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SEÇÃO: PAPERS

USE OF VIDEO LESSONS IN THE TEACHING-LEARNING PROCESS OF DIETARY TECHNIQUE DISCIPLINE[1]

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ABSTRACT

The insertion of new teaching strategies through Information and Communication Technologies generates a higher integration between students and teachers, facilitates the teaching-learning process and, besides, provides a more attractive and dynamic environment. The objective of this work was to evaluate the use of video lessons in the teaching-learning process of Dietetic Technique discipline for the Nutrition course. Video lessons developed on the contents that were shared during classes, on a channel on YouTube and Facebook. Final average grades compared (with and without intervention) by the Student's T test at a 5% significance level. The average grade was higher in the intervention period ($p < 0.05$). The students mentioned that the same methodology could be adopted in other disciplines. It concluded that video lessons help in the teaching learning process and can be used as a tool that allows students to appropriate knowledge.

Keywords: Nutritional Sciences. Information Technology. Higher education.

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EMPLEO DE CLASES DE VIDEO EN LA ENSEÑANZA Y APRENDIZAJE DE LA ASIGNATURA DE LA TÉCNICA DIETÉTICA

RESUMEN

La inserción de nuevas estrategias de enseñanza a través de las Tecnologías de la Información y la Comunicación genera una mayor integración entre estudiantes y docentes, facilita el proceso de enseñanza-aprendizaje, además de proporcionar un entorno más atractivo y dinámico. El objetivo de este trabajo fue evaluar el uso de clases de video en la enseñanza-aprendizaje de la asignatura de la técnica dietética para la carrera de Nutrición. Las clases de video se desarrollaron sobre los contenidos de la asignatura que se compartieron durante las clases y en un canal en YouTube y Facebook. Los puntajes promedio finales se compararon (sin y con intervención) mediante la prueba T de Student con un nivel de significación del 5%. El puntaje promedio fue mayor en el período de intervención ($p < 0.05$). Los estudiantes mencionaron que la misma metodología podría adoptarse en otras asignaturas. Se concluyó que las clases de video ayudaron en el proceso de enseñanza-aprendizaje y se pueden usar como una herramienta que permite a los estudiantes obtener el conocimiento apropiado.

Palabras clave: Ciencias de la Nutrición. Tecnología de la Información. Enseñanza superior.

EMPREGO DE VIDEOAULAS NO ENSINO-APRENDIZAGEM DA DISCIPLINA DE TÉCNICA DIETÉTICA

RESUMO

A inserção de novas estratégias de ensino por meio das Tecnologias da Informação e Comunicação gera maior integração entre alunos e professores, facilita o processo de ensino-aprendizagem, além de propiciar um ambiente mais atrativo e dinâmico. O objetivo deste trabalho foi avaliar o emprego de vídeo-aulas no ensino-aprendizagem da disciplina de Técnica Dietética para o curso de Nutrição. Desenvolveram-se vídeo-aulas sobre os conteúdos da disciplina que foram compartilhadas durante as aulas, em um canal no *YouTube* e no *Facebook*. Compararam-se as médias finais das notas (sem e com intervenção) pelo teste T de Student a 5% de significância. A média das notas foi maior no período com intervenção ($p<0,05$). Os discentes mencionaram que a mesma metodologia poderia ser adotada nas demais disciplinas. Concluiu-se que as vídeo-aulas auxiliaram no processo de ensino-aprendizagem e podem ser utilizadas como uma ferramenta que permite aos estudantes a apropriação de conhecimentos.

Palavras-chave: Ciências da Nutrição. Tecnologia da Informação. Ensino superior.

INTRODUCTION

Convention didactics that uses exhibition methods, in which the teacher is the possessor of information and the student is the recipient, does not adequately enable the teaching-learning process (PIMENTEL, 2016). This limitation of the traditional approach brings about new strategies and means of communication as a complement to the teacher's action in his teaching practice. The increasing diffusion of technologies has caused changes in all dimensions, including education (BRAGA, 2013; SILVA; LINS; LEO, 2019).

The diversification of didactic methodologies provides the sharing of information and the creation of new educational materials that can contribute to the scientific advancement of teaching (PIMENTEL, 2016). The use of technologies is of great importance for the construction of knowledge, since they trigger different behaviors in individuals and provoke innovative cultural scenarios. With numerous communication resources, it is necessary a new teaching-learning model with reformulated postures of both the teacher and the student so that there is a constructive and integral process of knowledge (OLIVEIRA *et al.*, 2018).

Information and Communication Technologies (ICTs) are recognized as all technologies that facilitate the exchange of information through electronic communication and that can contribute to the teaching-learning process (BRAZILIAN AGENCY FOR INDUSTRIAL DEVELOPMENT, 2010). The ICTs encompass teaching by technology by different forms of knowledge dissemination, such as “the Internet”; electronic devices such as computers, mobile phones, tablets and audiovisual resources; among others (CAMARGO; ITO, 2012; VASCONCELOS; OLIVEIRA, 2017).

Through ICTs it is possible to generate integration between students and teachers for greater acquisition of knowledge, in addition to simplifying the evaluation process and providing a more attractive, dynamic and modern teaching for both (SOARES; MENDES, 2019). The use of video classes is a strategy that allows teaching with the use of these new methodologies during classes. This is because it brings the classroom closer to the daily life in which the student inserted and brings sensory experiences such as visual, spoken language, musical language and writing, in addition to combining sensory, emotional and intuitive to reach the rational (MORAN, 1995).

In the training of nutritionists, the ICTs be used in several areas. The discipline of Dietary Technique brings food undergraduates closer together and comprises the study of the culinary processes to which food submitted, from selection to the modifications suffered for consumption, with the objective of maintaining nutritional value and achieving the desired sensory characteristics (BENETTI *et al.,* 2013; DOMENE, 2011).

According to Oliveira (2015), the reduced workload in the classroom makes it difficult to appropriate knowledge, which can be solved through ICTs that offer adequate teaching

resources and provide greater learning. This is the case of the discipline of Dietary Technique, which has an extensive curricular content and that includes in-depth topics on the modifications that foods undergo during its pre-preparation and preparation. Many students are unable to understand these changes only during class time. Thus, practical, palpable and visual examples, through video classes, may allow the appropriation of knowledge, contribute to the full exercise of the profession and serve as tools to facilitate the teaching-learning process of Dietary Technique for undergraduates in Nutrition. However, it observed that the literature presents a scarcity of studies in the field of ICTs for the Nutrition course, mainly about the discipline of Dietary Technique. Therefore, this study aimed to evaluate the use of video classes in teaching-learning of Dietetic Technique.

METHODOLOGY

The intervention research, with descriptive, qualitative and quantitative analytical approach, was carried out in 2019, with the participation of students enrolled in the discipline of Dietary Technique I of the Nutrition Course at the Federal University of Viçosa - Campus Rio Paranaíba, and contemplated four phases, as described below.

Phase 1: There was a definition of the themes for the elaboration of video classes. In addition, there was bibliographic review, preparation of scripts, recording and editing of images and language (codes and audios) by *Adobe Photoshop* software version CS6, *Adobe Lightroom* version 5, *Microsoft PowerPoint* version 2016 and the online *application Biteable Video Maker*. After the development of video classes, a *YouTube* channel called "Nourishing Knowledge" was created for the sharing of material. To facilitate access to content, a Facebook page with the *same channel* name has also been created. The video classes developed by students who had already attended the discipline of Dietary Technique I, under the guidance of the teacher responsible for the discipline.

Phase 2: there was a sociodemographic characterization of the students who were attending the Dietary Technique I in the second semester of 2019. We used a questionnaire (Appendix A), elaborated by the authors, based on the factors that influence access to IT, according to the literature consulted for the planning of the study. This questionnaire addressed the date of birth, and in the seven semi-structured questions, information obtained regarding gender, internet access, available technological equipment and the main sources for studies and preparation of academic papers. There was also a space for describing the needs of other teaching methodologies.

Phase 3: the video classes developed for the sharing of the contents of the discipline in an attractive and innovative way. At the end of each class, the video lesson displayed through a data show, according to the content covered that day. The video lesson link on the *YouTube*

channel made available for students to review the content and use it as a study tool for evaluative activities.

Table 1 lists the approach of the materials that focused on functional properties, preparation techniques and modifications resulting from food preparation, according to the contents described in the analytical program of the discipline.

Themes	Content covered	Duration (minutes)
Sugars	Video lesson 1 -Sugar and its varieties	2:55
Cereals	Video lesson 2 -Rice: structure of the grain and its varieties	2:45
	Video lesson 3 -Starch gelatinization	3:11
Meat	Video lesson 4 -Conceptualization and composition of meat	3:41
Pigments and Vegetables	Video lesson 5 – Carotenoides	3:48
Fruits and Vegetables	Video lesson 6 -Acquisition, conservation and hygiene	3:07
Legumes	Video lesson 7 - Legumes and their varieties	3:12
Oils and Fats	Video lesson 8 – Conceptualization	2:22
	Video lesson 9 – Rating	2:38
	Video lesson 10 - Smoke point	1:27
Eggs	Video lesson 11 - The structure of the egg	2:37
	Video lesson 12 - Test: Old egg *versus* fresh egg	1:39

Table 1 – Themes and content of video classes developed for employment in the discipline of Dietary Technique I of the Federal University of Viçosa - Campus Rio Paranaíba, 2020.
Source: prepared by the authors, 2020.

Phase 4: there was the evaluation of the use of materials elaborated through the students' academic performance obtained by the grades platform of the Federal University of Viçosa. The average final grade of students enrolled in 2018 (without the use of IT) was compared with the results of students attending the course in 2019 (using IT). In both periods, the course taught by the same teacher, for students of the Nutrition course, enrolled in the fourth period and with the same program content and types of evaluations. After the intervention, we used a questionnaire (Appendix B) elaborated by the authors, based on the literature observed for the study design, composed of four questions. The instrument analyzed the contribution of video classes to learning, as well as content, quality and methodology, students' opinion on the use of the same methodology in other disciplines and suggestions for improvement.

Data collections (Phase 2 and Phase 4) were performed through self-administered semi-structured questionnaires via the Internet by *Google Docs,* with an average response time of 15 minutes. The study respected all ethical precepts with voluntary participation and confidentiality of information and was approved by the Ethics Committee of the Federal

University of Viçosa, under opinion number 3,331,090. All students who attended the course in 2019 and who agreed to participate in the study included.

The data analyzed descriptively by means and standard deviation, absolute and relative frequencies. The final averages of the grades compared by the Student's T-test at 5% significance in the *Software Statistical Package for the Social Sciences (SPSS),* version 22.0.

RESULTS AND DISCUSSION

The *YouTube* channel where the video lessons made available had 9,119 views until June 2020, and the *Facebook page had* 221 likes in the same period.

Fernandes (2011) and Juliani *et al.* (2012) point out that social networks can be explored as pedagogical tools because, besides providing an important exchange of information, they promote collaboration in the educational process and allow individuals to have a critical and reflective view of knowledge. *Facebook collaborates* in the learning of students, as well as bringing strategies to teachers by providing and broadening perceptions about the content covered in pages and groups collaborative, which expands the exchange of information and contributes to professional training (LINHARES; CHAGAS, 2015).

All data from study participants collected through online forms developed on the *Google Docs platform.* According to Faleiros *et al.* (2016), the use of such forms to conduct research emerges as a tool that enables savings, greater speed of information collection, which can increase the number of responses obtained, in addition to greater practicality and convenience to participants.

In the intervention phase, 24 students participated, with a mean age of 21 years, of which 87.5% (n=21) were female. All participants had internet access at home, computer/notebook and mobile devices (tablets or smartphones).

The availability of equipment and internet access are consistent with data from the Internet Steering Committee in Brazil (2019), which indicate that 67.5% of Brazilian households (46.5 million households) have internet access, and that this number is increasing every year. The same Committee describes that the use of the desktop computer has decreased significantly, since in 2018 most homes had notebooks and tablets (INTERNET STEERING COMMITTEE IN BRAZIL, 2019).

When asked about the main sources for study and academic work, the most cited were *YouTube, books,* articles and journals and *e-books.* Among those evaluated, 83.3% (n=20) used social *networks (Facebook, YouTube and Instagram)* for teaching learning, which demonstrates that virtual platforms have been a support for studies during graduation. About teaching methodologies, 66.7% (n=16) described the need for other formats besides the

exhibition method, such as video classes, interactive videos and more dynamic and practical classes.

These results converge with data from recent studies that describe that young people accustomed to using the Internet to answer doubts, in addition to appropriating social networks for studies and relationships (FERREIRA; CASTIGLIONE, 2017; LEMUS, 2017; SPIZZIRRI *et al.*, 2012).

According to Gabriel (2013), conventional teaching has fallen into disuse in the face of various ways of stimulating the learning process, which increasingly involves digital technologies. This fact leads to the need to diversify the strategies that condition global and critical learning. The contemporary student acquired a differentiated profile, with specific requirements, needs and perspectives regarding the teacher and the form of teaching available.

In this sense, ICTs will be an alternative for learning and play a fundamental role for the development of a critical vision, besides being a support tool for Academic guidance (CAMARGO; ITO, 2012; VASCONCELOS; OLIVEIRA, 2017).

After the use of video classes, 95.8% (n=23) of the students pointed out that they cooperated for their learning and suggested that this methodology could adopt in all disciplines of the curricular matrix of the Nutrition course, with emphasis on the disciplines of Nutrition Pathology and Diet therapy, Biochemistry, Human Physiology, Human Anatomy, Immunology, Nutritional Assessment, Human Nutrition, Dietetic Technique II and Gastronomy. This can be seen in the response of two students to the open questions of the questionnaires:

> *"It was a very good complement to the studies. I suggest you have for all subjects, the summarized videos help in learning and understanding"* (Participant 4).
>
> *"It is certainly valid to be applied in all disciplines, especially those with a higher degree of difficulty"* (Participant 20).

The suggestions of participants 4 and 20 of inclusion of this methodology in other disciplines concern the results of other studies that point to the efficiency of ICT in the learning of several other areas of higher education, such as in the teaching of Biochemistry for the chemistry course (LIMA, 2017), Anatomy for the medical course (MARKER *et al.,* 2012), Nutritional Education for the Nutrition course (DAUN; GAMBARDELLA, 2016) and in the calculus study by higher education students (SANTOS; LOPO, SANTOS, 2019).

Comparing the second half of 2018 (without the use of ICTs) and the second half of 2019 (using ICTs), it noted that the average of the final grades of the students enrolled in the discipline was higher in the period with intervention ($p<0.05$), according to data from Table 1, demonstrating the effectiveness of the methodology in the evolution of the results. According

to Alves, Melo and Melo (2009) the analogy between the score obtained in two moments (before and after the intervention) presupposes an assertive result of the methodology employed.

Evaluation period	N	Notes	P-value
No use of ITCs	23	70.47± 7.45	
Using THE TICs	24	82.20± 6.82	0,000

Table 1 - Mean and standard deviation of the grades obtained by the students in the discipline of Dietary Technique I of the Federal University of Viçosa - Campus Rio Paranaíba, between 2018 and 2019.
Source: elaborated by the authors, 2020.

Torres and Santos (2014), when using video classes in a discipline on Nutritional Therapy at the University of Brasília, realized that they were effective tools in the training of health professionals, taking account that, when comparing the grades of students, there was a higher average (6.91 ± 1.17) for those who used the material than the average (5.48 ± 1.76) of those who did not. In addition, the same study described that the more often the students viewed the video classes, the higher the grades of the evaluative activities and the final score of the discipline.

The above results confirm that teaching measured by ICTs provides the greatest use of the content taught and enables learning, as reflected in a higher quality teaching (ALMEIDA, 2016; VOSGERAU; ROSSARI, 2017). Souza *et al.* (2017) point out that the teaching of Nutrition through the use of ICT enables the acquisition of skills and training of skills essential for the performance of future health professionals.

However, it is important that the teaching-learning process influenced by several factors, such as the way of entering higher education (National High School Exam, readmission, transference), type of subject, class attendance and use of the library and Virtual Learning Environments (AVA) (AUGUSTO JUNIOR *et al.*, 2019). In addition, the use of technologies in the context of Nutrition Sciences should be considered, since the positive outcome in learning conditioned to access to equipment, management skills, involvement and socioeconomic conditions (CURIONI; BRITO; BOCCOLINI, 2013).

In 1995, it already stated that the video lesson helped the teacher, generated a greater interest of the students without modifying the pedagogical relationship and introduced the new questions in the educational process. For the student, this methodology means leisure and not a class, because it creates a bridge between videos and practical classes (MORAN, 1995).

The average grade attributed by academics regarding the content, methodology and quality of the materials used was 8.80 points. Another study conducted at a Federal University used

six video classes in teaching-learning of the discipline of Human Nutrition and obtained an average of 8.97 points when assessing student satisfaction with the materials offered (TORRES; ABBAD; SANTOS, 2014). Torres and Santos (2014), by providing video classes for a nutrition course focused on Nutritional Therapy offered for nursing, pharmacy, physiotherapy, collective health and occupational therapy courses at the University of Brasília, obtained a similar score regarding the importance of video classes for learning (8,50).

The effectiveness of the use of video classes in teaching-learning perceived, as those who attended the video classes and had access to these materials to study for the evaluation activities obtained better results. In addition, the reports from academics show that the materials were effective in the process of knowledge construction, in view of the desire to expand them to other curricular components. According to Mayer and Moreno (2003), the video classes please and allow greater concentration of students by presenting audio and image in a single media, which requires less intellectual work.

However, some observations suggest a greater improvement in quality and content, as reported by the participants:

> *"The videos are great, I suggest creating a box of doubts regarding the matter and then elaborate videos contemplating the main doubts"* (Participant 19).
>
> *"The videos were very fast, in class sometimes you could not read everything, but at home you can pause and read everything. The content helped me a lot in the tests"* (Participant 2).
>
> *"The materials are very good, but I believe that to reach excellence in the videos lack a speech, that is, a narrative of the processes that are being exposed"* (Participant 24).

The students' narratives reinforce the ideas of Dussel (2015), who cites that collaboration between users to stimulate and develop skills helps in the creation of new knowledge and that TICS can be employed in networking of creative spaces.

In the same sense, the participant's report corroborates the ideas of Kenski, Medeiros and Órdeas (2019), who states that teaching mediated by technology brings a new teaching methodology that allows access to numerous contents in the student's home. The new opportunity for digital education proposes the formation of critical thinking and makes the student the main actor in the construction of knowledge. The teacher and student relationship now has a collaborative characteristic, in which both have the roles of interacting and collaborating in the learning process.

The reports of participants 2 and 24 reiterate the importance of some basic characteristics of digital content to achieve two senses: vision through body language, image, text and video; and hearing through sound and speech (KENSKI; MEDEIROS, MEDEIROS. ORDEAS, 2019).

Nevertheless, technology has been increasingly used as a pedagogical resource, ensuring access to it is still the greatest difficulty. Even if the universities themselves offer technological resources within their structure, there are many students who do not have access to this equipment and the internet in environments outside higher education institutions (RIBAS *et al.,*2017).

Although THE CTs have positive results, Moran (2007) describes that there are situations of delay in educational institutions and resistance among educators regarding the introduction of these technologies in Brazilian education. The teacher continues to play an essential role, not as a transmitter of knowledge, but as a mediator in access, by helping students to be more discerning in content choices and to develop critical and constructive thinking.

Many teachers still encounter a cultural didactic obstacle to the insertion of CTs in their daily practice, due to the physical structure and difficulties in breaking habits and customs in the classroom. Some professionals report that its use is a challenge, because changing gives work and demands a longer time (SCHUHMACHER, 2014; SCHUHMACHER; ALVES FILHO; SCHUHMACHER, 2017).

ICTs do not intended to eliminate the use of conventional teaching and research techniques, but can be incorporated as an addition to the existing educational process. Its introduction does not have the role of replacing the work of the teacher, but of complementing his or her to make learning effective for the students. Being added to the methodologies already used, ICTs contribute to the further improvement of teaching techniques in order to achieve the desired competencies (LOBO; MAIA, 2015).

New technologies can bring improvements in the education, especially in higher education, with teaching methodologies in different ways, presenting a new concept of learning and teaching with much more flexibility to make learning effective (GESSER, 2012).

FINAL CONSIDERATIONS

All study participants had access to ICTs and this factor was decisive for the use of the proposed methodology. The students assigned a high grade to the available materials, describe that video classes facilitate learning and suggested the inclusion of this methodology for other subjects in the Nutrition course.

The current profile of students geared towards technology, which facilitates integration with the proposed methodology. Most students highlighted the use of social networks as a study tool. In this sense, in times when human relations converge towards technological mediation, the use of ICTs appears as an alternative teaching methodology in the face of the decline of traditional teaching methods.

The video classes were efficient in teaching and learning the discipline of Dietetic Technique, because they contributed to the improvement of academic performance of students and made the classes more dynamic classes, a fact that corroborates with the current scenario and the profile of university students.

It is suggested the expansion of these educational tools, through the creation of other types of materials for other subjects of the Nutrition Course, for a greater integration between teachers and students, as well as a stimulus to motivation, creativity, critical thinking and more active participation during the academic formation.

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APPENDIX A - Characterization questionnaire

1. Date of birth:_____/_____/_____
2. Sex:

o The Female; o the Male.

3. Do you have Internet access at home? o Yes; o No.
4. Do you have a computer/notebook? o Yes; o No.
5. Do you have a mobile device (example: smartphone/tablet) with internet access? o Yes; o No.
6. Select your main source(s) of research for studies and academic work: o Books; o Articles/journals; o E-books; o Blogs; o Magazines; o Newspapers; o TV Programs; o Youtube; o Other(s): _____
7. Do you use social networks to complement the teaching-learning process?
   o Yes. Which one(s)?
   _____
   o No.
8. Would you like other forms of presentation for learning the contents, besides the expository teaching-learning method (slides and board)?
   o Yes. Which one(s)?
   _____
   o No.

APPENDIX B - Questionnaire for the evaluation of the use of video classes in the teaching of Dietetic Technique I

1. Did the materials used in the classroom contribute to your learning?
   - ○ Yes;
   - ○ No.
2. On a scale of 0 to 10, what is the grade in relation to the contents, methodology and quality of the materials used?_____
3. Can this methodology be used in other discipline(s)?
   - ○ Yes. Which one(s)? _____
   - o No.

4. Leave suggestions for possible improvements to the contents and ways of approach._____
_____

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