DEVELOP A TREND OF INTERDEPENDENCE IN MATHEMATICS AND INFORMATION TECHNOLOGY

ErgashevJ.B., JSPI

Ahatqulov A., JSPI

This article is devoted to the study of the relationship between the subjects of mathematics and computer science. It is known that mathematics provides the researcher with a number of mathematical methods that allow him to demonstrate not only the numerical characteristics of the object under study, but also its nature under the influence of various scientists.
Informatics, on the other hand, increases accuracy and reduces the complexity of "manual" technology, which causes some problems or cannot be calculated.
Therefore, the application of information and communication technologies in the teaching and learning of mathematics is relevant today.

Данная статья посвящёна на изучени связ между предметами математики и информатики. Известно что математика предлагает исследователю ряд математических методов, позволяющих не только получить числовые характеристики исследуемого объекта, но и промоделировать его поведение под влиянием различных факторов. Информатика предоставляет инструментарий, который позволяет повысить точность и сократить трудоемкость сложных мероприятий, недоступные при господстве «ручной» технологии. В настоящее время считается актуальным применение компьютеры и ИКТ на преподаванию и обучению математики.

Nowadays, in education, connection among subjects is considered to be clear expression of integrational process happening in science and society as well as it plays great role while increasing professional preparation of future specialists who study at higher educational establishments. Through connection among subjects many educational issues are solved not only by quality in new step, but also it is foundation to solve difficult problems of real world collectively. Therefore, it is considered to be term of collective approach while teaching and educating students at higher educational establishments.

Efficient usage of connection among subjects to teach mathematics and informational technology is firstly seen as usage in order to avoid difficulties while mastering educational program, it gives great opportunities to increase teaching efficiency. Mentioned connection can also be developed by two following directions: a) in the context of teaching b) in pedagogical activity.

We can see these directions in teaching methods of informational technology as teaching basics of higher mathematics in educational direction. According to its broad meaning mathematics fits with mathematic modeling and its elements always participate in studying course of "Foundations of higher mathematics". Usage of mathematic modeling by the student is often disorderly and unexpectedly. Furthermore, intently strengthening the modeling aspect to study "Foundations of higher mathematics" gives students' opportunity to have full imagination about technological chain of solving problems while studying informational technology course.

Students' cognition that mathematic structure includes models of real relations gives chance them to understand how to use mathematic tools in practical context of informational technology.

The first tendency that development of connection between "Foundations of higher mathematics" and informational technology is based on following idea. Concept of algorithm plays great role in the course of "Foundations of higher mathematics" and directly connected with discrete mathematics, mathematical logic, elements of combinatory, theory of possibility and other branches of mathematical statistics. Moreover, algorithm is the basis of programming in the course of informational technology. However, tendencies to study algorithms in the courses of "foundations of higher mathematics" and "informational technology" are unorganized. Particularly, in mathematics algorithm is process and in informational technology it is model of activity, script of process. In the course of "Informational technology" algorithming is process of formal description and structuring algorithm in some kind of algorithmic language. Algorithm is done with the help of computer and while studying it great attention is paid to formal description. Contrary to this, in the course of "Foundations of higher mathematics" syntactic side of algorithms is less described, main attention is paid to create and use algorithms. During professional activity future teacher of "informational technology" should strengthen syntactic aspect of algorithms in order to connect tendencies of learning algorithms in the courses of "Informational technology" and "Foundations of higher mathematics". In this case, algorithms which are created in the process of teaching "Foundations of higher mathematics" belong to the bank of algorithms of informational technology course according to their connected tendencies. Such kind of connection gives students chance to realize ways of personal activity in the process of solving mathematical matters.

Concept of the second tendency is to develop connection between "Foundations of higher mathematics" and informational technology. In the course

of informational technology main attention is paid to form algorithm and move it to the programming language while teaching students to solve matters with the help of computer. However, this kind of process consists of technological chain such as matter itself, creation of model, formation of algorithm and programming on the basis of it as well as testing it. Successful solution of the matter depends on how all operations are correctly done.

Professional activity of the student who is graduating "teaching methodology of informational technology" should solve practical matters and much attention is paid to create models. As most of the models are mathematical models, solving practical matters and forming models depend on mathematics. Algorithm is considered to be main studying object of informational technology and is also basis of "Foundations of higher mathematics", not openly but facility to develop teaching.

Block-scheme is often used as means to describe algorithms in the course of informational technology. Therefore, from the side of methodology using block-scheme to create algorithm in the course of "Foundations of higher mathematics" is correct decision. Because, from one side this helps to strengthen syntactic aspect of algorithm, from the other side it does not require to repeat its teaching concept. Block-scheme is considered to be very simple means to solve mathematical matters. Including to form algorithm and describe it in block-scheme doesn't require to repeat teaching concept of mathematics.

Above mentioned ideas give chance to find out following tendencies of developing connection between "Informational technology" and "Foundations of higher mathematics": developing model aspect of teaching "Foundations of higher mathematics"; developing algorithmic aspect of "Foundations of higher mathematics".

Informational technology plays great role to study numbers deeply. It calculates numbers such as $\sqrt{2}$, $\sqrt{2}+\sqrt{3}$, π,e……., gives chances to understand them correctly and develop concept of one after the other limit.

Above stated algorithm gives us opportunity to make uncomplicated programme order to calculate number π.

```
Program primer;

uses crt;
label 1,2,3;
var     i, n: integer;
        p, eps, s1, a, h, d, b: real;

2: i:=1;

s1:=0;
h:=1.0/n;
3: a:=sqrt(1.0-sqr(i*h));
s1:=s1+a;
```

```
begin
clrscr;
write('eps=');
readln(eps);
write('n=');
readln(n);
1: q:=(2.0-sqrt(1.0-sqr((n-1)/n)))/(2*n);
if p<eps then goto 2;
n:=2*n;
goto 1;
i:=i+1;
if (i<=(n-2)) then goto 3;
        b:=1.0-sqr(n-1)*h;
b:=sqrt(b);
b:=3.0*b/2.0;
s:=4.0*(s1+b)*h;
        d:=4.0*(1.0+s1+b)*h;
        writeln('s=',s:15:8);
writeln('d=',d:15:8);
        end.
```

Through this programme following result comes when it is $\varepsilon = 0{,}001$ and n=10.

S=3,14006623: d=3,14319123.

In conclusion, it should be stressed that developing model and algorithm aspects of teaching the course "Foundations of higher mathematics" clearly shows that it is connected with informational technology.

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