

INNOVATIVE TECHNOLOGIES WITHIN THE STUDYING OF PHARMACOGNOSY BY ENGLISH MEDIUM STUDENTS

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Definition, advantages, requirements for structure and functions of an electronic textbook as an innovative educational tool are given in the article. Application of modern information technologies reveals new possibilities for studying of Pharmacognosy, that is confirmed by the first electronic «A Textbook of Pharmacognosy» for students of English medium at Pharmacy Faculty (specialty 8.110201 «Pharmacy»), developed by co-workers of the Department of Pharmacognosy and botany at Danylo Halytsky Lviv National Medical University.

Key words: pharmacognosy, English medium students, innovative technologies in education, electronic educational resources, electronic textbook on Pharmacognosy.

Introduction. Among the features of educational system in modern information society should be a much accessed education, provided by the extensive use of new educational technologies [4].

The processes of modernization and globalization of higher education leads to the formation of appropriate conditions for high-quality training of specialists. The educational system is increasingly uses information technology in the context of innovative forms of learning.

Ukraine as an European country is on the verge of complete information support for society, and that is evidenced by a law of Ukraine «On the Concept of National Programme of Information Support» [9], which states: «Information processes of education will be directed towards the formation and development of the intellectual potential of the nation, improvement of the forms and the contents of educational process, introduction of computer methods of training and testing that will provide solutions to the problems of education at a higher level, subjected to the world requirements».

In September 2012, the Government considered and approved the National Strategy for the Development of Education in Ukraine for the period of 2012-2021, which states: «The efforts of education authorities at all levels, scientific and methodological services, supported by the entire society and the state should be focused on the implementation of priority trends for progress of education, overcoming of the actual problems, solving future challenges of sustainable development, including ... the formation of a modern material and technical support for the educational system, providing conditions for the growth of area of modern training means (teaching and methodical, electronic, technical, information and communication, etc.) ... Development priorities of education comprise the introduction of modern information and communication technologies that ensure improvement of the educational process, the availability and effectiveness of education, training of young generation for the life activity in the information society. This is achieved by ... working out of electronic textbooks».

Providing students with modern textbooks and manuals, prepared according to the updated curricu-

lum considering the latest achievements of world and domestic science, remains an integral part of improving the quality of training for the healthcare area [2]. For higher educational establishments in Ukraine, studying of foreign citizens is the responsibility of the state authorities in relation to fulfillment of the tasks of financial, social, political, cultural and international cooperation *etc* [3].

A modern textbook is a consistent, systematic presentation of the discipline that meets the requirements of curriculum. One of the major objectives of the educational process is to increase the level of mastering by students of academic material.

The role of information technologies in the training of future specialists has greatly increased. The states need highly qualified and knowledgeable experts in the various areas of work using computer technology. Information competence is becoming an important part for current employment processes. The computer becomes the primary means for communication, obtaining information, and a leading learning tool.

Problem statement. The objectives of the article comprise analysis of current state of occurrence and development of electronic educational resources, structure and requirements for modern e-textbooks; substantiation of the advantages in application of new computer technologies in educational process.

Research results. New information technologies in education comprise methodology and technology of educational process using the latest e-learning means.

Electronic media for educational purposes include means for teaching, stored on digital or analogue storage media and reproduced in electronic equipment (computer programs of general and didactic orientation, electronic tables, e-libraries, slide collections, tests, virtual labs *etc* [8].

Guidelines on electronic educational resources, approved by the order № 1060 of the Ministry of Education and Science, Youth and Sport of Ukraine [7], define electronic educational resources as training, research, information materials and tools, developed in electronic form and submitted to media of any kind or located in computer networks, which are reproduced by means of elec-

tronic digital technical devices, required for the effective organization of the educational process, as regards its content filling with qualitative teaching materials.

The main types of electronic educational resources comprise: electronic document, electronic edition, electronic analogue of printed edition, electronic didactic demonstration materials, information system, the depository of electronic resources, computer-based test, electronic dictionary, electronic guide, electronic library of digital objects, electronic educational manual, electronic textbook, electronic teaching materials, course of distance learning, electronic laboratory manual [7].

A computer textbook is a set of software and hardware, educational and methodical media, united by a common idea and theme which aims to intensify the educational process through the use of personal computers.

Electronic textbook may be define as an e-learning edition of systematic exposition of the discipline (its section, chapter), which corresponds a curriculum [7]; a computer software tool that meets the curriculum and is designed for implementation of scientific and methodical complex using general didactic principles [11], an open methodical system, based on the principles of flexibility and mobility [5].

Electronic textbooks (e-textbooks), or digital textbooks are digitized forms of textbooks that will potentially replace existing paper-based textbooks. E-textbooks have been envisioned to be a preferred and common choice of teaching and learning tool in the very near future [1].

The vast majority of authors in choice of the forms and contents of electronic books are influenced by technology for establishment of sites on the Internet. Currently, most e-books resemble the sites of their specific logics of construction. This path seems to be the most successful because a potential user can easily orient in electronic textbooks [5, 6], since the majority of users of e-books are young people from childhood perfectly oriented in the electronic network Internet [6].

The modern textbooks should meet the following requirements: structuring, convenience of application, clarity of the material. To meet the above requirements, it is advisable to use hypertext learning systems.

Possibility for variation of familiarization sequence with the content of a hypertext, as opposed to the linear text, is reached by division of information on segments (themes) and the establishment of links between them, allowing the user to move from the current studied theme to one of several related themes.

In the presentation of theoretical material, the possibilities of electronic textbook allow to transfer to any fragment of data, demonstrate the high-quality graphics, and select the previously studied material, required for learning the particular fragment.

The advantages in application of new computer technologies comprise full support of all students with complete information materials; wide spec-

trum of technical options for entrance into electronic textbooks by the student audience; the ability for mobile changes of hypertext, which allows not only for timely correction of texts submitted, but also to upgrade coloured drawings, graphs, diagrams, photographs, schemes; low cost of virtual textbooks, that does not require expensive printing expenses, almost is «not damaged» in the long-term use, as opposed to a paper carrier.

Clarity, available in electronic books, is much more effective, because there is an opportunity to use multimedia technology, including slides and video clips, hyperlinks etc. Electronic textbook can be complemented by the theoretical and practical material, adjusted and improved.

In order to study the specialized subject of Pharmacognosy by students of the English department of the Faculty of Pharmacy are required English guides, compiled in accordance with the typical and work curricula, considering the specifics of teaching the subject to representatives of various foreign countries.

The electronic «A Textbook of Pharmacognosy» in English is prepared in accordance with the typical curriculum (Kyiv, 2011) of Pharmacognosy for English medium students of higher pharmaceutical institution and Pharmacy faculties at higher educational institutions of III-IV levels of accreditation (specialty 8.110201 – «Pharmacy») by the co-workers of department of Pharmacognosy and Botany at Danylo Halytsky Lviv National Medical University assist. prof. Roman Lysiuk and prof., DSci. (Pharm.) Volodymyr Antonyuk. The electronic textbook is worked out on the basis of the program «Microsoft Office Publisher 2007» with the possibility of on – line and offline access.

Since 2011, in free access for Internet users operates the educational portal at www.pharmacognosy.org.ua; it may be used not only by students of Danylo Halytsky Lviv National Medical University, but also English-speaking students of higher educational establishments in Ukraine and other countries.

According to its characteristics, the electronic computer textbook of Pharmacognosy is an electronic educational complex which has much more features than a usual manual and can be used for independent study of theoretical material and formation of practical application of these knowledge by students of the English department at the Faculty of Pharmacy.

The textbook presents detailed information about the classes of biologically active substances: polysaccharides, lipids, vitamins, essential oils, iridoids, isothiocyanates, saponins, cardiac glycosides, phenolic compounds, lignans, xanthenes, anthracene derivatives, coumarins and chromones, flavonoids, tannins, alkaloids. Biogenesis, classification, characteristics of chemical structures, reactions of identification, and methods for the quantitative determination of these groups of substances, pharmacological properties and application in medicine of their raw material sources are highlighted.

The electronic textbook is also supplemented by tables, arranged in accordance with chemical clas-

sification of the main bioactive compounds. The tables include the names of the MPM, their plant sources and major active principles, pharmacological activity and medical applications.

Certain sections of the textbook introduce students to Pharmacognosy as a subject, its history, current state and prospects of development; issues of harvesting, drying and storage of medicinal plant material (MPM), methods for determination of the identity and purity of MPM in accordance with regulation guidelines; rational use and conservation of medicinal plants; principles of morphological, botanical and pharmacological classification of MPM; data on the characteristics and methods for the analysis of complex phytopharmaceuticals (herbal collections and teas from MPM, briquettes, cut and pressed plant materials).

Since in the choice of the main forms for teaching of students, the important attention is paid to practical skills, therefore, a particular attention in the textbook is paid for macro – and microscopic characteristics of the studied materials and possible admixtures of official plant sources. The data on the modern medicines from plant materials, including medicinal plants of the world medicine, considering the national characters of the medical application in different countries of the world are presented.

Conclusions. The purposes of the working out of electronic educational resources include modernization of education, meaningful filling of educational environment and ensuring equal access for its participants, regardless of their place of residence and learning forms, to qualitative teaching and learning materials, developed on the basis of information and communication technologies [7].

Modern means of working out, transmission and processing of information have much more opportunities compared to the print editions, due to the intensive development of multimedia, hypertext and network technologies.

Uses of electronic textbook, an effective means for improving the quality of education, will have

a positive impact on the process of preparing students, considering means for organization of learning process, structure, methodological requirements, and will facilitate the perception of information, diversify forms of work, interest by technical capabilities; also while training assist for the further development of students' cognitive motivation [10].

Properly organized by a teacher work, using innovative technologies, electronic textbooks as well, allows engaging students in the learning process, thereby enhancing cognitive activity in the classroom and within independent work.

Working out of e-textbooks helps to resolve constant updating of information material of educational subject. Electronic manuals possess highly visual and informative features. Publication of an electronic computer textbook is much cheaper than of printed one. The advantages of e-textbooks are mobility and accessibility due to the growth of computer networks.

The adequacy to the level of modern scientific data, the need for constant updating of information material, and different levels of language training among students caused the incorporation in the learning process of the English department of the electronic textbook on Pharmacognosy.

The use of Internet resources and electronic textbooks provides students' access to modern information space, optimizes preparation for practical classes, and reveals the benefits for implementation of intensive technologies in the learning process.

Developing of any textbook and preparing it for publication usually always takes some period of time for which, unfortunately, some of the information, considering the rapid progress of world science, loses actuality, and sometimes even needs a whole revision, a remake of classic views and improvement of educational and information material, since only under conditions of permanent upgrade may be expected the appropriate quality of training for highly qualified specialists.

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ІННОВАЦІЙНІ ТЕХНОЛОГІЇ ПРИ ВИВЧЕННІ ФАРМАКОГНОЗІЇ СТУДЕНТАМИ АНГЛОМОВНОГО ВІДДІЛЕННЯ

Резюме

У статті наведено дефініції, переваги, вимоги до структури та функціонування електронного підручника як інноваційного навчального засобу. Використання сучасних інформаційних технологій відкриває нові можливості при вивченні навчальної дисципліни Фармакогнозія, що представлено на прикладі першого електронного посібника «A Textbook of Pharmacognosy» для студентів англomовного відділення фармацевтичного факультету (спеціальність 8.110201 «Фармація»), розробленого співробітниками кафедри фармакогнозії та ботаніки Львівського національного медичного університету імені Данила Галицького.

Ключові слова: фармакогнозія, англomовне відділення, інноваційні технології у навчанні, електронні освітні ресурси, електронний підручник з фармакогнозії.

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ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ ПРИ ИЗУЧЕНИИ ФАРМАКОГНОЗИИ СТУДЕНТАМИ АНГЛОЯЗЫЧНОГО ОТДЕЛЕНИЯ

Резюме

В статье приведены определения, преимущества, требования к структуре и функционированию электронного учебника как инновационного учебного средства. Использование современных информационных технологий открывает новые возможности в изучении дисциплины Фармакогнозия, что представлено на примере первого электронного пособия «A Textbook of Pharmacognosy» для студентов англоязычного отделения фармацевтического факультета (специальность 8.110201 «Фармация»), разработанного сотрудниками кафедры фармакогнозии и ботаники Львовского национального медицинского университета имени Даниила Галицкого.

Ключевые слова: фармакогнозия, англоязычное отделение, инновационные технологии в учебном процессе, электронные образовательные ресурсы, электронный учебник по фармакогнозии.