INTERACTIVE COMPLEX MODULE FOR TEACHING MEDICAL AND HEALTH CARE SPECIALISTS

(Preliminary communication)

Ivanichka Serbezova¹ and Teodora Nedeva²

¹Ivanichka Serbezova, Ruse, Ruse University “Angel Kanchev”, FPHHC, Department of Health care, Ruse, Bulgaria
²Teodora Nedeva, Ruse, Ruse University “Angel Kanchev”, FPHHC, Department of Health care, Ruse, Bulgaria

Abstract

The aim of this research is to develop an algorithm and rationale for using educational video films, combined with problem-solving tasks. The literature sources studied the model proposed by Shivacheva (Шивачева), (2009) are the foundation for the theoretical model developed for the aims of the present research. In the model proposed, the settings are directed to medical topics. Its application in teaching practice achieves high quality of training, provides versatile competences, basic knowledge and skills of the students. This respectively ensures good medical care in the future.

Keywords: medical and health care specialists, interactive training model, university lecturers, medical teaching practice, medical students, educational video films, problem-solving tasks, Health care complex module, teaching syllabus

INTRODUCTION

The main purpose of training medical and health care professionals in Universities is to prepare the students, so that they acquire the knowledge, skills and competences required for a work in a heavy and dynamic environment of health. It is necessary for the future medical and health professionals who study at the university to acquire professional skills by using different interactive technologies in their practical training. The proper selection of technologies used in practice is a main task and responsibility of the university teachers. This educational stage represents very long and difficult process. Every university professor’s priority objective is to create basic knowledge, good practical skills and to guide the clinical thinking if his students. Student’s obligation is to adopt and use correctly the acquired knowledge in their future work. It is absolutely necessary, students to develop and upgrade the knowledge received at the university. This is a crucial element in achieving good results in the care of people – regardless of their health status, for a quality health care, for the principles of good medical practice and for the good image of health care specialists among the population as a whole. The quality of individual knowledge or practical skills is very essential for the adequate, immediate and complex treatment of a patient, but it varies a lot among different students. The basic medical knowledge can be achieved by many different methods and learning techniques and by perfect self well control. The interactive complex module is innovative, creative and well established approach.

In the last decades, information and communication technologies develops rapidly and for a short period of time they turn from extra to a routine practice for the young people. The discrepancy between expectations of the digital generation and the reality in schools is real. As a result of the complete digital environment and the continuous interaction with it, the present and future students think and process information in a completely different way than their predecessors. It is not a secret that our educational system meets serious problems in student’s training and the reason for that is not hidden within the “lowered” capacity of the young generation as some may think. Nowadays students are neither better nor worse than their parents or teachers, but are completely different.

With the advent of the digital generation in the university audience, the higher education system faced a big challenge – to ensure adequate training of students whose way of thinking, behavior, preferences, expectations and learning styles are radically different from those of their teachers and the preceding students. The classic teaching style in university, with outdated methods and means, definitely bore students, who are grown up people and very actively enjoy all the “extras” of the
students – nurses, midwives and physiotherapists in the subjects called here Health care complex module.

In the model proposed, the settings are directed to medical topics. It compiles ideas from other literature sources related to teaching medical and health care specialists. This model is presented in Fig. 1.

RESULTS AND DISCUSSION

In the literature we found interactive techniques and technologies described, which are implemented on teaching the students – future medical and health care specialists. It would be hard to come up with a unified classification since there are numerous differences in the interactive models proposed. The literature sources studied (Filipova (Филипова), 2010; Mitova & Mladenova (Митова & Младенова, 2008); Shivacheva (Шивачева), 2009; Ridley, 2007; Yilmaz, 2008; Yuan, Kunaviktikul, Klunklin, & Williams, 2008) and the model proposed by Shivacheva (Шивачева), (2009) are the foundation for the theoretical model developed for the aims of the present research.

In the developed theoretical model, the most common interactive technologies, used in the Health Care teaching, are taken into account. Elements from the problem-based teaching through tasks – clinical case studies – are presented in a separate block of the model. The requirement for provision of technical and information resources to aid the teaching process is shown. The presence of the patient in the interactive teaching and the operational medical and health care specialist, who participates in forming the behavior model of the students are presented. The Fig. 1 reflects individual-oriented technologies in their interactive context, as they are used in medical and health care specialists teaching;

Fig. 1 Theoretical model of the complex effect of interactive filming, combined with problem-solving tasks in teaching medical and health care specialists
namely: technologies of interactive педагогический interaction and dialogue; technologies of interactive pedagogical interaction and dialogue; technologies of cooperation, partnership, consistency and shared responsibility; technologies of group work, creating skills for teamwork; success and productivity technologies; technologies of using audio-visual aids, technologies of generating ideas and innovations. The expected result from the effect of interactive teaching technologies is pointed out – forming of professional competencies, and the equally important professional values formed in student medical and health care specialists (Key Competencies European Reference Frame (Ключови компетентности европейска референтна рамка) (2009). The detailed research of forming professional values could become an object of future papers. In the model shown in Fig.1. “audio-visual and information aids block” is included. One of the concept ideas in the present dissertation thesis is shown in this block – the idea for using the study method of filming and visualization techniques. In these techniques, the patient is both a subject and an object of teaching, while the operational medical and health care specialist is a factor in forming the behavioral model.

Possibilities for implementing the theoretical model in the study process in professional field Health care and Public Health at the University of Ruse

The key figures in implementing the model for complex effect of interactive and problem-solving teaching are the university lecturers and the students-medical and health care specialists.

The university lecturer is the driving factor, determining to a great extent the person-oriented student teaching. The regulations for the academic staff in the higher school state that a lecturer with academic ranking (associate professor or professor), or one without a rank (assistant or principal assistant) can do the teaching. The modern university lecturer is responsible for introducing teaching models and technologies, in which the student is at the centre of the study process. At the same time he is also a partner in the quest for knowledge and in doing

research Shivacheva (Шивачева), 2009).

The „interactive” lecturer should take into account the personality of the students and their study style. The lecturer has to be “interactive” because he interacts not only with the students, but also with his colleagues; not only with the available resources, but also with the resources he discovered by himself (Shivacheva (Шивачева), 2009).

It is an indisputable fact that in general, the interactive technologies put the student in the centre of the educational process, enrich the traditional educational environment and make this process more dynamic, developing and interesting. The new environment includes various forms of interaction between the students and the virtual teams on working projects and communication between the students and lecturers on an equal basis. It is based on dialogue and negotiating. The lecturer is no longer the only source of knowledge – he is an instructor, a facilitator (preparing in advance instructions for approaching the study tasks on the Internet/Intranet), who facilitates and supports the education through consultations and answers the questions at any time. Students have the opportunity to use various sources of information such as the expert opinions, websites, multimedia programs, etc. They all are elements of a modern educational environment. This process is illustrated by the model developed for interactive teaching in a favorable environment, shown on Fig. 2.

At the University of Ruse efforts have been made for building a favorable environment, including the following two main parts – one is on the part of the lecturers and the other one – on the part of the students. As a result from the interaction between those two main components, in the process of dialogue the critical thinking of students - medical and health care specialists is formed. And this critical thinking is the basis for building the clinical thinking.

Following the model of teaching and studying of Hodges (2008.) and the experience of the University of Ruse, the present paper proposes a model, taking into

Fig. 2. A model of interactive teaching in a favorable environment
account the factors lecturer, student, environment and other effects. In this way, the two models complement each other - the first one is conceptual (Fig.1.), and the second one is procedural (Fig. 2).

In the European reference frame there are requirements, related to the digital competencies. By definition, according to the documentation of the European reference frame (Ключови компетентности европейска референтна рамка (2009), the competency is a combination of knowledge, skills, attitudes and scholastic aptitude. Also, “competency” is a “proficiency, a skill, knowledge, ability, experience, adeptness, knowledge ability, authority, competency, specialty”.

A definition is accepted, according to which the competency of medical and health care specialists is their successful use of integrated knowledge and skills, as well as the ability to provide quality health care to humans – healthy or sick. Acquiring competencies and clinical thinking with the support of the lecturers in health care starts from the very first day in the study and practical complex programs of the Faculty of Public Health and Health Care.

The competency depends on the content of the teaching syllabus, on the technologies used, on the study practice and the professional experience of the students. The health care lecturers are interested in increasing their students’ competencies, so that the students could offer health care to the person which needs such care without harming him. The existing teaching methods presents to students the theoretical basis of the technique for providing health care, necessary for the preliminary preparation of the practical seminar: Mitova & Mladenova (Mитова & Младенова, 2008); Ridley, 2007; Yilmaz, 2008; Yuan, Kunaviktituk, Klunklin, & Williams, 2008). The need to develop an educational video film is determined by the pedagogical research which has to be done. It turns out that the theory needs to be consolidated in specific practical situations, for which the students have a feedback. They will have a positive effect on the students ‘preparation for end- of- semester and the state exams.

The concepts for educational video films, developed in the present paper, would solve this educational problem, which would lead to improved quality of the patient’s health care. The concept considers the theoretical knowledge acquired by medical and health care specialists, a foundation for the practical application of health care offered to the individual — healthy or sick. For a quality health care, students should have formed professional skills and competencies, in order to apply them in specific situations on specific patients. Critical and clinical thinking is necessary in order to make the correct decision which should be made for the patient’s care. In case of an error on the part of the future medical and health care specialist, the patient’s health is put at a risk. Including the case studies and the ensuing problem-solving tasks in teaching the students, it reduces the risks of errors and improves the patient’s care; Воденичаров & Митова, 1995; Митова & Младенова, 2008; Yuan, Kunaviktituk, Klunklin, & Williams, 2008).

In Fig.3. a model is shown which presents the process of building the professional competence of the future medical and health care specialists by using the interactive approach. There is a two-fold comparison – with (+) and without the use (-) of complex interactive environment of teaching. The process of forming clinical thinking, which is ascending, has been identified, its foundation being the knowledge acquired during the study, its understanding and the awareness of its place in implementing and forming of critical creative thinking, which underlies the clinical thinking. Vodenicharov & Mitova (Воденичаров & Митова, 1995; Ridley, 2007.

As can be seen from the model, in the focus of the entire professional activity of the future medical and health care specialist is the patient, who needs quality health care and should be carefully taken care of. In the pro-

Fig. 3. A model of the ascending process of building professional competency of medical and health care specialists, using interactivity and adapted for the aims of the research (by R.Ridley/
cess of their practical education, the medical and health care specialists build professional competencies, which they need to implement in a real hospital environment, on a real patient, under the supervision of a university lecturer. In this process the traditional and interactive teaching methods can be used. The process of building competencies includes several steps, in order for the future medical and health care specialist to be able to take quality care of the patient (Key Competencies European Reference Frame (Ключови компетентности европейска референтна рамка) (2009). The model visualizes the following steps for achieving competency:

The first step is the cognitive field, which includes the theoretical knowledge as a subject of the study. This is the lowest level and it is connected to the ability of students to define and characterize accurately a specific class of objects and phenomena.

The second step is building a psycho-motor level, which includes the formation of manipulative skills and habits, following a model at a slowed down rate, though a pre-routine action under enhanced conscious control, leading to automatism, in order to develop to the next step – efficiency of action.

The last step is the formation of professional skills in the student – future medical and health care specialist, when with his knowledge, psycho-motor skills and the necessary ethical principles, rules and norms of professional behavior can be allowed him to work with the real patient. Thus it can be considered that the ability “to provide” quality health care is present.

Methods for implementing the theoretical model: The present methods have been constructed on the basis of models 1. and 3.

The methods for implementing the theoretical model include development of study materials, participating in the complex system for interactive teaching, consisting of three parts. The first one is: making video films; the second is: developing a system of problem-solving tasks and the last one is: studying materials for traditional teaching of the material under the study. The interactive complex system includes video films and a system of problem-solving tasks.

The methods for implementing the interactive technique through video films include: an algorithm for making video films; accounting for the choice of topics for the video films; technology for using the video films as an interactive format and scenarios of the video films.

Technology for using the video films as an interactive format: The study content of the topics chosen for use through interactive teaching of medical and health care specialists comes in the following sequence: checking the preliminary knowledge of students on the topic; updating the problem studied and presenting the video film. After that the seminar continues in the traditional way. During the seminars it was found out that the time is not always sufficient for individual work of each student, so that he/she can gain solid knowledge on the problem studied. The time is not enough for final control and identifying the knowledge, skills and competencies acquired by the students at the end of the seminar.

That is why we propose to implement the system of problem-solving tasks at the end of the study cycle. Two classes are needed for the summarizing part, which are enough for checking the knowledge, skills and competencies of the future medical and health care specialists.

The methods for developing a system of problem-solving tasks and their implementation in an interactive complex with the video film include: algorithm for developing problem-solving tasks as part of the complex system for interactive teaching; justifying the system of problem-solving tasks.

The conclusion made in the beginning of this paper states that it is appropriate to use a complex system for interactive teaching in two parts:

- Developing and implementing case studies and behavioral models through filming selected topics;
- Developing and implementing a system of problem-solving tasks on the same topics.

There are various classifications of problem-solving tasks. We accept as most appropriate for the aims of the present research the classification of Mitova & Mladenova (Митова & Младенова) (2008). It includes four types of problem-solving tasks:

- Tasks with insufficient output;
- Tasks with superfluous or insignificant data;
- Tasks with controversial data;
- Tasks, allowing for a likely solution.

The motives for choosing this classification are as follows:

- First of all, this classification has been developed for problem learning of study content in medical and health care subjects;
- Secondly, the various clinical problems that students encounter during their clinical practice are enriched by the above-mentioned groups of tasks.

For each of the video film topics four tasks of each type have been prepared. This is how the system of problem-solving tasks has been devised in the present dissertation thesis research.

The methods for developing case studies for acquiring professional competencies include: a flowchart for structuring the activities of teacher and learner when solving the case studies and devising the system of the case studies.

Solving problems in pre-clinical and clinical preparation of students – medical and health care specialists is a prerequisite for providing quality health care for the patient. At the moment there is an abundance of variants for devising the case studies for teaching medical and health care specialists Mitova & Mladenova (Митова & Младенова, 2008); Ridley, 2007; Yilmaz, 2008.; Yuan, Kunaviktikul, Klunklin, & Williams, 2008. It is an undisputable fact that the case studies have their specific place in student preparation. They can pose various problems, differing in importance and complexity,
concerning the case history, fair condition, physiological indicators, laboratory and instrumental methods of testing, diagnosis, treatment, nursing and midwife care, prevention from various complications, following an appropriate diet, ethical, medical and social problems.

Ten case studies have been developed, each with a subset of 10 problems. The first three update the knowledge from the study video films and the rest solve the problem posed.

**CONCLUSION**

The research concept is presented in a summarized model format through a theoretical model for an interactive complex (Fig. 1) in teaching medical and health care specialists and integrating it in a model of the ascending process of building professional competency, adapted to suit the research (Fig. 3). The compositional unity and the complementarity of the two models account for the choice of complex didactic technology, with its aims to form cognitive abilities and clinical thinking as components of the professional competency of the future specialist.

The interactive set of video films, problem-solving tasks and case studies is directed to different levels of the cognitive process: knowledge, understanding, implementation and creative thinking. The didactic components of the interactive set are related to the study module Health Care as a psychological and pedagogical platform.

The unified algorithms developed are the technological mechanisms, through which the research concept has been implemented. The algorithms for the two components in the interactive set – video films and a system of problem-solving tasks, have been constructed with the following parts:

- onto didactic selection study content,
- unified methods for specific development of the didactic component,
- structure of the respective didactic component.

In the didactic research, five video films and a system of problem-solving tasks have been devised using the proper algorithms. They follow the classification of Mitova (Mitova, 2008) which is generally accepted in medical and health care education. These two didactic constructs in the research thesis have been embedded in a transforming experiment.

In accordance with the model of building professional competencies of medical and health care specialists and to provide a level – implementing and creative thinking – a system of case studies has been developed. They are connected to the other two constructs, video films and problem-solving tasks, by content and procedure. The flowchart for developing case studies is directed to the aim: creating organizational and pedagogical conditions for building professional competencies for solving a study (clinical) problem.

The interactive set, in its entirety, provides all levels of the cognitive process: knowledge; understanding; implementation as well as critical and creative thinking.

**REFERENCES**

Филипова, Н. (2010). Инновации и интерактивно обучение [Innovations and Interactive Teaching. In Bulgarian.] Благоевград: ЮЗУ „Неофит Рилски”.


Стойкова, В. (2014). Автореферат на дисертация за присъждане на образователна и научна степен Доктор на тема: Реализиране и изследване на елементи от концепция за адаптиране на системата на висшето образование към дигиталното поколение [Realization and Research of Elements from the Conception for Adaptation of the System for Higher Education to Digital Generation. In Bulgarian.] (Автореферат на дисертация за присъждане на образователна и научна степен Доктор на науките) Русе: Русенски университет „Ангел Кънчев”.


