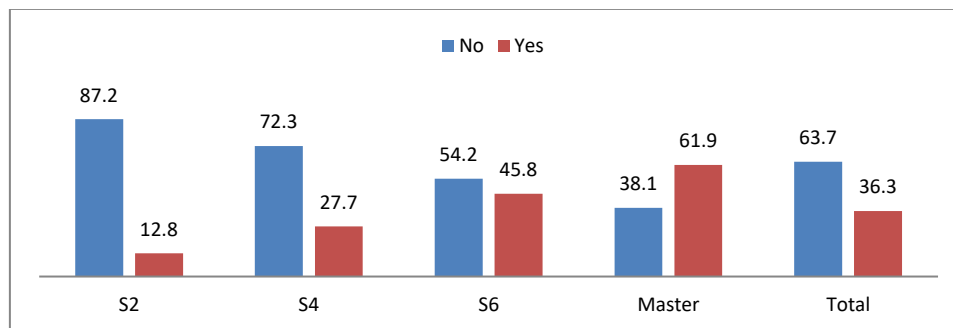
Graph 2. Response to the question: in your level, a traineeship is it obligatory? (In %)

According to this graph, we notice that the traineeships are not obligatory for 63.7% of the students, also the proportions of the obligation of the traineeships increase according to the levels.

It should be noted that the results observed for traineeships (see Table 5) can probably be explained by the obligatory existence or the no-existence of these practices in formation models.

2.4.3.3. Behaviours of work

Table 4. Response to the question: With which frequency, you have, during your studies (Scale of five possible responses, ranging from Never to Very often). Sum of responses Often and Very often (in %)

	S2 (%)	S4 (%)	S6 (%)	Master (%)	Total (%)
Read more documents related to your discipline than what was recommended to you	29.8	15.4	16.4	25	20.9
Defined and continue to work on your own points of interest	33.9	20	37.7	35	30.3
Developed your own ideas to solve a problem of research treated by your discipline	23.7	30.1	22.6	43.9	29.2
Conducted your own little experience/research project	13.8	22.7	29.8	38.6	25.2
Tried to find how a particular search result had been elaborated	49.1	50.6	41.1	59.1	49.6
Questioned the statements presented in a university publication	37	31.1	30.9	14.3	29.3

Students are also asked about with which frequency, during their studies, they have implemented certain work approaches or exercised their critical thinking. The results reveal two major traits:

- In the general plan, evoked practices don't seem to be frequent among students. The act of reading beyond what is strictly recommended is relatively less frequent. Critical thinking (try to understand how a result was produced, questioned statements) appears frequent compared to the autonomy of working among students (personal interests, own ideas, personal research project) which seems less developed.
- The comparison between the levels revealed significant differences on several items. S6 and master's students seem more than those of the first and second year autonomous in their work. However, the behaviours are relatively close to the critical thinking plan.

In general, the behaviour of boys and girls are relatively similar in terms: autonomy of work and critical thinking, except for the first one (read more than recommended) where boys seem more interested in this plan (even if the proportions remain very modest; 24.7% for boys versus 18.8% for girls).

2.4.3.4. Strategies considered useful

Table 5. Response to the question: To what extent the following possibilities seem useful for your future? Sum of responses Useful and Very useful (in %)

	S2 (%)	S4 (%)	S6 (%)	Master (%)	Total (%)
Participate in a research project	54.7	65.5	61.2	66.7	61.9
Study abroad for certain time	40	46.4	59.1	46.5	48.2
Specialise early in a domain	73.8	61.7	60.9	75	66.8
Learning foreign languages	80.3	75.3	65.6	71.1	73.3
Have good marks in exams	80	74.4	76.9	75	76.5
Make a thesis	42.9	34.1	37.2	46.4	40.1
Have practical professional experience outside of the university (traineeship)	69.8	75.8	78.8	80	76.1

The students had recourse, in very variable proportions, to certain actions or strategies during their studies. They are asked about the interest which they grant, for the continuation of their studies, to certain propositions.

The responses are very variable between the levels. 'to have good marks in exams' is the major preoccupation of the students (76.5%).

The wish to do a traineeship is also very strongly expressed by students (76.1%), especially for students of S6 and the master, this result is not surprising because these are the two levels which provide the most, a professional traineeship which will be the subject of a final project study for them. Learning foreign languages is strongly considered among the useful strategies to improve higher education (73.3%).

66.8% of students prefer to specialise early in a certain domain and complete as directly as possible as their studies, which explain relatively the modest proportions of engagement in a doctoral work (only 40.1%).

The prospect for international mobility, even if it is more important than that actually realised, remains relatively average.

The gender does not introduce any significant variation in this series of responses.

3. Conclusion

The results obtained from this survey show that it is possible to take into account the evaluation of students on their studies whether on aspects related to the teaching process, on those concerning the learning process or on the effects of these processes.

Our results lead us firstly to identify the areas of priority actions from the student responses, and secondly, the suggestions for improvement which they emit to determine the form of the actions can be implemented.

According to the obtained results, the dissatisfaction of the students is patent and teachers are not interested enough to motivate their students, a situation that really requires a very urgent intervention!

A greater involvement of students in the teaching and learning process seems to be one of the priority action areas.

According to the students, this point could be improved through a good clarification of the educational objectives, an improvement of teaching methods, a valorisation of debates involving speaking of students and a development of language courses.

Another priority action area seems to be the development of students' operative capacity. It is through an increase of the relations between the economic world and the institutions of higher education that the students identify possible actions to improve this problematic zone by suggesting, for example, the introduction of obligatory traineeships and the aid for the professional insertion.

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