Bahir Dar University

Outreach Program for Talented Students Project

Annual Report (Nov. 15, 2011 - September 30, 2012)

Financed by: Gelfand Family Charitable Trust (GFCT)

"Inside Every Child is a Scientist" G.M.

Bahir Dar University

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Financed by: Gelfand Family Charitable Trust (GFCT)

Prepared by

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3. Mr. Berhanu Teshale

October 2012

Bahir Dar University

Bahir Dar, Ethiopia

Contents Pages

1. Outreach Program Familiarization

1.1 Major activities according to the project plan

November 23, 2011:

Introducing the outreach program for Bahir Dar City Education office officials and some school directors from Bahir Dar. The meeting was held on 23rd of November and Ato Getachew from Foka Science center shares his experience and the vision of Mr. Mark Gelfand and the project.

Three from Bahir Dar city education office and 10 school directors participated the workshop. The commitment and interest of officials and school directors was encouraging. The workshop was facilitated by Bahir Dar University, including lunch at Dib Anbesa Hotel.

The status of science and technology clubs in schools was also assessed. Four schools, Fasilo high school, TanaHaik high school and preparatory school, Bahir Dar preparatory school and Serstedingel primary school were visited by outreach program coordination group. The activities of the clubs were found to be very week in all schools. The structure of the clubs was also different in different schools.

Fig 1: Facilitating group discussion (Standing: Mr. Berhanu)

December 2011:

Document prepared by Ministry of Science and Technology of Ethiopia was used as starting material to re-organize science and technology clubs and the document was distributed for 16 schools in Bahir Dar. Based on the document, one Science and Technology coordinator and 5 clubs leaders were assigned in each school. The clubs are: Biology club, Chemistry club, Physics club, Mathematics club and Electronics and IT club.

Even though biology wasn't included on the projected document the coordinating team has negotiated and convinced the University top management to add biology training and cover the cost from the University Budget. Addition of Biology club was based on the recommendation from schools and Bahir Dar city education office officials.

January, 2012:

First meeting with Science and Technology coordinators of the school was conducted

12 participants (out of 16) appear in the meeting and the Outreach program project was fully introduced.

Mobilization of students and teachers to take part in science and technology clubs and possible ways were discussed during the meeting. Time table was set for popularization of clubs in each school.

February 2012:

Second meeting with science and technology club coordinators was conducted. The report was produced by each coordinator about the activities of each school and discussed. On the meeting there was experience sharing and discussion on challenges that has been observed on some schools. Attendees have understood well their roll and expectation of this project. Mobilization of students and teachers to take part in science and technology clubs and possible ways were discussed during the meeting. Time table was set for popularization of clubs in each school.

Club guideline was prepared by the project team and discussed with school coordinators. Guideline was amended and given for each coordinator of schools.

The project team visited Foka science center, Ministry of Science and Technology of Ethiopia, other institutions.

Bahir Dar university academic staff was selected to prepare the curriculum and Manual development on a competitive and transparent manner.

Physic day was organized at Bahir Dar University and about 400 students and 15 unit leaders attended. The physics day participation was encouraging to conduct similar science days in other science fields.

March 2012:

Communication with Aksum University and exchange of documents was stared and we are working very closely.

One day workshop was organized for science and Technology coordinators and unit leaders, and 90 % attended the planning activity. The objective of the meeting was to prepare four month (March – June) activity plan. The meeting was facilitated by project team, Mr. Berhanu, Mr. Aemro Bizuneh, and Mr. Berie Getie and Research and Community services V/P, Dr. Tesfaye Shiferaw, Dr. Ali Seid from Biology Department, Mr. Andarge from Physics department and Mr. Abebe Regassa from Mathematics department.

The remaining 10 % were invited after a week and encouraged to follow outreach program according to the schedule set by the majority.

Fig 2: Mathematics unit leaders discussing four month activity plan (Standing: Dr. Tesfaye, RRCS VP)

Student clubs are organized in all schools (16 schools) in Bahir dar. The total population involved in science and technology clubs are:

Teachers: 152

Students: 2250

Note: the number of students in each club was limited to 30 full member students by organizers. In some clubs (mainly IT and Physics) the number of students is much higher than 30 considered as not-full members of the club. But they can participate in some activities depending on the

resource availability.

Fig 3: Chemistry Unit leaders discussing four month action plan

Fig 4: Physics Unit leaders discussing four month action plan

Fig 5: Biology Unit leaders discussing four month action plan

Fig 6: IT Unit leaders discussing four month action plan.

Fig 7: Presentation of action plan by each group

1.2 Experience sharing with Axum University

One of our project team members, Aemro Bizuneh has gone to Axum University to sharing experience. Axum University outreach program team, Ato Getachew from FOKA science center, Dr. Aklilu the Vice president for Academic and Research at Axum University and Aemro has made a meeting. On the meeting good lessons from Axum's university and our sides have been shared. Ato Getachew has also given a valuable comments and suggestion from his lifelong experience. The strong commitment of the Axum University for this project is reflected by Dr. Aklilu. On the meeting we have learned that he is curiously following this project and communication with other government bodies outside his University. Dr. Col. Alemayehu was also on the plan to attend the meeting but due to some minor car accident on his way to Bole airport he wasn't able to attend. His regular phone calls had important contribution for the success of the meeting. Our team has appreciated the hospitality provided for Aemro.

1.3 Preparation for the national workshop

Preparation of budget document for experience sharing program was prepared. Tentative program for experience sharing will be April 27, 2012.

2. National Workshop on outreach program

The outreach program coordinators together with the Vice President's Office for Research and Community Services conducted a workshop on outreach program for talented students. Outlining the objective of the Program, BDU's Research and Community Services Vice President Office Knowledge and Technology Transfer Senior Expert Berhanu Teshale said that the outreach program was intended to develop skills and competencies of students of grade 7th through grade 12th in core science and technology subjects and upgrade the skills of secondary school teachers through involving them in the process of team teaching with Bahir Dar University academicians.

Fig -8: *Dr. Col. Alemayehu, Ato Getachew, Dr. Tesfaye from right to left, and other participants*

Speaking at the workshop, BDU's Vice President for Research and Community Services, Dr.Tesfaye Shiferaw pointed out that his office was doing its best in enhancing good governance, in support of teaching and learning, research and community services.

The Outreach Program Technology Unit Coordinator Aemro Bizuneh explained that the workshop enabled participants to share experience with Aksum University on implementation of the Outreach Program for talented students, sort out challenges and suggest possible remedies which slow down the effectiveness of the program and discuss future activities to be carried out on making this unique project a success.

According Aemro, Science and technology clubs had been established in 16 Bahir Dar Secondary Schools, while 2250 students and 152 teachers were registered as members. The project is expected to expand to other towns of the region.

“The project would assist to cultivate and ignite minds that would help the nation to produce globally competitive scientist that could be able to invent new technology and knowledge, “said Ethiopia Electrical Engineers Association Chairperson, Dr. Colonel Alemayehu Terfa.

Participants were drawn from Mekelle University, Gondar University, Gonder Teachers Education College, Amhara National Regional State Education Bureau, 16 science and technology Club representatives, Ethiopia Electric Engineers Association, Foka Science Center, Afar National Regional State and Benishangul Gumuz National Regional State.

Outreach Program for Talented Students is a two year project financed by Mr.Mark Gelfand, an American Philanthropist who supports such project to maximize the number of science and technology students with a motto” Inside every child there is a scientist”.

3. Collaborations with juniors and High schools

In parallel, we have been working closely with Junior and high school teachers to promote science and technologies, some of the schools become more motivated on participating different science clubs and developing science teaching aids. One of the physics teachers has developed lots of models and teaching aids. The organizers of these projects have also facilitated University supports to schools like chemicals, used computers and other resources. BDU also financially support the science and technology completion organize.

Fig 9: *A young physic teacher (Ato Ayenew Terefe) presetting his hydro-power model teaching aid*

4. National conference on STEM education

We have hosted a national conference on "Present and Future Direction of Science, Technology, Engineering and Mathematics (STEM) Education in Ethiopia." While welcoming participants, Dr.Baylie Damtie said the University had been striving to promote STEM education within and beyond its borders in order to install scientific thinking. He announced the commencement of summer outreach programmes and the admission of 450 students drawn from Amhara(mainly from Bahir Dar City) and Benishangul Gumuz National Regional States, in order to improve their knowledge and competencies in science,technology,engineering and mathematics.

The Ministry of Education Minister Demeke Mekonnen explained that the conference was meant to brief participants about STEM education, to discuss strategies that would help to scale up STEM at country level, and to find ways of how to align its activities with Mr.Mark Gelfand's project, American philanthropist supporting the growth of STEM education in Ethiopia. Demeke disclosed that the establishment of science centers in some selected 6 regions of Ethiopia, pilot outreach program for talented students of upper primary and secondary school and the new

initiative to set up a national science museum would take the nation in to a new level in science and technology areas.

In response to Mr.Mark Gelfand's plan, Demeke confirmed the Government's commitment and support towards Mr.Mark Gelfand's endeavors. In his message to the summer outreach program participating talented students, Demeke advised them to pick the nuances of science, technology, mathematics and language to enhance their knowledge, skill and competence. He pledged to create a national movement in attempt to make science and technology the most preferred calling among the youth of the nation.

Fig 10: *Conference Participants in partial*

Demeke called on the 31 Public University presidents to emulate the best practices as exhibited by Paragon universities in an effort to popularize science and instill scientific temperament among the children and the youth of the nation.

In his keynote address, Mr.Mark Gelfand who was conferred with a life membership award in recognition of his distinguished contribution towards advancement of science and technology in the country pledged his support towards the area of Science, Technology, Engineering and Mathematics.

5. Teaching Material Preparation, and Staff and Student Selection

5.1 Material Development

The first work was preparation of training manual for all levels of students. To develop the materials, an open letter was distributed to university community. Based on the criteria set by the outreach coordinating group, 6 senior staff members were selected from each program. Based on the contract agreement signed, the preparation of the material was finalized at the end of May, 2012. 17 laboratory manuals were prepared and compiled for the program.

The manuals were prepared based on:

1. The grade of the students: *course syllabus has been studied from the month January to June*
2. Their background knowledge : *we have also assessed the practical skill that is being given in the schools of Bahir Dar town*
3. Expected skill and knowledge : *we outlined the expected skill and knowledge that enhances the talents of the students*

The manuals have been prepared for grades 7&8, 9&10 and 11&12 by a team of professionals. The produced manuals have been also evaluated by other professionals and corrections have been done before the training. The manual consists of theoretical background and practical work in the lab and projects which are constructed by the students. The training objective was to give practical skill to the talented students about Electronics, ICT, Science and Mathematics to enhance their productivity. The time allotted for manual preparation was sufficient so the manual is prepared at best level.

In general, the modules are prepared based on the capacity of the students, and the objectives of the program. They are complete, up to the standard and clear. We haven't faced difficulties to understand and implement the practical exercises throughout the modules. But still some minor improvement and revision is required on both modules especially on preparatory level module.

5.2 Student selection

The selection of students was carried out based on the club activity of the student, creativity of the student and average mark of the student in science subjects. Large number of students show interest to join the program. However, only the top students were selected based on the application form which was completed by the club unit leader and science and technology coordinator. The outreach team at Bahir Dar University selected few students from each school. The distribution of the students was similar in 16 primary schools and 3 high schools in Bahir Dar town (Government schools). Few students (about 70 students) were selected from 10 zones and three towns in Amhara region and Benshangul-Gumuz region. Private schools in Bahir Dar town were also included in the program based on the quota given by the team.

5.3 Staff selection

Staff selection was based on the activity of each staff on club activity. Each school had one Science and technology coordinator and four or five unit leaders. We had three meetings with all science coordinators and unit leaders and agree on the selection criteria. Based on the selection criteria, about 64 staff members were selected and participated during summer training through team teaching. (See Annex B).

6. Summer Training

6.1 Registration and Inauguration Ceremony

Registration of students selected from 16 governmental schools in Bahir Dar City was performed from July 10 to July 13, 2012. During this time discussion was held between participant instructors from Bahir Dar University about the objectives of the outreach program and its implementation together with participants' role and responsibilities in the summer training program.

In July 14, 2012, registration and welcoming of students coming from 12 zones and 2 city administrations of Amhara Region and Benshangul Gumuz Region were done. Dormitory and food services for students coming from outside Bahir Dar City were provided starting from July 14, 2012. Registration of students from nongovernmental schools in Bahir Dar City was held in the same day. A discussion was held between all registered students about the program particularly about: the general objectives of the outreach program, the 2012 summer outreach program, the working principles that we must follow for effective implementation of the program, students' roles and responsibilities in the summer program, transportation system, class schedules, etc. Uniform (T-shirt) and stationary materials were provided for registered students during this time.

In July 15, 2012, students and invited university and school instructors welcome guests during the National Conference held in Bahir Dar University to officially open the Outreach Program for Talented Students project. The conference was chaired by Ministry of Education and high level guests. The contribution of Mr. Mark Gelfand was recognized by awarding different memorable gifts by the university. The University President, Dr. Baylie Damtie and Mr. Mark Gelfand inaugurated STEM Incubation Center at Bahir Dar.

From July 11 to July 15, 2012, discussions were held between teachers selected from upper primary and secondary governmental schools in Bahir Dar city. During these days, teachers coming from schools and Bahir Dar University (including technical assistants) held discussions and developed agreed up on working plan for the successful implementation of the 2012 summer program and convinced themselves to show maximum effort for the maximum benefit of students on Laboratory work. Teaching resources, Science and ICT laboratory rooms, and mathematics class rooms were ready during these days. Sections students are assigned, laboratory rooms, school and university instructor teams assigned, learning sessions, etc are well informed to students in July 15, 2012.

The university management gave due attention for the program by providing six laboratory rooms in science, five class rooms for mathematics and four laboratories for ICT. In addition, in Engineering campus two electronics and four computer laboratories has been dedicated for this program for the whole summer.

Actual Summer Teaching Program was started in July 16, 2012 on ICT and Mathematics subject areas.

6.2 The Summer Training Program Structure

Group 1 (including Grades 7 and 8) were divided into 5 sections with 30 students each. Each section took the training on 5 subject areas: Mathematics, Physics, ICT, Chemistry, and Biology during the morning session; one subject each day from Monday to Friday for three hours; 9:00 AM -12:00 AM. On Saturday, one of these subjects was conducted in order. This scheme was implemented from July 16 to September 1, 2012 and 8 days or 24 hours was given for each subject.

Fig11: Grades 7 and 8 Students in Biology Laboratory

Group 2 (including Grades 9 and 10) and Group 3 (including Grades 11 and 12) were also divided into 5 sections with 30 students like that of Group 1. In this second scheme, the training was given on Mathematics and ICT for the first two weeks time from July 16 to August 9, 2012. Due to shortage of laboratory rooms and transportation problems, there were two sessions; morning and afternoon. The morning session was from 9:00 AM to 12:00 AM and the afternoon

session is from 1:30 PM to 4:30 PM. During this time students from both group 2 and 3 who were excellent in the introductory ICT were identified and trained on computer programming.

Fig.12: Grades 7 and 8 students in ICT Laboratory

After covering the ICT and Mathematics training, group 2 and 3 students were placed in two branches: Science and ICT-Electronics, based on their preference and background knowledge and skill. The science and ICT-Electronics training was given from August 9 to September 1, 2012. ICT and Electronics training was conducted in engineering campus under the school of Computing and Electronics in circuit training form. These students were again placed in to 2 sections in each group, totaling 4 sections with 30 students each. Science training was conducted in the main campus of Bahir Dar University under college of Science in circuit training form. These students were again placed in to 3 sections in each group, totaling 6 sections with 30 students each.

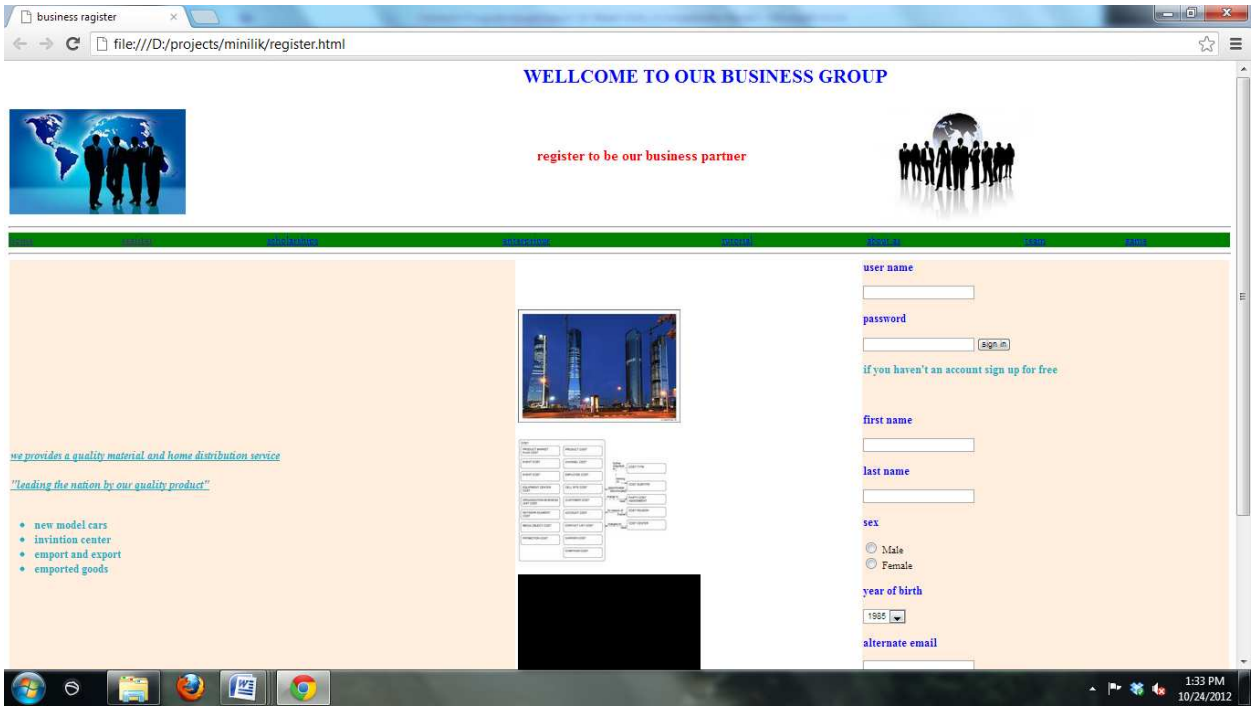


Fig. 13: A website developed by one our grade 11 student(Menilik), He has developed this website after three days training of HTML and CSS

Fig. 11: Grades 9 and 10 Students in Laboratory

Fig. 14: Grades 11 and 12 in Physics Laboratory

Fig. 15: Grades 9 and 10 in Chemistry Laboratory

Even though students in group 2 and 3 were expected to take 75 hours for each subject, except mathematics, as of the project outline, they were very much interested to follow both trainings.

Hence we have managed to provide the training in circuit training form for all subjects. However, students with special interest were treated separately without additional budget request.

Fig 16: *Students exercise building a siren circuit*

Detailed timetable has been developed by the coordinators so that the training runs smoothly without any clash of resource utilization and teachers availability.

Fig. 17: *Students exercise a circuit for a building*

The shipped lab equipments have been arrived on time for the training, but some consumable lab items has been used from the university budget since it was very difficult to buy them from the local market in a very short time.

Fig. 18: *Students exercise siren circuit*

6.3 Students View of the Project

Most of the trainers have been happy with students. One of the strainer on his report said" *The training was an eye opener. This indicates the potential of the regions. In addition to this it help the country to prepare students in science and technology from the lower class. The students were very active and receptive. They were eager to get knowledge as much as possible. We tried to satisfy their interest. Generally, the training is giving a bright future for the country to get highly equipped and creative mind students. I would like to recommend that the ministry of education opened such training center all over the country to encourage creative student. In other countries like Russia they are selected highly talented students all over the country and they train in special training center for military research. If we take such experience from different countries and prepare talented students to transfer technology and innovation of new technology, the country will grow within a very short period of time. "*

Fig. 19: *Students present their power supply system design*

Another ICT trainer said *"outreach program is important to develop skills and competencies of students in core science and technology subjects and upgrade the skills of secondary school teachers through involving them in the process of team teaching."*

In general all trainers have put their own constructive comments to maximize the out puts of the next trainings. One of our ICT trainer said*" In general the training was good as first time, and I believe that the recommendations will be seen so as to make the training be much more effective."* His recommendations are compiled with the other trainers' comments and suggestions below. For a matter of clarity the students' feedback and the project coordinators observations are written on separate topics.

The training was started based the curriculum which was 75% practical and 25% theory. Student's interest and attention for the course was more than expected. Students' capacity in the practical aspect of a computer was different even though they have equal interest because some students may get some exposure about a computer before the start of this training.

Finally instructors evaluation formats were prepared including detailed evaluation criteria written in both English and local language, Amharic so that all students evaluated their instructors accordingly. The result of this evaluation will be used for the program further training work and used as a base for selecting instructors.

7. Extracurricular Activities

In addition to the above schemes of training, there were additional English Language Training and Computer Basics Training for those students coming from outside Bahir Dar City during their free sessions. This includes 15 hours English Language Training and 25 hours Computer Training. In addition, based on students' request, classroom textbooks were brought from Regional Educational Bureau and given to students for further reading and to prepare themselves for national exams.

There were weekly travels in the form of educational tour or as recreation or visit based on their groups to different recreational areas around Bahir Dar. The main travel areas were **Blue Nile Water Fall** and **Koga Agricultural Irrigation Dam**.

During the training time, **top six to eight** talented students were identified by their respective instructors' team for the sake of further treatment and additional advanced training during the whole academic year. After the completion of the summer program, during September 1,2 and 3 2012, there were **Aptitude Tests** for each group on **Mathematics** just for the purpose of identifying students who are good achievers in standardized aptitude tests having international quality. During this examination time there was a discussion on the future prospect of the students and the program as well. In general students said the team teaching was so effective and they took lots of experiences and showed confidence to work on laboratory activities.

8. Best experiences

(i) The modules prepared were not difficult for the students. The students have been interested for all the practical exercises. However, further improvement is required for the next training.

(ii) The implementation of this project in Bahir Dar University, we have gotten very important supports from the top management team because the management team has own this project very quickly.

(iii) We have learned that the students at high school and junior school level are interested on practical exercise rather than chalk and blackboard teaching style. Most of the students

were interested to develop and test their practical exercise. And, they were even competing each other to complete the given practical work faster than others. Thus, most of them have developed the complete practical in the module and get the expected result from each practical.

(iv) Outreach Program has created excellent relationship between university instructors and school teachers. In addition a bridge was formed between University instructors and students from school so that students can conduct experiments in the laboratories.

(v) Students coming from different schools and regions shared wonderful experiences mainly students' life in the Universities.

(vi) The Outreach Program has created a great interest on students in mathematics, science and technology. From large number of student applicants, very few joined the program.

(vii) All in all, the program is very supportive and initiative for students to join the STEM fields that are the major concern of the country.

9. Appendix

Annex 1: Student selection format

ባህር ዳር ዩኒቨርሲቲ (Bahir Dar University)

የምርምርና ማህበረሰብ አገልግሎት (Research and Community Service)

"**Inside Every Child there is a Scientist**"

የተማሪዎች የመምረጫ መስፈርት (Student Selection form)

የተማሪው ስም (Name of Student) ……..……

የት/ምህርት ቤቱ ስምchool Name) ……..…… **የክበቡ ስም** (Name of the club) ……

በክረምት ስልጠና ለመሳተፍ ተስማምቻለሁ፡፡ (Agree to participate on Outreach program)

የተማሪ ስምና ፊርማ (Student name and signature) ……..……

በዩኒት ሊደር የሚሞላ (Club Unit Leader)

ተ.ቁ.	የመምረጫ መስፈርት (Selection criteria)	ፐርሰንት (%)	ውጤት (Result)	ምርመራ (Remark)
1	**የተማሪ የክበባት ተሳትፎ** **Club activity of the student**	35%		
2	**የተማሪ ፈጠራ ችሎታ** **Creativity of the student**	25%		
3	**የተማሪ የሳይንስ ትምህርቶች ውጤት** **Science subject grade**	25%		
4	**የተማሪ ሥነ-ምግባር** **Student behavior**	15%		
5	**ለሴት ተማሪዎች (Femal student)**	3%		
ድምር (Total)				

የዩኒት ሊደር ስምና ፊርማ (Club unit leader name and Sign ……

የሳይንስና ቴክኖሎጂ አስተባባሪ ስምና ፊርማ (Science & technology coordinator name and sign)

Annex 2: School teacher selection format.

ባህር ዳር ዩኒቨርሲቲ (Bahir Dar University)

የምርምርና ማህበረሰብ አገልግሎት (Research and Community Service)

“Inside Every Child is a Scientist” M.G.

“Outreach Program for Talented Students” **ፕሮጀክት የሚሳተፉ መምህራንን** የመምረጫ መስፈርት (በሳይንስና ቴክኖሎጂ ክበባት ለተሳተፉ መምህራን ብቻ) Staff selection

የመምህሩ/ሯ ስም (Name of the teacher) ……..

የትምህርት ቤቱ ስም (Name of the school) ……

የትምህርት መስክ (Field of Study) ……..

ሙሉ ጊዜየን በመጠቀም በከረምት ስልጠና ለመሳተፍ ተስማምቻለሁ፡፡

I agree to participate full on Outreach program project.

የመምህሩ/ሯ ስምና ፊርማ (Name of Staff) ……

በርዕሰ መምህር ወይም ም/ርዕሰ መምህር የሚሞላ (To be filled by school director)

ተ.ቁ.	የመምረጫ መስፈርት (Selection criteria)	ፐርሰንት (%)	ውጤት (Result)	ምርመራ (Remark)
1	የክበባት ተሳትፎ (Club activity)	28 %		
2	የፈጠራ ችሎታ (Creativity)	20 %		
3	በተማሪ የተሰጠ **ግምገማ** ውጤት (Student evaluation)	17 %		
4	ሥነ-ምግባር (Behavior)	10 %		
5	ለሴት **መምህራን** (Gender)	3 %		
	የአመቱ የስራ አፈፃፀም ውጤት (አማካይ) (Annual evaluation)	25 %		
ድምር (Total)				

ርዕሰ መምህር ወይም ም/ርዕሰ መምህር ስምና ፊርማ (Directors or V/director name and signature) ……

Annex 3: University staff selection format for material preparation

Department: _____

S.No.	Name	Qualification	Sex	Year of Service	Module writing Exp.	Curriculum Development Exp.	Community Service Exp.	Document Attached	Total Points	Remark
1										
2										
3										
4										
5										
6										

Annex 4: Club Organizing Format

Bahir Dar University, Research and Community Services

March 25, 2012 (Megabit 16, 2004 E.C.)

Project: Outreach Program for Talented Students in and around Bahir Dar

Experience sharing with School coordinators and unit leaders

Name of School	Name of staff	Position	Subject	Staff Club members		Student Club members		Four month plan Prepared (Yes, NO)	Signature	Remark
				Male	Female	Male	Female			
Bahir Dar Preparatory	Wubie Teshome	Coordinator								
		Unit leader	Biology							
		Unit leader	Chemistry							
		Unit leader	Physics							
		Unit leader	Maths							
		Unit leader	Elec. & IT							
Ghion Preparatory	Bassie Godie	Coordinator								
		Unit leader	Biology							
		Unit leader	Chemistry							
		Unit leader	Physics							
		Unit leader	Maths							
		Unit leader	Elec. & IT							

Annex 5: Club Guidelines

Bahir Dar University

Project: Outreach program for Talented Students. "In Every Child There is Scientist"

Purpose: Science and Technology Club Check list.

School Science and Technology Coordinator Name and Sign: _____

1. Club name: (Biology, Chemistry, Mathematics, Physics, Technology and IT)
2. Given name of the club (if any): _____
3. Name of Unit leader (School teacher) and sign: _____
4. Month: _____
5. Complete the following table.

No	List of activities of Each month	Names of Participants (Students and Teachers)	Conducted according to monthly plan	Not conducted according to monthly plan
1				
2				
3				
4				
5				
6				

Remark :

Note: You can use Amharic to fill the table as well as the remark.

Bahir Dar University

Project: Outreach program for Talented Students. "In Every Child There is Scientist"

Purpose: Science and Technology Club Check list.

1. Name of club: (Biology, Chemistry, Mathematics, Physics, Technology and IT)
2. Given name of the club (If any)_____
2. Name of Unit leader (School teacher) and sign: _____
3. Name and sign. of club member: _____
4. Complete the following table.

No	List of activities of each club member	Conducted according to monthly plan	Not conducted according to monthly plan
1			
2			
3			
4			
5			
6			

Remark :

Note: You can use Amharic to fill the table as well as the remark.

Bahir Dar University

The project (Outreach program for Talented Students) is financed by Gelfand Family Charitable Trust (GFCT) with a motto: "In Every Child There is Scientist". Bahir Dar University fully support the implementation of the project and establishment of the science and technology center in Bahir Dar.

Science and Technology Club Guidelines

Thank you for your desire to join a club at _____ school. Clubs are great ways to build friendships, get involved, and share your interests with others. Bahir Dar University, Research and Community Services V/P Office recognizes that student clubs contribute to the educational, social, recreational and personal development of students. Students are free to organize and participate in voluntary clubs of their own choosing, subject (Biology, Chemistry, Mathematics, Physics, and Technology and IT in this project).

This is a guide for an after-school science and technology club prepared by project team:

1. Ato Berhanu Teshale — Project coordinator
2. Ato Aemro Bizuneh — Technology and IT Unit leader
3. Ato Berie Getie — Mathematics and Science Unit leader

After-school programs are voluntary, so that students and teachers share experience on common ideas in science and technology.

The objectives of the club

- To promote student participation in educational activities in mathematics, science and technology.
- To get the students in club programs and keep them excited about mathematics, science and technology.
- To relate mathematics, science and technology ideas to concepts from the classroom to the reality outside as well as explain topics scientifically.
- To enable students to gain experience in group based activities.
- To develop skill in group cooperation and ethical and transparent interaction.

Applicable guidelines for Science and Technology clubs:

1. The organization of the club shall follow the structure developed by Ministry of Ethiopian Science and Technology.
2. All student clubs must have a name that reflects the mission and the purpose of the club and the name must be approved by the school and BDU project team. Once approved, a club may not change its name in a given academic year.
3. Activities and programs of student clubs will not be scheduled to affect the normal educational Programs of the school.
4. Parents shall be informed in written letter in advance that students participate in science and technology clubs.
5. The club must provide equal access to all students.
6. Each student club member is accountable for the actions of its members, on behalf of the group, in which the club has been authorized.
7. Any registered student in the school who enrolls before Feb. 30, 2012 will be full member of the club. Students registered after Feb. 30, 2012 are not full members. The duration of membership shall be from date of enrollment till September 30 of the following year.
8. Each club shall have at least minimum 20 member students and maximum 30 member students.
9. Each club shall carry out an activity on monthly basis. A club that do not carry out any activities for two months will be dissolved.
10. A leader of the club shall be elected by registered students who enroll before Feb. 30, 2012, and nominees shall has spent at least on semester as members of the school, in good academic standing, not received a warning for non-academic violations of the student code of conduct, shall be free from any addiction, and has great respect and love for Ethiopian people and culture.
11. Any member of the club may be expelled from the club by a two-thirds majority of full members of the club, after consultation with school science and technology coordinator and BDU Outreach program

coordinator for either of the following reasons:

- Violation of the principles and aims of the club or regulations governing club activities or student membership in clubs.
- Failure to attend more than 25 % of the meeting during a semester (Up to June 30, 2012) without valid excuse submitted in written to the science and technology coordinator of the school.

12. Student clubs which register with the school may use facilities of school and BDU on a space-available basis and BDU may provide the necessary equipment and materials for the activity of the clubs.

13. The university is not liable for any structural failure, injury, accidents, or error of any kind.

14. The following are expected activities of the science and technology club members:

- Quiz / Debate on Science/Mathematics [On every 2nd Friday or a fixed date in a month (8 times a year) as per convenience of concerned school. 3 students compete every Friday in each club and marks of each student shall be registered.
- Experimenting in laboratories and demonstrate outputs to club members.
- Doing home-take projects based on the student's talent and initiative.
- Nature Study – field visit to eco parks etc. in the vicinity of school once a year for each club through contribution by students or Bahir Dar University, RCS and Outreach program for Talented students project will strive to find financial source and/or transportation facility.
- Observation of important days (viz. World Wetland Day on Feb 2nd, African science and Technology day on June 30th, World Health Day on April 17th, International Bio-diversity Day on May 22nd, World Environment Day on June 5th, etc.) to disseminate the importance of the said day among the students and acquaint them on the theme of the day of importance (Close contact may be kept with concerned Sub-divisional Science & Technology club).
- Essay Competition on the occasion of different important days or on life & works of Scientists (quarterly in a year in two groups- Science and Technology group)
- Publication of Annual Science Magazine and/or display of information of the club activities on monthly basis on Notice Boards exclusively for Science Club activities, both in Schools and BDU.
- A specific period or day may be selected once in a quarter (e.g. every fourth Saturday of every fourth month) for organizing popular science lectures/audio visual shows etc. Bahir Dar University, Research and Community Services office may help in identifying appropriate personnel for the program. Resource Materials in terms of digital and printed matters/ for

such audio visual shows will be provided by RCS.

The school can also take its own initiative of contacting the persons/organizing the audio-visual shows.

- Support individual members of the club to show their talent in science and technology innovation. Financial assistant will be provided for few students based on criteria set by the coordination team. BDU will support such activities with financial as well as material provision.

Note: The above proposed activities are main guidelines. Any activities over and above these are

recommended.

Annex 6: Selected School Teachers List

የከረምት ስልጠና ፕሮግራም ተሳታፊ 7- 8ኛ መምህራን ዝርዝር (የተመረጡ)

ተ.ቁ.	የመምህሩ ስም	የት/ቤቱ ስም	የት/መስክ	ፆታ	የመምረጫ መስፈርት						
					የክበብ ተሳትፎ (28 %)	የፈጠራ ችሎታ (20 %)	የተማሪ የግምገማ ውጤት (17 %)	ስነ-ምግባር (10 %)	ለሴት መምህራን (3 %)	የስራ አፈፀፀም (25 %)	ድምር

Annex 7: Participant Students Composition

Outreach Program for Talented Students

Outreach program for talented students has organized science and technology clubs in 16 schools. The clubs names are: Biology, Chemistry, Physics, Mathematics, Electronics and Information technology.

Clubs were organized in three groups namely: Group 1 – Grade 7 and 8, Group 2 – Grade 9 and 10, Group 3- Grade 11 and 12

Each club has maximum of 30 students. We expect about 120 – 150 students are involved in each school, which makes a total of 1920 – 2400 students. The outreach program will provide training for around 450 - 480 students in three groups during summer program.

The following criteria will be used to select students participating during summer program at Bahir Dar University.

1. Participation of the student in science clubs – 30 %
2. Academic achievement in science subjects - 20 %
3. Creative work of the student – 15 %
4. Student ethics – 10 %
5. Gender – 3 %
6. Student with father, mother and/or both are/were teachers – 2 %

Composition of students from different schools

1. Government schools in Bahir Dar town - 325 students
2. Private schools in Bahir Dar town - 50 students
3. Students (both private and government) from zones – 45 students

(5 students from each zone, 5 students from special towns: Gondar, Desse, and Debremarkos)

4. Benshanguil Gumuz region – 20 students

Annex 8: Sample Instructors Attendance

Outreach Program For Talented Students Project

Teachers Attendance

Date: _____ (**Monday**)

Name	**Subject**	**Grade Level & Section**	**Room**	**Sign.**		**Remark**
				Morning	**Afternoon**	
Group 1 (Grade 7 & 8)						
Zelalem W.	Math	Section 3				University Teacher
Maelaf Hunegnaw						School Teacher
Balew G.	Physics	Section 2				University Teacher
Ayenew Terefe						School Teacher
Wudu						Laboratory Tech.
Berhanu T.	Chemistry	Section 1				University Teacher
Alelign Sinkie						School Teacher
Getinet G.						Laboratory Tech.
Seblewongiel A.	Biology	Section 4				University Teacher
Meriem Hassen						School Teacher

Melkamu A.						Laboratory Tech.
Yishagerew L.	ICT	Section 5				University Teacher
Teshale Adane						School Teacher
Abiwa A.						Laboratory Tech.
Group 2 (Grade 9 & 10)						
Molalign H.	Math	Section 1				University Teacher
Fisiha Tefera						School Teacher
Aemro B.	ICT	Section 2				University Teacher
Nigus Melese						School Teacher
Hagos T.						Laboratory Tech.
Seife B.	Math	Section 3				University Teacher
Tegie Limenew						School Teacher
Selamneh B.	ICT	Section 4				University Teacher
Yismaw Wubie						School Teacher
Dagnachew M.						Laboratory Tech.
Adem M.	Math	Section 5				University Teacher
Taye Bekele						School Teacher
Group 3 (Grade 11 & 12)						

Sileshi D.	ICT	Section 1				University Teacher
Gashaw Taye						School Teacher
Wubante G.						Laboratory Tech.
Molalign A.	Math	Section 2				University Teacher
H/mariam Kelkay						School Teacher
Esubalew A.	ICT	Section 3				University Teacher
Tigist Tesfahun						School Teacher
Tadele T.						Laboratory Tech.
Abebe R.	Math	Section 4				University Teacher
Zelalem Ewnetu						School Teacher
Yohannes B.	ICT	Section 5				University Teacher
Mulualem Desalegn						School Teacher
Abiwa A.						Laboratory Tech.

Annex 9: Summer Teaching Program Time Table

Group-2 (Grade 9 & 10) **1st – 2nd weeks (Hamle 9 –26) ((16 Days)**

Section	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning (2:45-5:45)						
Science 1	Physics	Chemistry	Biology	Physics	Chemistry	Biology
Science 2	Chemistry	Biology	Physics	Chemistry	Biology	Physics
Science 3	Biology	Physics	Chemistry	Biology	Physics	Chemistry
ICT and Electronics						
ICT/Elec. 1	ICT	Electronics	ICT	Electronics	ICT	Electronics
ICT/Elec. 2	Electronics	ICT	Electronics	ICT	Electronics	ICT

	University Teacher	School Teacher	Laboratory Technician
Math:	Molalign H. (S-1&2)	Fisiha Tefera (S-1&2)	_____
	Seife B. (S-3&4)	Tegie Limenew(S-3&4)	_____
	Adem M. (S-5)	Taye Bekele (S-5)	_____
ICT:	Aemro B. (S-1&2)	Nigus Moges (S-1&2)	Hagos T. (S-1&2)
	Selamneh B. (S-3&4)	Yismaw Wubie (S-3&4)	Dagnachew M. (S-3&4)
	Amha W. (S-5)	Abebe Lingerh (S-5)	Fentaye Moges (S-5)

Group-2 (Grade 9 & 10) **3rd – 7th weeks (Hamle 27 – Nehasie 26) (27 Days)**

Section	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning (2:45-5:45)						
1	Math	ICT	Math	ICT	Math	ICT
2	ICT	Math	ICT	Math	ICT	Math
Afternoon (8:00- 11:00)						
3	Math	ICT	Math	ICT	Math	ICT
4	ICT	Math	ICT	Math	ICT	Math
5	Math	ICT	Math	ICT	Math	ICT

	University Teacher	School Teacher	Laboratory Technician
Physics:	**Andargie G. (S-1&2)** **Kassa D. (S-2&3)**	**Basie Godie (S-1)** **Solomon Baleh (S-2)** **Shegaw Damtie (S-3)**	**Fantahun (S-1,2,3)**
Chemistry:	**Dr. Assefa S. (S-1&2)** **Dr. Solomon L. (S-2&3)**	**Letebirhan Tsegaye(S-1)** **Andargie Gezahegn(S-2)** **Tesfa Genet (S-3)**	**Yohannes A. (S-1,2,3)**
Biology:	**Getachew B. (S-1&2)** **Dr. Eyayu M. (S-2&3)**	**Netsanet Chalachew(S-1)** **Estifanos Tarekegn (S-2)** **Tenesa Mamecha (S-3)**	**Yewulsew K. (S-1,2,3)**

Group-3 (Grade 11 & 12) **1st – 2nd weeks (Hamle 9 –26) ((16 Days)**

Section	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Morning (2:45-5:45)						
1	ICT	Math	ICT	Math	ICT	Math
2	Math	ICT	Math	ICT	Math	ICT
3	ICT	Math	ICT	Math	ICT	Math
Afternoon (8:00- 11:00)						
4	Math	ICT	Math	ICT	Math	ICT
5	ICT	Math	ICT	Math	ICT	Math

	University Teacher	School Teacher	Laboratory Technician
Math:	**Abebe R. (S-4&5)**	**Zelalem Ewnetu (S-4&5)**	_____
	Melkamu M. (S-3)	**Anbesaw Embiyale (S-3)**	_____
	Mulat G. (S-1)	**H/mariam Kelkay (S-1&2)**	_____
	Molalign A. (S-2)		
ICT:	**Sileshi D. (S-1&2)**	**Gashaw Taye (S-1&2)**	**Wubante G. (S-1&2)**
	Esubalew A. (S-3&4)	**Tigist Tesfahun (S-3&4)**	**Tadele T. (S-3&4)**
	Yohannes B. (S-5)	**Mulualem Desalegn (S-5)**	**Abiwa A. (S-5)**

Group-3 (Grade 11 & 12) **3rd – 7th weeks (Hamle 27 – Nehasie 26) (27 Days)**

Section	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Afternoon (7:30- 10:30)						
Science 1	Physics	Chemistry	Biology	Physics	Chemistry	Biology
Science 2	Chemistry	Biology	Physics	Chemistry	Biology	Physics
Science 3	Biology	Physics	Chemistry	Biology	Physics	Chemistry
Morning (2:45-5:45)						
ICT/Elec. 1	ICT	Electronics	ICT	Electronics	ICT	Electronics
ICT/Elec. 2	Electronics	ICT	Electronics	ICT	Electronics	ICT

	University Teacher	School Teacher	Laboratory Technician
Physics:	**Zinaye T. (S-1&2)** **Dereje A. (S-2&3)**	**Dawit Belay (S-1&2)** **Adugna Abere (S-3)**	**Abay (S-1,2,3)**
Chemistry:	**Agegnehu A. (S-1&2)** **Yonas B. (S-3)**	**Kefyalew Tegegn (S-1)** **Maru Eshetie (S-2)** **Wondie Mekonnen (S-3)**	**Nega A. (S-1,2,3)**
Biology:	**Dr. Bizuayehu K.(S-1&2)** **Dr. Ali S. (S-2&3)**	**Desalegn Taye (S-1)** **Yohannes Hagos (S-2)** **Yekaba Mengesha (S-3)**	**Misganaw L. (S-1,2,3)**

Group-1 (Grade 7 & 8) **Section-1 (Morning 2:45 – 5:45)**

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hamle 09 to Nehasie 26	Chemistry	Biology	ICT	Math	Physics	Chemistry (Ham. 14) , Biology (Ham. 21), ICT (Ham. 28), Math (Neh. 5), Physics(Neh. 12)

	University Teacher	School Teacher	Laboratory Technician
Math:	**Berie G.**	**Endeshaw Getinet**	
Physics:	**Balew G.**	**Ayenew Terefe**	**Wudu**
Chemistry:	**Berhanu T.**	**Alelign Sinkie**	**Getinet G.**
Biology:	**Amera M.**	**Chekula Sitotaw**	**Denekew T.**
ICT:	**Adane N.**	**Abebe Assefa**	**Selam T.**

Group-1 (Grade 7 & 8) **Section-2 (Morning 2:45 – 5:45)**

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hamle 09 to Nehasie 26	Physics	Chemistry	Biology	ICT	Math	Physics (Ham. 14) , Chemistry (Ham. 21), Biology (Ham. 28), ICT (Neh. 5), Math(Neh. 12)

	University Teacher	School Teacher	Laboratory Technician
Math:	**Berie G.**	**Abebe Agidew**	
Physics:	**Balew G.**	**Ayenew Terefe**	**Wudu**
Chemistry:	**Berhanu T.**	**Alelign Sinkie**	**Getinet G.**
Biology:	**Amera M.**	**Agerie Admas**	**Denekew T.**
ICT:	**Adane N.**	**Henok Ephrem**	**Selam T.**

Group-1 (Grade 7 & 8) **Section-3 (Morning 2:45 – 5:45)**

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hamle 09 to Nehasie 26	Math	Physics	Chemistry	Biology	ICT	Math (Ham. 14) , Physics (Ham. 21), Chemistry (Ham. 28), Biology (Neh. 5), ICT(Neh. 12)

	University Teacher	School Teacher	Laboratory Technician
Math:	**Zelalem W.**	**Maelaf Hunegnaw**	
Physics:	**Ambelu T.**	**Mekete Tibebe**	**Gone L.**
Chemistry:	**Tsegaye G.**	**Yeshitila Semahegn**	**Getinet G.**
Biology:	**Seblewongiel A.**	**Netsanet Alemu**	**Denekew T.**
ICT:	**Belsity Y.**	**Melkamu Achamyeleh**	**Adane B.**

Group-1 (Grade 7 & 8) **Section-4 (Morning 2:45 – 5:45)**

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hamle 09 to Nehasie 26	Biology	ICT	Math	Physics	Chemistry	Biology (Ham. 14) , ICT (Ham. 21), Math (Ham. 28), Physics (Neh. 5), Chemistry(Neh. 12)

	University Teacher	School Teacher	Laboratory Technician
Math:	**Zelalem W.**	**Berhanu Mengistu**	
Physics:	**Ambelu T.**	**Alemnew Mitiku**	**Gone L.**
Chemistry:	**Tsegaye G.**	**Berhanu Gobena**	**Anteneh**
Biology:	**Seblewongiel A.**	**Meriem Hassen**	**Melkamu A.**
ICT:	**Belsity Y.**	**Teshale Adane**	**Adane B.**

Group-1 (Grade 7 & 8) **Section-5 (Morning 2:45 – 5:45)**

Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hamle 09 to Nehasie 26	ICT	Math	Physics	Chemistry	Biology	ICT (Ham. 14) , Math (Ham. 21), Physics (Ham. 28), Chemistry (Neh. 5), Biology (Neh. 12)

	University Teacher	School Teacher	Laboratory Technician
Math:	**Assaye W.**	**Amsal K/Mariam**	
Physics:	**Getachew H.**	**Abdulahi Abebe**	**Gone L.**
Chemistry:	**Yeshitila M.**	**Befkadu Haile**	**Anteneh**
Biology:	**Zewdu K.**	**Siranesh Desalegn**	**Melkamu A.**
ICT:	**Yishagerew L.**	**Teshale Adane**	**Abiwa A.**

Annex 10: To Six Students Selection Form

Top Six Talented Students Identification Form

Subject: **Mathematics**

Group: **Grades 7 &8**

Section: **1**

Teachers Name: _____

S. No.	Students Name	Grade Level	School Name	Remark
1				
2				
3				
4				
5				
6				

Annex 11: Staff Evaluation Form

Outreach Program for Talented Students Project / የተለየ ክህሎት ያላቸውን ተማሪዎች የማግኘት ፕሮጀክት

Staff evaluation form/ የመምህር መገምገሚያ ፎርም

የትምህርቱ አይነት (Subject) _____ ክፍል (Section) _____
የመምህሩ ስም (Name of the staff) _____

5 = very high 4 = high 3 = Medium 2 = Low 1 = Very low

5 = በጣም ከፍተኛ 4 = ከፍተኛ 3 = መካከለኛ 2 = ዝቅተኛ ነ = በጣም ዝቅተኛ

No.	Activity/ተግባር	Scale/መለኪያ					
		5	4	3	2	1	
1	Is well prepared for the lab session and enthusiastic throughout all the time.						

	ለተግባር ትምህርት በቅድሚያ ይዘጋጃሉ ፣ የተግባር ትምህርት በማስተማር ይደሰታሉ፡፡						
2	Come to lab class on time and help students throughout the lab class. ለተግባር ትምህርት በሰዓቱ ይገኛሉ ፣ ተማሪዎቹን በላቦራቶሪ ሰዓት በሙሉ ይረዳሉ፡፡						
3	Help students in the lab or outside the lab. በክፍልም ሆነ ከክፍል ውጪ ተማሪዎች የሚጠይቁትን ለመፈጸም ጥረት ያደርጋሉ፡፡						
4	Ask students questions to help them solve their own problems rather than doing it all for them. ተማሪዎችን ጥያቄ በመጠየቅ የራሳቸውን ጥያቄ በራሳቸው እንዲሰሩ ያደርጋሉ እንጂ እራሳቸው ብቻ አይሰሩም፡፡						
5	Motivate students to do their best in the lab. ተማሪዎቹ በማበረታታት የተግባር ትምህርት በአግባቡ እንዲሰሩ ያደርጋሉ፡፡						
6	Has good sense of humor and is warm and friendly. የደስደስ ፊት ያለቸውና ሳቂታ ሆነው በጓደኛነት ስሜት ያስተምራል/ታስተምራለች፡፡						
7	Is genuinely concerned with students' progress in the lab. ለተማሪዎች የተግባር ትምህርት እንዲከታተሉና እንዲያውቁ በትጋት ያሰራሉ፡፡						
8	Listen carefully and try to understand students' problem and show respect for students. በጥሞና በማዳመጥ የተማሪዎችን ጥያቄ በማረዳት አግባብ ባለው ሁኔታ መልስ ይሰጣሉ፡፡						

"Inside Every Child is a Scientist" - "በእያንዳንዱ ህፃን ውስጥ ሳይንቲስት አለ"

Annex 12: Aptitude Test Used for Mathematics courses

Bahir Dar University

Outreach Program for Talented Students

Mathematics Aptitude Test

Time Allowed 1:15 hrs.
Date: 26/12/04 E.C.

Name: _____

Grades: Group 1 (Grade 7 and 8) **Section: _____**

School: _____ **Telephone/Email address: _____**

Region/Zone: _____

Write one mathematician whom you are admiring most. _____

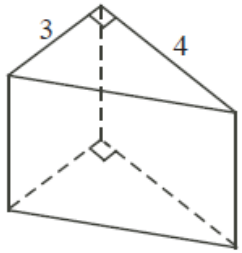
DIRECTION: For each of the following questions, ***circle the letter of your choice***

1. Which of the following numbers is equal to 33 million?
   (A) 3 300 000 (B) 330 000 (C) 33 000 (D) 33 000 000 (E) 330 000 000
2. A six-sided die has the numbers one to six on its sides. What is the probability of rolling odd numbers?
   (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$ (E) $\frac{5}{6}$
3. The largest fraction in the set $\left\{\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{10}\right\}$ is:
   (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$ (E) $\frac{1}{10}$
4. Betelhem wins on six of her eight dart games. The percentage of games that she does not win on is:
   (A) 2 (B) 40 (C) 10 (D) 20 (E) 25

5. The ratio of boys to girls at Tiss Abay visit was 8:5. If there were 128 boys at the visit, then how many students were there at Tiss Abay?

(A) 218 (B) 253 (C) 208 (D) 133 (E) 198

6. A triangular prism has a volume of 120 cm^3. Two edges of the triangular faces measure 3 cm and 4 cm, as shown. The height of the prism, in cm, is:

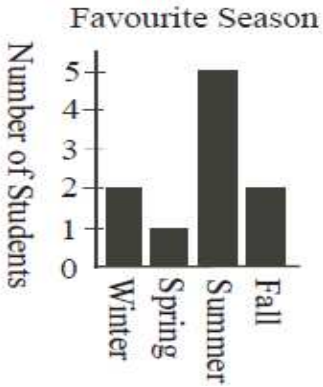


(A) 12 (B) 20 (C) 10 (D) 16 (E) 8

7. The smallest number in the list 1.0101; 1.0011; 1.0110; 1.1001; 1.1100 is:

(A) 1.0101 (B) 1.0011 (C) 1.0110 (D) 1.1001 (E) 1.1100

8. Students were surveyed about their favourite season. The results are shown in the bar graph. What percentage of the 10 students surveyed chose Spring?



(A) 50% (B)10% (C) 25% (D) 250% (E) 5%

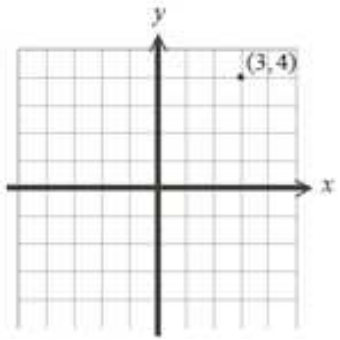
9. You are writing a multiple choice test and on one question you guess and pick an answer at random. If there are five possible choices (A, B, C, D, E), what is the probability that you guessed correctly?

(A) $\frac{1}{5}$ **(B)** $\frac{5}{5}$ **(C)** $\frac{4}{5}$ **(D)** $\frac{2}{5}$ **(E)** $\frac{3}{5}$

10. $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}$ equals:

(A) $3\frac{1}{3}$ **(B)** $7+\frac{1}{3}$ **(C)** $\frac{3}{7}$ **(D)** $7+3$ **(E)** $7\times\frac{1}{3}$

11. If the point (3, 4) is reflected in the x-axis, what are the coordinates of its image?



(A) (4, 3) (B) (-3, 4) (C) (3, -4)
(D) (3, 4) (E) (-3, -4)

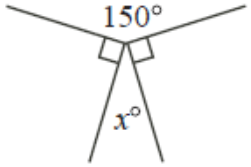
12. Five children had dinner. Cherinet ate more than Mulu. Bahiru ate less than Kimia. Kimia ate less than Mulu but more than Taye. Which child ate the second most?

(A) Bahiru (B) Cherinet (C) Kimia (D) Mulu (E) Taye

13. If 10.0003 x Δ = 10000.3, the number that should replace the Δ is:

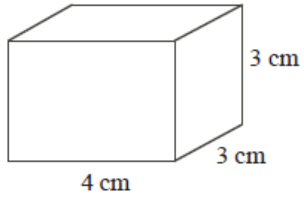
(A) 100 (B) 1000 (C) 10000 (D) 0.001 (E) 0.0001

14. In the diagram, the value of x is



(A) 40 (B) 35 (C) 150 (D) 30 (E) 25

15. How many 1cm x 1cm x 1cm blocks are needed to build the solid rectangular prism shown?



(A) 10 (B) 12 (C) 33

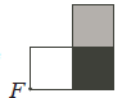
(D) 66 (E) 36

16. In a magic square, all rows, columns, and diagonals have the same sum. The magic square shown uses each of the integers from -6 to +2. What is the value of Y?

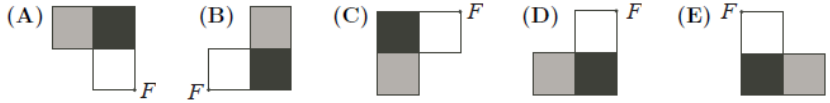
+1		*Y*
−4		
−3		−5

(A) -1 (B) 0 (C) -6

(D) +2 (E) -2

17. If the figure 

is rotated 180° about point F, the result could be:



18. The product 60 x 60 x24 x7 equals

(A) the number of minutes in seven weeks

(B) the number of hours in sixty days

(C) the number of seconds in seven hours

(D) the number of seconds in one week

(E) the number of minutes in twenty-four weeks

19. The weight of a box with 30 identical chocolates is 21 grams. When 6 chocolates are removed and eaten, the weight of the box and remaining chocolates is 17.4 grams. In grams, what is the weight of the empty box?

A. 2.2 B. 2.4 C. 2.8 D. 3 E. 3.2

20. In this addition problem, each letter represents a different digit from 0 through 9.

Compute the sum L+I+V.

$$\begin{array}{ccc} L & I & L \\ + & I & V \\ \hline I & L & L \end{array}$$

A.13 B. 15 C. 16

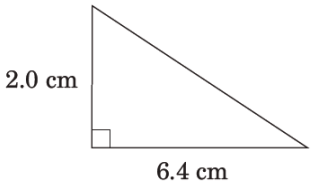
D.17 E. 20

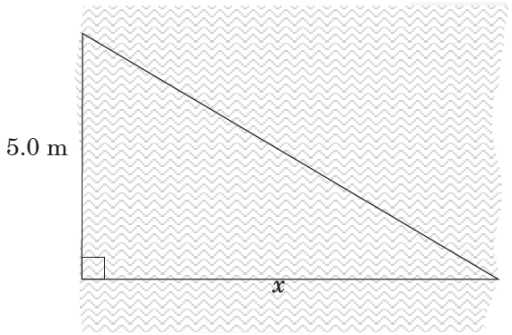
21. Rahel's garden is in the shape of a square. How does the area of the garden change if she doubles the length of each side of the garden?

A. The area is halved. B. The area is doubled.

C. The area is tripled. D. The area is quadrupled.

22. Eyerus wanted to know the distance across a river. She made a drawing with two similar triangles, as shown below. What is the distance across the river, *x*?





A. 1.6 m B. 9.4 m C. 16.0 m D. 25.6 m

23. A tree has a shadow 12 feet long. At the same time, Yohannes, who is 5 feet tall, has a shadow 4 feet long. If Senait wants to find the height of the tree, which proportion should she use?

A $\frac{x}{4} = \frac{5}{12}$ C $\frac{x}{8} = \frac{5}{4}$

B $\frac{x}{5} = \frac{8}{4}$ D $\frac{x}{12} = \frac{5}{4}$

24. The diagonal of a square television screen measures 27 inches. What is the ***approximate*** length of the screen?

A. 13 in. B. 15 in. C. 19 in. D. 21 in.

25. Which would be an appropriate first step to solve $-2 = 5x - 3$ for x ?

A. subtract 3 from both sides B. add 3 to both sides

C. add 2 to both sides D. divide both sides by 5

26. Read the following paragraph and answer the question accordingly.

As I was going to abroad, I met a man with seven wives; Every wife had seven sacks; Every sack had seven cats; Every cat had seven kits.

What is the total number of men, wives, sacks, cats, and kits that this person met?

A. 155 B. 2401 C. 2409 D. 2800 E. 2801

27. My daughter Hana was born on the N^{th} day of March.

From **<u>your age</u>** in years, you can calculate N and therefore know Hana's birthday.

(i) Make a <u>6-digit number</u> by writing **<u>your</u>** age three times. (For example, if your teacher is 28 years old, your teacher would write 282828.)

(ii) Divide **<u>your</u>** 6-digit number by 1443.

(iii) Add 133 to that answer.

(iv) Divide that answer by 7.

(v) From that answer, subtract <u>your age</u> in years. Your final answer is N.

When is Hana's birthday?

A. March 7 B. March 12 C. March 14 D. March 19 E. March 28

Bahir Dar University

Outreach Program for Talented Students

Mathematics Aptitude Test

Time Allowed 1:15 hrs.
Date: 25/12/04 E.C.

Name: _____

Grades: Group 2 (Grade 9 and 10) **Section: _____**

School: _____ **Telephone/Email address: _____**

Region/Zone: _____

Write one mathematician whom you are admiring most. _____

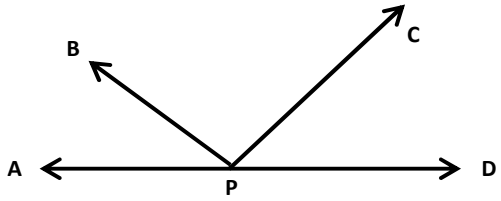
DIRECTION: For each of the following questions, ***circle the letter of your choice***

1. If $g(x - 1) = x^2 + 1$, then g(2) is equal to:
A. 1 B. 2 C. 5 D. 9 E. 10

2. The 17^{th} day of a month is Saturday. The first day of that month was:
(A) Monday (B) Tuesday (C) Wednesday (D) Thursday (E) Friday

3. The value of $\left(\sqrt{\sqrt{9}+\sqrt{1}}\right)^4$ is
(A) $\sqrt{10}$ (B) 10 (C) 16 (D) 82 (E) 100

4. APD is a line, < APC = 142^o and < DPB = 156^o.



What is the measure of < BPC?

A. 14^o B. 90^o C. 104^o

D. 118^o E. Cannot be determined

5. One of the following 8 figures is randomly chosen. What is the probability that the chosen figure is a triangle?

(A) $\frac{3}{8}$ (B) $\frac{3}{4}$ (C) $\frac{1}{8}$ (D) $\frac{1}{2}$ (E) $\frac{1}{3}$

6. From an 8x8x8 cube, a 2x2x2 cube is removed from each corner. What fraction of the 8x8x8 cube is removed?

A.1/4 B. 1/8 C. 1/2 D. 3/32 E. 3/8

7. A 3-digit natural number is divisible by 5 but not by 10. The hundreds' digit is odd and the tens' digit is twice the hundreds' digit. What is the sum of all numbers that meet all of these conditions?

A.490 B. 540 C. 560 D. 600 E. 660

8. As the value of x increases from –1 to 0, how many of these five numbers also increase?

x^2 x^3 $3-x$ $x-3$ $\frac{1}{x+2}$

A. 1 B. 2 C. 3 D. 4 E. 5

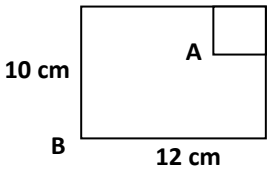
9. When the decimal point of a certain positive number is moved one placed to the right, the positive difference between the two numbers is 18.072. What is the sum of these two numbers?

A. 22.088 B. 22.88 C. 220.08 D. 220.88 E. 222.08

10. **Let a** and **b** are integers such that $a^b = 64$. What is the sum of all possible values of **a**?

A.68 B. 70 C. 72 D. 76 E. 78

11. Point A is the vertex of a square, 4 cm on each side. What is the length in centimeters of segment AB?



A.10 B. 14 C. $6\sqrt{2}$

D.$8\sqrt{2}$ E. $2\sqrt{61} - 4\sqrt{2}$

12. Of 100 students, 84 are taking Algebra, 30 are taking Geometry, while 24 are taking both Algebra and Geometry. How many of the 100 students are taking neither Algebra nor Geometry?

A.6 B. 10 C. 12 D. 20 E. 34

13. A cylinder fits for four spheres (you might call them tennis balls), each of radius r. What is the ratio of the height of the cylinder to the surface area of one of the spheres?

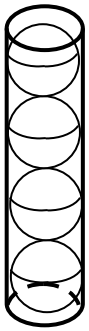
A. $\frac{2}{\pi r^2}$ B. $\frac{4}{\pi}$ C. $\frac{4}{\pi r^2}$ D. $\frac{8}{\pi}$ E. $\frac{8}{\pi r^2}$

14. If K is a real number, for how many values of K are the following two lines parallel?

$3x + Ky + 8 = 0$ and **$2Kx + 6y + 5 = 0$**

A. 0 B. 1 C. 2 D. 3 E. More than 3

15. Mrs. Assefu uses this weighted average formula to grade her Mathematics class.



"25% of HW average plus 75% of Test average"

What is Zelalem's current grade if his HW average is 72 and his test average is 97?

A.84.5% B. 88% C. 88.5% D. 90% E. 90.75%

16. Tihtna's bag is filled with one-cents, five-cents, ten-cents, and twenty-five-cents. If she has at least five of each coin and has a total of 3.02 birr, what is the least total number of coins that she could have in her bag?

A. 18 B. 20 C. 25 D. 27 E. 29

17. The point (7, 5) is reflected about the line y = x to point P. Then point P is reflected about the x-axis to point Q. What is the sum of the coordinates of point Q?

A. –2 B. 2 C. –12 D. 12 E. None of these

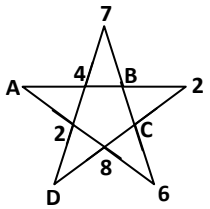
18. On a clock, at 10:20 what is the measure of the smaller angle between the minute hand and the hour hand?

A. 168^o B. 170^o C. 174^o D. 175^o E. 180^o

19. A square and a rectangle have equal areas. The length of the rectangle is 4 times its width. What is the ratio of the perimeter of the rectangle to the perimeter of the square?

A. 1 B. $\frac{3}{2}$ C. $\frac{5}{4}$ D. $\frac{7}{4}$ E. 2

20. On this Magic Star, the sum of any four numbers in a row equals the same number. What is the value of the sum A + B?



A. 13 B. 15 C. 16 D. 20 E. 23

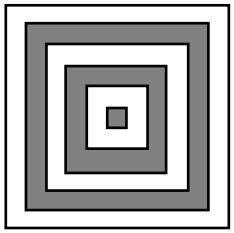
21. In this sequence of seven numbers, the difference between consecutive numbers doubles each time.

A ; _____; 12; 18; 30; _____; B

Compute $B \div A$.

A.7.2 B. 9 C. 10.4 D. 13.6 E. 17

22. A target consists of six concentric squares of side lengths: 1, 3, 5, 7, 9, and 11. What percent of the target is shaded?



A.38% B. 40% C. 43% D. 45% E. 46%

23. The sum of three consecutive prime numbers is:

A. Always an even number B. Always an odd number

C. Always a multiple of 3 D. Never a multiple of 3

E. None of the above

24. If the measures of two angles of an isosceles triangle are 80^o and x^o, there are three possibilities for x. What is the sum of those three possible values?

A.160^o B. 90^o C. 100^o D. 180^o E. 150^o

25. Which of the following numbers is closest to 1?

(A) $\frac{11}{10}$ (B) $\frac{111}{100}$ (C) 1.101 (D) $\frac{1111}{1000}$ (E) 1.011

Annex 13: Laboratory Equipments received from TDA

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Model 19

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No.012530

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Serial

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THE FEDERAL DEMOCRATIC REPUBLIC
OF ETHIOPIA
የገንዘብና የኢኮኖሚ ልማት ሚኒስቴር
MINISTRY OF FINANCE AND
ECONOMIC DEVELOPMENT

1. ዋጋው በገንዘቡ ወጪ መዝገብ የተጻፈበት ተራ ቁጥር ____
Item No. In expenditure Registry
2. በዕቃ ገቢ መዝገቡ የገባበት ንምራ ____
No. Of entry in the register of incoming goods
3. ለዕቃው የተሰጠው መደብ ____
Classification of Stock
4. ዕቃው የሚቀመጥበት መጋዘን ቁጥር ____
Store's No.
5. የመደርደሪያው ቁጥር ____
Shelf No.

የ computing and electrical school
Department

የ ዕ ቃ ው ወ ይ ም የ ን ብ ረ ት ገ ቢ ደ ረ ሰ ኝ
RECEIPT FOR ARTICLES OR PROPRIETY RECEIVED

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The Day 20 From

Noble Printing Press

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1	DC-60MHz approx dual trace digital storage oscilloscope				pcs	10	1041	00	10410	00
2	Analog multimeter DC voltage accuracy:				pcs	10	9	65	96	50
3	Analog voltmeter, approx: 0-5V, DC				pcs	10	3	90	39	00
4	Gold leaf electroscope				pcs	10	5	50	55	
5	Digital timer				pcs	5	49	85	249	25
6	timing gate				pcs	5	37		185	00
7	ticker tape timer 12V approx				pcs	10	11	25	112	50
8	Ticker Tapes				pcs	20	4	05	81	00
9	power supply approx. 2-12V, AC/DC				pcs	10	17	70	177	00
10	optical bench with acc				pcs	10	12	50	125	00
	ድምር Total								11530	25

ተረካቢው 1120.25
Deliverer (Recipient)

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Deliverer (Donor)

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የገንዘብና የኢኮኖሚ ልማት ሚኒስቴር
MINISTRY OF FINANCE AND ECONOMIC DEVELOPMENT

1. ዋጋው በገንዘብ ወጪ መዝገብ የተጻፈበት ተራ ቁጥር ____ Item No. In expenditure Registry
2. በዕቃ ገቢ መዝገቡ የገባበት ንምራ ____ No. Of entry in the register of incoming goods
3. ለዕቃው የተሰጠው መደብ ____ Classification of Stock
4. ዕቃው የሚቀመጥበት መጋዘን ቁጥር ____ Store's No.
5. የመደርደሪያው ቁጥር ____ Shelf No.

computing and electrical
Department

የዕቃው ወይም የንብረት ገቢ ደረሰኝ
RECEIPT FOR ARTICLES OR PROPRIETY RECEIVED

ከ ዩኒቨርሲቲ ... ne ከዚህ በታች በዝርዝር የተመለከተውን ንብረት received the following

ቀን Day 20 ___ ዓ.ም From ከ ... Noble Printing Press

23/12/04 The

ተራ ቁጥር Serial No	የዕቃው ወይም የንብረት ዓይነት ዝርዝር Detailed Description of Articles or property	ሞዴል Model	ሴሪ Serie	ተከታታይ Page No ከ From	እስከ To	ብዛት Quantity	ያንዱ ዋጋ Unit price ብር Birr	ሳ ¢	የዋጋ ድምር Total price ብር Birr	ሳ ¢
1	Rigol DS1052E digital oscilloscope 2 chanale 50MHz	...				10	1041		10410	
						ድምር Total		-	10410	

አስረካቢው Deliverer (Donor)
ተረካቢው Deliverer (Recipient)

ማጠልከቻ፣ ይህ ካርኒ ሦስት ኮፒ ያለው ሆኖ በካርቦን ይሠራል፡ ከዚሁም ሁለቱ ተጎራጅ ሆኖ የመጀመሪያው ለክፍሉ የሂሣብ ቤት ... የሒሣብ ማጠቃለያ ... ለገንዘብና የኢኮኖሚ ልማት ሚኒስቴር ... እንዲሆን ... የዋጋው ድምር በሚገለው ውስጥ በውርስ ወይም በሌላ ምክንያት የተገኘ ዕቃ ወይም ንብረት የሆነ እንደሆነ ዋጋው በኤክስፐርት ተገምቶ በዋጋ ካሉን ውስጥ ይገባል ፡