

Success and Learning Strategies: A Survey of Students at the Faculty of Dentistry in Casablanca

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ABSTRACT

Objective: The present study aimed to evaluate the learning strategies used by the students of the 2nd year of the Faculty of Dentistry in Casablanca.

Methodology: A cross-sectional study was conducted among second-year dental students after informed consent. A modified WOLF questionnaire, "My intellectual work tools," was distributed. It included 37 closed questions on self-reported study practices in four categories: cognitive, metacognitive, affective, and resource management. Data entry and statistical analysis were performed using SPSS software in the Laboratory of Community Health Epidemiology and Biostatistics.

Results: 86.9% of students were active in meaning-making, reformulation, and exemplification. 9.7% mastered highlighting relationships and structuring. 42.8% reorganized information according to personal criteria. For memorization, the students used both types with a predominance of the appropriate form. For metacognitive, affective, and management strategies, 21.4% systematically anticipated evaluation situations. For time management, 12.4% planned and managed their time regularly. In terms of self-confidence, 17.2% stated that they had complete self-confidence.

Conclusion: Except for memorization and comprehension strategies, all the tools assessed were little used and/or not mastered by the students. To help students master these strategies, increased use of differentiated pedagogies such as flipped classrooms and MOOCs, and OSCE assessments should take place. Workshops and seminars on learning strategies should be provided to reinforce the course administered in the first year.

Keywords: Dentistry, learning, learning strategies, students.

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1. INTRODUCTION

At the university level, failure and dropout are phenomena that are very frequently observed and are causing more and more concern among the organizations involved in the education system. Indeed, students move from a school structure, where courses are mandatory, and learning is highly supervised, to a university structure, where they must manage their own learning and adapt quickly to their new environment (Côté *et al.*, 2004; Kebaetse *et al.*, 2018; Ramage *et al.*, 2020).

Several factors could explain these failures, including the use or non-use of appropriate learning strategies. Data from the literature confirm the close link between academic success and the learning strategies used. Indeed, students who pass their exams with ease and obtain brilliant academic results have a better strategic background than weak

students (Kebaetse *et al.*, 2018; Qanbari Qalehsari *et al.*, 2017; van Houten-Schat *et al.*, 2018).

These strategies are used in all learning, but which strategy to use, when to use it, and how to use it? The answer to these questions leads to the acquisition of a good working method. A student who has a good working method is one who can use the right learning strategies in the right way at the right time. Indeed, learning a good work method should be done in conjunction with learning the specific course content. The teacher should be as interested in students' learning strategies as in the content of the course (Boulet *et al.*, 1996; Saint-Pierre, 1991; Vianin, 2020; Wolfs, 2007).

Despite the fact that several works on effective learning methods have been published, few institutions integrate evidence-based learning strategies into their curriculum. One example is the Faculty of Dentistry of Casablanca,

where training takes place over 6 years. The first year is an introductory year and is devoted to the fundamentals and basic concepts (biochemistry, pharmacology, physics, mathematics, biology, introduction to anatomy). The student has to validate a theoretical program. During the following 2 years, he benefits from lectures and practical pre-clinical activities whose objective is to prepare him for clinical training during the following 3 years. The last year is devoted to an internship in private practices and clinics and in the University Hospital. The volume of lectures is very high in the second and third years of candidacy, while it is reduced in the following years. The first-year students benefit from 20 hours of lectures on social medicine, during which topics such as stress and time management, awareness of change, speaking up, and self-control are covered. In spite of this course given in the first year, failure and abandonment are still present. Many students have consulted the faculty's listening unit for their academic failures, and a learning difficulty has been reported, especially for second-year students. In the first semester of the 2022/2023 year, only 44 out of 145 second-year students were able to pass in the first session. The objective of our investigation was to evaluate the learning strategies used by the second-year dental students.

2. METHODOLOGY

An exhaustive cross-sectional study was conducted between December 2022 and April 2022.

2.1. Class Evaluation

Our study included second-year undergraduate medical school students in dentistry. The class consisted of 161 students, of whom 16 students dropped out for that year. Our final sample included 145 students. The choice was dictated by the high number of students who had to make up the first part of their studies compared to the other classes, as well as the high number of students who consulted the listening cell of the faculty for learning difficulties. Students in the 2nd year spent 1135 hours between classes and practical pre-clinical activities, of which 265 hours were reserved for lectures in the first term.

2.2. Data Collection and Analysis

Data on learning strategies were collected using the questionnaire "My intellectual work tools". This questionnaire, designed for secondary and university education, has been validated in the literature. It has been reproduced almost in its entirety except for question 30 concerning my future. The questionnaire was administered to volunteer students at the beginning of the second semester, after the January examination session. For each group of students, an explanation of the purpose of the study was given, specifying its relationship with the results of the first term, the intimate relationship between learning strategy and academic success, and the sincerity required to complete it. This anonymous questionnaire took approximately 10 minutes to complete. It includes 37 questions with a list of prepositions describing different ways of learning or studying a course or a subject. For each of these, the student is asked to circle his or her answer

according to the degree of use. The answers are closed-ended (of the type: never, rarely, often, always).

First, an analysis of the answers provided for the first part was made by calculating the frequency of use of each of the 10 work tools proposed below in the form of a score for each proposed tool:

- 1) The search for meaning and the search for information,
- 2) Rephrasing,
- 3) Finding and using examples,
- 4) Identifying relationships and structure in a text or lecture,
- 5) Reorganizing information according to personal criteria,
- 6) Memorization,
- 7) Anticipation of evaluation situations or use of one's knowledge,
- 8) Work planning and time management,
- 9) Realistic self-assessment of one's abilities and self-confidence,
- 10) Involvement or commitment to one's studies.

The scores are assigned following the instructions mentioned in the questionnaire. The original questionnaire proposed a self-calculation of scores. In order to make the results reliable, we have modified the strategy by calculating the scores ourselves. The student will have to provide the basic elements without drowning in calculations. Data entry and statistical analysis were performed using SPSS software in the laboratory of epidemiology and research at the Faculty of Dentistry in Casablanca. The results were expressed by percentages for qualitative values.

3. RESULTS

145 of 161 students participated in the survey, and 16 students had dropped out. The average age was 19.26 (SD: 0.67). Female students represented 53.1% of the sample.

3.1. Deep Learning (Tables I and II)

1) Students were active in finding meaning in information, with scores of 3 (37.9%) and 4 (29%).

TABLE I: RESULTS OF THE STUDY FOR THE SEARCH FOR MEANING, REFORMULATION, AND EXEMPLIFICATION (N = 145)

Variables	Scores	Frequency	Percentage
Information search	0	2	1.4
	1	3	2.1
	2	14	9.7
	3	42	29.0
	4	55	37.9
Rephrasing	5	29	20.0
	0	9	6.2
	1	34	23.4
	2	70	48.3
Exemplification	3	32	22.1
	0	6	4.1
	1	44	30.3
	2	95	65.5

TABLE II: RESULTS OF THE STUDY FOR ANALYZING RELATIONSHIPS, STRUCTURING A TEXT OR A LECTURE, AND REORGANIZATION OF INFORMATION (N = 145)

Variables	Scores	Frequency	Percentage
Analysing relationships	0.5	1	0.7
	1.0	4	2.8
	1.5	6	4.1
	2.0	11	7.6
	2.5	16	11.0
	3.0	16	11.0
	3.5	24	16.6
	4.0	33	22.8
	4.5	20	13.8
Structuring a text or a lecture	5.0	14	9.7
	0	29	20.0
	1	62	42.8
	2	53	36.6
Reorganization of information	3	1	0.7
	0	8	5.5
	1	23	15.9
	2	52	35.9
	3	62	42.8

2) For rephrasing, 48.3% were attempting to rephrase course content, but only 22.1% mastered elaboration strategies.

3) 65% of students were looking for examples to understand and illustrate their course.

4) 9.7% of students considered highlighting relationships a priority.

5) Students looked for connections between different concepts and ideas, and 36.6% subsequently tried to transcribe these connections into another structured form.

6) For reorganizing information according to personal criteria, only 42.8% used it systematically.

3.2. Memorization

We found that 37.2% of the students used systematic appropriate memorization (see Table III).

3.3. Use of Other Learning Tools

1) 12.4% of students had reported using the planning strategy and time management

2) 21.4% systematically anticipated evaluation situations by thinking about the subject that might be asked or by self-questioning, for example.

TABLE III: RESULTS OF THE STUDY FOR MEMORIZATION (N = 145)

Variables	Scores	Frequency	Percentage
Rote memory	0	33	22.8
	1	52	35.9
	2	40	27.6
	3	20	13.8
Memorization in an appropriate form	0	1	0.7
	1	40	27.6
	2	50	34.5
	3	54	37.2

TABLE IV: RESULTS OF THE STUDY FOR PLANNING AND TIME MANAGEMENT, SELF-EVALUATION, AND SELF-CONFIDENCE (N = 145)

Variables	Scores	Frequency	Percentage
Planning and time management	0	22	15.2
	1	39	26.9
	2	36	24.8
	3	30	20.7
	4	18	12.4
Self-assessment of difficulties encountered	0	3	2.1
	1	7	4.8
	2	19	13.1
	3	21	14.5
	4	12	8.3
	5	18	12.4
	6	20	13.8
	7	10	6.9
	8	9	6.2
Self-evaluation of self-confidence	9	8	5.5
	0	11	7.6
	1	49	33.8
	2	60	41.4
	3	25	17.2

TABLE V: RESULTS OF THE STUDY FOR INVOLVEMENT AND COMMITMENT (N = 145)

Variables	Scores	Frequency	Percentage
Involving and commitment	0	1	0.7
	1	11	7.6
	2	23	15.9
	3	41	28.3
	4	36	24.8
	5	25	17.2
	6	6	4.1
7	2	1.4	

3) 17.2% declare that they are completely confident in themselves and their learning methods (see Table IV).

4) Students' involvement and commitment to their studies varied greatly (see Table V).

The issue of learning strategies has often been raised by students who are failing or experiencing learning difficulties, and the request has been made during pedagogical consultations with the faculty of dentistry's listening unit.

4. DISCUSSION

The analysis of the results revealed that not all students are equipped for effective learning. The work method tools proposed in the questionnaire are used to varying degrees depending on the students. Students try to understand what they need to learn by looking for meaning in the information and examples, but they do not know how to make the links between the different information to be learned. Linking ideas is a tool that is little used, as well as reformulation, reorganization, the anticipation of evaluation situations, work planning, and time management.

For the tools used for learning, the results of our study corroborate with the results of the study of Vanmuylder et al. (2006). and the study of Grenorie (2006) on high

school students, the reformulation and the reorganization of the work, which call for synthesis, were the tools least used by the sample. The students are capable of understanding and analyzing, but they have difficulty in synthesizing. These results could be explained by the type of academic instruction provided and the method of assessment. Indeed, transmissive teaching based on classical lectures does not favor the synthesis, which calls for the tools of reformulation and reorganization. Moreover, any evaluation requiring only the retransmission of knowledge negatively influences the student's ability to synthesize knowledge. The lack of experience of students (freshly integrated into university studies) could also explain the results. Indeed, a prospective study conducted by the team of Pottier on fourth-year students showed that the deep learning approach predominates (Pottier et al., 2008).

For memorization, the results of our study showed that students learn with both forms but much more in appropriate form than rote. This is a very positive result. Grenorie (2006) worked on a sample of 20 students and found that rote memorization does not appear to be an essential strategy for medical students. A similarity in the learning approaches of our students and those of Vanmuylder's study was also noted (Vanmuylder et al., 2006). We underline the interest in using examinations with questionnaires that favor memorization-appropriation to the detriment of "rote" memorization.

For metacognitive abilities, few students are reflective, and self-evaluation was put into action systematically in only 21.4% of the study population. The team of van Houten-Schat et al. (2018) also pointed out a lack of self-evaluation among students.

For planning and time management, students have great difficulty in organizing themselves to plan their work and manage their time. Only 12.4% mastered these skills. Researchers in other studies have also observed increasing difficulties in time management for their samples (Boulet et al., 1996; Pottier et al., 2008). These results can also be explained by factors such as the amount of content to learn. In 2016, the team of Bickerdike worked on a sample of 376 students and found that poorer academic performance was associated with a poor time management approach to studying ("cramming") and increased use of the 'surface learning' strategy (Bickerdike et al., 2016).

In terms of affective strategies, the percentages varied widely, with some students rating their difficulties as low overall. But others overestimated them (scores of 12 and 13). Only 17.2% of the students reported being completely confident. The involvement and commitment of students in their learning is very variable. Work should be done on the factors influencing self-confidence and motivation.

In this cross-sectional study, we used a questionnaire that has already been used and validated in the literature. Nevertheless, some limitations must be taken into account in the analysis of these results. The data on learning strategies were reported by the students, and the questions concerning all the tools were closed-ended. In interpreting these results, we must take into account interacting factors such as previous education and socioeconomic and cultural levels.

In spite of these limitations, our work has certain strengths, namely, an exhaustive survey with the participation of 145 students, whereas the samples of other studies remain relatively small. We also decided to calculate the scores and analyze the second part of the questionnaire ourselves to avoid any bias. The results also allowed us to objectively observe the deficit in learning strategies among our students.

5. CONCLUSION

The results of our study showed that our students use the learning strategies but at varying percentages. Difficulties in synthesis, metacognitive, and affection strategies were noted. To help students master learning strategies, we propose:

- 1) A reinforcement of the course taught in the 1st year by seminars and workshops focused on the missing synthesis and metacognitive tools,
- 2) Increasing the use of multiple educational strategies by teachers, such as the flipped classroom and MOOCs, to promote the development of synthesis and self-assessment skills and to teach in a more synthetic way using updated pedagogical methods,
- 3) A follow-up work of the studied class and a comparative study between the different classes.

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CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

REFERENCES

- Bickerdike, A., O'Deasmhunaigh, C., O'Flynn, S., & O'Tuathaigh, C. (2016). Learning strategies, study habits and social networking activity of undergraduate medical students. *International Journal of Medical Education*, 7, 230–236. <https://doi.org/10.5116/ijme.576f.d074>.
- Boulet, A., Savoie-Zajc, L., & Chevrier, J. (1996). *Les stratégies d'apprentissage à l'université* [Learning strategies at university] University of Québec Press. <https://doi.org/10.1353/book16220>.
- Côté, D. J., Bellavance, C., Chamberland, M., & Gaillon, A. (2004). Un programme pour aider les étudiants en médecine à développer leurs stratégies d'apprentissage [A programme to help medical students develop their learning strategies]. *Pédagogie Médicale*, 5(2), 95–102.
- Grenorie, É. (2006). *Apprendre à apprendre... ou travailler les méthodes de travail* [Learning to learn... or working on work methods] (Unpublished master's thesis). IUFM of the Montpellier Academy.
- Kebaetse, M. B., Kebaetse, M., Mokone, G. G., Nkomazana, O., Mogodi, M., Wright, J. (2018). Learning support interventions for year 1 medical students: A review of the literature. *Medical Education*, 52(3), 263–273. <https://doi.org/10.1111/medu.13465>.

- Pottier, P., Derkinderen, P., Barrier, J., Sevin, M., Rogez, J. -M., & Planchon, B. (2008). Étude descriptive des pratiques d'apprentissage d'étudiants en quatrième année de médecine dans une faculté française et de leurs performances à résoudre un problème [Descriptive study of the learning practices of fourth-year medical students in a French faculty and their performance in solving a problem]. *Pédagogie Médicale*, 9(2), 70–82. <https://doi.org/10.1051/pmed:2008006>.
- Qanbari Qalehsari, M., Khaghanizadeh, M., & Ebadi, A. (2017). Life-long learning strategies in nursing: A systematic review. *Electronic Physician*, 9(10), 5541–5550. <https://doi.org/10.19082/5541>.
- Ramage, M. J., Bournaud, I., & Mathias, H. (2020). Identifier les pratiques d'étude des étudiants de première année de licence scientifique pour mieux les accompagner [Identifying the study practices of first-year science undergraduates to provide them with better support]. *Journal International de Recherche en Éducation et Formation*, 6(2), 107–140.
- Saint-Pierre, L. (1991). L'étude et les stratégies d'apprentissage [Study and learning strategies]. *Pédagogie Collégiale*, 5(2), 15–21.
- van Houten-Schat, M. A., Berkhout, J. J., Van Dijk, N., Endedijk, M. D., Jaarsma, A. D. C., & Diemers, A. D. (2018). Self-regulated learning in the clinical context: A systematic review. *Medical Education*, 52(10), 1008–1015.
- Vanmuylder, N., Salvia, P., De Broeu, F., Rooze, M., & Louryan, S. (2006). Stratégies d'apprentissage des étudiants de premier cycle des études médicales, de graduat en biologie médicale et d'élèves infirmiers: Une étude conduite au pôle universitaire européen Bruxelles-Wallonie [Learning strategies of undergraduate medical students, graduate students in medical biology and student nurses: A study conducted at the European University centre]. *Pédagogie Médicale*, 7(1), 7–19.
- Vianin, P. (2020). Comment donner à l'élève les clés de sa réussite?: L'enseignement des stratégies d'apprentissage à l'école [How to give Students the Keys to Success: Teaching Learning Strategies at School]. De Boeck Supérieur.
- Wolfs, J. -L. (2007). *Méthodes de Travail et Stratégies d'apprentissage*. [Working Methods and Learning Strategies]. De Boeck Supérieur.