Analysis of the knowledge and opinions of students and qualified dentists regarding the use of computers

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Abstract

Dentists are currently required to make multiple diagnoses and treatment decisions every day and the information necessary to achieve this satisfactorily doubles in volume every five years. Knowledge therefore rapidly becomes out of date, so that it is often impossible to remember established information and assimilate new concepts. This may result in a significant lack of knowledge in the future, which would jeopardize the success of treatments. To remedy this situation and to prevent it, we nowadays have access to modern computing systems, with an extensive data base, which helps us to retain the information necessary for daily practice and access it instantaneously.

Objetives: The objectives of this study are therefore to determine how widespread the use of computing is in this environment and to determine the opinion of students and qualified dentists as regards its use in Dentistry.

Study design: 90 people were chosen to take part in the study, divided into the following groups (students) (newly qualified dentists) (experts).

Results: It has been demonstrated that a high percentage (93.30%) use a computer, but that their level of computing knowledge is predominantly moderate. The place where a computer is used most is the home, which suggests that the majority own a computer.

Conclusions: Analysis of the results obtained for evaluation of computers in teaching showed that the participants thought that it saved a great deal of time and had great potential for providing an image (in terms of marketing) and they considered it a very innovative and stimulating tool.

Key words: *Computer-assisted learning, education, making decisions, students and faculty opinion.*

Introduction

The world of computing has influenced the health sector, introducing numerous administrative or financial as well as clinical innovations. Major clinical advances have been made in particular, vastly improving the quality of medical and dental services.

Dentists are currently required to make multiple diagnoses and treatment decisions every day and the information necessary to achieve this satisfactorily doubles in volume every five years. Knowledge therefore rapidly becomes out of date, so that it is often impossible to remember established information and assimilate new concepts. This may result in a significant lack of knowledge in the future, which would jeopardize the success of treatments. To remedy this situation and to prevent it, we nowadays have access to modern computing systems, with an extensive data base, which helps us to retain the information necessary for daily practice and access it instantaneously (1).

Computers consequently represent an ideal means of su-

pplementing the defects of the human memory, allowing a greater quantity of the information necessary to produce a diagnosis to be retained and processed.

There are many informatics programs which are used in our clinics to help us (2-3). One of the most important computing innovations has been the introduction of computer-based learning or teaching support programs.

The development of these programs in our specialism is basically intended for use in university education. The impact of computing on dental education has been considerable in the last two decades, enabling both teachers and students to have access to information stored on computer for both administrative and management purposes as well as for learning. The ability of students and the ease with which they currently use sophisticated learning tools is increasing daily, while teachers strive to make teaching a much more attractive and easier task.

Many universities are increasingly supporting the introduction and use of computers within the educational system and the AADS (American Association of Dental Schools) has approved the incorporation of computing and considers it to be a fundamental part of the syllabus, requiring its inclusion as a subject in its own right (4). Furthermore, the Special Committee for the Future of Dentistry, set up by the ADA (American Dental Association), has pointed out how important it is that universities incorporate new knowledge, technologies and information systems in syllabuses, so that students are capable of using the new computing systems. The aim of this is to incorporate the new knowledge and technologies in dental practice in the near future (5).

The objectives of this study are therefore to determine how widespread the use of computing is in this environment and to determine the opinion of students and qualified dentists as regards its use in Dentistry.

Material and Methods

90 people were chosen to take part in the study, divided into the following groups.

1st GROUP, students: 30 5th year students from the School of Dentistry of Seville University, from the years 97-98 and 98-99.

2nd GROUP, newly qualified dentists: 30 graduates in Dentistry or Stomatology from Seville University with at least 2 years' and at most 5 years' professional experience.

3rd GROUP, experts: 30 graduates in Dentistry or Stomatology practising in Seville and with at least 10 years' professional experience.

There were no specific selection criteria.

All the groups were asked a series of questions (Fig. 1).

Statistical analysis.

A data array was used incorporated in Microsoft Access software opened by the SPSSPC software carrying out a simple descriptive study of the responses obtained in the survey for each group (n=30; students, newly qualified dentists and experts) and also overall (n=90).

Results

Fig. 1. Survey designed to evaluate opinions.

1º.- Have you ever used computers?

2º.- Choose your level of computing knowledge:

3º.- Where do you normally use the computer?

4º.- State which type of computer program you use most:

5º.- Do you use the Internet?

6º.- And e-mail?

7º.- Do you think that computers are useful in teaching?

8º.- And for professional support (management programs, etc.)?

9º.- You regard the use of computers in teaching as: saving time, impersonal, a matter of image, a matter of marketing, difficult, innovative and stimulating.

10º.- The use of computers in professional practice: saving time, impersonal, a matter of image, a matter of marketing, difficult, innovative and stimulating.

11º.- You think that computer-based learning programs are useful for: providing a knowledge base, establishing self-monitoring and evaluation mechanisms, presenting clinical cases and supporting theory/practical classes.

The stadistic results obtained are described in tables (1-17).

Discussion

It has been demonstrated that a high percentage (93.30%) use a computer, but that their level of computing knowledge is predominantly moderate. The place where a computer is used most is the home, which suggests that the majority own a computer. Use at the university is low, only 14.16%, which may indicate the low level of development or accessibility of computers in Seville compared to other universities, possibly due to current problems with space in the School. It is to be hoped that the building under construction, in which the works' committee has already planned a newspaper archive with computerized bibliographic search systems and connection to the network.

The Internet is used by only 29.40%, together with 23.41% who use e-mail, which would indicate the low level of introduction in Spain of these two tools which are so important in the world today. The marked difference between the three study groups as regards use of the Internet and e-mail should be emphasized. In group 3 59.30% used the Internet and 44.4% e-mail, while in group 1 92.2% did not use it. Group 2 also differed greatly from group 3, since 73.3% had not used it. This difference in the results is due to the fact that those questioned in group 3 were mainly teachers at the School of Dentistry of Seville, which has the necessary infrastructure for accessing the Internet, which caused the increase in this figure. It is important

Table 1. Statistical results of the survey.

QUESTION 1	GROUP 3	GROUP 2	GROUP 1	OVERALL
YES	90	96.7	93.3	93.3
NO	10	3.3	6.7	6.7
OTHER	0	0	0	0
QUESTION 2				
LOW	29.60	33.30	67	43.50
MODERATE	70.40	56.70	29	50.80
ADVANCED	0	6.70	4	3.50
OTHER	0	3.30	0	1.20
QUESTION 3				
HOME	85.2	56.7	89.3	76.81
SURGERY	11.1	13.3	0	7.83
UNIVERSITY	3.7	26.7	10.7	14.16
OTHER	0	3.3	0	1.20
QUESTION 4				
WORD PROCESSOR	92.6	90	100	94.10
DENTAL MANAGEMENT	7.4	6.7	0	4.70
GRAPHICS	0	0	0	0
OTHER	0	3.3	0	1.20
QUESTION 5				
YES	59.30	23.3	7.10	29.40
NO	40.70	73.3	92.90	70.40
NS/NC[1]	0	0	0	1.20
QUESTION 6				
YES	44.4	16.7	7.1	23.41
NO	55.6	83.3	92.9	76.59
NS/NC	0	0	0	1.20
QUESTION 7				
YES	100	96.7	90	95.60
NO	0	0	6.7	2.20
NS/NC	0	3.3	3.3	2.20
QUESTION 8				
YES	86.7	100	86.7	91.10
NO	0	0	0	8.90
NS/NC	13.3	0	13.3	0

[1]Don't know/No comment

Table 2. Question 9: Saves time.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	3.3	3.3	3.3
SLIGHTLY	3.3	10	0
AVERAGE	26.7	16.7	33.3
CONSIDERABLY	26.7	26.7	20
VERY MUCH	40	43.3	43.3

Table 3. Question 9: Impersonal.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	6.7	13.3	0
SLIGHTLY	10	13.3	6.7
AVERAGE	36.7	33.3	50
CONSIDERABLY	23.3	23.3	23.3
VERY MUCH	23.3	16.7	20

Table 4. Question 9: Image.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	6.7
SLIGHTLY	0	0	0
AVERAGE	40	10	23.3
CONSIDERABLY	30	33.3	53.3
VERY MUCH	30	56.7	46.7

Table 5. Question 9: Difficult.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	6.7	10	6.7
SLIGHTLY	13.3	20	3.3
AVERAGE	56.7	53.3	43.3
CONSIDERABLY	16.7	16.7	30
VERY MUCH	6.7	0	16.7

Table 6. Question 9: Innovative.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	3.3	0	0
SLIGHTLY	0	0	0
AVERAGE	6.7	13.3	6.7
CONSIDERABLY	33.3	36.7	36.7
VERY MUCH	56.7	50	56.7

Table 7. Question 9: Stimulating.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	3.3	6.7	6.7
SLIGHTLY	0	3.3	16.7
AVERAGE	13.3	23.3	36.7
CONSIDERABLY	53.3	26.7	26.7
VERY MUCH	30	40	13.3

Table 8. Question 10: Saves time.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	3.3	3.3	0
SLIGHTLY	0	3.3	0
AVERAGE	20	20	10
CONSIDERABLY	30	23.3	33.3
VERY MUCH	46.7	50	56.7

Table 9. Question 10: Impersonal.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	10	26.7	3.3
SLIGHTLY	6.7	16.7	16.7
AVERAGE	36.7	30	36.7
CONSIDERABLY	33.3	16.7	26.7
VERY MUCH	13.3	10	16.7

Table 10. Question 10: Image.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	3.3	0
SLIGHTLY	3.3	0	0
AVERAGE	10	0	6.7
CONSIDERABLY	20	13.3	13.3
VERY MUCH	66.7	83.3	80

Table 11. Question 10: Difficult.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	6.7	13.3	6.7
SLIGHTLY	13.3	20	6.7
AVERAGE	46.7	53.3	30
CONSIDERABLY	16.7	13.3	46.7
VERY MUCH	16.7	0	10

Table 12. Question 10: Innovative.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	0
SLIGHTLY	3.3	3.3	0
AVERAGE	20	10	3.3
CONSIDERABLY	36.7	53.3	40
VERY MUCH	30	33.3	56.7

Table 13. Question 10: Stimulating.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	10	13.3	6.7
SLIGHTLY	3.3	3.3	20
AVERAGE	26.7	20	36.7
CONSIDERABLY	36.7	43.3	23.3
VERY MUCH	23.3	20	13.3

Table 14. Question 11: Provides a knowledge base.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	0
SLIGHTLY	3.3	13.3	6.7
AVERAGE	23.3	13.3	40
CONSIDERABLY	33.3	40	26.7
VERY MUCH	40	33.3	26.7

Table 15. Question 11: Establishing self-monitoring and evaluation mechanisms.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	0
SLIGHTLY	6.7	16.7	3.3
AVERAGE	33.3	20	50
CONSIDERABLY	36.7	40	40
VERY MUCH	23.3	23.3	6.7

Table 16. Question 11: Presenting clinical cases.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	0
SLIGHTLY	13.3	10	0
AVERAGE	16.7	16.7	20
CONSIDERABLY	26.7	26.7	50
VERY MUCH	43.3	46.7	30

Table 17. Question 11: Supporting theory/practical classes.

	GROUP 3(%)	GROUP 2(%)	GROUP 1(%)
NOT AT ALL	0	0	0
SLIGHTLY	6.7	3.3	3.3
AVERAGE	23.3	16.7	20
CONSIDERABLY	23.3	33.3	36.7
VERY MUCH	46.7	46.7	40

that students continue to gain proof of the existence of such a valuable tool as the Internet, since they can use it to access many pages where the doubts that can arise in our normal practice can be resolved. An example of this is DERWEB (http: //.derweb.ac.uks63cal.html), a British site (6).

As regards the type of computer program most used by our participants, word processing was chosen most, with none choosing programming. This is in contrast with a study conducted at Harvard University in which students knew how to program or had taken programming courses (7).

Analysis of the results obtained for evaluation of computers in teaching showed that the participants thought that it saved a great deal of time and had great potential for providing an image (in terms of marketing) and they considered it a very innovative and stimulating tool.

These same aspects, but with regard to the use of computers in professional practice gave approximately the same results. The most important aspect in this area was the potential for images of computers in consultations with patients, with the development and introduction of dental management programs, radiovisiography, cephalometric analysis, etc.

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