



SUMMER INTERNSHIP TRAINING FOR STUDENTS IN FIRST YEAR FROM THE DENTAL TECHNOLOGY UNDERGRADUATE PROGRAMME – THEORETICAL AND PRACTICAL ASPECTS

MĂDĂLINA MALIȚA¹, MAGDALENA NATALIA DINA², OLIVIA POPOVICIU³,
IOANA VOINESCU⁴, IRINA ADRIANA BEURAN⁵, MIHAI BURLIBAȘA⁶,
VIOREL ȘTEFAN PERIEANU⁷, IULIANA BABIUC⁸, MANUELA POPESCU⁹,
CAMELIA IONESCU¹⁰, GABRIELA TĂNASE¹¹, AUGUSTIN MIHAI¹², RALUCA COSTEA¹³,
RADU COSTEA¹⁴, RUXANDRA STĂNESCU¹⁵

^{1,2,3,4,5,6,7,8,9,10,11,12,14,15} “Carol Davila” University of Medicine of Pharmacy Bucharest, ¹³S.C. Dentexpert Magic S.R.L. Brașov

Keywords: *summer internship, dental technology program, students* **Abstract:** *The summer internship was and is a mandatory learning stage for all students of medical specialties in Romania, including students of dental medicine and dental technology programs. Thus, we have made a very interesting study, strictly related to the summer internship for the students from the first year of this specialty, which operates in one of the universities with medical profile in Bucharest.*

INTRODUCTION

The summer internship for all students from all medical specialties of the “Carol Davila” University of Medicine and Pharmacy (U.M.P. – Romanian U.M.F.) in Bucharest (initially, until 1989, this institution of higher medical education was called the Institute of Medicine and Pharmacy Bucharest, or IMP – Romanian IMF – Bucharest), it was always mandatory.

This internship was performed by all students in various forms during summer vacations for certain pre-determined periods of time, in state medical services and units until 1989 and later, after 1990, in both state medical services and units, as well as in public-private partnerships.

And for the dental technology, this summer internship has been a compulsory discipline since the establishment of the programme within the U.M.P. “Carol Davila” from Bucharest, starting with year 1983, when the first College of Dental Technology was born.

Subsequently, this programme was transformed into short term university studies and worked within the Faculty of Dental Medicine and starting with 2012, it operates within the Faculty of Midwifery and Nursing of the U.M.P. “Carol Davila” from Bucharest.

As far as we are concerned, the Dental Technology Undergraduate Programme of the “Carol Davila” U.M.P in Bucharest, had until the academic year 2017-2018 a number of approximately 300 hours of practice divided into 2 study forms: guided practice in the laboratory of dental technique with hours that took place during the academic year under the supervision of a titular teacher and a demonstration dental technician and summer internship that was usually carried out in public-private partnership under the supervision of specialized personnel from the private units, the note being subsequently obtained following a colloquium held in front of a commission made up of teachers, a commission designated by the faculty management.

Starting with 2016, the Romanian Agency for Quality Assurance in Higher Education (or briefly RAQAHE - Romanian ARACIS) has initiated new criteria for the functioning of the dental technology undergraduate programmes for all the Universities of Medicine and Pharmacy in Romania, where the internship is no longer be divided into guided practice in the dental technique laboratory with hours that took place throughout the academic year and summer internship with hours that took place only during the summer vacation, and became strictly a summer internship, unitary, compulsory, with a fixed number of 320 hours (which should only take place during the summer holidays).

Of these 320 hours of summer internship, 160 hours must be spent in the first year of studies, while the other 160 hours are allocated to the second year of studies.(1) Although, these regulations were introduced by the Romanian Agency for Quality Assurance in Higher Education (or briefly RAQAHE) in 2016, we have introduced as an optional summer internship to the first year students of the Dental Technology Undergraduate Programme with that number of 160 hours related from the 2016-2017 academic year, and from the 2017-2018 academic year, this internship has become mandatory.

It should be mentioned that, by optional version, we have made it very clear that the final mark in the evaluation will not be included in the catalogue and will not be considered later, and this alternative has been discussed by the teachers of the Dental Technology Undergraduate Programme, in order to have an informal first impression on the practice portfolio adopted by them.

The students from the first year of the 2016-2017 Dental Technology Undergraduate Programme who have chosen for this optional variant of the summer internship were 22, out of a total of 55 subjects.

But, in order to better understand these new regulations, we will make a very brief presentation of the need

³Corresponding author: Olivia Popoviciu, Str. Plevnei, Nr. 19, Sector 1, București, România, E-mail: mburlibasa@gmail.com, Phone: +40723 472632
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for these internships for the first year students, of the Dental Technology Undergraduate Programme, within the U.M.P. "Carol Davila" from Bucharest.

The summer internship of the students studying in the Dental Technology Undergraduate Program of the "Carol Davila" University of Medicine and Pharmacy of Bucharest, has become in the academic year 2017-2018, a mandatory internship, lasting 160 hours and takes place during the summer vacation.(2) This internship will be carried out according to the MECT Order no. 3955/2008 on the General framework for organizing the internships - undergraduate and master's programmes, the Framework Convention on the practice internship within the undergraduate or master's degree programmes and Law 258/2007 on the practice of students and students.(2) The summer internship for students in the first year will be held in dental laboratories in the country and abroad (referred to as the Practice Partner) during the summer vacation, based on the signing of a Framework Convention on the practice internship within the undergraduate or master's degree studies between students, UMP "Carol Davila" from Bucharest and the respective unit.(2) The duration of this summer internship is 160 hours, spread over a period of 4 weeks, 5 days/week, 8 hours/day. The evaluation of this practical activity will be made on the basis of a predetermined scale and will be carried out at the end of the first academic year by the designated teachers, taking into account the rating of those who supervised the activity within the partner practice units (Practice partner).(2)

The summer internship for the first academic year (2017-2018) of the Dental Technology Undergraduate Programme has the role of ensuring the implementation of theoretical knowledge, acquired in the didactic activities accumulated during the 2 semesters. The activities carried out during the summer internship have been chosen so that they are relevant to the field/specialization for which the students are preparing, to offer openness to new goals and possibilities for future application.

AIM

Starting from these aspects described above, we have developed a booklet for the summer internship (or rather a portfolio for the summer internship) for students in the first academic year of Dental Technology Undergraduate Programme of UMP "Carol Davila" from Bucharest, a portfolio that we considered to be sufficiently balanced, to meet the requirements of these students.

By publishing this material, we actually wanted to conduct a preliminary study to see the impact that this practice portfolio as a preliminary variant had on the first year students who have completed it, and here we discuss about students in the first year of study from the 2016-2017 academic year when this summer internship was optional, as well as the students in the first year of study from the 2017-2018 academic year when summer internship has become compulsory.

MATERIALS AND METHODS

The practice portfolio developed by us for the students included in the study, both for those who have passed this optional summer internship and for those who have completed the compulsory internship, includes the following elements:(2)

- First Week (40 hours, 5 days, 8 hours/day): Modelling in wax, at real dimensions, of the maxillary and mandibular dental structures, on models capable of reproducing the occlusal relationship. The correctness of the modelling can be appreciated using the tooth harmony between the tooth modelled in wax with the tooth remained on the model (figure no. 1);

- Second Week (40 hours, 5 days, 8 hours/day): Modelling, by grinding (milling), using the dental micromotor, to real dimensions of some dental structures from self-curing acrylic resin: upper central incisor (ICS, 1.1/ 2.1), upper canine (CS, 1.3/ 2.3), upper first premolar (PM1S, 1.4/ 2.4) (figure no. 2 a, b, c);
- Third week (40 hours, 5 days, 8 hours/day): Modelling, by grinding (milling), using the dental micromotor, to real dimensions, of dental structures made of self-curing acrylic resin: upper first molar (M1S, 1.6/ 2.6), mandibular first molar (M1I, 3.6/ 4.6) (figure no. 2 c, d). Awareness of the occlusal surfaces morphology of the lateral teeth, by modelling them with coloured wax, by addition technique. Modelling of dental occlusal morphology of the maxillary and/or mandibular arches at a 1:1 scale by wax addition;
- Fourth week (40 hours, 5 days, 8 hours / day): Awareness of the occlusal surfaces morphology of the lateral teeth, by modeling them with coloured wax, by addition technique. Modelling of dental occlusal morphology of the maxillary and/or mandibular arches at a 1:1 scale by wax addition (figure no. 3 a, b);

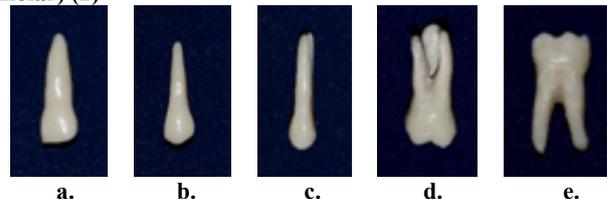
The requirements for the final evaluation consisted of the physical presentation of the following elements:

- Wax modelled maxillary arch (1 pc);
- Wax modelled mandibular arch (1 pc.);
- Teeth made of acrylic resin by milling with the help of the dental micromotor, 1 pcs. of each: ICS (1.1 / 2.1), CS (1.3 / 2.3), PM1S (1.4 / 2.4), M1S (1.6 / 2.6), M1I (3.6 / 4.6).
- Modelling of dental occlusal morphology at a 1:1 scale by wax addition:
 - a. Right and left maxillary lateral teeth group (premolars and molars) (1 pc.);
 - b. Right and left mandibular lateral teeth group (premolars and molars) (1 pc.).

Figure no. 1. Wax modelled teeth on maxillary and mandibular model with sectioned teeth (2)



Figure no. 2. a-e. Milled made teeth from self-curing acrylic resin (a - upper central incisor; b - upper canine; c - upper first premolar; d - upper first molar; e - mandibular first molar) (2)



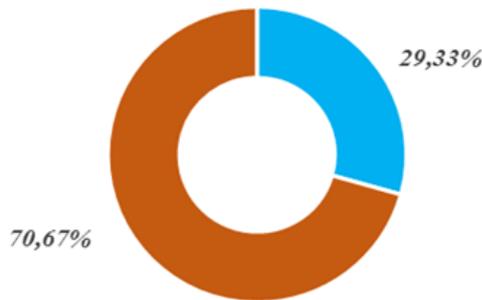
75 subjects were included in the study, they were students in the first study year in Dental Technology Undergraduate Programme, 22 of them in the academic year 2016-2018 (representing 29.33%) and 53 of them in the academic year 2017-2018 (representing 70.67%)

Figure no. 3 a, b. Modelling of dental occlusal morphology at a 1:1 scale by wax addition (2)



It should be remembered that for the students from the 2016-2017 academic year, this summer internship was optional, while for the students from the 2017-2018 academic year this internship was mandatory (figure no. 4).

Figure no. 4. Distribution of the subjects included in the study



A questionnaire was used to carry out this preliminary study. It consisted of a number of 5 questions, which was applied to the 75 subjects, subject to anonymity.

In the following, we will present the questionnaire applied to the 75 subjects:(3-18)

1. How do you assess the compulsory to complete this summer internship for the Dental Technology Undergraduate Programme, first study year, consisting of 160 hours? **a.** Very good, considering that it takes place during the summer vacation of the students. **b.** Good, the classes should be redistributed during the academic year; **c.** Enough, as the number of practical training hours; **d.** Insufficient.

2. How do you consider wax modelling at real dimensions, of the maxillary and mandibular dental structures, on models capable of reproducing the occlusal reports, followed by checking the correctness of the modelling using the dental harmony of the tooth modelled in wax with the remaining teeth on the model? **a.** It is an effective didactic method, capable of developing your theoretical and practical knowledge in an efficient and constructive way; **b.** It is a didactic method with a relative character, without having optimal prospects for developing theoretical and practical knowledge in an efficient and constructive way; **c.** Totally useless.

3. How do you consider that modelling by grinding/milling, using the dental micromotor, to real dimensions, of dental structures from self-curing acrylic resin (upper central incisor, upper canine, first upper premolar, first upper molar, first mandibular molar)? **a.** It is an efficient teaching method, capable of developing your theoretical and practical knowledge in an efficient and constructive way; **b.** It is a didactic method with a relative character, without having optimal prospects for developing theoretical and practical knowledge in an efficient and constructive way; **c.** Totally useless.

4. How do you consider the understanding and awareness of the occlusal surfaces morphology of the lateral teeth, by

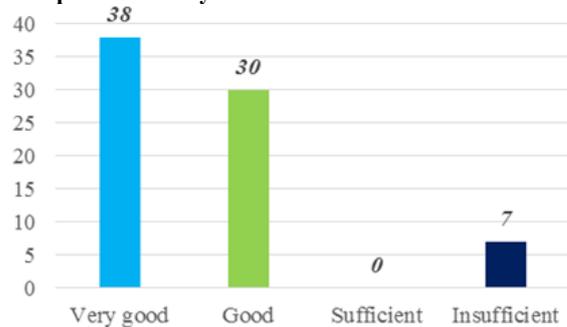
modelling of dental occlusal morphology of the maxillary and/or mandibular arches at a 1:1 scale by wax addition technique with coloured wax? **a.** It is an efficient teaching method, able to develop your theoretical and practical knowledge in an efficient and constructive way; **b.** It is a didactic method with a relative character, without having optimal prospects for developing theoretical and practical knowledge in an efficient and constructive way; **c.** Totally useless.

5. How this practice portfolio, designed by the teaching staff working in the Dental Technology Undergraduate Program from U.M.P. "Carol Davila" from Bucharest, should be modified? **a.** Substantially improved (over 50%); **b.** Partially improved (over 30%); **c.** Left as it is; **d.** Totally changed.

RESULTS AND DISCUSSIONS

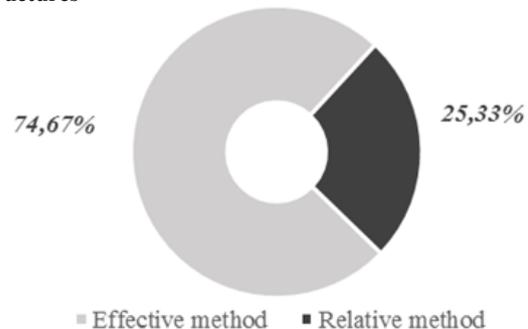
Regarding the obligation of completing the summer internship for the first year of studies, 38 of the subjects (representing 50.67%) appreciated as very good because it takes place during the holiday, 30 (representing 40%) appreciated as good but the hours should also be redistributed during the academic year, while only 7 of the subjects (representing 9.33%) considered that the number of hours is insufficient (figure no. 5).

Figure no. 5. The compulsory to complete the summer internship for the first year of studies



Wax modelling of dental structures was considered by 56 respondents (representing 74.67%) as an effective teaching method while only 19 respondents (representing 25.33%) considered it as a didactic method with relative character (figure no. 6).

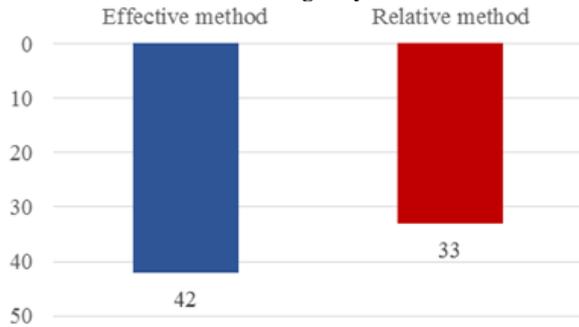
Figure no. 6. Analysis of the wax modelling method of dental structures



Regarding the modelling by grinding / milling using the dental micromotor to real dimensions of dental structures made of self-curing acrylic resin 42 subjects (representing 56%) considered as an effective teaching method, while 33 subjects (representing 44%) considered as a method with relative character that does not allow the development of theoretical and practical knowledge efficiently (figure no. 7).

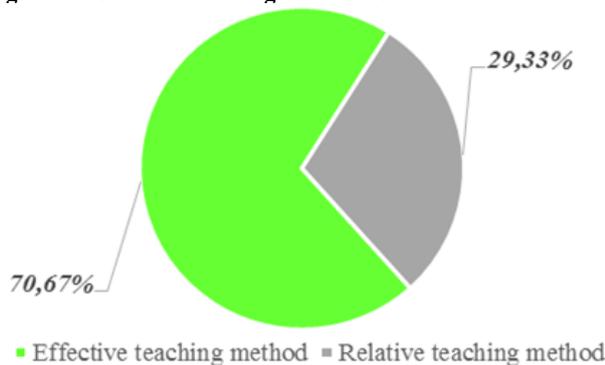
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Figure no. 7. Modelling to real dimensions of dental structures made from self-curing acrylic resin



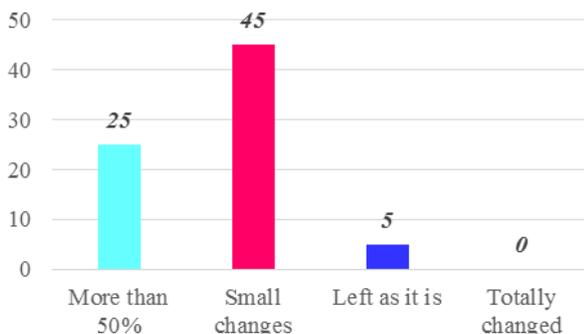
Modelling from coloured wax at 1:1 scale to understand the morphology of occlusal surfaces was considered by most of the subjects questioned (53 representing 70.67%) as an effective teaching method, while 22 subjects (representing 29.33%) considered it as a didactic method with relative character (figure no. 8).

Figure no. 8. Wax modelling of dental structures



The last question, related to the changes that should be made to the summer internship protocol, 25 of the respondents (representing 33.33%) considered that they needed substantial improvements, 45 of the respondents (representing 60%) considered that they needed small changes, while 5 respondents (representing 6.67%) felt that the current form should not be changed (figure no. 9).

Figure no. 9. The need to change the summer internship protocol



CONCLUSIONS

After studying the answers to the 5 questions, we can conclude several quite interesting aspects for the future development of the summer internship for the first year students of the Dental Technology Undergraduate Program, within the U.M.P. "Carol Davila" from Bucharest, as follows:

Given that this summer internship runs for 4 weeks during the summer vacation, over half of the subjects involved in the study (50.66%) considered that this subject takes up too much of their vacation time hours, it can also be redistributed during the academic year.

Related to the wax modelling, to real dimensions, of the maxillary and mandibular dental structures, on models capable of reproducing the occlusal reports, followed by checking the correctness of the modelling using the dental harmony of the tooth modelled in wax with the remaining teeth on the model, most of the subjects involved in the study (74.66%) indicated this method, being very didactic and extremely effective in their theoretical and practical preparation.

Regarding the modelling, by grinding (milling), with the help of the dental micromotor, to real dimensions, from some self-curing acrylic resin of dental structures (upper central incisor, upper canine, upper first premolar, upper first molar, mandibular first molar), over half of the interviewed subjects (56%) appreciated that this is an effective teaching method, capable of developing their theoretical and practical knowledge in an effective and constructive way.

Related to the awareness of the occlusal surfaces morphology of the lateral teeth, by modelling dental occlusal morphology of the maxillary and/or mandibular arches at a 1:1 scale by wax addition technique with coloured wax, 70.66% of the subjects appreciated this method as being useful and constructive in developing the theoretical and practical aptitudes for the graduates of the Dental Technology Undergraduate Program, within UMP "Carol Davila" from Bucharest.

Most of the subjects involved in the study (60%) considered that this summer internship portfolio should be improved by more than 30%, by adopting additional measures, capable of sufficiently develop their theoretic and practical skills.

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