

ROLE AND PLACE OF VIDEO ALGORITHMS IN THE TEACHING OF BANDAGING TECHNIQUES

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Abstract

Interaction in an electronic environment gives students and teachers greater freedom of choice and independence from the “time” factor, as well as makes them interact and collaborate. The article explores the role of video algorithms in the teaching of bandaging techniques and their importance in improving the quality of education. Analyzed is the opinion of 107 students from professional direction “Health care” in the branch “Prof. Dr. Iv. Mitev”, Vratsa at the Medical University - Sofia. The results show that the use of video algorithms in the teaching of bandaging techniques can be a useful tool for the formation of technical and practical skills in students.

Keywords: video algorithms, university education, learning process, bandaging techniques

1. INTRODUCTION

The 21st century is “the information age” and the information technology is becoming an integral part of our lives. The rapid growth and development of science and technology, the increased social requirements, and also the reform of the health education system in Bulgaria determine the requirement for improving the methods of teaching and learning in higher education. Today's learners, including health care students, are different from those of the past and they require a change in the way of studying. The modern students are more informed, freer, but also more demanding. They need an alternative education and training, in accordance with the development of the world in which they live and for which they are preparing.

The modern standards for education of health care professionals requires a modern technological approach to the formation of professional competencies, a prerequisite not only for a successful and confident career, but also to facilitate critical thinking, cultivate a deep interest in the profession and the most importantly for improving overall the patient's care.

According to Hr. Milcheva “about a formation of the professional competencies it is important to apply adequate approaches, methods and forms that correspond to the specifics of training and help maintain a positive motivation in mastering the profession.” (Milcheva Hr., 2012)

“The performing septic and aseptic bandaging” is a manipulation regulated in Ordinance № 1 of 08.02.2011 as an independent professional activity by the nurses, the midwives and the associated medical professionals. (Ordinance № 1 of 08.02.2011)

The acquisition of skills for bandaging techniques in students from the professional field “Health Care” in the Branch “Prof. Dr.Iv. Mitev”, Vratsa at MU - Sofia is carried out in the classes of “Nursing care for surgical diseases” and “Desmurgia”. The learning content is structured in the form of lectures and practical exercises. Classes - practical classes are held in the office of Health Care, where students under the supervision of the teacher and at a slow pace practice bandaging techniques. The students are required to fully master these techniques before being admitted to a real patient during their clinical practice. This specificity in health care education creates a need for adequate modeling of learning situations and processes (Serbezova I., 2011), which should combine traditional skills and practices with new technologically advanced teaching methods. (Dimitrova D.,2020; Borisova, 2019; Milcheva Hr. et al. 2018).

The information and communication technologies (ICTs) can provide some solutions to this challenge (Arguel A, Jamet E., 2009; Dokova A., J. Zhekov, 2020; Kirkova-Bogdanova A. 2020).

In recent decades, many global studies have shown that technology-assisted learning has become a new learning approach.

Different studies prove that as technological resources, the video algorithms are the most effective for acquiring knowledge (Kirkova A., et al. 2020) and can be a highly effective educational tool (Stockwell et al., 2015; Dimitrova D., 2020). Their application contributes to learning as a powerful tool for learning and acquiring clinical competencies, reducing the difference between a theory and a practice (Forbes MO, Hickey MT.2008, Sue MG, Voegeli D, Harrison M, et al.2003; Milcheva Hr. 2020). In addition, the using of video can assist students in learning different types of technical skills (Baharav E, 2008; Sue MG, Voegeli D, et al. 2003; Serbezova I., Shcherbanova T., 2016; Noval JJ, Johnson T. 2018).

High-quality video algorithms can be used as educational resources with many advantages for teaching and developing clinical skills, including: greater capacity to connect theory and practice, potential to stimulate in-depth learning, engagement and critical reflection. (Lynch et al., 2012; Roshier et al., 2011; Stoykova, V. et al., 2012).The students prefer the video algorithms because of their greater flexibility, self-management and self-learning capability (Kelly et al., 2009). The repeated viewing allows pause and replay of the necessary content, which helps the learners to understand and remember it (Kirkova-Bogdanova A. et al., 2017; Kirkova-Bogdanova A. et al., 2020). Using video not only allows students to learn at their own pace, time and comfort from their own environment, but encourages self-directed learning. This allows to increase the autonomy, the efficiency and the sense of control over the learning process (Kelly et al., 2009; Velikov St., S. Spiridonov, P. Petkov. 2017; Mehrpour S. R. et al., 2013). The video algorithms are useful for studying manipulative techniques, observing interactions with real patients, and detecting differences between normal and abnormal clinical signs (Hibbert et al., 2013). Other documented advantages of using video algorithms to teach clinical skills are: assisting students in building interactive knowledge and outlining reality under controlled conditions (Cardoso et al., 2012).

The interactive set of video algorithms is aimed at different levels of the cognitive process. The cognitive impact of video algorithms, representing simulations of health care will complement traditional teaching, will provide all levels of the cognitive process: knowledge; understanding; application; critical, creative thinking and will enhance the quality of learning.

The use of video algorithms in health care education in Bulgaria is still poorly represented.

The educational video algorithms would be a very effective method if they are applied correctly in the context of the practical training and if they have significant elements that show a direct connection between their content, the curriculum and those who teach it. The topic is interesting for researchers as well as teachers and students.

2. MATERIALS AND METHODS

The present research is conducted during the implementation of a research project funded by the Medical University of Sofia from the GRANT-2021 competition on the topic: "Video algorithms as a means to improve the quality of health care education in an electronic environment."

Objective: To establish the role of the video algorithms in the teaching of bandaging techniques and their importance for improving the quality of education.

In the period May - June 2021. A survey was conducted among 107 students from the professional field "Health Care" in the Branch "Prof. Dr. Iv. Mitev", Vratsa at the Medical University - Sofia.

Second-year students studying in the specialties "nurse", "midwife" and "medical assistant" for the 2020/2021 academic year were interviewed.

The age range of the studied contingent is 21-30 years. The average age of the respondents was 24 years ($\chi = 23, 86$). Of all respondents, 84.1% are women and 15.9% are men. The profile of the group

shows that these are young people who have recently graduated from high school and have good skills in working with communication and information technology.

To achieve the goal of the study, a questionnaire was developed in which the formulation and selection of questions were performed by the authors.

The processing of the results, the statistical analysis and the storage of the data were performed with IBM SPSS Statistics 19.0. Data were analyzed using descriptive analysis at a significance level of $p < 0.05$. The tables and graphs are made using the Word and Excel program.

3. RESULTS

The providing learning materials in a variety of formats - using video, audio, other technologies or software - are tools that can make learning more interesting and also allow students to improve the quality of their learning.

In May - June 2021 it was making a survey of the student opinion on the training in the disciplines "Nursing in patients with surgical diseases" and "Desmurgia" in the academic year 2020/2021.

Surveyed 107 students in second year studying in professional direction "Health care" in the branch "Prof. Dr. Iv. Mitev", Vratsa at the Medical University - Sofia. The survey is a feedback that can help improve the quality and effectiveness of training in these disciplines.

The distribution of students by specialties is shown in Table 1.

Table 1. Distribution of students by specialties

Specialties from "Health care" in an affiliate "Prof. Dr. Ivan Mitev" - Vratsa	Respondents	
	N	About share
Specialty "nurse"	62	57,94%
Specialty "midwife"	15	14,02%
Specialty "medical assistant"	30	28,04%
Total	107	100%

The 2020/2021 school year passed in the conditions of a global pandemic of coronavirus infection (COVID-19), which necessitated the transition to absentee / hybrid learning in an electronic environment.

Anti-epidemic measures to limit infection have become a catalyst for rapid changes in the educational process. The traditional educational institutions have begun to expand their functions, focusing their efforts on the digitalization of the learning process.

The distance learning has proven to be suitable for gaining theoretical knowledge, but the training of healthcare professionals also requires practical skills. This requires the development of strategies and the use of all available means of self-education through online services.

The quality of the distance learning is connected to its implementation in a different way from traditional face-to-face training, regardless of its technological support.

The application of new technologies, including online learning, creates an educational environment for students different from the traditional one, which is highly appreciated by all respondents. Therefore, they prefer those pedagogical methods and approaches that provide more information are easier to perceive and remember, and contribute to the effective transfer of theoretical knowledge into practice.

The main advantage of learning in an electronic environment according to students is the accessibility to learning materials 46.72% (platforms, online resources, videos, presentations, etc.). The opportunity to study from home is an advantage for 30.84% of respondents, and 22.43% of respondents do not approve of distance learning. (Fig. 1)

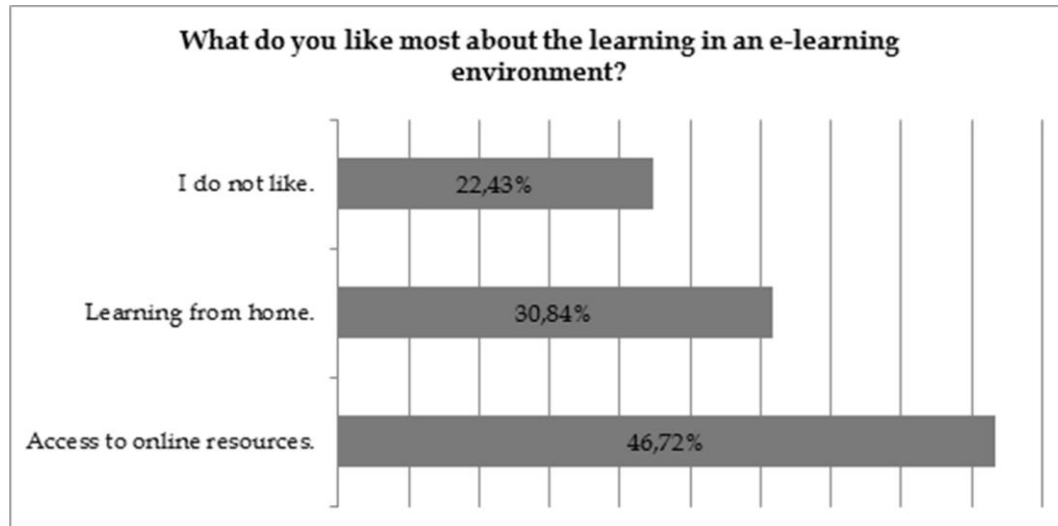


Fig. 1. Advantages of training in electronic environment

One of the most important issues related to the quality of e-learning is whether its provision differs from that of traditional face-to-face learning, albeit aided by technology. The quality very much depends on the live contact between the teacher and the student.

A large percentage of students (74.77%) believe that face-to-face training is very important for the formation of professional knowledge and skills. The lack of direct contact with the teacher is a major drawback according to 46.72% of respondents. For 22.40% distance learning is accompanied by more workload. (Figure 2)

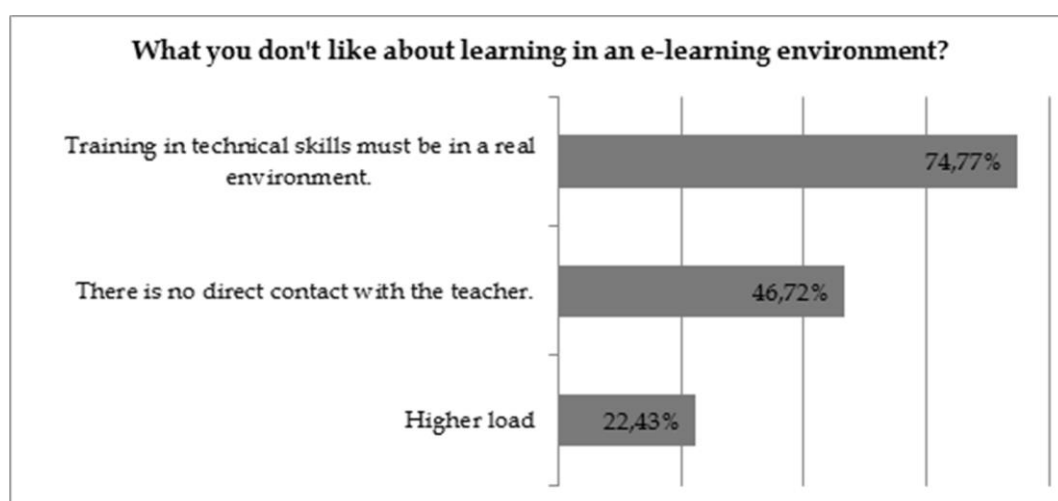


Fig. 2. Disadvantages of training in electronic environment

The learning in an electronic environment enables students to work individually with the learning material and to manage the learning process autonomously. The learning environment, in turn, allows students to intervene in the learning process and manage it depending on their individual characteristics and preferences, determining the speed of their work and the implementation of tasks. This also forms their positive attitudes towards e-learning. (Fig. 3)

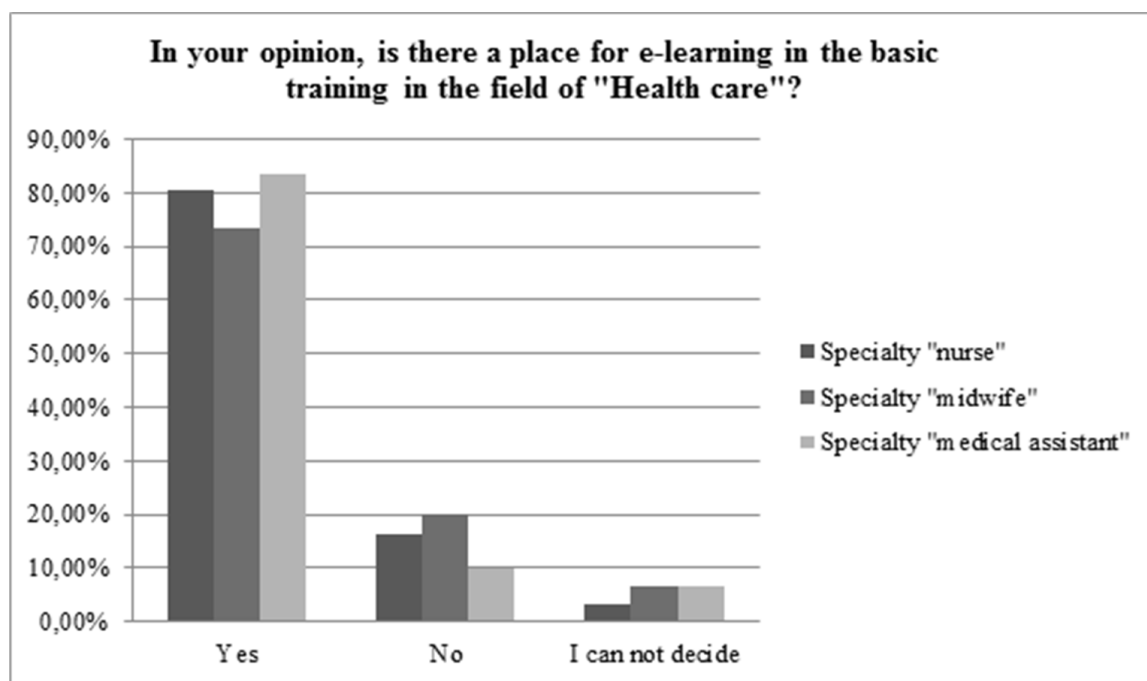


Fig. 3. Students' opinion on the benefits of computer technology in training.

During the academic year 2020/2021 the lecture course of the disciplines “Nursing care for patients with surgical diseases” and “Desmurgia” was conducted online, and the practical exercises and clinical practice were present. In the conditions of pandemic and social distancing, a number of difficulties arose in the organization of online training in the respective disciplines. Usually, the prepared lectures only mark the main points in the taught material, which turns out to be insufficient for teaching in an electronic environment. The exercises in bandaging techniques are performed in the Health Care office, where the students under the supervision of the teacher and at a slow pace practice the technique of different types of bandaging. The bandaging technique requires a mastery of the skill to the point of automatism without mistake before it is applied to the patient.

According to the answers from the survey, the existing practice for acquiring skills and competencies for bandaging techniques is well organized in lecture content and practically during clinical exercises, but can be upgraded with audio - visual technologies.

More than half of the students (65.42%) are satisfied with the conducted lecture courses and practical exercises, while 34.5% expected the training to provide them with more opportunities for the formation of practical skills.

Respondents believe that the most useful for the formation and strengthening of practical skills for future online learning will be video materials (video films; video algorithms; video demonstrations) in the relevant disciplines (74.77%); multimedia presentations (46.72%); situational tasks (30.84%); discussions (22.43%) and others.

According to the students, the training video algorithms allow better visualization of procedural steps, allow students to review technical skills before, during or after the training session, and can help to overcome the lack of time for on-site training.

4. DISCUSSION

Research on the use of video algorithms as a training resource for training healthcare professionals has been gaining momentum in recent years. In support of the aim of the study, the results show that the use of video algorithms in the teaching of bandaging techniques can be useful tools for the formation of technical and practical skills in students.

According to the answers from the survey, the existing practice for acquiring skills and competencies for bandaging techniques is well organized, but can be upgraded with audio - visual technologies.

Similar findings are observed in other studies focused on the use of video algorithms in the learning process. (Milcheva Hr et. al. 2018; Dimitrova D., 2020; Georgieva-Tsaneva G., I. Serbezova, 2020)

5. CONCLUSION

In today's technological society, the inclusion of innovative interactive digital tools in the process of training in medical specialties is imperative and undoubtedly contributes to improving the quality of teaching.

The results of the survey among students show critical thinking and a positive attitude towards e-learning.

Respondents believe that the most useful for the formation and strengthening of practical skills for future online learning will be video materials (video films; video algorithms; video demonstrations) in the relevant disciplines (74.77%); multimedia presentations (46.72%); situational tasks (30.84%); discussions (22.43%) and others.

The video algorithms are one of the most appropriate means of providing interactivity in the practical lesson, which not only arouses students' interest, increases the attractiveness, visually and in formativeness of the study material, introduces dynamics in teaching, but also enables students to use videos in training and self-preparation.

The creation of innovative educational resources (videos, role-playing games, virtual simulations, etc.) can complement traditional teaching methods by increasing satisfaction and student motivation for learning in an electronic environment.

Using a training video algorithms in teaching bandaging techniques will help the consolidation of theoretical knowledge in practical situations for students to have feedback and will play a positive role in the formation of professional competence.

ACKNOWLEDGMENTS

The present research is conducted in the execution on a scientifically research project which is financed by Consul of Medical Science in Medical University-Sofia, contract №: D-109/04.06.2021, from a competition GRANT-2021 with topic: "Video algorithms as a means of improving the quality of health care education in an electronic environment."

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