UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

MISSION IN LIBYA

Tripoli

FINAL REPORT

by

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I. INTRODUCTION

It was recognised by UNESCO, long before my assignment in Libya, that the development of Science Teaching in the schools at all levels was of great importance. Two experts in Science and one in Mathematics had been sent to Libya by UNESCO, whose functions were limited to the training of teachers (both men and women) in Tripoli Teacher's Training Colleges. After some time a new plan was suggested in order to improve the teaching of science in secondary, preparatory, primary and T.T. Colleges. In accordance with this plan I was assigned to serve as:

(a) Adviser to the Ministry of Education;
(b) to advise in the revision of the curriculum;
(c) to provide technical guidance in practical lessons of science teaching at the Men's Teacher's Training College, Tripoli;
(d) to prepare equipment lists and assist in equipping all the school laboratories in the country, and
(e) to direct in-service training courses for science teachers.

Soon after my arrival in Tripoli, I met the top people of the Ministry of Education and paid some visits to schools of all levels. I had the chance to discuss with teachers in schools their problems, and soon became acquainted with most of the difficulties concerning the Plan of Study, Curriculum, books, equipment, laboratories, etc. This was not difficult because the Egyptian curriculum was the one followed in schools with some modifications, most of the Textbooks used in schools were Egyptian, and the teaching staff
in some schools, as at present, consisted of expatriates, the majority of whom were Egyptians.

Thus the Objectives of my post, after discussion with H.E. the Minister of Education and Mr. M.M. Hussain, Chief of the UNESCO Mission in Libya, were to be as follows:

1. To advise the Ministry of Education on the revision of general science teaching curricula in schools, and the equipment of laboratories.

2. Promote and organise under my direction periodic in-service training courses for Science Teachers in all provinces during the most suitable period.

3. Supervise the practical lessons of Science teaching at the Men's Teacher's Training College, Tripoli.

4. Advise the Higher Council of Education on new plans and Syllabi to all kinds of schools.

5. Assist in the preparation of new books in Science and Hygiene for students all over the country.

II. ACCOMPLISHMENTS DURING THE PERIOD OF MY ASSIGNMENT

As an Adviser to the Ministry of Education I proposed the following solution of the problem of science teaching in schools:

(a) Plan of Study and Curricula

The plan of study in schools at all levels was revised, and some weekly hours for science and mathematics in most of the schools were added. This increase in teaching hours will enable the teachers to give more attention to the development of Science Teaching. The new plan, approved by the Higher Council of Education, was submitted directly to the Educational Authorities of the three provinces. (The country was divided into 3 states and had a Federal Government) Many changes were made in the plan of secondary education, teacher training and vocational education (Agricultural and Trades). (Annex I gives number of Science, Hygiene and Math. weekly hours at all levels, which is now followed in schools).
These changes of the Plan of Study demanded the revision of the curricula of most of the subjects at all levels of Education. Different Committees were suggested by the expert to assist him in revising and preparing new curricula for Science and Hygiene to all schools. The new syllabi will enable pupils to gain information on Science by experimenting, by observing, by reading, by looking at films and in other ways.

The members of these Committees were selected from among the school teachers, school Inspectors and Heads of Departments of the Libyan University Faculties. It was arranged that at least one member of each Committee should be a Libyan, to ensure the introduction of Libyan Arabic Terms in the headings of the Syllabi. The Curriculum of Science included practical work, and some practical studies were suggested. Lessons were indicated in the Plan of Study, such as gardening, etc.

In actual fact very little of this practical work is done owing to lack of gardening space and because the teachers themselves have not received any training of this kind. The new curricula were also submitted to the Higher Council of Education, and after approval were submitted to the provinces and are now followed in schools.

(Annex 2. - gives the curriculum of Science, method of Science Teaching, School Hygiene, for T.T. Colleges Special Course (1st year General) (Science Section) and (Handicrafts Section).

Annex 3. - gives the curriculum of Science for secondary schools.

Annex 4. - " " " of " and Hygiene for Preparatory schools.

Annex 5. - " " " " " in Primary schools.


Annex 7. - " " " " " Preparatory schools.

Annex 8. - " " " Science for Fuehat Fundamental Education Centre in Benghazi.)
(b) **Books**

As all schools in Libya depend (up till now) upon imported books from other Arab countries, especially the U.A., a new suggestion was made to produce some Libyan books in Science and other subjects. This suggestion, which was supported by H.E. Mr. Hassan Binti, former Minister of Education, enabled me to produce seven different books on General Science and Hygiene for some classes (Copies of these books were sent to the Department of Education, UNESCO, Paris).

These books are:

(i) a book on General Science for 5th Primary
(ii) a book on General Science for 6th Primary
(iii) a book on Hygiene for 5th Primary
(iv) a book on Hygiene for 6th Primary
(v) a book on General Science and Hygiene for 1st Preparatory
(vi) a book on " " " " 2nd "
(vii) a book on " " " " 3rd "

Many other Science and Hygiene books for the other classes are still imported from other countries. These are the books for:

1. 1st, 2nd, 3rd, and 4th classes of Primary Education
2. All books (Physics, Chemistry and Biology) for Secondary Schools
3. All books for T.T. Colleges
4. All books for Vocational Education.

The seven books mentioned above were prepared and revised in the following way:

- The expert was assisted by different Committees.
- For each book, a special Committee was suggested by the expert.
- Teachers of schools, Inspectors, and Professors of the Libyan University were chosen as members of each Committee.
- Every Committee had at least one Libyan teacher as a member.

We insisted on this last condition to ensure a certain standard of study and the best method of teaching, bearing local conditions in mind.
as well as to make use of Libyan Arabic terms. The books contained enough explanatory lines, practical studies and problems and questions for revision. After these books were printed the expert was responsible for the final revision of the first copies. Great care was given to the preparation and publishing of these books, but as they are going to be republished during the summer of 1960, the expert suggests that a questionnaire should be prepared for the teachers so that future committees set up to revise the books before republication, could make, I hope, the necessary modifications in the light of the answers received. It will be possible to prepare more books in the future because imported books do not cover a great part of the Libyan syllabi which differs from those of other Arab countries.

(c) Teachers and Inspectors

Primary Education is provided in schools with six classes. Nearly most of the schools follow the system of shift classes, owing to the lack of buildings. Pupils and teachers of the higher classes come in the morning and those of the lower classes in the afternoon. To provide the schools with qualified teachers some Teacher's Training Colleges (general course) were established early in 1948. The participants to these Colleges were graduates of Primary schools, and they had to pass four years course of study in order to be graduated as class-teachers in Primary Education. As there was an urgent need for graduates of these Teacher's Training Colleges, because of the increase in the number of schools and classes and because of the determination of the Ministry of Education to employ only Libyan Teachers, the period of study at the T.T. Colleges was limited to three years instead of four, and the Government was obliged to recruit a majority of young people fresh from school.

The fact is now clear that the majority of primary teachers are young youths lacking experience and with very limited knowledge. To solve the problem a new type of T.T. College was suggested, to replace the old ones (special course). The participants of the new College are the graduates from preparatory schools instead of primary. A General Course
of study is given to all students in the first year, but they are divided into 3 different sections to get special courses of studies in the end, 3rd and 4th years. The sections are:

1. Religion and Arabic Language studies.
2. Social and English Language studies.
5. Handicrafts and Drawing studies.

The graduates are specialised in one or more subjects, being qualified academically and professionally, they are recruited as subject teachers in primary schools for 5th and 6th classes, and some good teachers among them are transferred to teach in preparatory schools. T. T. Colleges (special course) are now widely spread, all over the country. There are about six large colleges for boys, and other three large colleges for girls. Nearly all the students (Boys and Girls) are boarders, and monthly stipends are paid to them for encouragement.

In-service training courses were suggested to help the other young unqualified teachers who are recruited yearly fresh from schools. They are given some knowledge of science, some knowledge of teaching, and some knowledge of the construction of apparatus with the simplest of tools and without any specially constructed workshop. As these in-service training courses cost much money and could not cover the large number of science teachers in primary schools spread all over the country, regular monthly meetings (whenever and wherever possible) were held by the expert with Mathematics and Science Inspectors of primary education. There are in the Zones of Education in the district, some excellent, qualified Mathematics and Science Libyan Inspectors, who were chosen among the Primary school teachers. Their number differs in each zone according to the number of its primary schools. One of these inspectors was trained as my counterpart. I hope he will be sent abroad next year for a nine months fellowship. During these meetings the problems concerning Syllabi, methods of teaching, laboratories and their equipment,
books, etc., were all discussed. The decisions taken were transmitted to teachers through the inspectors during their visits to their schools, (more details concerning training courses will come later). The expert was responsible for practical lessons of science teaching at the Sen's T.T. College, Tripoli, and had the chance to look after the professional training of the graduates of that College. He used to meet them one day weekly, and he could through their practical teaching lessons introduce the best teaching methods, the construction of simple apparatus, the use of filmstrips, cinema films, kits, etc.

Science teachers and Inspectors of other schools above the primary level are expatriates, but there are very few Libyans graduated from foreign Universities, or from the Faculty of Science of the Libyan University. The recruitment of science teachers is not so easy at present because of the great demand for science teachers in all countries, and because they are few and their recruitment is handicapped by the low salaries paid to teachers as compared with similarly qualified persons in industry. The graduates of the Libyan University are not qualified professionally and most of them are subject specialists. In my opinion it is undesirable for a secondary school science teacher to be so. Therefore, it is clear that the need for training Libyan science teachers for the levels above primary education is a matter of urgency. The expert has suggested a Higher Teacher's Training College, which was discussed by UNESCO, by the Ministry of Education, and the Government has submitted a request to the Special Fund and UNESCO to support the Project. It will be of great benefit to the country.

At the same time the expert would like to suggest the professional training of other science teachers (graduates of the Faculty of Science) to take place in a Post-Graduate training school attached to the University. This course should last for at least one academic year and include both theoretical and practical training. As most of the expatriates always leave the country after a short time (usually after four years) the expert has trained two Libyan science teachers as Inspectors and counterparts.
They are qualified, both academically and professionally, and they have worked well. One of them is still serving in his post and will get a nine months fellowship abroad next September, while the other has been transferred to another post as Director of Zawia T.T. College (special course). In my opinion, the problem of training Libyan science teachers for all schools should receive priority consideration or else all efforts to develop science teaching will be slow and unsuccessful.

(a) Laboratories and Equipment

The school laboratory equipment is a big problem, which the expert tried to solve. He equipped the laboratory in the Men's T.T. College in Tripoli from the UNESCO Mission's Support Funds. This assistance was very valuable and resulted in four highly equipped Mathematics, Physics, Chemistry and Biology Laboratories. The other T.T. Colleges, Preparatory schools, and secondary schools have not yet been similarly provided with science equipment because this was Government's responsibility and UNESCO could not give any further assistance after having provided equipment for the above laboratories, which were to serve as a model for the other laboratories. The expert has prepared, in consultation with the responsible people of the Ministry of Education, lists of laboratory equipment for all schools (primary, preparatory, secondary and T.T. Colleges), which were submitted to the Government. The items and amounts mentioned on the lists were those necessary for the teaching of the syllabi at each level in a school of ten classes. Copies of the lists are attached as follows:

....
Annex 9 - Laboratory equipment for Primary schools
....
" 10 - "  " "  " Preparatory schools
....
" 11 - "  " "  " Secondary schools
....
" 12 - "  " "  " Teacher's Training Colleges

In regard to primary schools, I found that schools had neither been provided with science teaching rooms, nor furnished with any science equipment, except some old Italian charts which were stored in some large old schools. At present the Government provides some schools with the
equipment mentioned in the above lists and science laboratory for primary schools are being built, especially in the new school buildings. In consultation with the Ministry of Education the expert has prepared a request for the supply of science equipment to ten primary schools, to be provided under UNICEF programme of assistance to Libya. This request has been approved and equipment which has been arriving is being delivered to the ten schools (one for each District) by the expert. The number of schools to benefit from this programme has risen to 14. The equipment for the other 4 schools will reach the country soon.

A similar request has been prepared to furnish another 40 primary schools with science equipment and this equipment, I hope, will reach the school next year (1964-1965).

The expert introduced some Audio-Visual Aids as a means for the development of science teaching in schools. He introduced the filmstrips and the cinema films. Two film libraries were founded, one in Tripoli, the other in Benghazi. Each Centre was provided with copies of films on science which were purchased by the expert through Support Funds allocated to the UNESCO Mission. The expert, with the agreement of the Government has prepared a list of some other cinema films and a request was submitted to UNICEF to provide each Centre with additional forty new films on science and a vehicle equipped with a filmstrip projector, a pick-up and a cinema projector, 16 mm. The car should be fitted with a special Dynamo which will generate the required electrical power for the equipment. This will enable different schools in both the Western and Eastern parts of the country to make use of the two film Centres, even at villages where electricity is not available.

Kits (aeromodeller, electricity, light, heat and chemistry) were also introduced to schools, especially T.T. Colleges. The teachers were trained by the expert but the project stopped because the Ministry of Education did not support it financially and the trained teachers left the country (expatriates).
As the cost of the apparatus is expensive, and the number of schools is great, while at the same time pupils have to see the experiment, the construction of apparatus with the simplest of tools and without any especially constructed workshop, was introduced in schools, as well as Teacher's Training Colleges. A list of some examples (Annex 13) was prepared by the expert and some school teachers were trained to make them in order to save money. Further, it is better if pupils can make the apparatus by themselves.

The problem of science teaching in laboratory is still far from being solved. Teachers do not carry out experiments nor give practical lessons. The reason is not always the lack of equipment, but their time-table is overloaded owing to the serious shortage of science teachers who cannot find any laboratory assistants in schools. The expert tried many times to recruit some laboratory assistants whom he proposed to give a one year training course at schools; though promises were made no one was allotted. The need for laboratory assistants is very great, and overloaded teachers must have at least the minimum assistance in order to do the work properly, otherwise they will limit themselves to lectures and give no practical experimental work. (A special training summer course will be suggested later).

(e) Advisory activities of the expert

The expert was always ready to give advice to the Ministry of Education whenever required to do so. He was chosen with the UNESCO Chief of Mission to represent UNESCO in:

(i) An Advisory Committee on Technical and Vocational Education organised by the Ministry of Education.

(ii) The First National Conference on Education held by the Ministry of Education at Beida from 17 to 22 August 1963.

(iii) Seminar on Agricultural Education organized jointly by FAO and UNESCO in Tripoli in September 1963 with Libya acting as host country.

The expert participated in setting examination papers and acted as controller for the General Certificate secondary examinations.
III. CONCLUSIONS

The foregoing brief account on the development of science teaching in Libya will convey an idea of the considerable effort that has been made both by the Ministry of Education and UNESCO.

The revision of the plan of study and the preparation of the new curricula was of great importance. The preparation of the seven Libyan science books provided both teachers and pupils with an explanation of the different syllabi and assisted them in following successful methods of teaching. The problem of recruiting qualified teachers was another immense difficulty to overcome. When the Government decided to replace the old T.T. Colleges (general course) by the new T.T. Colleges (special course) it intended to strengthen and improve the teaching staff, firstly in quality and afterwards in quantity. Similarly, when the new Higher Teacher's Training College will be established both the problems of recruiting teachers from abroad and the budgetary difficulties will be solved, both the Government and UNESCO gave great care to Laboratory equipment and to Audio Visual aids which have greatly assisted the development of science teaching.

In spite of all this several problems have been only partially solved, for example:

(a) The training of the big number of unqualified teachers.
(b) The professional training of the other teachers who are recruited directly after graduation from the Libyan University.
(c) The recruitment of Laboratory assistants and their professional and academical training, etc.

In short, as the standard of teaching has declined because of the increase of the number of inexperienced teachers, the following recommendations will, I hope, provide a sound basis for the future development of science teaching in Libya.
IV. RECOMMENDATIONS FOR THE FUTURE DEVELOPMENT OF SCIENCE TEACHING IN LIBYA

1. It is clear from what has been said above that a new plan of study has been recently approved and it seems to me that it is necessary to make any radical changes in the plan of study and in the curricula of science during the next few years.

2. As the foreign textbooks now used in schools are not adapted to this country, it is essential to prepare and publish with the least possible delay the remaining Libyan Science textbooks as mentioned above. The books will use the best tested teaching methods and will be helpful to both pupils and teachers.

3. The other seven Science and Hygiene textbooks which have been published before, will be republished next year. I recommend that they should be revised, and the changes which will be introduced must be preceded by a questionnaire to teachers in schools so as to make use of their ideas in this work.

4. As there are two serious gaps in Libyan Primary Education, i.e. lack of laboratory equipment, and practical work particularly in regard to gardening, I recommend that the Ministry of Education should follow up the equipping of the remaining schools with science equipment, and to provide all schools with necessary large rooms for laboratories. In order to practise gardening in schools, both the required ground and the practical agricultural training for teaching staff should be given.

5. The training of teaching staff is the first problem to be dealt with since other problems depend upon it. Short summer training courses for some years are of great importance to all science teachers; they should be encouraged to attend Refresher courses, and some other courses in the teaching of science subjects, including techniques of teaching, maintenance of apparatus, collection, preservation and storage of materials and use of audio visual aids.
I therefore recommend that the Technical Assistance Department of UNESCO should help for some years such short summer courses for Libyan science teachers at all levels whom the Ministry of Education should organize yearly as follows:

- about 60 Primary school teachers
- about 20 Preparatory and Secondary school teachers

A special course can be prepared for them to last about 3 weeks during the month of August. Lectures, discussions on books, practical work will be given to all of them if a suitable timetable could be prepared.

A Director and three specialists in science teaching could be recruited yearly for a short term (not more than four weeks).

6. Reference is made to what has been mentioned before concerning the serious shortage in Laboratory assistants and their training. I would like to recommend that the short summer courses mentioned under para 5. above should give a separate training course to about ten other employees yearly. This course should last 4 weeks and can be conducted by the same specialists but emphasis should be placed on practical work.

N.B. - The expert, even after his departure from the country, is ready to offer his services to both the Ministry of Education and to the Technical Assistance Department of UNESCO, to arrange and share in the following:

(a) Preparing and publishing the new Science Books.
(b) Revising the old Science books before republication in the light of the information elicited from the questionnaire.
(c) Organizing and giving a limited course in the suggested short summer courses to both teachers and laboratory assistants every year.
V. SUMMARY

1. The Revision of the plan of study and of the general science curricula in schools has been completed.

2. Seven Science and Hygiene textbooks for primary and preparatory schools were prepared and revised by the expert with the assistance of others. They have been distributed to pupils all over the country.

3. Lists of science laboratory equipment for different kinds of schools were prepared. They served as a basis for the placing of orders for new equipment for schools.

4. The assistance of UNICEF to science teaching was made available to schools. The expert was responsible for the delivery of the sets and for training teachers on carrying out experiments.

5. Two film-library centres were furnished with films. A vehicle for each centre is recommended to transport the cinema film to all schools.

6. A project was suggested to establish a Higher Teacher's Training College with the assistance of UNESCO under the U.N. Special Fund.

7. The expert was always ready to give advice to the Ministry of Education whenever requested to do so.

V. (a) SUMMARY OF RECOMMENDATIONS

1. Any radical changes in the plan of study and the curricula of science during the next few years is unnecessary.

2. The preparation of the remaining Libyan Science textbooks is essential and should be done with the least possible delay.

3. The science textbooks which have been prepared, should be revised before they are republished.

4. Primary schools should be equipped with science laboratories with adequate space for gardening.

5. Training of all teaching staff and laboratory assistants should be given in summer courses for some years.
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