ODOVTOS
International Journal of Dental Sciences

UNIVERSIDAD DE COSTA RICA

FOd Facultad de Odontología

https://revistas.ucr.ac.cr/index.php/Odontos

BASIC RESEARCH:

Instagram as a Pedagogical Tool in Pediatric Dentistry and Ortodontic Courses
Instagram como herramienta pedagógica en cursos de odontopediatría y ortodoncia

Natalia Gutiérrez-Marín DDS, Mag[1] https://orcid.org/0000-0002-1801-9856
Ingrid Miranda-Garro DDS[1] https://orcid.org/0000-0002-1575-5014
Andrea López-Soto DDS, MSc[1] https://orcid.org/0000-0003-2707-9671

1. Faculty of Dentistry, Universidad de Costa Rica, San José, Costa Rica.

Correspondence to: Natalia Gutiérrez-Marín DDS, Mag – natalia.gutierrez@ucr.ac.cr

ABSTRACT: Social networks have become an ideal space for the exchange of information and knowledge. The objetive of this study was to determine the usefulness of the implementation of Instagram as a didactic tool to promote and facilitate student learning in the theoretical and laboratory courses of Pediatric Dentistry and Orthodontics during 2022. Private Instagram accounts were created for each of the four courses. During 4 months relevant information was posted to review concepts and strengthen the teaching-learning process of the students. At the end of the courses, a survey was conducted containing the following variables: usefulness of the social network, amount of information provided, preferred place to view content (wall or stories) and whether students recommend the use of Instagram in other courses of the Department of Dentistry and Orthodontics. For the association of variables, the chi-square test was used, value of p<0.05, 95%CI. The participation in the accounts was 222 individuals; the interaction of the students with the accounts was 87.5% with respect to the stories, 95% observed the stories completely. There was a statistically significant difference with respect to where the information was posted: stories was the preferred place for students. There were 167 students participating in the survey. All the students found very useful or useful the content of the application on the social network.100% of the respondents recommended keeping the implementation of social networks in the theoretical courses of the Department. Instagram is not only a social application but also a channel to make the teaching process more dynamic and attractive. Teachers can integrate this social platform to foster motivation and learning in students.

KEYWORDS: Dentistry; Universit; Dental students; Education; Social media.

RESUMEN: Las redes sociales se han convertido en un espacio idóneo para el intercambio de información y conocimiento. El objetivo de este estudio fue determinar la utilidad de la implementación de Instagram como herramienta didáctica, para fomentar y facilitar el aprendizaje del estudiantado en los cursos teóricos y de laboratorio de Odontopediatría y Ortodoncia durante el 2022. Se crearon cuentas privadas en Instagram para cada uno de los cuatro cursos. Durante 4 meses se posteó información de relevancia para repasar conceptos y fortalecer el proceso de enseñanza- aprendizaje de los estudiantes. Al finalizar los cursos se realizó una encuesta que contenía las siguientes variables: utilidad de la red social, cantidad de información proporcionada, lugar preferido para ver el contenido (muro o historias) y si los estudiantes recomiendan el uso de Instagram en otros cursos del Departamento de Odontopediatría y Ortodoncia. Para la asociación de variables se utilizó la prueba de chi-cuadrado, el valor de p<0,05, 95%CI. La participación en las cuentas fue de 222 individuos; la interacción de los estudiantes con las cuentas fue del 87,5% respecto a las historias, el 95% observaron las historias de forma completa. Hubo una diferencia estadísticamente significativa respecto al lugar donde se publicaba la información: las historias fue el lugar preferido por los estudiantes. La participación en la encuesta fue de 167 estudiantes. A todos los estudiantes les resultó muy útil o útil el contenido en la red social. El 100% de los encuestados recomendaron mantener la implementación de las redes sociales en los cursos teóricos del Departamento. Instagram no es solo una aplicación de carácter social, sino que constituye un canal para hacer el proceso de enseñanza más dinámico y atractivo. Los docentes pueden integrar esta plataforma social para fomentar la motivación y el aprendizaje en los estudiantes.

PALABRAS CLAVE: Odontología; Universidad; Estudiantes de odontología; Educación; Red social.

INTRODUCTION

Social networks are structures formed by a group of individuals connected to each other by different types of relationships such as friendship, kinship, interests or knowledge (1). In recent years, these applications play a key role in people's lives and in the way which they and organizations combine to meet objectives or generate their influences (2).

From a constructivist approach, the use of social networks facilitates the development of virtual learning by organizing a set of elements, materials and media in didactic devices. These devices cover a wide range of resources that can be designed and applied by teachers to complement and strengthen the teaching-learning process (3).

Instagram is a social network that has recently completed its first decade in operation and, since its inception, has registered a remarkable evolution (4). It is one of the most used networks worldwide, in which users share photographs or short videos that can be accompanied by up to 2,200 characters (5). The topics found on Instagram are diverse: analysis of audiences, profiles and users, brands, companies and marketing, political communication and education, among others (4).

Instagram has also become a tool that can be used in education using figures, diagrams and videos that facilitate the development of learning. It is a useful resource as it allows both teachers and students to communicate easily and dynamically. The use of this social network allows students to

generate ideas with content relevant to the context and, additionally, offers a learning experience that they enjoy (5).

Some research supports Instagram use in education. In the field of letters, Instagram proved to be of great help for students of writing courses in terms of developing new vocabulary and, additionally, increasing motivation in learning (6). In medical careers, this social network demonstrated great potential as a teaching tool, given its ability to facilitate interaction between participants (7) .

In dentistry courses, only an investigation of the use of this network as a didactic strategy is reported, however, it focused on clinical courses (8). Therefore, this research aims to determine the usefulness of the implementation of Instagram as a pedagogical tool, to promote and facilitate student learning in the theoretical and laboratory courses of Pediatric Dentistry and Orthodontics of the Faculty of Dentistry at the University of Costa Rica (UCR), in 2022.

METHODOLOGY

PARTICIPANTS

The study was conducted at the Faculty of Dentistry at the UCR. The inclusion criteria were as follows: students enrolled in the theoretical courses such as Growth and Development of Occlusion and Teething (O-3002), Pediatric Dentistry II (O-4009), Orthodontics II (O-4025) and the Orthodontic Laboratory (O-4026) during the second half of 2022. The exclusion criterion was students who did not use social networks. At the beginning of the semester, students were asked which network they used the most, with Instagram being the most accepted. The participants were explained the dynamics of the use of the social network as a pedagogical tool to support teaching-learning processes. They were informed that participation was voluntary and without evaluation.

DATA COLLECTION

A pediatric dentist and orthodontist teachers at the Department of Pediatric Dentistry and Orthodontics were in charge of the didactic strategy. A private Instagram account was created for each of the courses (Growth and Development of Occlusion and Dentition: #crecimientoucr, Pediatric Dentistry II: #ucrteoriainfantil, Orthodontics II: #teoriaortodonciaucr and in the Orthodontic Laboratory: #tallerortodonciaucr). The accounts were privatized to avoid trolls, who could alter the results of the teaching strategy. Each of the course coordinators was contacted to know the schedule of the topics, and the aspects were those that should be highlighted in social networks. Throughout the semester, the persons in charge created visual content using the Canva® application to upload each of the accounts.

During four months, information was uploaded each week, regarding each class received (Figure 1). The material was uploaded to the network the day after the students received the class.

Days before the exams, questions were uploaded to them to review the subject and prepare. The "stories" tool was used when a question was asked. Different answer options were provided. The students selected the ones they considered correct and immediately received feedback on what the correct answer was (Figure 2). Featured stories were created where the story questions were placed so that they could always access them even if 24 hours had already passed. A daily control of the students who saw the stories was carried out.
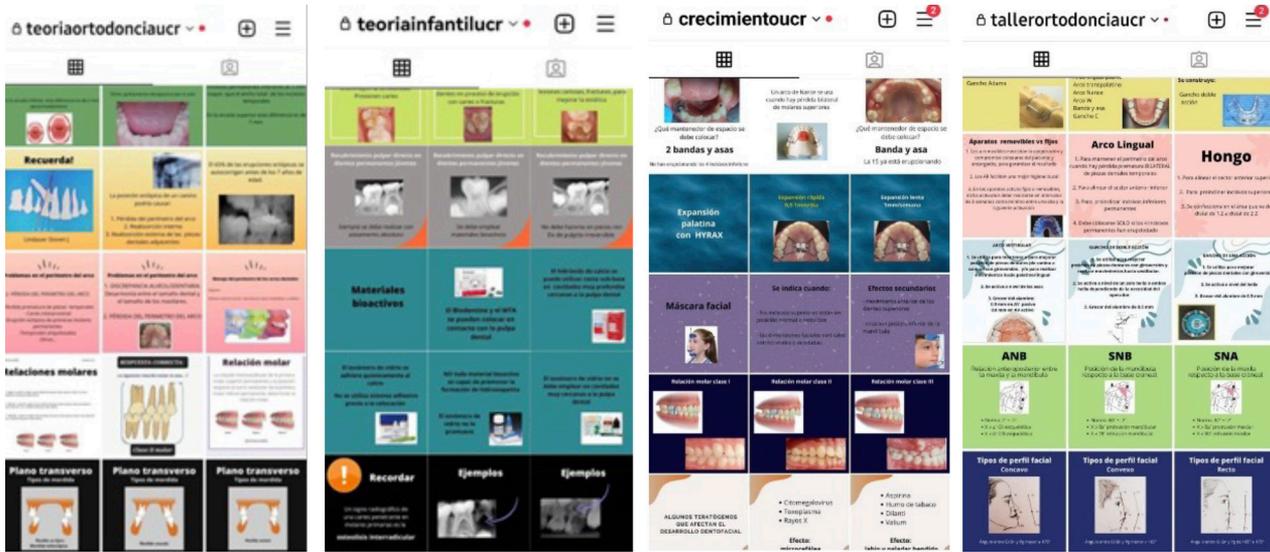
Figure 1. Examples of material uploaded to the network after each class.
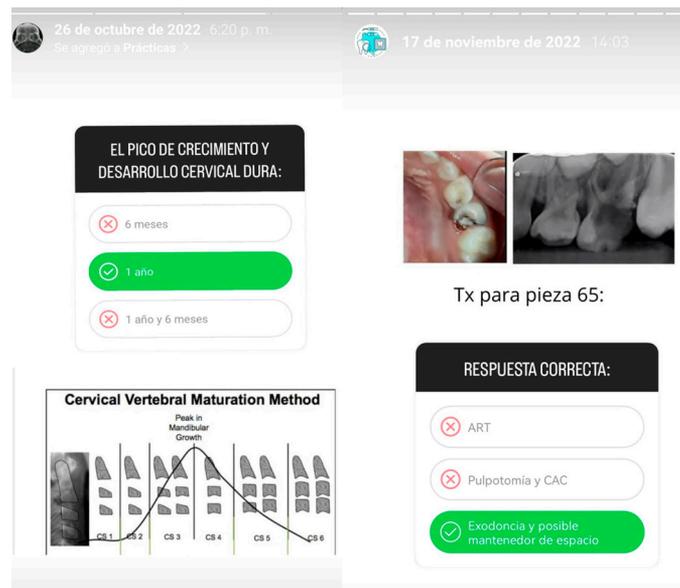

Figure 2. Stories questions.

The student always had access to direct messages to clarify any questions or to expand some information regarding the course (Figure 3).

A focus group was held to know the opinion of the students on the use of the network and to generate improvements to the didactic strategy. This group was made up of students who participated voluntary. On average there were five students from each course. At the end of the courses, an anonimized survey was carried out by Survey Monkey® to assess the students, regarding the implementation of the social network according to each course. The survey was previously validated. The variables that were taken into an account were the usefulness of the social network, the amount of information provided, the preferred place to view the content (wall or story) and if the students recommended the use of Instagram in other courses of the Department of Pediatric Dentistry and Orthodontics. The following coding was used to tabulate the data: Course 1: O-4009, Course 2: O-4025, Course 3: O-3002 and Course 4: O-4026. Once the semester ended, students were removed from the accounts.
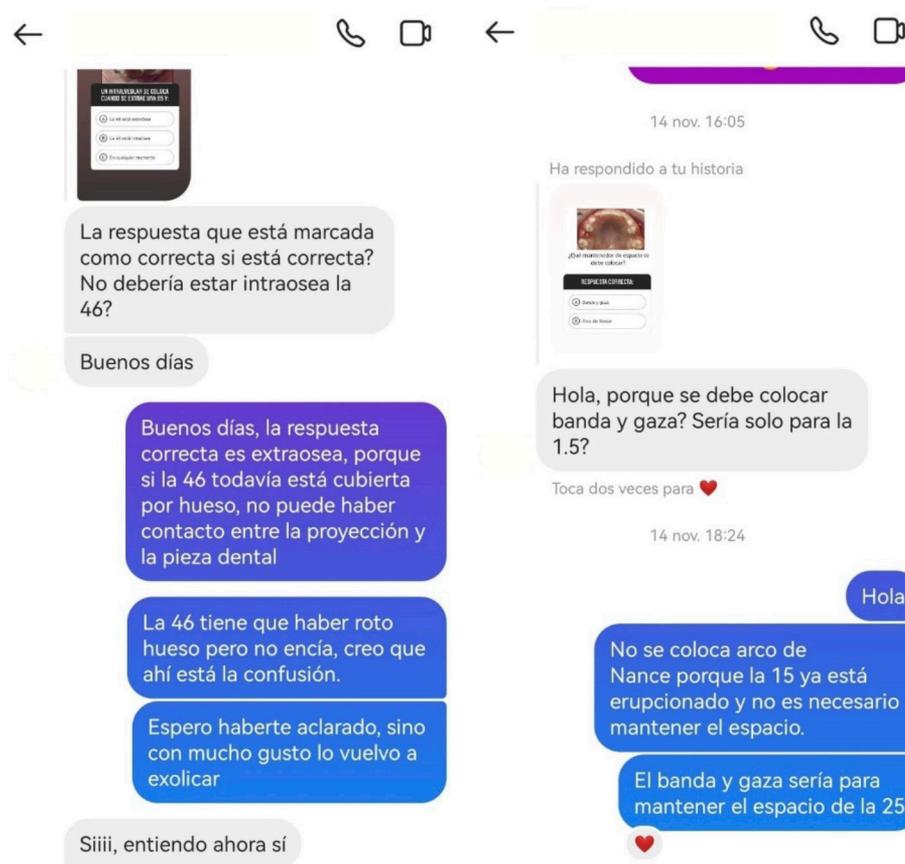

Figure 3. Messages to clarify questions from the students.

ETHICAL CONSIDERATIONS

The research is part of a project approved by the Vice-Rectory of Teaching of the UCR (PD-O-1245-2022) and was approved by the Scientific Ethics Committee of the UCR (CEC-UCR-507-2022).

STATISTICAL ANALYSIS

Descriptive statistics were performed, establishing the absolute and relative frequency. For the association of variables, the Chi square test was used. A p value <0.05, 95% CI was considered significant.

RESULTS

A total of 222 subjects participated. In the O-3002 course all the students, 100% participated in the account created. In the O-4026 and O-4025 courses, the percentage was 73%, while in the O-4009 course, 78% subjects followed the account. On average, 81% of all students enrolled in the courses of the Department of Pediatric Dentistry and Orthodontics interacted with the didactic strategy. No students abandoned any accounts during the semester.

The interaction of the students with the account was very high. On average, 87.5% of the students interacted with the stories, 95% saw the stories in full and 55% answered the questions (Figure 4).

The survey was answered by 167 students, 81% of whom found the information uploaded to the stories more useful. All the students found very useful or useful the content of the application on the social network. Also, all the students considered very useful or useful the questions in the stories. There was only a statistically significant difference regarding the place where the information was placed. The students preferred the stories to the wall (Table 1).
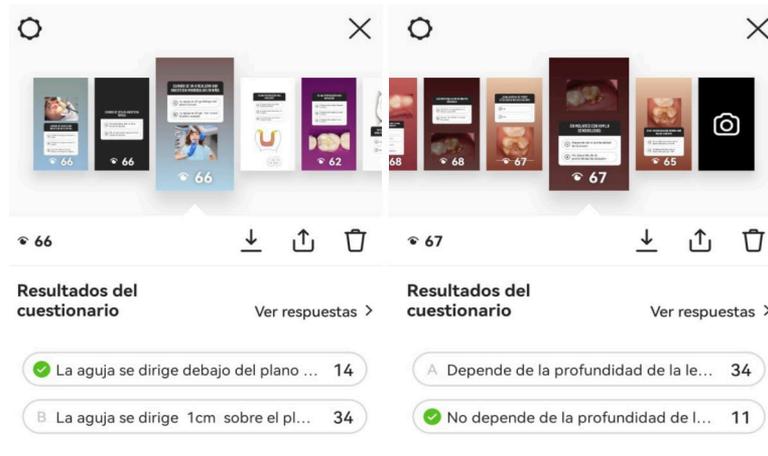

Figure 4. Interactions with the accounts.

Table 1. Results of the survey evaluating the use of Instagram as a pedagogical tool.

Survey Questions	Course 1*	Course 2*	Course 3*	Course 4*	Total	P
Did you find the content of the application on the social network useful to better understand the theoretical contents taught in the course?						0,530
Very useful	62.2%	57.8%	47.4%	56.1%	56.9%	
Useful	37.8%	42.2%	52.6%	43.9%	43.1%	
Not very useful	0%	0%	0%	0%	0%	
Did you find the application relevant in the social network to adequately prepare for the theoretical tests?						0.478
Very relevant	37.8%	53.3%	21.1%	34.8%	38.9%	
Relevant	56.8%	44.4%	73.7%	63.6%	58.1%	
Little relevant	5.6%	2.3%	5.2%	1.6%	3.0%	
How did the stories published per day seem to you?						0.781
Excessive	0.0%	2.2%	0.0%	0.0%	0.6%	
Appropriate	94.6%	86.7%	63.2%	93.9%	88.6%	
Few	5.4%	11.1%	36.8%	6.1%	10.8%	
The frequency of posts on the wall was as follows:						0.860
Loud	2.7%	6.7%	5.3%	4.5%	4.8%	
Moderate	89.2%	84.4%	47.4%	87.9%	82.6%	
Casualty	8.1%	8.9%	47.4%	7.6%	12.6%	
The questions in the stories are considered as follows:						0.783
Very useful	67.6%	68.9%	57.9%	66.7%	66.5%	
Useful	32.4%	31.1%	36.8%	33.3%	32.9%	
Not very useful	0.0%	0.0%	5.3%	0.0%	0.6%	
Where was most benefited by the information published?						0.020
In Stories	73.0%	75.6%	84.2%	89.4%	81.4%	
On Wall	27.0%	24.4%	15.8%	10.6%	18.6%	

*Course 1: Pediatric Dentistry II; course 2: Orthodontics II; course 3: Growth and Development of Occlusion and Teething; course 4: Orthodontic Laboratory.

The last question of the questionnaire was as follows: Do you recommend maintaining the implementation of social networks in the theoretical courses of the Department of Pediatric Dentistry and Orthodontics? Of the students of the four courses, 100% indicated yes.

The survey also has an open question if the students wanted to comment. Focus groups were made for the students to offer their opinions and suggestions about the pedagogical strategy. Some of the comments both in the survey and in the focus groups were: "Very good idea. I find the stories much more useful because I see them more often," "It seems to me an appropriate and dynamic way to reinforce the subject and knowledge seen in class; it is more entertaining this way," "Excellent initiative, has helped me a lot to understand the subject they give in class," "The project allowed to maintain an active review of the subjects, which is helpful when studying for exams," "Put more practices on the platform" and "Create more featured stories, and upload more content."

DISCUSSION

Society has undergone relevant transformations at the technological level, and the means of communication have changed. In this research, students expressed the great usefulness of Instagram as a pedagogical strategy for their academic training, taking an active role that promoted interest in the courses taught. The above shows that technological changes, specifically social networks, not only impact at the business and social level but also have a high potential in the educational field (9).

A high percentage of the students requested access to the different accounts of the social network, and none of the students dropped out. This high participation in the accounts created on Instagram may be because the participation was voluntary and not evaluated. The above greatly favors the teaching-learning process since if evaluation is taken into account in its formative dimension. Learning is greater when it does not carry a grade and when the student participates only with a desire to learn either by an intrinsic motivation such as the satisfaction of acquiring knowledge or by extrinsic motivations such as the possible positive consequences that can be derived from learning (10). Additionally, the fact that participation in the questions was high supports the rethinking that has taken place on the evaluation of learning. Currently, it is considered that the implementation of new didactic strategies and formative evaluation is very important as not only can it serve as a means to harmonize between teachers and students but also learning becomes more meaningful and lasting (11).

The stories on average were accessed by 87.5% of the students, which is a high participation as the stories on Instagram are ordered according to the number of interactions with the accounts that most interest the person. Therefore, it is suggested that the accounts created in this research were part of the student preferences. This percentage is very high when compared to data indicating that on Instagram, small accounts with less than 5,000 followers achieve an average reach of 8.43% in stories (12). Only some entertainment accounts reach 85% of views, and certain sports accounts have the highest following: 90% (13) At the level of the UCR, the Faculty outreach department indicates that the official account of the Faculty of Dentistry has a visualization of its histories of 35%. For the account of the postgraduate of Pediatric Dentistry UCR, the percentage of visualization of the histories is 36%, which demonstrates the great interest that the accounts, created as a didactic strategy, had in this study (14).

Another relevant fact regarding stories is that a large majority of respondents found the information published in this area more useful, which differs a bit from the general statistics in

which only 45% of Instagram users prefer stories to follow trends (15). Nevertheless this preference coincides with Cristofol *et al.* (16), who mention that the function of "stories" on Instagram has shown great support from users and "has been the final trigger to ensure the success of this application," as it provides many more possibilities to users than the others widely used. Additionally, only 5% of students abandoned multi-image stories, which is a higher completion percentage than for major brand accounts in which the rate is 86% or sports accounts, which report a 90% rate. Moreover, in general terms, only 17% of Instagram users see the stories in full (17). This may be because the stories published questions regarding the subject taught in class, with which students could practice and receive immediate feedback, and if they failed the answer, that would not affect the grades of the course.

Regarding the usefulness of Instagram as a didactic strategy, all students considered that its use was useful or very useful. This usefulness of the social network was also presented in a research with students of Obstetrics, in which 97.8% of students considered it useful to implement this tool as a complement to theoretical classes (18). Another study also agrees that 88% of students using the network to learn English mentioned that Instagram was useful as it can be accessed from any time and place (19). Additionally, in another research in the Department of Accounting of the Faculty of Economics of the University of Valencia, Instagram was used to improve teaching-learning processes. Within the results, it is mentioned that 76.47% of students mentioned that the social network facilitated learning and was also a pleasant process (20).

Regarding the relevance that the application had in the social network to adequately prepare for the theoretical tests, only 3% indicated that it had little relevance. This figure is consistent with research conducted in a Histology and Embryology course in which students were asked whether Instagram contributed to their performance during evaluations and practical steps, to which, a large number of students responded positively (5).

The comments of the students regarding the use of Instagram as a didactic tool were very positive and agree that 100% of the respondents recommended maintaining the implementation of social networks in the theoretical courses of the Department of Pediatric Dentistry and Orthodontics. This may be because Instagram offers its users the possibility of interacting with the application in a very versatile and dynamic manner, providing flexibility articulated through the design and management of a didactic device (23).

As mentioned, several investigations prove that Instagram can be used successfully as a teaching tool. Therefore, in the near future, users of this network could include in their preferences the use of Instagram as a support for education and not only its current uses: leisure/entertainment, communication, fashion, lifestyle or comment on news (24).

One of the strengths of this research is that Instagram has demonstrated for the first time its potential use as a pedagogical tool in some theoretical and laboratory courses in the dental degree. However, one of the limitations is that the social network was used only in the courses of the Department of Pediatric Dentistry and Orthodontics, so in the future it is planned to coordinate with the directors of other departments to assess whether the didactic strategy is also useful in areas such as restorative, surgery, endodontics or periodontics. In addition, it is planned to carry out research in the future where the impact that Intagram could have on the performance of students in theorical courses will be measured.

CONCLUSIONS

Instagram has proved to be more than a social application. It can also work as a channel for making learning more dynamic and attractive for students. Teachers can integrate social networks to improve motivation and learning in their students.

AUTHOR CONTRIBUTION STATEMENT

Conceptualization and design: N.G.M. and I.M.G.
Literature review: N.G.M. and I.M.G.
Methodology and validation: N.G.M. and I.M.G.
Formal analysis: N.G.M. and I.M.G.
Investigation and data collection: N.G.M. and I.M.G.
Resources: N.G.M. and I.M.G.
Data analysis and interpretation: A.L.S., N.G.M. and I.M.G.
Writing-original draft preparation: N.G.M. and I.M.G.
Writing-review & editing: N.G.M., I.M.G. and A.L.S.
Supervision: N.G.M. and I.M.G.
Project administration: N.G.M.
Funding acquisition: Not applicable.

REFERENCES

1. Prada-Nuñez R., Hernpandez-Suarez C., Maldonado-Estevez E. Diagnóstico del potencial de las redes sociales como recurso didáctico en el proceso de enseñanza en época de aislamiento social. Espacios. 2020; 41 (42): 260-8.
2. Espinel G., Hernández C., Prada R. Usos y gratificaciones de las redes sociales en adolescentes de educación secundaria y media : de lo entretenido a lo educativo. Rev Encuentros. 2021; 19 (01): 137-56.
3. Kuz A. Instagram como un entorno virtual de aprendizaje complementario para fortalecer los procesos de enseñanza aprendizaje durante Pandemia. Eduweb. 2022; 16 (1): 130-42.
4. Figuereo-Benítez J.C., González-Quiñones F., Machin-Mastromatteo J.D. Instagram como objeto de estudio en investigaciones recientes. Una revisión de literatura con enfoque en revistas científicas. Ámbitos Rev Int Comun. 2021; 53 (53): 9-23.
5. Roa I. Utilización de Instagram como una Herramienta Pedagógica para la Enseñanza de Morfología en Tiempos de COVID-19. Int J Morphol. 2021; 39 (4): 1063-7.
6. Shazali S.S., Shamsudin Z.H., Yunus M.M. Instagram: A Platform to Develop Student's Writing Ability. Instagram A Platf to Dev Student Writ Abil. 2019; 9 (1): 88-98.
7. Wong X.L., Liu R.C., Sebaratnam D.F. Evolving role of Instagram in #medicine. Intern Med J. 2019; 49 (10): 1329-32.
8. Gutiérrez-Marín N. Implementación de la red social Instagram como herramienta pedagógica en la Clínica de Odontopediatría y Ortodoncia de la Facultad de Odontología, Universidad de Costa Rica. IDental. 2021; 13 (1): 46-58.
9. Alcolea Parra M., Rodríguez Barba D., Núñez Fernández V. El uso corporativo de Instagram en las universidades privadas españolas. Estudio comparativo de 35 universidades. Ámbitos Rev Int Comun. 2020; (47): 109-34.
10. Arribas J. La evaluación de los aprendizajes. Problemas y soluciones. Profesorado. 2017; 21 (4): 381-404.
11. Ruiz Morales Y.A. Evaluación formativa y compartida para el desarrollo de competencias investigativas en estudiantes universitarios. Educere. 2019; 23 (75): 499-508. Available from: https://www.redalyc.org/articulo.oa?id=35660262020
12. Lastras E. Marketingdirecto.com [Internet]. 2022. Available from: https://www.

marketingdirecto.com/digital-general/social-media-marketing/marcas-beben-vientos-instagram-stories

13. McLachlan S., Enriquez G. 42 estadísticas de Instagram relevantes para tu negocio en 2022. [Internet]. Hootsuite. 2022. Available from: https://blog.hootsuite.com/es/lista-completa-de-estadisticas-de-instagram/#Estadisticas_de_Instagram_Stories

14. Comisión de divulgación Facultad de Odontología UCR. Uso de redes sociales en la Facultad de Odontología, UCR. 2023.

15. Woolf M. 100+ Estadísticas de Instagram en el año 2023 [Internet]. 2023. Available from: https://passport-photo.online/es-es/blog/estadisticas-instagram/#instagram-stories

16. Cristofol C., Alcalá A., Fenández L. Análisis comparativo de las aplicaciones Snapcht e Instagram: nuevas tendencias derivadas de su uso. Redmarka. 2018; 1: 39-76.

17. Ahlgren M. Más de 40 estadísticas, hechos y tendencias de Instagram para 2023. [Internet]. websiterating.com. 2023. Available from: https://www.websiterating.com/es/research/instagram-statistics/#chapter-1

18. Jara-Rosales S., Elgueta D., Pérez C., Sepúlveda J., Paredes D., Fernández J., et al. Instagram como herramienta didáctica de apoyo a la asignatura Neonatología en modalidad online en el contexto de la pandemia por COVID-19. Rev Educ Cienc Salud. 2022; 19 (2): 74-7.

19. Khalitova L., Gimaletdinova G. Mobile Technologies in Teaching English As a Foreign Language in Higher Education: a Case Study of Using Mobile Application Instagram. ICERI2016 Proc. 2016; 1 (May 2016): 6155-61.

20. Merello P., Barberà A., Amihaesei A.M. Uso de Instagram como recurso educativo en la docencia en contabilidad. Congreso In-Red. 2022; 6-8. DOI: 10.4995/INRED2022.2022.15931