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Using Case Method in Organizing Student Academic/Professional Activity as Part of the Educational Process

Usando el método del caso en la organización de la actividad académica/profesional del estudiante como parte del proceso educativo

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ABSTRACT:

This paper examines a methodology for instructor use of the case method for fostering professional competencies in medical university students. The authors define the function of the case method, describe some of the requirements for composing a case, and provide an insight into the possible content of cases for students and teaching aids for instructors. The paper introduces novel educational instructional materials that could be used in organizing students' academic/professional activity based on the case method. The authors describe a set of methods related to instructor use of the case method for fostering professional competencies in students and bring forward a set of requirements for the instructional training of instructors intended to help them develop relevant educational instructional materials associated with the case method.

Keywords: case method, instructional training of pharmacy instructors, professional competencies,

RESUMEN:

Este trabajo examina una metodología para el uso de instructores del método Case para fomentar las competencias profesionales en los estudiantes universitarios de medicina. Los autores definen la función del método del caso, describen algunos de los requisitos para componer un caso, y proporcionan una penetración en el contenido posible de casos para los estudiantes y ayudas de enseñanza para los instructores. El documento presenta nuevos materiales educacionales que podrían ser utilizados en la organización de la actividad académica/profesional de los estudiantes basándose en el método del caso. Los autores describen un conjunto de métodos relacionados con el uso de instructores del método de caso para fomentar las competencias profesionales en los estudiantes y presentar un conjunto de requisitos para la formación educacional de los instructores destinados a ayudarles a desarrollar relevantes materiales educacionales de instrucción asociados al método Case.

teaching aids

Palabras clave: método de caso, formación instruccional de instructores de farmacia, competencias profesionales, ayudas didácticas

1. Introduction

One of the most significant conditions for meeting social demand in the system of education is developing the instructional competence ofteachers to enable them to design various ways of resolving all kinds of instructional objectives in the educational process in keeping with objective psychological-pedagogical laws governing the educational process and students' psychological and age characteristics (Gal'perin, 1966). Only in that case it will be possible to guarantee that each of them will attain high levels of academic achievement.

Evidence from research conducted by the authors and their extensive experience working with students at the Department of Pharmacy at Sechenov First Moscow State Medical University, attending classes, and observing and analyzing instructor activity indicates that a great many instructors experience major difficulties when it comes to the instructional component of their pedagogical activity. Many are unable to identify the psychologically tough areas in students' perception of learning material and most tend to reduce their professional activity, purport and content-wise, to just passing along to students some "readymade" knowledge, demonstrating to them certain ways of solving practical problems in the form of templates, schemes, and algorithms, and monitoring their memorization and reproduction of the material. To ensure the effective resolution of instructional objectives aimed at fostering high-caliber professional competencies in every student, it helps to focus on boosting the level of teacher instructional training.

In contrast to the traditional notion of instructional training as merely alignable with respect to other components in the structure of instructors' professional activity and being one that, under certain logic, just "follows" the psychological, pedagogical, organizational, managerial, communicative, and other components, the authors rather view it as integrative – one that actually "incorporates" all the other components. The other components act as its orientational basis, which makes instructional training a core component in the system of professional preparation of instructors that opens up other vistas of opportunity in respect of the quality development of their professional-pedagogical activity (Kolomiets, 2014a; Kolomiets, 2014b; Kolomiets et al., 2014; O. M. Lifshits & Nechaev, 1988).

Instructors' well-developed ability to resolve the following key instructional objectives acts as the basis for their instructional training:

1) organizing learning material in such a way as to ensure the highest possible level of its assimilation by each student during the educational process;

2) organizing learners' educational activity is such a way as to ensure that they will have definitely mastered the learning material. Pedagogical psychology has proven that the quality of mastering learning material of any complexity depends on the content of the activity as part of which this material is mastered – not on their inheritance;

3) organizing the instructor's pedagogical activity.

It is on the instructor's level of instructional training that their ability to employ in the educational process, in keeping with instructional objectives set, relevant technologies, methods, ways, and forms of learning provided by didactics and general and particular methodologies depends on.

An illustration of the above ideas is the authors' example of the issue of the dependence of how well the instructor organizes the academic activity of each student at a medical university based on the case method on the level of their instructional training. Getting a handle on this methodology will enable instructors to create in the educational process a "system of conditions for each student that will not only help but, as scholar P.Ya. Gal'perin puts it, "force" them to

act the right way and only the right way, the way it is required to be done and by reference to all preset parameters" (Kolomiets, 2014b). In that case, the use of the case method will definitely serve as one of the key conditions for nurturing competitive medical university graduates during the educational process.

The case method, or the technology of analysis of specific situations, emerged in the 20th century at the Harvard Business School and soon entered wide use by top business schools across Western Europe (Reshetova, 2002). The case method is aimed at developing in students the ability to come up with solutions to various daily life and professional situations, including practical professional problems (situational, clinical, etc.), as well as work with subject-specific information through the analysis of specific genuine practical professional situation-based problems (cases).

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2. Methods

To organize student academic activity based on the case method, the instructor needs to develop 2 major blocks of teaching aids: for the student and for the instructor. Among the key requirements for a case are: a) its agenda must match the subject matter of educational material, as well as the content and didactic objectives of the academic discipline; b) the situation must be relevant; c) students must have a sufficient level of knowledge in the case's subject area.

The instructor's key guideposts in putting together a case are the actual professional competencies the student must acquire.

The case's content may include the following materials for students: 1) a set of instructions intended to help orient the student through case materials, which will serve as a sort of guide to the case's structure and content that includes recommendations on studying the learning material on a certain topic, module, section, etc.; 2) a scheme for orienting the student through the subject-specific learning material to be mastered (the scheme will provide insight into the topics under study, as well as the key structural components of the target competencies and core relationships between them); 3) the student activity book, which models and organizes the student's cognitive and academic/research activity; 4) templates of systemic-type schemes for orienting the student through the learning material (in the form of reference tables and reference maps); 5) an educational literature kit; 6) a collection of practical professional problems (situational, clinical, etc.); 7) a collection of creative assignments and problems; 8) a collection of logical problems aimed at the development of logical and systemic thinking – the basis of professional thinking; 9) a multimedia video-course; 10) educational programs on removable media; 11) testing and assessment materials for self-checks (tests, practical problems, etc.); 12) a system of normative criteria for self-evaluating the tests taken, the practical assignments completed, etc.; 13) other materials. A deadline should be specified for each case.

The block of instructional materials for instructors may include the following materials: 1) a set of instructions intended to orient the instructor through the structure and content of the case and serving as a scenario for the organization of the student's academic activity and the instructor's pedagogical activity associated with the study of learning material related to a certain topic, module, section, etc.; 2) a scheme for orienting one through the subject-specific learning material to be mastered (the scheme will provide insight into the topics under study, as well as the key structural components of the target competencies and core relationships between them); 3) a student activity book that lists probable inferences and information that students must extract from their educational literature in working with it independently; 4) templates of systemic-type schemes, filled with subject-specific knowledge, for orienting one through the learning material (in the form of reference tables and reference maps); 5) a collection of practical professional problems (situational, clinical, etc.) accompanied by various variants of the solution to them; 6) a collection of creative assignments and problems with various variants of the solution; 7) a collection of logical problems aimed at the development of

logical and systemic thinking – the basis of professional thinking, accompanied by various variants of the solution; 8) testing and assessment materials for self-checks (tests, practical problems, etc.) accompanied by variants of how to do and solve them; 9) other materials.

3. Results

Instructor and student activity based on the case method is structured in 3 stages. At the preparatory stage, the instructor puts together the content of the case for the students. The instructor establishes the case's topic and constructs a scheme for orientation through the subject-specific learning material to be mastered, which will provide insight into what knowledge the students are expected to acquire on the topic and what abilities and skills they are expected to develop. A mandatory requirement is establishing the core relationships between knowledge, abilities, and skills as the components of students' professional competence which they develop in studying a certain topic.

The next didactic tool to be developed by the instructor is the student activity book, which is used to model the cognitive and academic/research activity aimed at promoting independent student work with educational literature, lecture course material, and other sources associated with the topic. This requires that the instructor prepare a complete package of educational literature on the topic.

To enable each student to generalize the subject-specific knowledge generated as a result of their academic/research activity and capture it on a means of information storage (paper, electronic devices, etc.) in materialized form for future use, like solving practical problems, the instructor may need to develop templates of special orientation schemes in the form of reference tables and reference maps. The reference table will be used by students to represent the system of subject-specific knowledge on the topic, and the reference map – the system of knowledge on the activities that need to be performed to solve practical problems as part of work with the topic under study. It may be regarded as an essential requirement crucial to fostering systemic thinking that the instructor develop systemic-type orientational schemes.

The instructor may also need to include in the case's content a collection of practical professional problems (situational, clinical, etc.), a collection of creative assignments and problems, and a collection of logical problems aimed at the development of logical and systemic thinking as the basis of professional thinking. It may also help to develop a multimedia video-course and educational programs on removable media.

If you are inclined to view the student as a subject – not object of instructor action, then it may help to develop relevant testing and assessment materials (tests, practical problems, etc.) to get students to perform self-checks, as well as a system of normative criteria for self-evaluating the tests taken, the logical and practical problems solved, etc. It is mandatory that the instructor establish a timeframe for completion of assignments associated with the case. Its content may include some other materials developed at the instructor's discretion. The last component of the case's content the instructor needs to work out is a set of instructions designed to guide students through the case materials, which may serve as a vector for independent work.

At this stage, the instructor develops the above-described instructional materials for organizing their own pedagogical activity. Afterwards, the case materials are provided to each student, who will then work with them independently for a certain amount of time. Students may ask instructors for help via email, which they could utilize to send in their completed academic/research assignments and receive materials for self-checks and self-evaluating their cognitive activity. The product of this kind of educational activity is the "conversion" of scientific knowledge provided in educational literature, first-hand sources, lecture course materials, etc., into the actor's knowledge of each student – knowledge that they become perfectly aware of, as it has been acquired as part of their actual academic/research activity.

Next, the main stage involves the instructor arranging for students to work with the case and

employ their actor's knowledge, which has already been generalized and materialized in the activity book. First, based on doing theoretical assignments as part of the case there takes place a detailed discussion of the content of the material under study – didactic units – and their theoretical generalization and systematization in the reference table and reference map. The instructor acts as a host who organizes student activity related to assimilating in class new didactic units on the topic based on their "verbalization" and materialization in the systemic-type orientation schemes.

Subsequently, the instructor arranges a common discussion on solving professional practical problems and analyzing various ways of solving them. The students offer various ways of solving the problems, demonstrate the ability to come up with a solution independently, provide a practical rationale for solutions offered, put forward relevant arguments, etc. To help develop logical thinking, students may also be offered logical problems that require systematizing, grouping, and classifying things, building cause-and-effect relationships, etc., based on the didactic unit material on the topic. In solving professional practical problems, students rely on the systemic-type orientation schemes they built in the preceding stage – reference tables and reference maps, which are employed perfectly deliberately, easily lend themselves to practical use, and can help forestall errors on the student's part. During the process of conducting the discussion, the instructor supports their logic and makes timely adjustments. At this stage, one can employ the various forms of working with students: individual, paired, or group.

The results of working with the case are summarized at the final stage. Here, the instructor gives a summarizing speech and shares the findings of their analysis of the discussion. This is followed by each student self-evaluating the ways of resolving professional practical problems they developed. To this end, the following criteria are used: the number of correct variants of the solution to practical problems, the ability to solve a problem independently, the time parameter, a solution's non-traditionalness, the ability to provide a sound practical rationale for one's solutions, the number of arguments, etc. It is worth noting that efficiency in resolving professional practical problems is determined based on each student's use of systemic-type orientation schemes of their own design – reference tables and reference maps, which are employed perfectly deliberately, easily lend themselves to practical use, and can help forestall errors on the student's part – i.e. perform an orientational function with respect to one's professional practical activity.

The Department of Pharmacy at Sechenov First Moscow State Medical University has employed novel instructional techniques based on the case method since 2012–2013. For instance, the institution has developed and successfully utilized in practice an activity book entitled 'Managing the Choice of Pharmaceutical Form' for students with a concentration in Pharmaceutical Technology.

The final academic assessment, which involved student interviews and tests to assess the practical skills of learners taught using the case method, produced better results compared with its versions from previous academic years, which were based on traditional approaches to instructional training (Table 1).

Table 1
Results from the final academic assessment of students at the Department of Pharmacy at Sechenov First Moscow State Medical University

Academic year	Use of the case method	Average final academic assessment score, %
2016–2017	+	98.7
2015–2016	+	99.3

2014–2015	+	98.5
2013–2014	+	97.3
2012–2013	+	92.8
2011–2012	–	80.5

As is evidenced from the above table, students at the Department of Pharmacy at Sechenov First Moscow State Medical University whose educational process is organized based on the case method have produced significantly greater final assessment scores over the last 5 years.

4. Discussion

The use by instructors of the case method in organizing student academic activity in the above-mentioned medical university based on the above-described methodology yields the following inferences: significant boosts have been achieved in terms of the caliber of student assimilation of learning material; a significant reduction has been achieved in the number of errors made in solving professional practical problems compared with other classes; a sharp reduction has been achieved in the number of student make-ups and retakes, which has freed time for other activities; boosts have been achieved in terms of motivation to engage in learning and prepare for future professional activity; boosts have been achieved in terms of moral satisfaction with the process and outcomes of one's academic/professional activity; most instructors feel a sense of satisfaction with the key outcome of their pedagogical activity – the success of each student; there are boosts in motivation and preparedness to develop the content of cases on new topics despite significant expenditure of time; a huge amount of time that used to be spent on dealing with student make-ups and retakes has been freed; progress has been achieved in terms of the development of the ability to forestall instructional errors, gain insight into their psychological nature, and come up with relevant preventive measures.

5. Conclusion

Thus, instructor organization of student learning activity in medical universities via case-based technology in accordance with a specifically developed methodology may serve as one of the key conditions for ensuring the effective development of professional competencies in students.

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