

Student performance evaluation of subject partial dentures of the Faculty of Dentistry, Universidad Central de Venezuela in the period 2006 – 2012

Alvarez de Lugo M

Associate Professor, Faculty of Dentistry, Universidad Central de Venezuela

Correspondence: Alvarez de Lugo M, Associate Professor, Chair of Removable Partial Dentures of the Faculty of Dentistry of the Universidad Central de Venezuela, Venezuela, Email marina.alvarez@ucv.ve, marina.alvarezdelugo@gmail.com

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Abstract

This work aims to disclose an experience of assessment of student performance subject Removable Partial Dentures, Faculty of Dentistry, Central University of Venezuela, the period 2006-2012. This is a retrospective study with a descriptive applied research scope documentary film. To analyze the data of different cohorts of the subject Removable Partial Dentures, from 2006 and until 2012, representing total trainees students of the subject in the mentioned period were taken. They were evaluated according to academic achievement standards as Caira & Lescher. At the conclusion of the results it was found that student achievement of the cohort 2006-2007 was at the “optimal” range according to the reference standards; 2007-2008 and 2009-2010 cohorts among “Best and Excellent” and the 2010-2011 cohort in the “Fair” range. Instead student achievement in the subject is located in the “poor or low” range for the 2008-2009 and 2011-2012 cohorts. It is further noted, from the 2010-2011 academic year, a decline in student achievement in the subject, so taking into account this study and its results, it is necessary to make changes to the methodological strategies in the process of teaching and learning to influence and optimize student achievement in itself, and to ensure that after graduation, dentists are better prepared for professional practice and appropriate care of partially edentulous patients.

Keywords: removable partial dentures, student achievement, assessment of student achievement

Abbreviations

UCV, Central University of Venezuela; ICT, information and communication technologies; NHANES, national health and nutrition report of the USA

Introduction

Removable Partial Dentures is a compulsory subject in professional training in the career of Dentistry, where the process of teaching and learning of the student is directed towards the diagnosis and treatment of partially edentulous patients. The current Study Plan of the Faculty of Dentistry, of the Central University of Venezuela (UCV) is governed by an annual regime and the subject Removable Partial Dentures is located in the third year of the race.¹

Gómez et al.² describe in the year 2006, that the program of this subject was executed from the year 1997 in a theoretical way, and remained since then without any modification, although they have been presenting low qualifications. The authors mentioned in the period 2004-2005 studied the program of the subject, which showed its deficiency from the structural and functional point of view. From this last evaluation, a new instructional design proposal of a theoretical-practical nature was developed, including preclinical activities, with the intention of developing in the student fine motor skills that reinforce the knowledge acquired in the theory and improve the understanding of the acts to be performed later in the clinical rooms, aiming to promote significant learning, association of knowledge related to the

prosthetic area and develop strategies for the transfer of knowledge to new problematic situations.³ And in the academic year 2005-2006 this instructional design was put into practice, obtaining as a result of this application an improvement of the student's performance, which was evidenced with an average of sixteen (16/20) points, in one scale from one to twenty, in the practical component, which had a positive effect on the final grade of the students attending the subject, obtaining a percentage of failed students of 28.23%, when in the previous year it was 33.44%.⁴

In view of these results, the Chair of Partial Removable Dentures for the 2006-2007 period designed a new theoretical-practical program for the subject, consisting of two curricular units: a theoretical component that is equivalent to 60% of the final grade and a practical or preclinical component, which makes up 40% of the final grade. This program, even though it has been re-evaluated in the following years, remains in force.¹¹

Several authors, among them Revoredo,⁵ affirm, in 2007, that the education offered at the university level must be updated. As well as, that universities around the world make small and large changes in the teaching methodology of their students and their university curriculum to achieve the ultimate goal of any university education institution so that graduates obtain the necessary knowledge so they can develop their career. It is important to highlight that the education of dentistry does not escape this.

The knowledge that the student of Dentistry should acquire in the prosthetic area are varied, among which the prosthetic rehabilitation of the patient should be mentioned, covering the following subjects: Crowns and Bridges, Removable Partial Dentures and Total Dentures. For the preparation of the student and aspiring Dentist to graduate from this Faculty, in the area of removable partial dentures must be trained through the theoretical, preclinical and clinical studies of "Removable Partial Dentures".

While is true that, the teaching of the removable partial denture must compromise the effort and conviction of the professors to be able to teach the benefits of its use and the fundamental principles for its construction, stimulating the students to assume the responsibility that belongs to the partial denture and not delegate the functions that are uniquely their competence, as is the case of the design that should be predetermined in the diagnostic model, which will serve as a guide to make preprosthetic and abutment tooth preparations so that the removable partial denture can function optimal way while maintaining the health of the remaining tissues. In the same way, the principles of the use and design of a removable partial denture are contents that all dentists of general practice must know and it is the responsibility of every university to ensure that their students learn these concepts.⁵

In the study of Lynch et al.⁶ in the year 2007, they affirm that there is a common agreement among dental schools regarding the teaching of removable partial dentures, however the principles of removable partial dentures taught in the dental school are separated from dentists in professional practice. Although it is true, in different universities of the world it is offered differently, however the institutions coincide, in relation to the preparation of removable partial dentures, in which for the preparation of the general dentist these studies include: theory, preclinical and clinical. Likewise, as Revoredo⁵ points out, it is important to mention that subjects with preclinical studies should be seen as preparation subjects for clinical practice, not as subjects that lack clinical relevance.

The Chair of Partial Dentures Removable of the Faculty of Dentistry of the UCV at the end of each academic year evaluates the student performance in the Subject Partial Dentures. At the end of the 2011-2012 period, it could be seen that 61.30% of the students enrolled in the course passed the subject, while 26.81% of the students enrolled were rejected, and 11.87% of the students lost. The subject for non-attendance (PI), being the grade average, thirteen points out of twenty (13/20).⁴ From all the aforementioned, the need to analyze student performance in the subject Removable Partial Dentures between the 2006-2012 periods is evident. This period of time is taken given that in the academic year 2006-2007 the current program of the subject was implemented, and the last group at the time of carrying out this study corresponds to the 2011-2012 cohort.

Materials and methods

It is a retrospective study applied with a descriptive scope of documentary research. In terms of its purpose, the research aims to analyze the student performance of the subject Removable Partial Dentures and establish its relationship with categorized performance standards. It is an applied research and the data have been obtained from the analysis of the reality that we want to improve, and we will make immediate use of the results to specific problems, in this case, referred to the subject of Removable Partial Dentures.⁴

To carry out this research, the data were extracted from a double source: primary data (record of final grades of the subject, as well as the student performance report of the subject Removable Partial Dentures) and secondary data (be obtained and registered by other researchers). The documentary sources from which the secondary data information was obtained were printed and electronic documents. For the analysis, data were taken from the different cohorts of the subject Removable Partial Dentures, from 2006 and up to 2012, which represent the total number of students attending the subject in the mentioned period.⁴ They were evaluated according to the Academic Performance Standards according to Caira et al.⁷ (Table 1).

Table 1 Standards of academic performance of the student of the school of sociology

Performance standard	Rank	Qualification
Poor or Minimal	Less than 65%	Less than 13 points
Regular	From 65% to 75%	From 13 to 15 points
Optimum	From 75% to 85%	From 15 to 17 points
Excelente	From 90% up to 100%	From 18 to 20 points

Fuente: Caira et al.⁷

Results

The number of students enrolled in the Subject Removable Partial Dentures in the academic year 2006-2007 is 293, of which 80.20% of the total population approved the subject, with an average score of 13.45 points, on a scale from 0 to 20 points. In the 2007-2008 academic year the number of students enrolled was 266, of which 89.20% of the cohort was approved, with an average score of 12.88 out of 20 points, this group reflecting the highest percentage of approved students from the studied cohorts (Table 2).

Table 2 Performance Students of the subject removable partial dentures Cohort 2006–2007 a 2011–2012. (Approved)

Cohort	Registered	Approved	Percentage	Qualification average
2006–2007	293	235	80,20%	13,45
2007–2008	266	237	89,20%	12,88
2008–2009	221	113	51,13%	13,24
2009–2010	265	229	86,41%	13,40
2010–2011	202	133	65,84%	13,92
2011–2012	261	160	61,30%	13,48
Average	251,33	184,5	72,34%	13,39

Source: Own.

In the year 2008-2009 the number of students enrolled was 221, where 51.13% approved the subject with an average score of 13.24 out of 20, considerably reducing the percentage of students in relation to the previous cohort (2007-2008), however the average rating improved in relation to the same group. Regarding the number of students enrolled in the Subject Removable Partial Dentures in the academic year 2009-2010 is 265 of which 86.41% of the total population approved the subject with an average score of 13.40 out of 20 points. In this last cohort there is an increase in the percentage of students approved in

relation to the 2008-2009 cohort, as well as an increase in the average grade.

In the 2010-2011 cohort, the number of students enrolled was 202, of which 65.84% approved the subject with an average grade of 13.92 out of 20 points. In the 201-2012 academic year, the number of students enrolled was 261, with 61.30% being approved in the subject, with an average score of 13.48 out of 20 points. In these last two cohorts, the percentage of approved students decreased considerably in relation to the 2009-2010 cohort, where the percentage of approved was 86.41%. In relation to the average of the qualification, no significant differences were observed in these last three groups studied.

Table 3 shows the variation in the percentage of students failed and the percentage of students who missed the subject due to non-attendance. In the 2006-2007 cohort, 11.26% of the students enrolled failed the subject, and 8.54% missed the subject due to non-attendance. Subsequently, in the academic year 2007-2008, only 8.64% of failed students and 2.16% of loss due to non-attendance were obtained. It can be seen that the 2007-2008 cohort is where the highest percentage of students approved in the Subject Removable Partial Dentures (89.20%) of the groups studied was obtained.

In the 2008-2009 cohort, the percentage of failed students increases to 40.72%, being the highest in this study. And it presents the 8.15% of students who lost the subject due to non-attendance. In relation to the greater percentage of students who lost the subject due to non-attendance, it is presented by the 2011-2012 cohort, with 11.89%. Of the studied cohorts, the average obtained in terms of the number of students enrolled in the subject between 2006 and 2012 was 251.33 students. The average number of approved students was 184.5, which represented 72.34%, with an average score of 13.39 over 20 points. Similarly, it was observed that the average number of students failed was 50.83, representing an average percentage of 21.34% of students failed, while the average number of students who missed the subject due to non-attendance was 16, resulting in a average percentage of 6.30%. Figure 1 Shows the results obtained in this study.

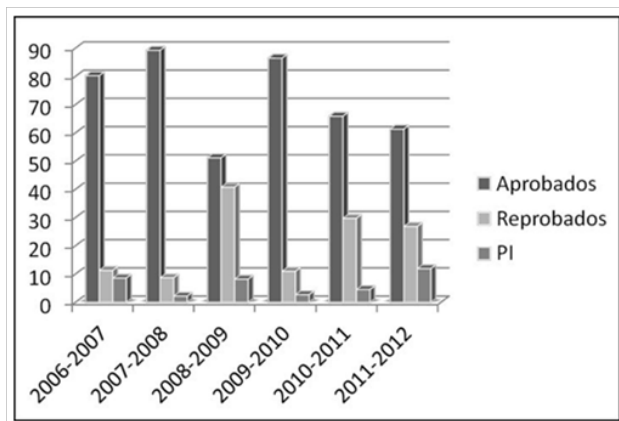


Figure 1 Student performance in the subject removable partial dentures. Percentages of the Cohorts 2006-2007 to 2011-2012. Source: Own.

Analysis

When observing the values of the student performance of the cohort 2006-2007, date in which the current program of the subject was implemented, it was observed that the results obtained at that moment were the following: 80.20% of the enrolled students approved the

subject, 11.26% of the students failed the subject and only 8.53% of the students lost the subject due to non-attendance. And when comparing with the data of the cohort 2011-2012, where we can appreciate that 61.30% of the registered students approved the subject, with an average score of 13.48 points out of 20, we can observe a difference between both groups of data. Graphically, the results of the 2006-2007 and 2011-2012 cohorts are observed, in Figure 2.

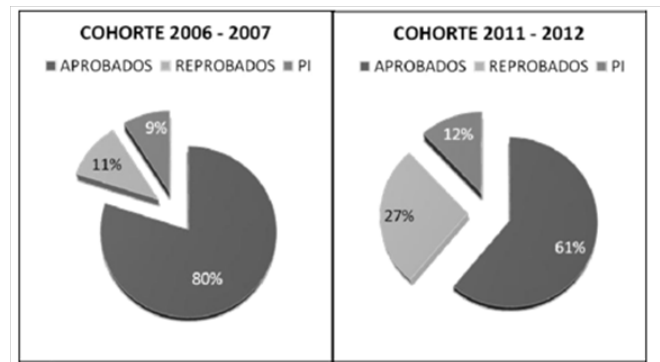


Figure 2 Student performance of the subject removable partial dentures. Cohort 2006-2007 and cohort 2011-2012. Source: Own.

When we took the data from the 2011-2012 cohort and analyzed them according to what was proposed by Caira et al.⁷ (Table 1), we observed that the subject Removable Partial Dentures within the Performance Standards is in the Deficient or Minimum range, since less than 65% of the students approved the subject, even though the average grade was thirteen (13/20) points out of 20, for this group of students (and the authors place the grade of thirteen (13) points in the order of the "Regular" performance standard).

If we compare this result with that obtained for the 2006-2007 cohort (Table 2) where it is observed that 80.20% of the enrolled students approved the subject with an average score of 13.45 out of 20, we found that within The Student Academic Performance Standards proposed by Caira et al.⁷ Table 1 the subject was found (for the period 2006-2007) in the Optimal range, since having 80.20% of approved students is located in This group, even when the average grade is thirteen (13/20) points over twenty, for this group of students, average that corresponds to a regular performance.

The results obtained for the following cohorts: the cohort 2007-2008, it was observed that the subject was found in the range between Optimum and Excellent, since having 89.20% of approved students, it is located between these two groups. The 2008-2009 cohort (Table 2) within the Student Academic Performance Standards proposed by Caira et al.⁷ (Table 1) the subject was found in the Deficient or Minimum range, since having the 51, 13% of approved students, is located in this group. And the average grade is thirteen (13/20) on twenty points for this group of students.

The 2009-2010 cohort (Table 3) with in the Student Academic Performance Standards proposed by Caira et al.⁷ (Table 1) the subject was found in the range between Optimum and Excellent, since having 86.41 % of approved, is located between these two groups. Even when the average grade is thirteen (13/20) on twenty points for this group of students. The 2010-2011 cohort (Table 3) within the Student Academic Performance Standards proposed by Caira et al.⁷ (Table 1) the subject was found in the Regular range, since having 65.84% of

approved, is located between these two groups. And in this group the average score was fourteen (14/20) on twenty points.

Table 3 Performance students of the subject removable partial dentures Cohort 2006–2007 a 2011–2012. (Reprobados y PI)

Cohort	Failed	Percentage	Loss for non-attendance	Percentage non-attendance
2006–2007	33	11,26%	25	8,54%
2007–2008	23	8,64%	6	2,16%
2008–2009	90	40,72%	18	8,15%
2009–2010	29	10,94%	7	2,65%
2010–2011	60	29,70%	9	4,46%
2011–2012	70	26,81%	31	11,89%
Average	50,83	21,34%	16	6,30%

Source: Own.

When we took the data from the 2011-2012 cohort and analyzed them according to what was proposed by Caira et al.⁷ (Table 1), we observed that the subject Partial Removable Dentures within the Performance Standards is in the Deficient or Minimum range, as mentioned previously.

Discussion

The evaluation of student performance at the Central University of Venezuela is subject to the provisions of the Universities Law and the special provisions agreed upon by the University Council of the UCV, requiring in the programming, the setting of general and specific objectives, to convert the evaluation in the middle to appreciate the degree to which they are reached. This evaluation leads to the formulation of objectives in the cognitive area, from the level of information, through analysis, to the formulation of critical judgments; in the affective area, to establish attitudes and ethical principles, based on the institution and the profession; and in the psychomotor area, to stimulate the beginning and development of neuromuscular skills, of great importance in dental practice.^{8,9}

While it is true that we have analyzed carefully regarding student performance in terms of percentages of students approved and failed, as well as final grades of the subject Removable Partial Dentures, placing us again in Table 3 we must mention that the average of the subject Removable Partial Dentures between 2006 and 2012 was thirteen points out of twenty (13/20), with an average of 251.33 students enrolled per year. And really thirteen points on twenty qualification (13/20), is a “regular” grade according to the academic performance standards taken by Caira et al.⁷ This would indicate that the competences proposed by the Chair of Partial Removable Dentures for the subject Removable Partial Dentures were achieved by the student on a regular basis and therefore not completely or optimally. Likewise, the knowledge in this area is “regular” and as a consequence, the performance as a future dentist in the area of removable partial dentures will be “regular”.

Studies indicate that between 66% and 74% of the Venezuelan population requires some form of treatment with dental prosthesis, a demand constituted mainly by partially edentulous individuals, where

the removable partial denture is the viable treatment alternative to solve most of the needs.^{10,11} Reason why the Chair of Partial Removable Dentures of the Faculty of Dentistry of the Central University of Venezuela is devoted to the preparation of Dentistry students so that they graduate with the best knowledge in the diagnosis and treatment of patients partially edentulous.

The practice of dentistry is considered to be the provision of services aimed at the prevention, diagnosis and treatment of diseases, deformations and traumatic accidents of the mouth and of the organs or anatomical regions that limit or comprehend it.¹² Dentistry professionals are for society experts in high knowledge and specific skills, committed to give priority to the welfare of their patients. Consequently, when someone is received as a dentist, they make a commitment to the community and accept the rules and obligations of their profession. These constitute the essence, as Torres-Quintana and Romo call it, of “dental ethics”. Practically from its beginnings the dental practice has been based on the search of the good of the patient (traditional ethics, Aristotelian, based on the virtues).¹³

From the point of view of their training in the prosthetic area, the Dentist graduated from the Central University of Venezuela must possess the clinical domain that includes prosthetic rehabilitation of the patient (integrated treatment of crowns and bridges, removable partial dentures and total dentures). Including the fundamental principles for the construction of the removable partial dentures, and assuming the responsibility as it is in the case of the design of the same. To design a removable partial prosthesis you must have all the data provided by a careful and orderly clinical examination of the patient, radiographic examination, model analysis, functional waxing of models, to obtain a correct diagnosis and accordingly establish a plan of adequate treatment that should be predetermined in the diagnostic model, which will also serve as a guide for performing preprosthetic and abutment tooth preparations, so that the removable partial denture can function improving and maintaining the health of the remaining tissues.¹⁴

It is well known that the challenge for dental educators is to train professionals in the area so that they are competent in providing oral health care. And in the prosthetic area, an important cause of concern arises in relation to the ability of recently graduated dentists to provide an adequate prosthetic service to their patients as well as the correct way to perform the indications to the laboratory.^{5,6}

Revoredo⁵ mentions that researches carried out in different countries shows a tendency in that dentists graduated from their universities do not know how to correctly design a metallic structure for a removable partial denture. Daher et al.¹⁵ refer to a 1984 study, which showed that 78% of removable partial dentures are designed by the dental technician at the request of dentists. In the same way, Sánchez et al.¹⁶ refer in 2007, that studies related to the production of removable partial dentures in public and private services, internationally and in Venezuela, coincide when observing a tendency to delegate functions in the form less appropriate, with the consequent detriment in the quality of the service provided in this area of the dental prosthesis.

While it is true that one of the main characteristics of prosthetic treatment is that a large part of its technical aspects are performed in the dental laboratory, Sánchez et al.¹⁷ in 2008 mention that it is the obligation of the dentist to send precise design instructions to the laboratories, as he is the one who knows the biomechanical aspects of each case, hence the great value that is given to the order of work

issued by the dentist, since when executed correctly they generate satisfaction and guarantee professional quality in the exercise of the removable partial denture. In another study carried out by Sánchez et al.¹⁶ in 2007, it is evident that the delegation of functions is carried out in the least convenient manner by the characteristics of the work orders, a situation very distant from what it teaches in dental schools. These results coincide with the results obtained by Guerra.¹⁴

Therefore it is convenient to mention that Carr et al.¹⁸ in 2006, established that the dentist is responsible for all phases of prosthetic rehabilitation and the prosthetic technician is responsible only to the dentist and never to the patient.¹⁸ On the other hand, Hummel et al.¹⁹ in 2002 evaluated the quality of the service of removable partial dentures in a population included in the National Health and Nutrition Report of the USA (NHANES III) observing a high incidence of defects in the removable partial dentures, where only one third of the studied population carries prosthesis without defects, which evidences the need to improve manufacturing techniques. Situation that should be considered in the training programs because the analysis of the projection of partial prosthesis needs in the United States exceeds what was expected for 2020.¹⁹

It is also important to point out that a decrease in the curricular time assigned to the study of removable partial dentures in dental schools in the USA is inadequate, as mentioned by Daher et al.¹⁵ Likewise Lynch and Allen affirm that it has been determined that these findings in relation to the failures in the ability of the recently graduated dentists to provide an adequate service to their patients, are a reflection of the current pressures on contemporary dental education, with an increase in the number of students and the limited availability of adequate personnel.⁶

The analysis of the observed situation should be considered in the training programs because the statistical projection of the needs of removable partial dentures surpass what was expected as a result of the tendency to conserve teeth in groups of patients of ages that were previously attended with Total Dentures. Decision making and quality assurance are terms that have great importance in the future development of clinical dentistry and, consequently, in the teaching of dentistry.²⁰

Conclusion

Student performance in the subject Removable Partial Dentures within the Student Academic Performance Standards is in the “Deficient or Minimum” range for the 2011-2012 cohort. It was observed that from the academic year 2010-2011 there has been a decrease in student performance of the subject, so taking into consideration this study and its results, it is necessary to make changes in the methodological strategies within the teaching process and of learning, to influence and optimize student performance in it, and ensure that once graduated, dentists are better prepared for professional practice and optimal care of partially edentulous patients.

In view of the results obtained, it is necessary to propose a new instructional alternative oriented to the teaching of the Partial Removable Dentures subject to overcome the indicated weaknesses. When we talk about education in the 21st century, we must know the approaches to the new challenges in a world that demands, every day more, adequate levels of preparation and quality to face the phenomenon of globalization and competitiveness in all orders, and in the face of this reality there must be important changes in relation

to our Universities, among which are: the training of our teachers for this new reality, the change of contents and teaching methods, with the incorporation of educational innovations. Among them, it is worth mentioning the E-Learning that is an educational modality in which communication occurs in conditions of separation between teachers and students. The interaction, therefore, can occur synchronously or asynchronously, through

Taking into account the existence of the Distance Education regulations of the Central University of Venezuela, as well as the operation of the SEDUCV, the author proposes, in accordance with the results of this research, to propose the realization and development of a new Design Instruction of the subject Removable Partial Dentures, of the School of Dentistry of Central University of Venezuela, adjusted to the new pedagogical strategies imposed by the distance modality and the incorporation of information and communication technologies in order to suggest a novel design and more attractive that manages to motivate and attract the attention of students.

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Conflict of interest

The author declares no conflict of interest.

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