Electronics and Telecommunication Institute
Kyrgyz State Technical University named after I. Razzakov
International Telecommunication Union

«CONNECT SCHOOLS» PROJECT

EVALUATION REPORT

OF SHORT-TERM TRAINING OF TEACHERS OF RURAL SCHOOLS ON COURSE "BASICS OF ALGORITHMS AND PROGRAMMING»

Training for trainers

26.04.2015- 30.04.2015

Teachers Staff: Zhunusaliev K.J. *signature*

Course manager: A.Tutlis *signature*

Bishkek – 2015

I. GENERAL INFORMATION

TITLE OF THE PROJECT:	**«CONNECT SCHOOLS»**
The purpose of the project:	**Expanding access to information and communication technologies, training in modern information technology and improvement of practical skills of teachers in rural schools.**
Tasks:	Organize short-term training courses for teachers in rural schools by the method of programming.
TITLE OF THE COURSE:	**"The course of training teachers in rural schools on the basics of algorithms and programming"**
The purpose of organizing refresher course:	The **purpose** of the course is to train teachers in rural schools programming skills, develop logically correct and efficient algorithms, programs.
Expected learning outcomes:	1) Formation of skills of the principles of construction of algorithms, basic algorithmic structures, systems programming; 2) Formation of skills of construction of algorithms and programming in programming languages; 3) Formation of skills of work with modern software development tools.

DATE OF COURSE:	
Start Date:	*26.04.2015*
The End Date:	*30.04.2015*
Duration:	*5 days*
Evaluation Date:	*30.04.2015*

Project Manager:	*Director of Institute* *signature* Prof. B.Nurmatov
Course Staff :	Course Manager *signature* A. Tutlis Teacher Alippe TV *signature* Zhunusaliev K.J.

II. COURSE CONTENT
2.1. Technical environments for training

Organized outreach courses for rural schools teachers of region's Issyk-Kol district of the Kyrgyz Republic. Classes were held in №1 *school gymnasium named after Lenin* in city Karakol *(Fig.1).* School has a modern material and technical base, equipped with multimedia classrooms and a computer with Internet access.

Fig. 1. school gymnasium named after Lenin

Fig. 2. school gymnasium named after Lenin

2.2. List of Participants

There were 25 rural teachers from region's of Issyk-Kol district and 23 of them were women *(Table 1, Fig.3).*

Table 1. The list of participants

№	Region/city	School	Name	
1	Jeti-Oguz	A.Altymyshbaev	Abylova Nurjan	Teacher on Informatics
2	Karakol	№9	Argynbaev Taalai	Teacher on Informatics
3	Ak Suu	Sydykbekov	Asanalieva Kenjegul	Teacher on Informatics
4	Tup	№ 16	Beishekeeva Ainura	Teacher on Informatics
5	Ak Suu	Jany-Aryk	Bekjanova Elnura	Teacher on Informatics
6	Ak Suu	K..Jantoshev	Botalieva Alina	Teacher on Informatics
7	Karakol	№ 6	Bukabaeva Nasyiat	Teacher on Informatics
8	Karakol	№ 5	Gaparov Tynychbek	Teacher on Informatics
9	Karakol	№ 11 gymnasium	Derkembaeva Aigul	Teacher on Informatics
10	Karakol	№ 1 gymnasium	Dushebekova Aigul	Teacher on Informatics
11	Karakol	GorO	Jumabekova Izat	
12	Karakol	№ 3 gymnasium	Imankanova Kunduz	Teacher on Informatics
13	Karakol	№ 11 gymnasium	Kasymbaeva Gulbarchyn	Teacher on Informatics
14	Karakol	GorO	Kelgenbaeva Cholpon	
15	Karakol	№ 3 gymnasium	Lushsanova Zuliha	Teacher on Informatics
16	Karakol	№ 1 gymnasium	Mamytova Venera	Teacher on Informatics
17	Ton	Toktobai uulu Shamei	Mashrapova Altynai	Teacher on Informatics
18	Balykchy	№ 5	Okeeva Gulbarchyn	Teacher on Informatics
19	Ak Suu	Jolkolot	Omuralieva Mairamgul	Teacher on Informatics
20	Karakol	№ 4 gymnasium	Ramanova Farida	Teacher on Informatics
21	Karakol	№ 4 gymnasium	Satybaldieva Cholpon	Teacher on Informatics
22	Ak Suu	Mamakeev Gym.	Termeeva Gulnara	Teacher on Informatics
23	Balykchy	№ 7	Toigonbaeva Zamira	Teacher on

				Informatics
24	Karakol	№ 1 gymnasium	Shygaeva Salamat	Teacher on Informatics
25	Karakol	№ 14	Emilbek k Aizada	Teacher on Informatics

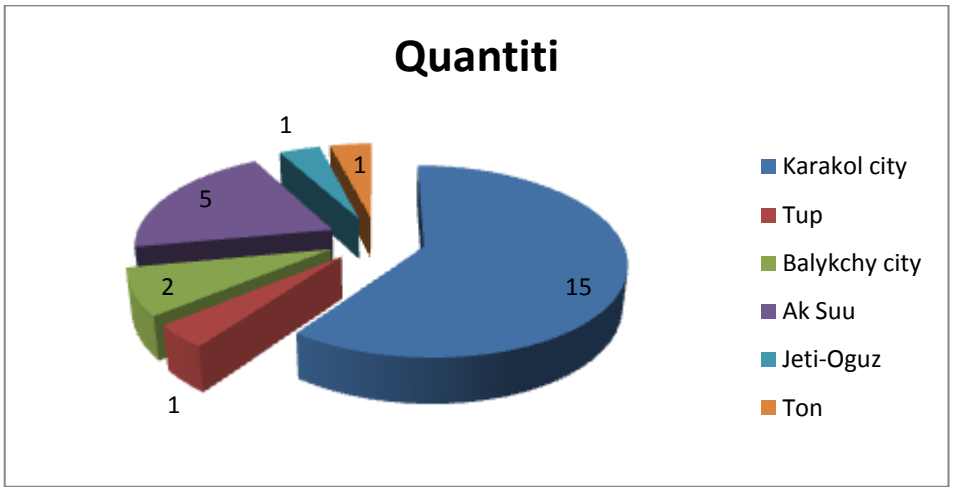


Fig. 3. The number of participants

2.3. Course program

The course program is calculated for 5 days. The program content is resulted in *Table 2.*

Table 2. The content of the course

1th Day		
Time	**Subjects**	**Used materials**
9.00-9.20	**Opening of trainings, greeting.** **Questionnaires to check the level of knowledge**	**Presentation**
9.20-10.30	**Basics of algorithms** • The concept of algorithm • Properties and types of algorithm • The main characters are block - schemes of algorithms • Basic algorithmic structures **Develop flowcharts algorithms** • Develop flowcharts algorithms for problems of linear structure • Development block - schemes algorithms for problems branched structure • Develop block - schemes algorithms for problems of a cyclic structure	**Presentation**
10.30-11.00	*Coffee Break*	
11.00-12.30	**Languages and programming methodology.** Classification of programming languages	**Presentation**

	Methodology of programming Structured programming Object-oriented programming Declarative programming The parallel programming	
12.30-13.30	*Lunch Time*	
13.30-15.00	**Fixation passed materials of lessons** **Practical training**	**Educational materials** **Video lessons**
15.00-15.30	*Coffee Break*	
15.30-16.30	**Software for PC** **Programming in Pascal** • The structure of the program; • Data, data types; • Operators.	**Presentation**
16.30-17.00	**This lesson materials** **Hands-on Lab** **A homework assignment.**	**Educational materials** **Video lessons**
2 th Day		
9.00-9.30	**Repeate passed materials of lessons**	
9.30-10.30	**The development of branching and cyclic programs** Using structured operators in the programs: - Organization of branching using conditional operators and selection; - Organization of programs cyclic structure.	**Presentation**
10.30-11.00	*Coffee Break*	
11.00-12.30	**Fixation passed materials oflessons** **Practical training**	**Presentation**
12.30-13.30	*Lunch Time*	
13.30-15.00	**Develop programs with branching structure:** - **Programming using conditional statements** - **Programming with select statements**	**Educational materials** **Video lessons**
15.00-15.30	*Coffee Break*	
15.30-16.30	**Develop programs cyclic structure:** - Programming cycles with a known number of repetitions; - Programming cycles precondition; - Programming cycles postcondition.	**Presentation** **Electronic books**
16.30-17.00	**Fixation passed materials of lessons** **Practical training.** **A homework assignment.**	**Educational materials** **Video lessons**
3 th Day		
9.00-9.30	**Repeate passed materials of lessons**	
9.30-10.30	**Develop a program using arrays:** - Accessing elements of array; - Programming tasks using one- dimensional arrays; - Programming tasks using multidimensional arrays.	**Presentation**
10.30-11.00	*Coffee Break*	
11.00-12.30	**Fixation passed materials of lessons** **Practical training.**	**Educational materials** **Video lessons**

12.30-13.30	*Lunch Time*	
13.30-15.00	**The development of complex software products** General information about the subroutines: – Programming with subroutines; – Procedures and functions as a kind of subroutines; – Organization of libraries of user subroutines.	**Presentation**
15.00-15.30	*Coffee Break*	
15.30-16.30	**Development of procedures and functions in the programs:** - Develop tasks using by the procedures; - Functions defined by user.	**Presentation**
16.30-17.00	**Fixation passed materials of lessons** **Practical training** **Homework**	**Educational materials** **Video lessons**
4 th Day		
9.00-9.30	**Repeate passed materials of lessons**	
9.30-10.30	**Working with data files:** – Description of the file type – Typed text and typed files **Procedures and functions for working with files** Text files as a source of input data: – Initialization text file; – Writing information to a text file; – Reading data from a text file/	**Presentation**
10.30-11.00	*Coffee Break*	
11.00-12.30	**Fixation passed materials of lessons** **Practical training**	**Educational materials** **Video lessons**
12.30-13.30	*Lunch Time*	
13.30-15.00	**Working with records:** – Announcement records; – Accessing elements record.	**Presentation**
15.00-15.30	*Coffee Break*	
15.30-17.00	**Fixing of studied materials** **Practical lesson** **Homework**	**Handouts** **Video tutorials**
5 th Day		
9.00-9.30	**Repeate passed materials of lessons**	
9.30-10.30	**Graphics Programming** – Initialization graphic mode; – The simplest graphical operators (procedures) language TurboPascal	**Presentation**
10.30-11.00	*Coffee Break*	
11.00-12.30	**Fixation passed materials of lessons** **Practical training**	**Handouts** **Video tutorials**
12.30-13.30	*Lunch Time*	
13.30-15.00	**Testing. Questioning**	
15.00-16.00	**Presentation of certificates**	

There were 2 Coffee Breaks where participants could ask teachers and discuss about class and exchange experience between each other.

All practical and theoretical classes' tutorials were printed and provided to course students, also were shared soft copies of video class materials (*Fig. 4*).

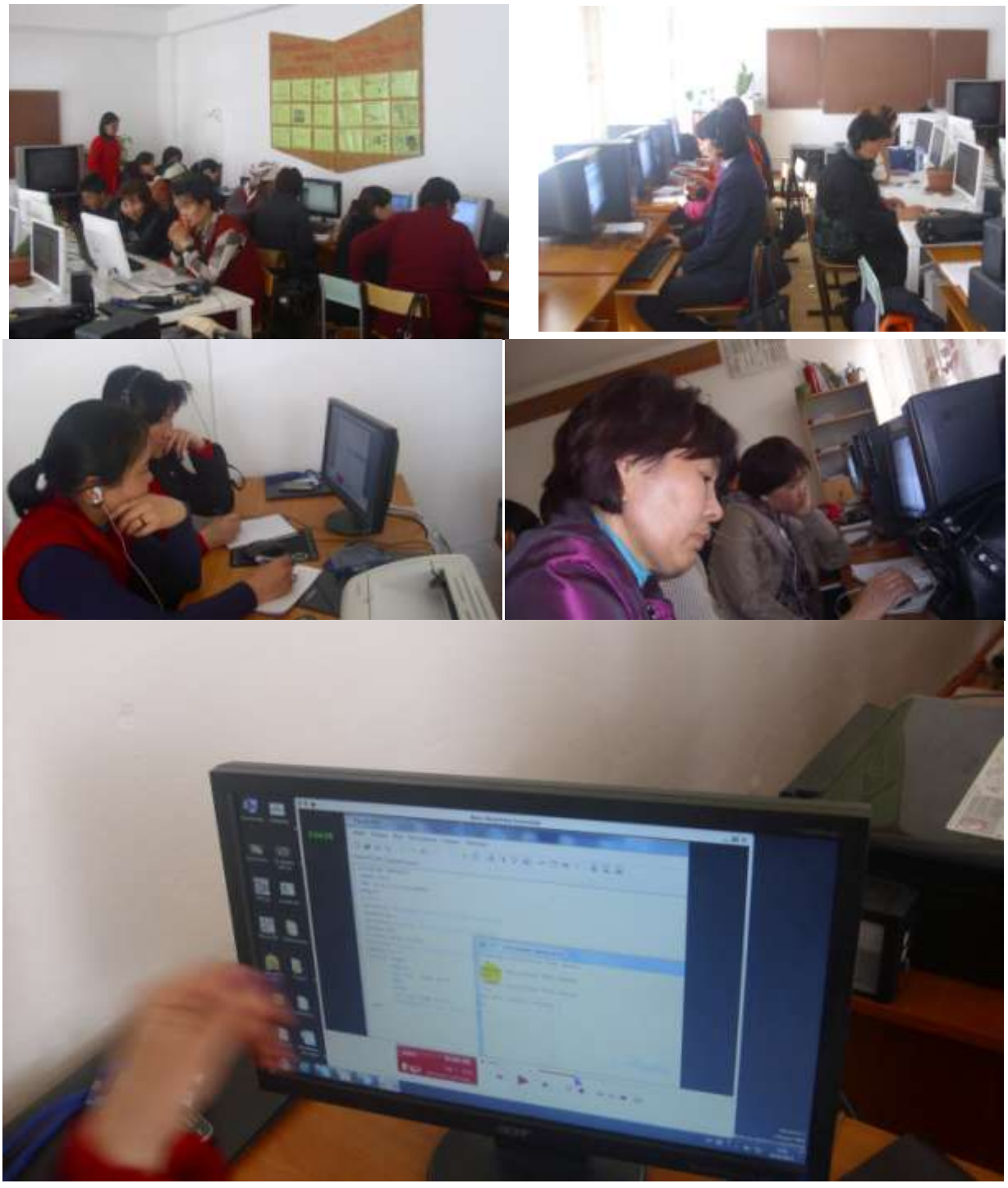


Fig. 4. Participants in the classroom

For check of level of knowledge of participants and level of carrying out of courses have spent questioning of participants in the and in the end of a course.

Results of questioning are presented in Tables 3 and 4.

Table 3. Results of the survey at the beginning of the course

№ п/п	Name	Have you participated in previous courses held within the project "School Connect"		Have you conception's about algorithms?		What programming languages do you know?			Did you work with PAscalABC?		There is an access to the Internet?		Do you have textbooks in Kyrgyz language ?	
		Yes	No	Yes	No	Pascal	Basic	C, C++, Java	Yes	No	Yes	USB-modem	Yes	No
1	Abylova Nurjan		+	+			+			+				+
2	Argynbaev Taalai	+		+			+			+	+			+
3	Asanalieva Kenjegul		+	+			+			+	+			+
4	Beishekeeva Ainura		+	+			+			+				+
5	Bekjanova Elnura		+	+			+			+				+
6	Botalieva Alina		+	+		+				+				+
7	Bukabaeva Nasyiat	+		+		+				+	+			+
8	Gaparov Tynychbek		+	+			+			+	+			+
9	Derkembaeva Aigul	+		+		+				+	+			+
10	Dushebekova Aigul	+		+			+			+				+
11	Jumabekova Izat	+			+					+	+			+
12	Imankanova Kunduz	+		+			+			+		+		+
13	Kasymbaeva Gulbarchyn	+		+			+			+		+	+	
14	Kelgenbaeva Cholpon	+			+					+	+			+
15	Lushsanova Zuliha	+		+		+			+		+		+	
16	Mamytova Venera	+		+		+			+		+			+

17	Mashrapova Altynai		+	+			+			+	+		+	
18	Okeeva Gulbarchyn		+	+			+			+				+
19	Omuralieva Mairamgul		+	+			+			+				+
20	Ramanova Farida	+		+		+			+		+			+
21	Satybaldieva Cholpon	+		+		+			+		+			+
22	Termeeva Gulnara	+		+		+				+	+			+
23	Toigonbaeva Zamira		+	+		+				+	+		+	
24	Shygaeva Salamat	+		+			+			+	+			+
25	Emilbek k Aizada	+		+			+			+	+			+
	%	**60%**	**40%**	**92 %**	**8 %**	**36 %**	**56 %**	**0%**	**16 %**	**84 %**	**64%**	**8%**	**16 %**	**84 %**

The results of the questionnaire to rate indicate that:

1) 60% took part in previous courses held within project "Connect a School";
2) 36% of the participants was engaged on Pascal programming language;
3) 16% participants work in PascalABC;
4) 72 % of participants hav't access to the Internet;
5) rural schools are not provided with textbooks on programming in the Kyrgyz language.

Comment Book was created for course participants. Each student should leave opinion about course and give own suggestion according course, teachers, teaching methods and organization of training.

Table 4. Results of the survey at the end of the course

№ п/п	What topics are not necessary for you, and what topics are you more like and want?	Are all the topics of the course have been passed?	You enjoyed the level of the course? Your opinion about the course	Do you want to participate in the course of the next level? Ifso, onwhat?
1	I have received a lot of the useful and new information	Yes	The course is held at a high level.	Yes, I want to participate in courses on computer graphics
2	All themes very much were pleasant	Yes	For short term have learnt to program	Yes, I want to participate in courses on web-technologies
3	All themes are necessary and useful for me	Yes	Teaching technique top-level	Yes, I want to participate in courses on database
4	All themes are necessary and useful for me	Yes	Well organised course	Yes, I want to participate in courses on computer graphics and web-technologies
5	All passed topics we really need	Yes	I want to note the excellent quality of teaching	I want to participate in courses on Delphi
6	All passed topics needed	Yes	I want to note the excellent teaching technique of teachers	I want to participate in such courses
7	All passed topics needed	Yes	The course is held at a high level, on the Kyrgyz language	Yes, I would like to participate in courses on multimedia technologies and database
8	No unnecessary topics	Yes	We got a lot of useful information	Yes, I would like to participate in courses organized you
9	All themes are very necessary to us	Yes	Trainers show their professionalism, liked their attitude and individual approach to each	Yes, I would like to participate in courses organized you
10	All themes are very necessary to us	Yes	Such courses are necessary for rural schools	I would like to participate in courses on creating web-sites
11	All passed topics needed	Yes	The course is held at high level, I want to express gratitude to organizers	Yes, I would like to participate in other courses

12	All themes need	Yes	At many schools there is no computer and the Internet, for short term could master a material	Yes, I would like to participate in courses on internet programming
13	All themes are very necessary to us	Yes	Rate have conducted at high level, I want to express the gratitude to our trainers	Yes, I want to participate in all courses
14	All themes are necessary and useful for me	Yes	The course is held at a high level, within program	Yes, I want to participate in all the courses the next level
15	I have received a lot of the useful and new information	Yes	The course is held at a high level.	Yes, I want to participate in courses on computer graphics
16	All themes very much were pleasant	Yes	For short term have learnt to program	Yes, I want to participate in courses on web-technologies
17	All themes are necessary and useful for me	Yes	Teaching technique top-level	Yes, I want to participate in courses on database
18	All themes are necessary and useful for me	Yes	Well organised course	Yes, I want to participate in courses on computer graphics and web-technologies
19	All passed topics we really need	Yes	I want to note the excellent quality of teaching	I want to participate in courses on Delphi
20	I have received a lot of the useful and new information	Yes	The course is held at a high level.	Yes, I want to participate in courses on computer graphics
21	All themes very much were pleasant	Yes	For short term have learnt to program	Yes, I want to participate in courses on web-technologies
22	All themes are necessary and useful for me	Yes	Teaching technique top-level	Yes, I want to participate in courses on database

23	All themes are necessary and useful for me	Yes	Well organised course	Yes, I want to participate in courses on computer graphics and web-technologies
24	All passed topics we really need	Yes	I want to note the excellent quality of teaching	I want to participate in courses on Delphi
25	All passed topics we really need	Yes	I want to note the excellent quality of teaching	I want to participate in courses on Delphi

As shown by the results of the questionnaire after the course, participants noted the high level of courses, thanked the organizers of the course and wish to participate in courses on software engineering.

III. COURSE TEST RESULTS

3.1. Testing exam

On the end of course participants was tested according passed tutorials. All result papers attached in *Appendix 1*.

In *Table 5* and a *Fig.5* the result of testing is presented.

Table 5. Exam Sheet

Exam Sheet № _____ Exam Data: *30.04.2015*

N	First, Surname	Number of correct answers	Number of incorrect answers	Percent age of correct answers	Grade
1	Abylova Nurjan	26	4	87%	4
2	Argynbaev Taalai	30	0	100%	5
3	Asanalieva Kenjegul	19	11	63%	3
4	Beishekeeva Ainura	19	11	63%	3
5	Bekjanova Elnura	29	1	97%	5
6	Botalieva Alina	23	7	77%	4
7	Bukabaeva Nasyiat	26	4	87%	4
8	Gaparov Tynychbek	15	15	50%	3
9	Derkembaeva Aigul	29	1	97%	5
10	Dushebekova Aigul	28	2	93%	4
11	Jumabekova Izat	18	12	60%	3
12	Imankanova Kunduz	23	7	77 %	4
13	Kasymbaeva Gulbarchyn	23	7	77 %	4
14	Kelgenbaeva Cholpon	28	2	93%	4
15	Lushsanova Zuliha	28	2	93%	4
16	Mamytova Venera	26	4	87%	4
17	Mashrapova Altynai	20	10	73%	3
18	Okeeva Gulbarchyn	22	8	73%	4
19	Omuralieva Mairamgul	20	10	67%	3
20	Ramanova Farida	27	3	90 %	4
21	Satybaldieva Cholpon	26	4	87 %	4
22	Termeeva Gulnara	21	9	70 %	4
23	Toigonbaeva Zamira	24	6	80 %	4

24	Shygaeva Salamat	28	2	93%	4
25	Emilbek k Aizada	20	10	63%	3
	Average	**24**	**6**	**96%**	**4**

Total: **25**

"excellent"	***3***	**12%**
"good"	***15***	**60%**
"satisfied"	***7***	**28%**
"not satisfied"	***0***	**0%**

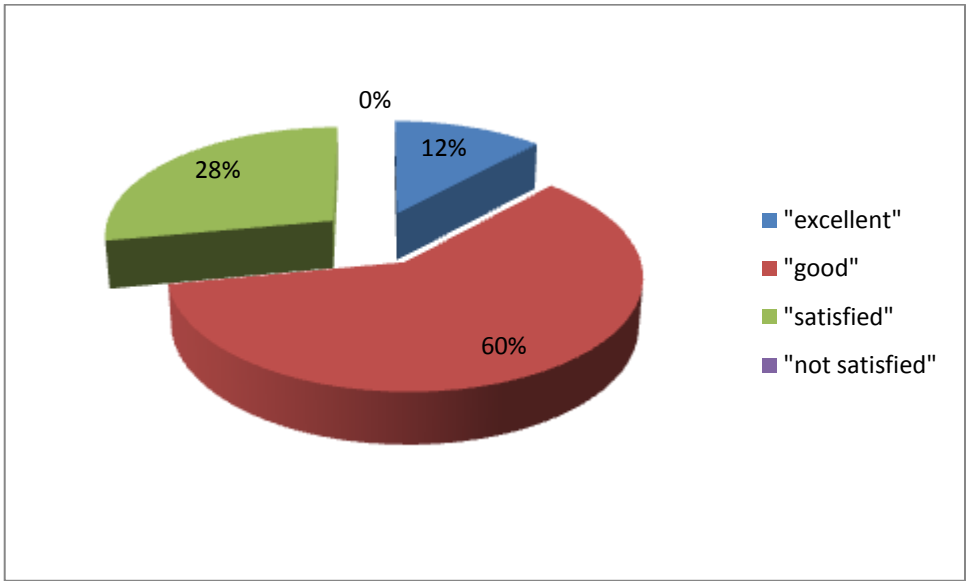


Fig. 5.

Test program was installed on every participants computer and test time was 40 min. After completing test everybody could see own results automatically. Heretest paper number,name, surname of tested person, questions and answer, scores and finally amount of correct answers, and it percentage representation and grade. Tests result view:

ЭЛЕКТРОНИКА ЖАНА ТЕЛЕКОММУНИКАЦИЯЛАР ИНСТИТУТУ

ТЕСТТИН ПРОТОКОЛУ №__

Фамилиясы, аты, атасынын аты **Солпуева Толкун**

Датасы **17.04.2015**

Окулган курс **Алгоритмдер жана программа түзүүнүн негиздери**

№	Суроо жана ага берилген жооп	Баллы
1	Жогорку деңгээлдеги программалоо тили болуп төмөнкү тил эсептелет. *Паскаль*	1
2	Саптардын узундугу кайсы процедура менен аныкталат? *LENGTH;*	1
3	Төмөнкү операторлорду аткаргандан кийин Xтин мааниси эмнеге барабар болот? *17*	1
4	Туура жазылган функцияны аныктагыла. *FUNCTION (a,b,c:real):integer;*	0
5	summa := sqr(x)+3*a операторунда өзгөрүлмөлөр болуп ... саналат? *x, a*	1
6	x=6; DEC (x, 4); операторлорунун жыйынтыгы эмнеге барабар? *2*	1
7	Төмөнкү программанын жыйынтыгы эмнеге барабар? *10*	1
8	Төмөнкү операторлорду аткаргандан кийин Xтин мааниси эмнеге барабар болот? *5*	1
9	X = 6; IF X>0 THEN Y: = Sqr(x) ELSE Y:=Sqrt(x); операторлорунун жыйынтыгы эмнеге барабар? *36*	1
10	Туура жазылган процедураны аныктагыла. *PROCEDURE (a:array of integer; var b:real);*	1
11	Экспонентаны эсептөө үчүн төмөнкү процедура колдонулат: *EXP(X)*	1
12	Төмөнкү операторлордун тизмегин A:=4; B:=2; X:=A mod B аткарууда X өзгөрүлмөсүнүн мааниси эмнеге барабар? *0*	1
13	X жана Y өзгөрүлмөлөрүнүн маанилерин алмаштыруу үчүн төмөнкү операторлордун кайсынысын колдонуу керек? *B:=X; X:=Y; Y:=B;*	1
14	Массив туура эмес аныкталган ...? *VAR W:ARRAY[5,7] OF INTEGER;*	1

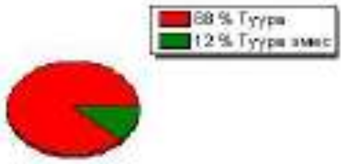
№	Суроо жана ага берилген жооп	Баллы
15	N! эсептөө үчүн туура жазылган операторду көрсөткүлө *p:=1; for i:=1 to n do p:=p*i;*	1
16	Типтердин болушу төмөнкү кызматчы сөз менен аныкталат: *TYPE*	1
17	Төмөнкү программанын жыйынтыгы канчага барабар: S:=-5;x:=0;repeat s:=s*(x+2);x:=x+1; until x<2;write(s); *-10.0*	0
18	Массивдеги жуп элементтердин санын аныктоо керек, кайсы шарт туура жазылган деп эсептейсиз? *if A[i] mod 2 = 0 then K:=K+1*	1
19	Өзгөрүлмөлөр болушу төмөнкү кызматчы сөзү менен аныкталат: *VAR*	1
20	Төмөнкү операторлордун жыйындысын аткарууда a:=1.0; b:=3; x:=(a+b)/a*b-a; x тин мааниси эмнеге барабар [illegible] *11*	1
21	Массив туура эмес аныкталган ... *VAR A:ARRAY[0..-4,1..2] OF CHAR*	1
22	x = 8; INC (x, 5); операторлорунун жыйынтыгы эмнеге барабар? *13*	1
23	Төмөнкү программанын жыйынтыгы эмнеге барабар : k:=6; for i:=1 to 5 do inc(k); write(k,' '); *11*	0
24	INC(x,k) процедурасы эмне үчүн колдонулат? *x өзгөрүлмөсүнүн маанисине k маанисин кошот*	1
25	Программанын жыйынтыгы эмнеге барабар? [illegible] *2*	1

Туура жооптун саны 22

Туура эмес жооптун саны 3

Туура жооптун пайызы 88%

Баасы 4



Мугалимдин фамилиясы, аты, атасынын аты ______________________

On the end of course each participant express his own opinion about course and give own suggestion according course, teachers, teaching methods and organization of training. Teachers noted that courses were very useful and informative.

According test results participants got Certificates (*Fig. 6,7)*

Fig. 6. Delivery of Certificates

Fig. 7. Course participants