United Nations Educational,
Scientific and Cultural Organization

IRAQ

EDUCATION IN TRANSITION

NEEDS AND CHALLENGES

2004

Cover:

The Shahid Jamal Tahir Preparatory School for Girls. Constructed by UNESCO

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MAP OF IRAQ

Map No. 3835 Rev. 4 UNITED NATIONS
January 2004

Department of Peacekeeping Operations
Cartographic Section

Foreword

UNESCO's cooperation with Iraq dates back to the Organization's earliest years, when a solid partnership was developed in all the fields of its mandate. Over the past decades, UNESCO programmes in Iraq have been founded on the country's rich history, cultural heritage and impressive human capital. The emphasis on capacity-building has enabled Iraq and UNESCO to work towards a common vision of national development and to consolidate close working relations.

Prior to the period of the Gulf War and subsequent economic sanctions, the country had one of the best performing education systems in the region. During the country's difficult years, UNESCO supported the national effort to ensure the continuity of the education system and maintain the high quality of the education programmes.

Immediately after the recent conflict and the demise of the Ba'ath regime, UNESCO prepared a situation analysis of education in Iraq (2003), based on the experience and information it had gathered over many years. This document was particularly useful to the Iraqi authorities and the international community for reviewing the state of education in Iraq and preparing the initial international response in support of its reconstruction.

UNESCO assisted the Ministry of Education and the Ministry of Higher Education to complete the school year 2002/2003, thereby reassuring parents and students that they could look forward to a return to normalcy and peace. During this critical phase, support was provided for end-of-year examinations and for preparing the new school year. To this end, transport, materials and revised textbooks in the fields of mathematics and science were provided. Similarly, girls' education was emphasised by the completion of a model secondary school for girls in a densely populated area of Baghdad, adapted to the local environment and climatic conditions. The Ministry of Education was further assisted by the establishment of a database on secondary education and the provision of technical equipment to process and manage this data.

At the level of higher education, international donor support was mobilized through the creation of the International Fund for Higher Education in Iraq, with the initial contribution of $ 15 million from Qatar.

During this period, Iraqi officials from the Ministry of Education and the Ministry of Higher Education visited UNESCO Headquarters to convey directly their immediate concerns. Given the education system's wide range of needs and competing priorities, UNESCO undertook a needs assessment immediately after the conflict, with the generous financial support of the Japanese Government.

The results of the needs assessment were made available immediately to the national authorities in order to assist them in preparing the basic data required for priority development projects and the new school year. The needs assessment has identified critical backlogs and gaps to overcome in order to enable the Iraqi

education system to reach its previous levels of quality and comparable international standards.

Working within the UNDG framework, UNESCO invites the international community to contribute actively to the national reconstruction effort by mobilizing the resources required for meeting these priority needs. Recognizing the importance of education in the national reconstruction effort, particularly with regard to the catalytic role of education in consolidating the peace process, national unity and democracy, I am confident that the international community will not disappoint the expectations of the Iraqi people.

For its part, UNESCO will continue to give high priority to educational programmes and projects aimed at national reconstruction and development, with particular regard to achieving the EFA goals.

Koïchiro Matsuura
Director-General of UNESCO

PREFACE

The renewal of education is one of the highest priorities in the process of national reconstruction and peace building. Access to learning and education brings hope and structure to the lives of young people, and sets the minds of their families at rest, provided that the quality and conditions of learning are satisfactory. Equally, the needs of the nation for well-educated manpower must be met. A national participatory approach to educational policy formulation and programmes provides an opportunity for dialogue and consensus-building between the various stakeholders and sections of the community, thereby consolidating national unity.

Given the acute shortage of reliable data on the basic needs of the education system and institutions in Iraq following the conflict in spring 2003, UNESCO undertook a survey of the priority needs in the fields of secondary, vocational and higher education, together with teacher training. This exercise was accompanied by national capacity building through the training and participation of national staff of the Ministry of Education and the Ministry of Higher Education and Scientific Research and the institutions concerned in survey design, implementation, data processing, analysis and interpretation.

The field survey was carried out during the period July-September 2003 by a team of consultants, supported by UNESCO staff, both in Iraq and at Headquarters. They worked in close collaboration with the staff of the Ministry of Education and the Ministry of Higher Education to design questionnaires on the status and needs of education institutions in secondary and higher education. Training workshops were organised for the survey team to collect data from heads of schools, university colleges and institutions in the various governorates. The actual data collection took place essentially in August 2003.

The wider reaches of the study, such as extensive field visits to schools and interviews with key informants, were constrained by the worsening security situation. This situation also meant that data processing had to be undertaken outside Baghdad, -initially in Northern Iraq, and then outside the country, which complicated considerably data verification as well as processing. Nevertheless, the database for schools was made available immediately to the Ministry of Education, to assist it the preparation of its own education situation analysis.

Besides the information already made available to the two Ministries and education institutes, the raw data in the form of questionnaires (partly Arabic, partly English) has been stored at UNESCO and will be available for further research. The large amount of data collected, particularly relevant to higher education, constitutes a rich source of information which still needs to be fully exploited. As part of the capacity building, the survey teams were provided with ICT equipment to facilitate their task and reinforce the capacities of the concerned Ministries.

The findings of the survey are summarised in the pages that follow. Data is provided on general secondary education, vocational secondary schools, teacher training institutes, universities and technical institutes. It is clear that the needs of these institutions are great. The conflict and subsequent looting led to many institutions being deprived of basic teaching-learning equipment and materials required for a proper learning environment. Likewise, the earlier years of under-funding of the sector due to economic sanctions have left their impact. Schools were without sufficient textbooks, teachers were unable to earn a

subsistence wage, in-service training was minimal and equipment and buildings deteriorated without proper maintenance.

Although there were some discrepancies in the data reporting from certain areas due to difficult access, logistics and security problems, the prevailing picture is one of acute shortages and urgent needs. Most of the education institutions require physical rehabilitation, furniture, equipment and materials for the teaching of science, technology, other practical subjects, and replenishment of libraries. In-service training for teachers, who had long been cut off from the outside world, including access to international journals, textbooks as well as internet communications, remains a prerequisite for the introduction of innovative practises and changes into the education system. Teacher trainers need to be exposed to the nature of active learning, student-centred education, and practice in critical, creative and caring thinking as a foundation for responsible citizenship.

The curriculum, likewise, has been static and limited by political constraints. Renewal of curriculum and textbooks is an urgent challenge, with a need for updating, especially in the sciences and technology, and infusion of the values of peace and human rights, respect for others, active citizenship and democracy. UNESCO, along with other organisations, has already contributed to the process of textbook revision, in order to meet the acute needs of the schools. However, the larger task of comprehensive curriculum and textbook renewal remains a major challenge for the coming years. Curriculum experts and textbook writers need to meet with their colleagues from countries which have faced post-conflict reconstruction as well as with the broader international and regional community in order to benefit from developments in these fields.

The Iraqi education system is generally soundly structured with committed national staff. Recent salary increases have improved staff motivation. However the management and governance issues will need to be addressed, and resources will be required for updating skills and promoting modern management and administration processes. Exposure of policy-makers to modern educational planning and management structures and procedures constitutes a key element for the renewal of the education system in general.

The present report is offered both to Iraqi educators and to the international community, with the hope that it will assist them in the preparing for the educational renewal in the country and mobilizing the required support. Although considerable progress has already been made in this renewal process under national leadership, the backlog and gaps to address, in basic needs, are still enormous.

The findings and recommendations of this survey present a comprehensive picture of these priority needs, which have to be addressed if the education system in Iraq is to contribute effectively to restoring peace and reconstruction, and to rekindling the culture of learning to a people who have historically been at the forefront of civilisation.

Mir Asghar Husain
Director,
Division of Educational Policies and Strategies
UNESCO

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ACKNOWLEDGMENTS

This survey of the needs of secondary and higher education in Iraq was undertaken in a particularly difficult environment given the deteriorating security situation and limited access to many education institutions in the immediate aftermath of the conflict. It is through the dedication of the national staff supported by the UNESCO team that the exercise could be completed. The extensive coverage of the education institutions would not have been possible without the perseverance and ingenuity of the survey team, who overcame the numerous obstacles they were confronted with. The period of the survey thus took longer than what had been originally programmed. Many of the surveyors, especially those in higher education institutions, went out of their way to provide information over and above that required by this exercise.

Without the help and cooperation of an array of these distinguished individual educators and institutions, the report could not have been completed. Special thanks are due to the Iraqi educators who participated as facilitators, focal points, monitors and respondents, for their enthusiasm and commitment. The staff of the Ministry of Education (MOE) and the Ministry of Higher Education and Scientific Research (MHESR) at central and local level spared no effort throughout the whole exercise

We also thank the Coalition Provisional Authority (CPA) and the Education Advisers for their cooperation.

Special thanks go to our survey team of chapter writers, database experts, and consultants as well as to the advise and support of the members of UNESCO's component of the Oil-for-Food Programme in Iraq: Tsagga Worku, S.A. El-Amrani, Mohamed Djelid, Suleiman Abdullah, Paul Agachi, Nestor Reyes Balmores, Sylvia Carpenter, Michael Croft, Martin Dewaele, Ahmed Ferej, Toku Hirasawa, Joseph Koech, Azzouz Mouzdahir, Adeeb Munim, Tin Tun Myint, Didier Pech, Anwar Said, Claude Sauvageot, Peter Schioler, Baerbel Stark, Mourad Zmit. We would also like to thank the UNESCO Office in Amman for its assistance and logistic support during the troubled period under which the survey took place.

A special appreciation goes to Dr. Margaret Sinclair, whose patience and diligence enabled us to finalize this report.

We are particularly grateful to the Government of Japan for its timely financial support and encouragement in this challenging exercise. The encouragement and assistance enabled us to adapt the project's implementation to the rapidly evolving local situation.

ABBREVIATIONS AND ACRONYMS

ALESCO	Arab League Educational, Scientific and Cultural Organization
BA	Bachelor of Arts
BS	Bachelor of Science
CPA	Coalition Provisional Authority
CTE	Commission for Technical Education
DG	Directorate General
EMIS	Education Management Information System
FAO	Food and Agriculture Organization
GER	Gross Enrolment Ratio
GPI	Gender Parity Index
HEMIS	Higher Education Management Information System
ICT	Information and Communication Technology
IDPs	Internally Displaced Persons
ITE	Independent Technical Evaluation
MA	Master of Arts
MHESR	Ministry of Higher Education and Scientific Research
MOE	Ministry of Education
MS	Master of Science
NGO	Non-Government Organization
OCE	Open College of Education
OFFP	Oil-for-Food Programme
OIP	Office of the Iraq Programme
TTI	Teacher Training Institute
TTC	Teacher Training College
Ph.D.	Doctor of Philosophy
SCR	Security Council Resolution
SC	Save the Children
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Emergency Fund
UPS	Uninterruptible Power Supply
USAID	United States Assistance for International Development
WFP	World Food Programme
WHO	World Health Organization

EXECUTIVE SUMMARY

This report is the output of a needs assessment survey on the education sector in Iraq conducted by UNESCO in cooperation with government officials in July – August 2003. The assessment was designed to assist the Iraqi government in developing a medium-term perspective for the renewal of the education sector in Iraq.

A. The Needs Assessment Survey

The survey was undertaken in close collaboration with the Iraq Ministry of Education (MOE) and Ministry of Higher Education and Scientific Research (MHESR). Iraqi educators participated in all stages of the process, including finalization of questionnaires, their distribution and completion. It is important to note that the survey was conducted in a climate of very serious security problems, which prevented the UNESCO team from visiting most of Central and Southern Iraq. UNESCO specialists visited and interviewed key education staff in representative schools and institutions of higher education in the vicinity of Baghdad and in Northern Iraq.

UNESCO organized training workshops on the survey methodology and administration of the questionnaires. The poor security situation did not allow for many follow-up visits, and a few returned questionnaires were therefore unsuitable for processing. A total of 4,424 questionnaires completed by institutions at secondary level were entered into the database. In higher education, questionnaires were returned by some 200 university colleges and 46 technical institutes.

B. Status and Needs: General Secondary Education

General secondary education in Iraq (UNESCO survey data, 2003)

- 4,042 general secondary schools (51% Intermediate level, grades 7-9; 38% 'Secondary' (grades 7-12), 11% Preparatory (grades 10-12)
- 49% boys schools, 33% girls schools, 18% co-educational
- 48% single shift, 50% double shift, 2% triple shift
- 1,443,436 students (boys 62%, girls 38%)
- Gross Enrolment Ratio: 40% (boys 49%, girls 31%)
- Teachers: 76,216 (41% male, 59% female)

Secondary education was severely affected by the conflict and its aftermath, as well as the impact of 12 years of economic sanctions. There is therefore an urgent need for a massive rehabilitation programme, as indicated in the following areas and subjects:

1. Need for improved access and quality. The survey showed that about 40% of the age group 12-17 were attending general secondary school, as indicated by the Gross Enrolment Ratio (enrolment in proportion to the corresponding age group). Participation was higher at

the Intermediate level (grades 7-9), with a Gross Enrolment Ratio of 57%, than at Preparatory level (grades 10-12), for which the ratio was 23%. The enrolment of girls was less than that of boys, with almost one-third of girls enrolled in general secondary school (Gross Enrolment Ratio of 31%) as compared to almost half of boys (Gross Enrolment Ratio of 49%). This reflects the impact of economic and social factors as well as physical access to schooling and its quality. Action is needed to promote participation in secondary schooling, minimise drop out and establish gender parity. Immediate concerns include providing secure access to schools and improved quality of education, through in-service training for teachers, renewal of curricula and textbooks, improved supplies of teaching-learning materials, rehabilitation of school buildings and utilities, and school transport where needed.

2. In-service teacher training. Teachers nearly all held university degrees (98%), but most had not attended in-service training in recent years. Moreover, teacher trainers themselves have often had limited exposure to modern teaching methods and pedagogy, as well as limited access to recent publications in their respective fields of specialisation. A massive programme of in-service teacher training is needed, linked to the renewal of school curricula and textbooks; including seminars and visits for teacher trainers to give them the opportunity to study international experiences and approaches in the field of pedagogy and subject teaching methodologies. Given the challenges facing the education system at this time, in-service training in school management and modern teaching methods may be developed for the 4,042 secondary school head-teachers.

3. Renewal of curriculum and textbooks. There is an urgent need to revise and update the textbooks currently in use, and distribute them in adequate quantities. As soon as possible, there is a need for a process of curriculum renewal, based on modern pedagogy, leading to the development and progressive introduction of a new generation of textbooks and other teaching-learning materials. Seminars and international study tours and fellowships for curriculum experts and textbook writers are a high priority, so that they may gain acquaintance with international developments in these areas.

4. Improved supplies of teaching-learning materials. The survey showed an acute shortage of teaching-learning materials. The total number of secondary school textbooks in all subjects combined (1.7 million) was barely greater than the number of students (1.4 million) in general secondary education. Yet at this level, students need to study texts in the full range of their school subjects. Since textbooks are a key tool of quality education, including home study to follow up the school lessons, the situation needs urgent action, and there should be a target of one textbook per subject per student.

5. Rehabilitation of school infrastructure. The survey documented the shortage of accommodation for schools. Only 48% of schools operated on a single shift basis, while 43% shared a building with another school, on a double shift or occasionally a triple shift basis. Few of the buildings were in good condition, with 47% partially damaged, 23% in very poor condition and 10% totally unsafe. More than half the schools were without access to running water and few had well-functioning sanitation. Power supplies were irregular or lacking: most schools were in fact connected to the grid but lacked the needed standby generators. The latter should be installed in all school premises. A major programme of rehabilitation of buildings and utilities is required. This should be linked to a school mapping exercise that will take account also of the need to phase out multiple shifts.

6. Provision of special workrooms. The survey showed that most schools lacked access to the required specialist classrooms. The assessment of requirements is complicated by the shift system. However, at a minimum the school premises currently in use need to be provided with about 7,000 science laboratories, 3,000 computer laboratories, 3,000 language laboratories, 2,500 library rooms, and 3,000 gymnasia for physical education.

7. Provision of equipment, furniture and materials. Secondary school heads expressed the need for computers and audio-visual aids, since stocks of such equipment had been limited due to sanctions and had been targeted by looters during the events of March/April 2004. The needs assessment concludes that at a minimum sets of 10 (or better 20) up-to-date computers and ancillary equipment be provided at the approximately 3000 school premises, together with at least one overhead and slide projector, TV/VCR, and two heavy duty photocopiers in each location. Specialised equipment is required for school science and libraries at each location. Transportation facilities are also needed to ensure access for young people living in villages distant from a secondary school, especially for girls. School furniture is required especially for the premises severely affected by war damage and looting.

C. Status and Needs: Secondary Vocational Education

Secondary vocational education (grades 10-12) is provided through 231 vocational schools located in 18 governorates: 131 Industrial, 34 Commercial, 9 Agricultural, 2 Household Science, and 55 'Vocational' schools. The schools accommodated 73,941 students, of whom the majority were boys (82%). There were 4,604 teachers, evenly divided between men and women. Some 8% of the staff were under-qualified, holding less than a bachelor's degree, and most had not benefited from in-service training in recent years. Operational problems were similar to those for general secondary education: 39% of buildings were stated to be badly damaged or unsafe, and there was widespread use of multiple shifts. There were insufficient laboratories and workshops, teaching-learning materials were scarce, and the curriculum and textbooks needed renewal.

The survey revealed the need for measures similar to those for the renewal of general secondary education. These measures should be set within the framework of a strategy to link secondary vocational education to the demands and opportunities of the labour market. A labour market study is recommended, to ensure that investments in the sub-sector yield the maximum benefit and to attract capable staff and students.

D. Status and Needs: Teacher Training Institutes

The training of teachers for primary schools is undertaken mainly through Teacher Training Institutes (grades 10-14) and Central Teacher Institutes (grades 13-14), which are under the management of the Ministry of Education. Additionally, primary school teachers are trained in the 'teachers' colleges' at the universities. The 108 Teacher Training Institutes and 28 Central Teachers Institutes which participated in the needs assessment accommodated 52,891 students, of whom 65% were girls. The institutes had some 2,705 staff, of whom half (51%) were women. Most of the staff had not participated in-service training in recent years. Operational problems included the poor condition of buildings and the use of multiple shifts. Textbooks had to be shared.

Renewal of teacher training will require infrastructure repairs, provision of specialised laboratories, libraries, etc., and supply of equipment and materials, as for general secondary education. A special programme will be needed to enable the staff to update their subject matter knowledge as well as strengthening their knowledge and experience of modern child-centred pedagogy. Curriculum renewal for these institutions should incorporate both study of modern teaching methods and their utilisation in the teaching-learning process. Enhanced provision for practice teaching and its supervision may require procurement of vehicles for these institutions.

E. Status and needs: Higher Education

Higher education in Iraq (UNESCO survey data, 2003)

- 20 universities, 37 technical institutes, 9 technical colleges
- 201 university colleges
- 251,175 university students (42% female) and 65,908 students in technical institutes/colleges
- 19,112 staff (43% female) in universities and 2,837 in technical education
- 28 university research centres
- 5 universities in Baghdad enrol 47% of all students

Participants at the stakeholders' meeting on higher education emphasised their aim of re-establishing a system that is up to international standards. The following requirements must be met if these objectives are to be achieved:

1. Strengthening capacity for policy formulation, planning and management. Policy review and the formulation of a national vision for future development are needed, through involvement of key stakeholders, as well as at the level of individual universities and institutes.

2. Improving quality: designing and implementing a faculty development and exchange programme. The assessment confirms the repeated demand for faculty development. One-third of university staff (over 6,000) hold only a bachelor's degree (over 6000) and as do half the faculty of technical institutions (almost 1,500), and need to extend their studies through seminars, conferences, short courses and as soon as possible through formal postgraduate studies. Selected staff with master's degrees need the opportunity to proceed to doctoral studies, preferably abroad, and with thesis topics related to the current priorities for the social and economic progress of Iraq. Professional development also entails a transformation of teaching methods. Senior staff should have access to fellowships for study visits abroad as well as access to recent literature in their specialist fields. The creation of a 'mobility fund' for academic exchanges, within the MHESR and/or individual academic institutions, would enable and accelerate the participation of Iraqi academics in a large variety of international activities (research networks, professional conferences, training for young scientists, etc). These various professional development activities should be arranged on a gender-equitable basis. A supporting step is to restore access to the international community of scholars through access to journals, textbooks and monographs, in print and virtual form

3. Improving quality: renewal of curricula, teaching-learning materials and teaching methods. The education authorities at national and institutional level can facilitate curriculum renewal in higher education by constituting study groups, panels, etc., to review curricular options for different subject areas on an inter-institutional basis. These panels may also review the existing textbooks and other teaching-learning materials in current use, those in use in the region and those available internationally. Based on these reviews, plans can be made for textbook revision or the writing of new textbooks with a modern perspective for the various types of course and years of studies. The new curricula would need to take account of modern pedagogical approaches.

The values framework of human rights and civic responsibility should be reflected in the content and method of studies, as well as in the management of the universities and institutes (the 'hidden' curriculum). The establishment of a UNESCO Chair of Human Rights may be considered. Workshops on these topics. Incorporating skills such as conflict resolution and interpersonal life skills might help staff and their students cope with psychosocial problems arising from the conflict, insecurity and the rapid pace of societal change. The environmental and social dimension may be introduced in the teaching of science, engineering and technology.

4. Improving quality: ICTs in support of higher education. ICTs offer the opportunity to bridge the information gap through virtual libraries and use of the internet. It will be important to ensure the interconnection of the universities (academic intranet) and their access to the internet. It will be necessary to provide computer laboratories and tuition in basic computer skills for all staff and students in higher education institutions.

5. Improving quality: provision of books, equipment and furniture. There is a deficit of some 31 million books in Iraqi higher education if the universities and institutes are to meet international standards of 100 per student (present stocks are less than one million). Procurement of textbooks and replenishment of libraries, supported by the equipment needed for their proper functioning, is a high priority. There is an urgent need to revise and update key textbooks used in undergraduate courses. Access to virtual texts is important for modernising courses of postgraduate studies and for research. Support for the refurbishment and equipment of the specialist libraries at the Iraq Academy of Sciences in Baghdad would provide an in-country resource that can be consulted by Iraqi scholars and permit the resumption of publication of Iraqi journals.

The universities and technical institutes need computers (some 60,000 for the universities, of which 23.000 are needed urgently, and at 2000 for the technical institutes). Accessories such as software and CD-ROMs are required, as well as hardware and related equipment such as heavy-duty photocopiers for reproduction of teaching learning materials. Audiovisual aids and general office equipment are required by most institutions. Almost every college and institute requires updated equipment for their respective fields of study, together with furniture, in those institutions that have been looted.

6. Strengthening the culture of research. Resources will be needed for research and development work to support the process of social and economic renewal. Decisions will be needed on research specialisations at different academic institutions, drawing on special competencies and centres that are already present, together with methods for coordination and communication between these institutions.

7. Quality assurance. Steps are needed to strengthen assessment and quality assurance activities at national and institutional level, so that courses can be recognised as of international standard.

8. Rehabilitation/reconstruction of infrastructure. The study classified needs in this area into three categories: rehabilitation and/or reconstruction of severely damaged buildings; rehabilitation of moderately damaged buildings, such as those which were vandalised and looted; and restoration of buildings that have suffered from lack of maintenance and repair over the period of economic sanctions. Prioritisation of infrastructure replacement, reconstruction or rehabilitation will be a major task for higher education managers in the years ahead.

F. Capacity building for education policy formulation, planning and management

Given the vast challenges facing the education sector and its management, it will be important to build capacity within the Ministry of Education and Ministry of Higher Education as well as the individual institutions in the fields of education policy formulation, structural analysis, planning, management and education management information systems (EMIS). UNESCO, through its International Institute for Education Planning (IIEP) and regional services, can provide training in these areas.

1. INTRODUCTION

Iraq has strong educational traditions, dating back to ancient times, and its education system was considered to be one of the most advanced in the region as recently as the 1980s. The education system remains strong, thanks to the dedication of its teachers and managers, despite the negative effects of economic sanctions, which during the 1990s led to a deterioration in infrastructure and shortage of teaching-learning materials. The conflict in March–April 2003 led to further deterioration of the infrastructure, as well as loss of equipment and materials due to looting.

The situation before March 2003 was documented by UNESCO in a report entitled 'Situation Analysis of Education in Iraq'. The present report complements this study, by documenting the status of the education sector after the conflict, based on a needs assessment survey conducted in July-August 2003.

1.1. The Needs Assessment Survey

In June 2003, UNESCO drew up plans for a capacity-building project for the education sector in Iraq, incorporating a needs assessment survey. This Japanese-funded project had three major objectives:

- To create a database for education at secondary and tertiary levels at the end of the academic year 2002/2003 and to identify priority needs for the reconstruction and renewal of the education sector

- To enhance the capacity of Iraqi educators in developing survey questionnaires, survey management, data processing and analysis, and developing projects

- To supply basic equipment such as computers and printers to support the needs assessment and subsequent data management.

The survey was undertaken in close collaboration with the Ministry of Education (MOE) and the Ministry of Higher Education and Scientific Research (MHESR). Iraqi educators participated in all stages of the process, including the finalization of the secondary and higher education survey questionnaires. National educators were hired to oversee the distribution of questionnaires and to coordinate with school head-teachers and deans of colleges, who were responsible for completing the questionnaires. Training workshops were held for the supervisors and the focal points managing the distribution, completion and collection of questionnaires. Opportunities for interviews and field visits by the UNESCO team were unfortunately limited by security constraints. Despite these constraints, however, a high proportion of secondary and higher education institutions returned completed questionnaires.

1.2. Methodology

1.2.1. Coverage

The needs assessment survey covered secondary education, including general secondary schools, vocational and teacher training institutions, and higher education, comprising the public universities and technical institutes. Research institutes and private colleges were not covered. The survey covered all 18 governorates.

1.2.2. Respondents

The respondents were the head-teachers of general secondary schools, vocational secondary schools and teacher training institutions, deans of university colleges and heads of technical institutes.

1.2.3. Organization of the survey

The development, administration and retrieval of the survey questionnaires were undertaken through the structures of the MOE and the MHESR, under the overall coordination of two Needs Assessment Steering Committees established for this purpose.

Assisting the Steering Committee for the secondary school survey were 21 monitors, who were mostly statisticians and former Oil-for-Food Programme education escorts. Their responsibility was to coordinate the administration of the survey at governorate level. They worked with 42 focal points, mainly education planners and senior subject supervisors, whose responsibility was to coordinate with subject supervisors and school head-teachers regarding the implementation of the survey at the school level.

In higher education, 23 higher education focal points coordinated the implementation of the survey, working with 238 enumerators whose responsibility was to monitor the completion of the questionnaires by the deans of colleges and technical institutes.

1.2.4. The Survey Questionnaires

Two sets of survey questionnaires were prepared, one for secondary education and another for higher education. Data was collected on students, teachers, curriculum, textbooks and other teaching and learning materials, condition of the infrastructure, etc. These parameters were chosen to indicate the level of access and participation of students, the quality of teaching-learning and the capacity of the education system.

Iraqi educators participated in the development of the survey questionnaires. The draft questionnaires were developed with members of the concerned Steering Committee, taken into account questionnaires previously used by the Ministries.

Workshops were conducted in order to widen the participation of Iraqi educators in the development of the survey questionnaires. In secondary education, the second draft was presented and discussed in a workshop that was attended by 42 focal points and 21 monitors from the MOE. In higher education, the draft was discussed with 23 higher education focal points, composed mostly of deans and directors. A separate workshop was conducted with 22 deans from the technical institutes. Comments and suggestions from the workshops were incorporated in the draft questionnaires, which then were pilot tested.

1.2.5. Pilot Testing

For the secondary education questionnaire, pilot testing was undertaken in two representative schools. In higher education, the survey questionnaire was pilot tested at the Technical Institute for Medical Technology. The focus was on identifying questions that were not clear to respondents and questions that they had difficulty in answering. The time taken to complete the questionnaire was also noted. The feedback from pilot testing was used to finalize the questionnaires.

1.2.6. Administration of the Survey Questionnaire

Before the survey questionnaires were distributed to the schools/colleges, another workshop was conducted with the focal points and monitors for both secondary and higher education, aimed at building their capacity to coordinate the administration of the needs assessment questionnaires. The workshop was repeated with the 416 secondary education supervisors who were to monitor the completion of the questionnaires by secondary school head-teachers. In higher education, a similar workshop was conducted with the 238 enumerators who were to monitor the completion of questionnaires by deans of colleges and technical institutes.

Data collection was conducted simultaneously in all the governorates during the first three weeks of August 2003. All governorates were provided with an adequate number of secondary education questionnaires for secondary, vocational and teacher training institutions and higher education questionnaires for universities and technical institutes. The number of completed questionnaires that were returned by secondary level institutions was more than 4,500. Completed higher education questionnaires were returned by 195 colleges and 49 technical institutes.

1.2.7. Interviews

UNESCO specialists conducted interviews with key informants from the education sector, complementing the quantitative data gathered from the survey questionnaires. Qualitative information about the education sector was asked from MOE and MHESR officials, including key staff from the ministry directorates, university presidents, college deans, heads of technical institutes and some head-teachers.

1.2.8. Data Entry

Security constraints meant that data entry could not be undertaken in Baghdad as originally planned. It was contracted to a database company in Erbil, Northern Iraq. Data entry specialists in Amman continued the work when the UNESCO Needs Assessment Team was relocated to Jordan because of security problems. Key data was verified by checkers after the operation was transferred to UNESCO headquarters in Paris. The database was created in Microsoft Access.

1.2.9. Analysis of Data

The data was analyzed using statistics and indicators, covering elements such as type of school, student enrolment, gross enrolment ratios, teacher characteristics, student/teacher ratios, availability of teaching-learning materials, furniture and equipment, school buildings and utilities.

The quantitative data was complemented by qualitative information based on interviews with key personnel of the MOE such as directors, educational planners and statisticians,

educational supervisors and head-teachers; and, in higher education, with some key MHESR officials, university presidents and vice-presidents, deans and directors and some faculty members.

1.2.10. Limitations of the Study

The survey was conducted inside Iraq while the country was beset with security problems, which prevented the needs assessment team from visiting affected regions. UNESCO specialists were only able to visit and interview key education personnel in representative schools and universities in the vicinity of Baghdad and Northern Iraq. The South was not visited but the survey team received information from ministry personnel working in the area.

Given the problems on the ground, the survey had various limitations:

- Not all the questionnaires that were returned were suitable for processing. In some cases, certain questions were not answered and in some, the answers were inconsistent.

- The assessment of damage to infrastructure and of future needs relied on the respondents' answers to specific items in the questionnaires. However, UNESCO specialists and architects could only verify some information through schools visited in regions where travel was permitted.

- Qualitative interviews were conducted with educators only in locations to which the specialists had access. UNESCO specialists were able to visit a few representative schools in Central Iraq and 5 universities in Baghdad, as well as educational institutions in Northern Iraq.

1.3. Need for Post-Conflict Reconstruction Strategy

The daunting task of rehabilitating the education sector began with the resumption of classes at all levels after the war, to ensure completion of the academic year 2002-2003. The annual ministerial examinations at the primary and secondary levels and the annual examinations in the universities and technical institutes were conducted as a result of efforts of Iraqi educators, supported by their international colleagues. These initial efforts were extremely important in meeting the aspirations of students, their families and education staff.

The process of rehabilitation and reconstruction of Iraq's education sector needs to be anchored on the country's long educational history as well as on the emerging political, social and economic order. The strategy, therefore, must be based upon the strengths of the country's past as well as the plans for its future. Data from the survey reported here can assist in developing an action plan for the renewal of the education sector of Iraq.

The following chapters indicate the findings of the analysis for each of the sub-sectors of education included in the survey. Based on these sub-sector reviews, a brief overview is presented of problems and issues confronting the education authorities in

their efforts to rebuild and renew the system. Finally, some suggestions are offered regarding key needs for educational rehabilitation, reconstruction and renewal.

The information gathered by the survey was made immediately available to the Ministries of Education and Higher Education as it was being processed. It thus served to build up their own database. Since the Ministries were fully committed to ensuring the functioning of basic services their demands for complementary data unexploited by the survey led us to proceed with detailed analysis in specific areas of their concern. This exercise delayed the finalisation of the report. The report presents an overall analysis and tables which should prove helpful to policy makers and development cooperation partners. The overall data collected, however constitutes a rich base for researchers and those interested in a deeper analysis of the education system and its needs. It is archived at UNESCO and the Ministries of Education, and Higher Education, Baghdad

2. BACKGROUND TO THE ASSESSMENT

The Iraqi education system was among the best in the Arab region for many years, and has shown its resilience, despite the resource constraints since 1990 and the effects of the recent conflict. It has a well-developed network of schools and institutions of higher education. The present chapter provides an overview of the education system, setting the context for the presentation of the survey data and assessment of the current situation.

2.1. Demographic Structure

The education system caters to a national population of some 25 million. At least 95% of the population adheres to Islam. Arabic is the official language and the mother tongue of about 76% of the population. Kurdish is spoken by the Kurds in Northern Iraq, and other languages are used by small minority groups.

Iraq's population of secondary school age (12 – 17 years old) is about 3.5 million. The distribution of the 12 – 17 school-age population by governorates is shown in Table 2.1. The number of children aged 12 – 17 years was highest in Baghdad (19%), Ninewa (9%) and Babylon (7%), and lowest in Muthanna (2%), Tameem (3%) and Missan (also 3%).

Table 2.1. Distribution of Population Aged 12-17 Years, by Governorate

	Governorate	Male	Female	Total	Percent
1	Anbar	92845	88911	181756	5.1
2	Basrah	105454	100986	206439	6.0
3	Muthanna	38243	36622	74865	2.1
4	Qadissiya	58354	55881	114235	3.2
5	Sulaymaniyah	121420	116276	237696	6.7
6	Babylon	127649	122241	249889	7.0
7	Baghdad	344235	329650	673886	19.0
8	Dahuk	61429	58827	120256	3.4
9	Thi-Qar	110820	106125	216945	6.1
10	Diyala	105037	100587	205623	5.8
11	Erbil	103134	98764	201898	5.7
12	Kerbala	65961	63166	129127	3.6
13	Tameen	53717	51441	105158	2.9
14	Missan	53144	50892	104036	2.9
15	Ninewa	165302	158299	323601	9.1
16	Wassit	60438	57877	118315	3.5
17	Najaf	69972	67008	136980	3.8
18	Salah Al-Din	80445	77037	157481	4.4
Total		1817598	1740588	3558186	100

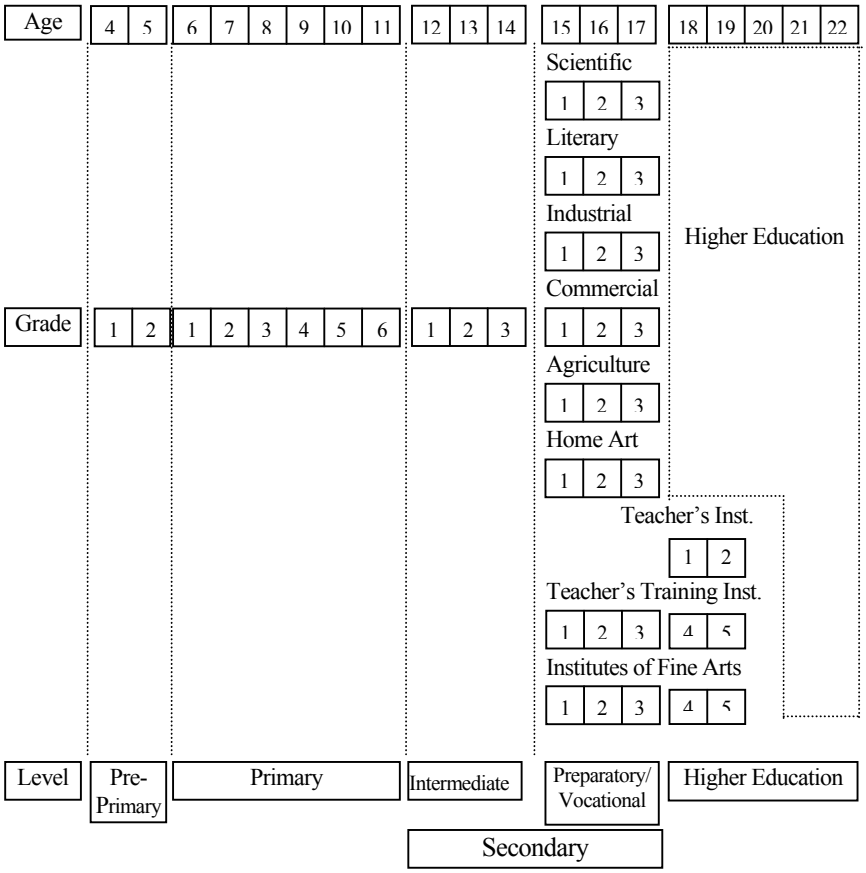
Source: Based on UN population estimates.[1]

[1] Based on the UN population estimate for 2002 of 25,214,293 (12,792,100 males, 12,422,193 females). Coefficients for calculating single year age groups were estimated using earlier UN demographic data for Iraq. Coefficients for calculating the governorate distribution were estimated on the basis of population data by governorate for the age-group 6-11, made available to the UNESCO Education for All team in 1999.

2.2. Structure of the education system at the time of the survey

Under Iraq's Provisional Constitution of 1970, the state guarantees the right to free education at all levels – primary, secondary, post-secondary and university – for all its citizens.[2] Primary education (grades 1-6) is compulsory, and universal literacy is a key goal. Secondary education is divided into 'Intermediate' (grades 7-9) and 'Preparatory' (grades 10-12) levels. These educational programmes are managed by the Ministry of Education, which is also responsible for vocational schools (grades 10-12) and teacher institutes (grades 10-14 or 13-14), and for the Open College of Education. The Ministry of Higher Education and Scientific Research is responsible for the higher education sector, comprising universities and technical institutes (grades 13 and above).[3]

Figure 2.1. The Educational Ladder in Iraq According To Age and Grade



Source: Educational Research and Study Centre of MOE of Iraq: The Development of Education, National Report on Iraq, Baghdad, 2001

Official statistical data for national education programmes in the academic year 2002/2003 are not available, since the Education Ministries were damaged and looted. Official data from 2000/2001 indicated that at the turn of the century there were some 11,709 primary

[2] Ministry of Education, Iraq, "Development of Education in Iraq, 1993/94 – 1994/95," a report submitted to the 48th International Conference of Education, UNESCO International Bureau of Education, Geneva, 1996.

[3] Students who complete the vocational level may proceed to a technical institute for a 2-year higher education programme or enter a technical college or university for a 4-year higher education degree. Graduates of a teacher institute may also be admitted to a university.

schools, with some 4,031,346 students (44% female) and 190,650 teachers (about 72% female); and some 3701 general secondary schools, with some 1,291,309 students (39.5% female) and 73,989 teachers. There were some 263 vocational secondary schools, 139 teacher institutes, 19 universities and 38 technical institutes. The education system catered to almost 6 million students.[4]

2.3. Curriculum

Curriculum may be seen as a framework that helps guide the education of a student at a given level. In Iraq, the curriculum seeks to promote the full personal development of the students and to prepare them to participate in the process of social, economic, scientific and technical development, while fostering critical thinking, assimilation of new knowledge and skills, and respect for others. The curriculum has aimed at inculcating secular values while making allowance for the teaching of religions of various denominations. Emphasis has been placed on the teaching of the sciences and mathematics.[5]

Curricular changes are the responsibility of the concerned ministry. Within the MOE, the High Committee for the Development of Curricula, Teaching Aids and Examinations is responsible for planning, designing, approving and revising the curriculum. Composed of members from the Directorates of Education and subject experts from Iraqi universities, this committee also approves textbooks and teacher guides.

In higher education, universities and technical institutes develop their academic programmes, through their respective governing councils, in consultation with the MHESR. Recently, however, the MHESR established the Temporary Advisory Committee on Curricular Reform, which launched a long-term national process of reviewing and reforming curricula across all disciplines. The committee's initial task was to develop a plan to conduct a comprehensive curricular review, suggest priorities, and identify potential avenues for international support to the review and revision process.

The study plans for the secondary education level are shown in **Tables 2.2** and **2.3.**

[4] Situation Analysis of Education in Iraq: 2003 (UNESCO, Paris, April 2003). Total enrolment in 2000/2001 vocational schools was 65,750 with 7,483 teachers, while in teacher institutes there were 56,747 students, and in higher education there were 317,993 students with 14,743 teachers.

[5] As indicated during interviews with education officials.

Table 2.2. Time Allocation (class periods) for Studies in the Intermediate Cycle

SUBJECT	Grade 7	Grade 8	Grade 9
Islamic Education	3	3	3
Arabic Language	6	6	6
English Language	6	5	5
History	2	2	2
Geography	2	2	2
Civics	1	1	1
Mathematics	5	5	5
Algebra	-	-	3
Geometry	-	-	2
General Science	4	-	-
Chemistry	-	2	2
Physics	-	2	2
Biology	-	2	-
Man and Human Health	-	-	2
Art Education	2	1	1
Physical Education & Military Training	2	2	2
TOTAL	33	33	33
Family Education for Girls	1	1	1
TOTAL (for girls)	34	34	34

Source: Educational Research and Study Centre of MOE of Iraq: The Development of Education, National Report on Iraq, Baghdad, 2001

Table 2.3. Time Allocation (class periods) for Studies in the Preparatory Cycle[6]

Subject	Grade 10 General	Grade 11 Literary	Grade 12 Literary	Grade 11 Scientific	Grade 12 Scientific
Islamic Education	3	3	3	3	3
Arabic Language	5	8	8	4	4
Kurdish Language	-	2	-	2	-
English Language	5	6	6	5	5
History	2	3	3	-	-
Geography	2	3	3	-	-
Sociology	-	2	-	-	-
Economics	-	2	3	-	-
Mathematics	3	2	2	6	5
Chemistry	3	-	-	4	4
Physics	3	-	-	4	4
Biology	3	-	-	4	4
Physical Education, Military Training and Civil Defence	1	2	1	2	1
Art Education	1	1	1	1	1
National Education	1	1	1	1	1
TOTAL	32	35	31	36	33
Family Education for Girls	1	1	1	1	1
Health Education for Girls	1	1	-	1	-
TOTAL (for girls)	34	37	32	38	33

Source: Educational Research and Study Centre of MOE of Iraq: The Development of Education, National Report on Iraq, Baghdad, 2001

The basic entry requirement to higher education is the *adadiyah* (secondary-school-leaving certificate), awarded after 6 years of secondary education. Entrance to the

[6] Op. Cit., Baghdad, 2001.

various streams depends on the nature of the candidate's previous examination results and on the grades obtained in the Preparatory final examination. Some universities, such as Al Nahrain University, administer their own college entrance examination over and above the general entry requirements.

The duration of studies in higher education varies according to the fields of study. The minimum duration that leads to a Diploma is 2 years, usually offered by the Technical Institutes. The first stage of higher education leads to a Bachelor's Degree in arts, law, economics, science and engineering (4 years); architecture, dentistry, pharmacy and veterinary medicine (5 years); and medicine (6 years). The second stage leads to a Master's Degree which is offered in various fields. The degree of Doctor of Philosophy (Ph.D.) is awarded in some fields 3 years after a Master's Degree.

2.4. General Characteristics of the Education Sector

The system of education in Iraq is well established:

(a) Education has been free at all levels from primary to university education, indicating a high level of access to education.
(b) The average student-teacher ratio is relatively favourable. Moreover, nearly all secondary school teachers hold a university degree.
(c) The curriculum at the primary and secondary level has allowed the injection of local content. Universities have enjoyed relative autonomy in establishing fields of study and revising curricular content and syllabi.
(d) The MOE was represented in every governorate, and had the capacity to reach out to remote locations.
(e) A university was established in almost all governorates (except 2).
(f) Scientific research was always encouraged in the universities.

The education sector suffered serious weaknesses, however, in recent years:

(a) Levels of student enrolment were affected by an increased incidence of poverty during the period of economic sanctions.
(b) The curriculum and textbooks had become outdated and were seen as having a political bias.
(c) Structurally, the education sector was under the authority of the central Ministry in Baghdad but had two semi-autonomous ministries, in Northern Iraq, which prevented the development of a uniform set of education policies for the whole country.
(d) There was a loss of experienced teachers from the profession, because of the dramatic decrease in the value of salaries during the sanctions period, to around $5 - $10 per month.
(e) There were shortages of textbooks and other teaching-learning materials and equipment.
(f) Many school buildings and educational infrastructure were in bad condition and in need of rehabilitation.
(g) There was isolation from the international academic community, preventing access to contemporary scholarship and modern teaching methods.

These strengths and weaknesses of the education sector are reflected in the profiles of the sub-sectors discussed in chapters 3-6 below.

3. GENERAL SECONDARY EDUCATION

Secondary education in Iraq begins with an 'Intermediate' stage of general education, from grades 7 to 9 of schooling. For students completing this stage there are a range of options at 'Preparatory' level: continuation of general secondary education, joining a secondary vocational school or entering a teacher training institute. General and Vocational Preparatory schools cover grades 10 to 12, while training for the teaching profession takes either five years (grades 10-14) or two years (grades 13-14).

3.1. Brief overview of education at secondary level

As shown in **Table 3.1** below, Iraq has over one and a half million students enrolled in education at secondary level, both general and vocational, of which over half a million are girls (38%).

Table 3.1. Enrolment in different types of education at secondary level

Type of school	Total enrolment[7]	Percentage of girls
Intermediate schools (Lower secondary)	616,601	32.0%
Secondary schools (Lower and upper secondary)	608,833	43.6%
Preparatory schools (Upper secondary)	218,002	38.7%
Preparatory Vocational schools	73941	18.5%
Teacher training institutions	49,119	66.4%
Fine Arts	5,374	27.0%
Tourism Institute	139	28.1%
Total	**1,572,009**	**37.8 %**

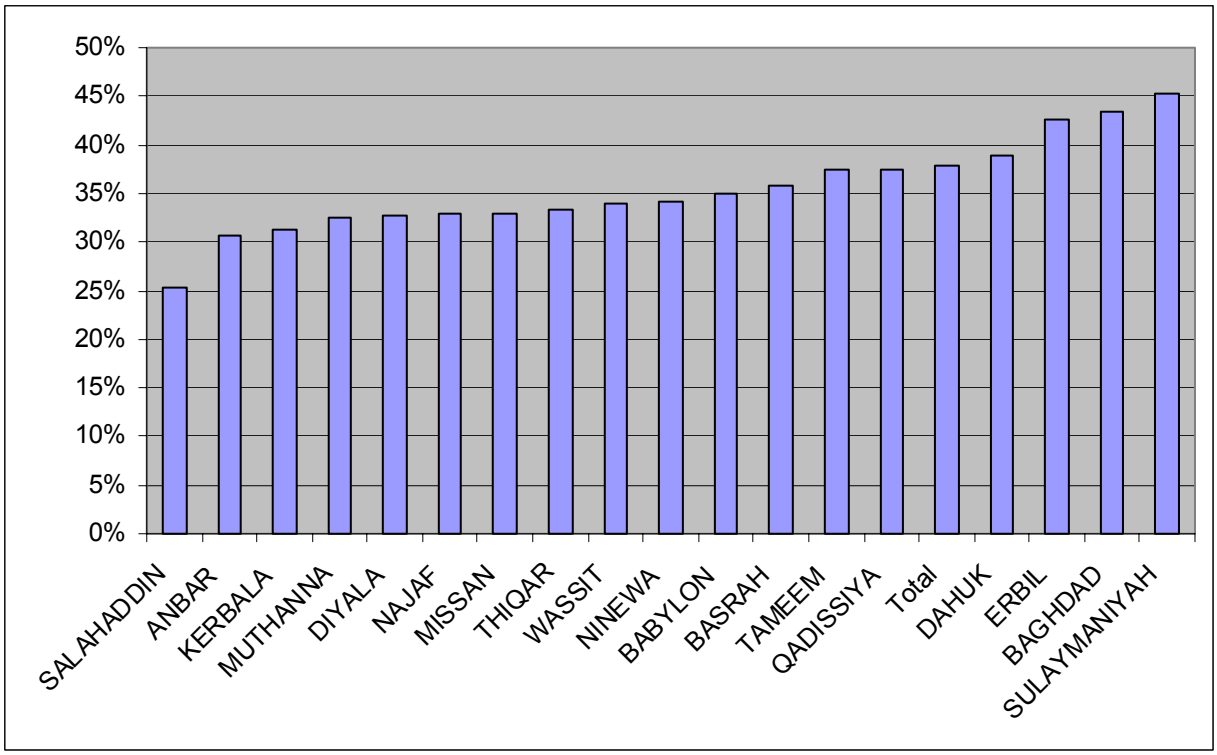
Source: Annex 1: Statistical Data for the Secondary Education Level

The UNESCO survey showed that the great majority of secondary students, -a total of 1,443,436, are enrolled in general secondary education, whether in schools that cater mainly to grades 7 to 9, -known as Intermediate schools, to grades 7 to 12, –known as Secondary schools, or to grades 10 to 12, - known as Preparatory schools. There were a further 128,573 students at secondary level (8%) who were enrolled in vocationally-oriented institutions, including teacher training. The survey showed wide disparities in student numbers between the 18 governorates. The highest enrolments at secondary level were in the governorates of Baghdad (444,427 students), Basrah (120,014) and Sulaymaniyah (100,576). The lowest enrolments were in the governorates of Missan (32,793) and Muthanna (17,429).

The participation of girls in education at secondary level was at a high level in some governorates (over 40% of students were girls in Baghdad, Erbil and Sulaymaniyah) while girls lagged far behind boys in others (only 25% of students in Salah Al-Din were girls). The proportion of female students varied according to the type of institution, with girls being in the majority for teacher training, and boys for other institutions.

[7] These figures include some students reported to be in grades other than those indicated by the title. The Dahuk Tourism Institute was included by the survey organisers since it is a secondary education institution managed by the education authorities in Dahuk.

Figure 3.1. Female students as a percentage of all students, by governorate (all types of secondary education)



Source: Annex 1: Statistical Data for the Secondary Education Level

The under-representation of girls is reflected in the Gross Enrolment Ratio (GER), namely the ratio of enrolment to the corresponding age group. About a half of all boys and a third of girls appeared to be participating in education at secondary level.[8]

Table 3.2. Gross Enrolment Ratio at Secondary Level (all types of institution), by Gender

	Population aged 12-17 years	Enrolment in secondary institutions[9]	GER
Boys	1,817,598	977,577	53.8%
Girls	1,740,588	594,432	34.2%
Total	**3,558,186**	**1,572,009**	44.2%

Source: Annex 1: Statistical Data for the Secondary Education Level and population estimates.

Secondary education employs a substantial number of highly educated persons, the majority being university graduates. As shown in **Table 3.3**, the total number of teachers in secondary level institutions was found by the survey to be 85,417, and a slight majority were women (58%). The majority of these teachers (77,357) were employed in general secondary education.

[8] The presence in enrolment figures of repeaters who take more than 6 years to complete grades 7 to 12, as well as students in years 13 and 14 of schooling at teacher training institutions, means that the GER tends to overestimate the proportion of the age group in school. However, the denominator of the GER (population estimate for specific age groups) is often subject to inaccuracy. Hence the ratio should be seen as providing a broad view of participation in schooling rather than a precise estimate.

[9] See previous footnote.

Table 3.3. Number of teachers in secondary level institutions, by type of school and gender

	Male	Female	Total	Percentage Female
Intermediate	12938	19773	32711	60.4%
Secondary General	12694	19353	32047	60.4%
Preparatory General	5832	5626	11458	49.1%
Preparatory Vocational	2311	2383	4694	50.8%
Teacher Training	1055	1539	2594	59.3%
Fine Arts	85	138	223	61.9%
Tourism Institute	7	4	11	36.4%
Total	**34922**	**48816**	**83738**	**58.3%**

Source: Annex 1: Statistical Data for the Secondary Education Level

This brief overview of secondary education in Iraq shows that most students at secondary level are enrolled in courses of *general education*, and most teachers work in this sub-sector. In the remainder of chapter 3 this crucial component of the education sector is reviewed in detail. Data on the vocational and teacher training sub-sectors are considered in chapters 4 and 5 below respectively.

3.2. Number and Types of Schools providing General Secondary Education

General secondary education in Iraq comprises two cycles each of three years duration. The first is the Intermediate cycle that leads to the Third Form Baccalaureate and the next is the Preparatory cycle which leads to the Sixth Form Baccalaureate. At the end of the first year of the Preparatory cycle, students following a course of general secondary education are required to opt for either literary or scientific studies.

Completed questionnaires were received from a total of 4,042 schools providing general secondary education.[10] The total number of schools returning completed questionnaires is greater than the number of secondary schools in 2000/2001 (3,701)[11], but lower than the MOE figure for 2002/2003 (4,155). This chapter uses the data from the 4,042 general secondary schools which participated in the survey, although this may slightly under-represent the sub-sector as a whole.[12] [13]

[10] In addition the survey team collected a few uncompleted questionnaires, showing only the name of a school and school identity code number. This matter could not be followed up, due to security problems.

[11] UNESCO, "Situation Analysis of Education in Iraq," April 2003.

[12] Survey data on general secondary education include 55 secondary schools covering grades 7-12 with a vocational bias.

[13] As noted earlier, UNESCO's needs assessment questionnaires were distributed to all secondary schools, through the governorate education authorities. Thus it was believed that a complete set of data would be received. It was not possible to check the returned questionnaires against a national register of schools, due to the loss of records in the Ministry of Education. Rather, the list of schools returning the questionnaires constitutes a useful register of functioning institutions of general secondary education.

Table 3.4. General Secondary Schools by Cycle, Governorate and Gender[14]

	Intermediate				'Secondary' (grades 7-12)				Preparatory			
	Boys	**Girls**	**Co-ed**	**Total**	**Boys**	**Girls**	**Co-ed**	**Total**	**Boys**	**Girls**	**Co-ed**	**Total**
Anbar	77	19	31	127	45	49	11	105	11	1	0	12
Basrah	80	53	16	149	53	44	21	118	16	18	0	34
Muthanna	23	8	3	34	14	9	1	24	5	2	0	7
Qadissiya	31	18	5	54	13	14	10	37	7	8	0	15
Sulaymaniyah	37	27	102	166	14	17	35	66	11	11	7	29
Babylon	41	28	32	101	26	15	14	55	12	15	5	32
Baghdad	223	145	33	401	107	159	11	277	57	40	0	97
Dahuk	21	20	41	82	5	6	36	47	6	5	5	16
Thi-Qar	61	34	23	118	34	23	30	87	13	12	0	25
Diyala	70	50	28	148	41	32	21	94	14	6	0	20
Erbil	41	25	37	103	16	20	47	83	24	19	8	51
Kerbala	35	23	5	63	26	15	0	41	7	4	0	11
Tameem	71	22	36	129	29	29	16	74	10	3	11	24
Missan	22	10	2	34	23	18	6	47	4	1	0	5
Ninewa	72	28	3	103	64	31	15	110	34	16	0	50
Wassit	28	12	9	49	22	26	11	59	11	4	1	16
Najaf	49	31	4	84	21	14	2	37	10	8	0	18
Salah Al-Din	77	25	7	109	96	47	12	155	6	1	0	7
Total	**1059**	**578**	**417**	**2054**	**649**	**568**	**299**	**1516**	**258**	**174**	**37**	**469**

Source: Annex 1: Statistical Data for the Secondary Education Level

As seen in Table 3.1, about half (51%) of the schools were offering only the Intermediate cycle. Over one-third (38%) were full Secondary schools with both Intermediate and Preparatory levels, and a minority (12%) were Preparatory schools.

Almost half (49%) of the schools catered only to male students and one third (33%) to female students, while 19% were co-educational.

The governorates of Baghdad and Basrah had the highest number of schools at secondary level, accounting for 19% and 7% of the total respectively. Muthanna and Missan (2% of the total each) had the least. This distribution may be expected because the first group of governorates includes large urban populations, whilst the second group comprises rural areas with lesser populations.

A significant majority of the schools were located in urban areas, the smallest unit of which is a *nahia* or sub-district. Sixty-eight percent of the Intermediate schools were reported as being in urban areas while only 32% were in the rural areas. Amongst the full Secondary schools (grades 7-12), 73% were located in urban areas and only 27% in rural areas. Finally, 88% of the Preparatory schools were located in urban areas while only 12% were in rural areas.

Corresponding population data is not available. Policy-makers, however, need to look into the possibility that rural children have less access to secondary education than those in urban areas, especially at Preparatory level.

In assessing the adequacy of school provision, it is important to examine the use of shifts. Many schools in Iraq use double or triple shifts, to accommodate the increasing number of

[14] Three schools did not respond to this particular question

students. In addition, one school building may be used by 2 or even 3 different schools. This impacts negatively on the learning environment and on the hours of study. **Table 3.5** shows the seriousness of the problem: almost half of the schools participated in a double shift use of buildings while 2% of buildings accommodated triple shifts.

Table 3.5. Use of Shifts by General Secondary Schools[15]

	Number of schools	Single Shift	Some classrooms used in two shifts	All classrooms run double shifts under one school administration	Building used for two administratively separate schools	Building used for three administratively split buildings	Other
Anbar	244	112	1	12	114	5	
Babylon	188	42	3	22	106	15	
Baghdad	773	471	7	66	224	2	3
Basrah	301	111	3	14	163	9	1
Dahuk	145	85	12	23	25		
Diyala	262	84		2	175	1	
Erbil	236	43	3	37	140	12	1
Kerbala	115	61			53	1	
Missan	87	70	1		16		
Muthanna	65	54			10		1
Najaf	139	84	1	3	51		
Ninewa	263	180	4	19	56	4	
Qadissiya	106	78	1	1	26		
Salah Al-Din	269	103	4	4	128	27	3
Sulaymaniyah	260	50	13	60	133	3	1
Tameem	227	129	1	11	75	10	1
Thi-Qar	230	95		5	124	6	
Wassit	124	87	4	3	30		
Total	**4034**	**1939**	**58**	**282**	**1649**	**95**	**11**

Source: Annex 1: Statistical Data for the Secondary Education Level

The extensive use of multiple shifts represents a major challenge in restoring quality education. A major school mapping exercise is needed to determine the requirements for additional classrooms and/or new schools in various locations in order to eliminate the multi-shift problem.

3.3. Enrolment

A total of 1,443,436 students were enrolled in the 4,042 secondary schools responding to the UNESCO survey. This figure was similar to the UNICEF/USAID estimate of 1,454,775. These figures indicate a continuing rise in enrolments in recent years, from 1,291,309 in 2000/2001.[16] Nearly three-quarters of these students (73%) were studying at the Intermediate (lower secondary) level.

Table 3.6 shows that just over half a million of the students enrolled in general secondary education were girls, corresponding to 38% of all students. There was a Gender Parity Index (GPI) of 0.61, - the ratio of female to male enrolment.[17] The proportion of girls studying at the Intermediate level was 36.5%, while at the Preparatory level it was higher,

[15] Some schools did not respond to this particular question

[16] Situation Analysis of Education in Iraq, UNESCO Paris, April 2003.

[17] The Gender Parity Index is the ratio of a statistic for females to the corresponding statistic for males. At gender parity the index is 1.0.

at 42%, indicating that a higher proportion of girls than boys continue their studies from the Intermediate to the Preparatory level of general education.

Table 3.6. Enrolment in general secondary education by grade and gender

	Male students	Female students	Total	%Female
Grade 7	269918	152594	422512	36.1%
Grade 8	215514	125007	340521	36.7%
Grade 9	183971	107153	291124	36.8%
Sub-total	669403	384754	1054157	36.5%
Grade 10	79717	59306	139023	42.7%
Grade 11	66138	53664	119802	44.8%
Grade 12	81518	48936	130454	37.5%
Sub-total	227373	161906	389279	41.6%
Total	896776	546660	1443436	37.9%

Source: Annex 1: Statistical Data for the Secondary Education Level

There was wide variation between governorates, as can be seen from **Table 3.7**. The largest number of female students was found in Baghdad (177,968), Sulaymaniyah (42,845), Basrah (38,821) and Erbil (38,388), while the smallest numbers were found in Missan (9,306) and Muthanna (4,875). In most governorates, about one third of the students in general secondary education were girls. The percentage of girls was highest in the governorates of Baghdad, Sulaymaniyah, Erbil and Tameem (over 40%), and lowest in the governorates of Salah Al-Din, Muthanna and Anbar (under 30%).

Table 3.7. Enrolment of Students in General Secondary Education, by Gender

	Male	Female	Total	% Female
Anbar	39186	16470	55656	29.6%
Basrah	66473	38821	105294	36.9%
Muthanna	12896	4875	17771	27.4%
Qadissiya	22199	13563	35762	37.9%
Sulaymaniyah	51805	42845	94650	45.3%
Babylon	43356	22561	65917	34.2%
Baghdad	231213	177968	409181	43.5%
Dahuk	31167	20730	51897	39.9%
Thi-Qar	46346	23989	70335	34.1%
Diyala	48264	22496	70760	31.8%
Erbil	52476	38388	90864	42.2%
Kerbala	25839	11820	37659	31.4%
Tameem	39600	26660	66260	40.2%
Missan	19885	9306	29191	31.9%
Ninewa	60501	31508	92009	34.2%
Wassit	28545	13958	42503	32.8%
Najaf	31408	15982	47390	33.7%
Salah Al-Din	45617	14720	60337	24.4%
Total	896776	546660	1443436	37.9%

Source: Annex 1: Statistical Data for the Secondary Education Level

Regarding children with disabilities, exact data was probably not available to the head-teachers when they completed the questionnaires (during the summer vacation). However,

they reported a total of 9,992 students (0.7% of all students participating in general secondary education) suffering from serious disabilities:

- Severe visual disability: 5,217 (0.4%);
- Physical disability: 3,268 (0.2%)
- Severe deafness: 616 (0.04%)
- Other: 891 (0.06%)

3.4. Participation Rates

The Gross Enrolment Ratio (GER) for general secondary education, namely enrolment as a percentage of the corresponding age group, was estimated using UNESCO survey data for the school year 2002/2003, and the population estimates shown in Table 2.1. Comparing the total enrolment of 1,443,436 to the estimated number of children aged 12 to 17 years inclusive (3,558,186) gives a GER of about 40%. The ratio was 49% for males and 31% for females. This ratio is sensitive to the estimation procedures used in computing the numbers of children in the age group 12-17, nationally and by governorate. It also overestimates participation levels, to the extent that there are students who have spent over six years in the system due to repetition.

Table 3.8. Gross Enrolment Ratio for General Secondary Education, by Gender and Governorate

Governorate	GER 12-17 Male	GER 12-17 Female	GER T
Anbar	41.6 %	18.5 %	30.3 %
Basrah	65.2 %	38.4 %	52.1 %
Muthanna	27.4 %	13.3 %	20.5 %
Qadissiya	38.0 %	24.2 %	31.3 %
Sulaymaniyah	42.6 %	36.8 %	39.8 %
Babylon	33.9 %	18.4 %	26.3 %
Baghdad	67.1 %	53.9 %	60.6 %
Dahuk	50.9 %	35.2 %	43.2 %
Thi-Qar	42.8 %	22.6 %	32.9 %
Diyala	45.9 %	22.0 %	34.2 %
Erbil	50.8 %	38.8 %	45.0 %
Kerbala	39.1 %	18.7 %	29.1 %
Tameem	73.7 %	51.8 %	63.0 %
Missan	37.5 %	18.2 %	28.1 %
Ninewa	36.6 %	19.9 %	28.4 %
Wassit	47.2 %	24.6 %	36.1 %
Najaf	44.8 %	23.8 %	34.5 %
Salah Al-Din	56.7 %	19.1 %	38.3 %
Total	**49.3 %**	**31.4 %**	**40.5 %**

Source: Annex 1: Statistical Data for the Secondary Education Level and population estimates

Table 3.8 shows that the GER was highest in the governorates of Tameen (63%), Baghdad (60%), and Basrah (52%). Low GER was found in Muthanna (20%), Missan and Ninewa (28% in each). Higher participation rates were thus found in governorates with a more urban population, indicating the high value placed on education for Iraqi children among this group as well as economic and cultural constraints and issues of access in rural areas.

Girls' participation in secondary education, in relation to the age group, was relatively high in Baghdad (53.9%) and Tameen (51.8%). It was low in Muthanna (13.3%) and Anbar, Babylon, Kerbala and Missan (18% in each). **It will be important for the Education Ministry to initiate programmes to retain more girls in school. Boys' participation likewise needs to be increased.**

When the Gross Enrolment Ratio is calculated separately for the Intermediate level of general secondary education, it appears that over half of all young people participate in this level of schooling. **Table 3.9** indicates that the proportion varies widely by governorate. Thus, some four-fifths of children in Baghdad participate in Intermediate general secondary education, while in Tameen participation appears to be nearly universal. The proportion is only about one-third in Muthanna, however. As noted previously, these calculations are subject to various limitations, including some inflation due to the presence of repeaters, and uncertainties about the demographic estimates for the various governorates. Similar differences by governorate are found at the Preparatory level (grades 10-12), where about one in five of the demographic group participate in general secondary education.

Table 3.9. Gross Enrolment Ratios at the Intermediate (grades 7-9) and Preparatory (grades 10-12) Levels of General Secondary Education, by Governorate

Governorate	Total Pop 12-14 Years	Intermediate Enrolment	Ger (%)	Total Pop 15-17 Years	Preparatory Enrolment	Ger (%)
Anbar	94,268	41,373	43.9%	87,488	14,283	16.3%
Basrah	107,070	76,684	71.6%	99,370	28,610	28.8%
Muthanna	38,829	13,741	35.4%	36,036	4,030	11.2%
Qadissiya	59,248	26,282	44.4%	54,987	9,480	17.2%
Sulaymaniyah	123,281	69,259	56.2%	114,415	25,391	22.2%
Babylon	129,605	48,166	37.2%	120,284	17,751	14.8%
Baghdad	349,511	294,990	84.4%	324,375	114,191	35.2%
Dahuk	62,371	40,318	64.6%	57,885	11,579	20.0%
Thi-Qar	112,518	47,859	42.5%	104,426	22,476	21.5%
Diyala	106,647	51,870	48.6%	98,977	18,890	19.1%
Erbil	104,714	63,810	60.9%	97,183	27,054	27.8%
Kerbala	66,971	27,924	41.7%	62,155	9,735	15.7%
Tameem	54,540	52,099	95.5%	50,618	14,161	28.0%
Missan	53,958	22,252	41.2%	50,078	6,939	13.9%
Ninewa	167,836	66,528	39.6%	155,765	25,481	16.4%
Wassit	61,364	31,937	52.0%	56,951	10,566	18.6%
Najaf	71,045	34,976	49.2%	65,935	12,414	18.8%
Salah Al-Din	81,678	44,089	54.0%	75,804	16,248	21.4%
Total	**1,845,454**	**1,054,157**	**57.1%**	**1,712,732**	**389,279**	**22.7%**

Source: Annex 1: Statistical Data for the Secondary Education Level and population estimates

Comparing Iraq's GER for general secondary education with its neighbours, Iraq had in 1990/91 a GER estimated at 47% compared to 43% in Jordan. Ten years later, the GER for Jordan had risen to 88%, doubling the previous figure, whilst that of Iraq appeared to

decline to 38%.[18] The current estimates indicate that Iraq remains behind its neighbour, which could be attributed in part to the effects of economic sanctions on families' abilities to meet the direct and indirect costs of keeping their older children in school.

3.5. Internal Efficiency

The present survey did not assess levels of repetition and drop out, given that the questionnaires had to be completed very quickly by head-teachers, and that this data had previously been recorded each year in national statistics. Repetition rates were high, even before the period of sanctions. In 2001/2002, they were recorded by the Ministry of Education as 31% for boys and 22% for girls at Intermediate level; and as 28% for boys and 16% for girls, at Preparatory level.

Cross-sectional data for 2002/2003 suggests that there is significant drop out after each grade of secondary education, except perhaps grade 11, as may be seen from **Table 3.10**. However, this cross-sectional data is only indicative.[19]

Enrolment in the Preparatory cycle was only 27% of the total general secondary enrolment; - the transition rate from Grade 9 (end of the Intermediate cycle) to Grade 10 (beginning of the Preparatory cycle) was 48%, indicating a high dropout rate between the two cycles. Some children who leave school after grade 9 enter secondary vocational schools and teacher institutes. Others are withdrawn from school to augment the family income. In the case of girls, there is the possibility of marriage or of staying at home to help with household duties.

Table 3.10. General Secondary Education Students by Grade and Governorate

Governorate	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12	Total
Anbar	16465	13547	11361	5071	3998	5214	55656
Basrah	28962	25353	22369	10164	8789	9657	105294
Muthanna	5696	4206	3839	1141	1320	1569	17771
Qadissiya	10377	7909	7996	3056	2870	3554	35762
Sulaymaniyah	28956	21621	18682	10405	8180	6806	94650
Babylon	19270	15289	13607	6002	5481	6268	65917
Baghdad	119052	96060	79878	40756	35591	37844	409181
Dahuk	16852	13411	10055	4329	3594	3656	51897
Thi-Qar	16857	15374	15628	7160	7166	8150	70335
Diyala	21244	17158	13468	6971	5617	6302	70760
Erbil	24693	20944	18173	10153	8470	8431	90864
Kerbala	10467	9776	7681	2933	2854	3948	37659
Tameem	22386	16705	13008	5062	4420	4679	66260
Missan	8314	7715	6223	2443	2044	2452	29191
Ninewa	30689	19742	16097	9595	7555	8331	92009
Wassit	12174	10125	9638	3680	3193	3693	42503
Najaf	14139	11447	9390	4301	3353	4760	47390
Salah Al-Din	15919	14139	14031	5801	5307	5140	60337
Total	422512	340521	291124	139023	119802	130454	1443436
Percent	29.3%	23.6%	20.2%	9.6%	8.3%	9.0%	100%

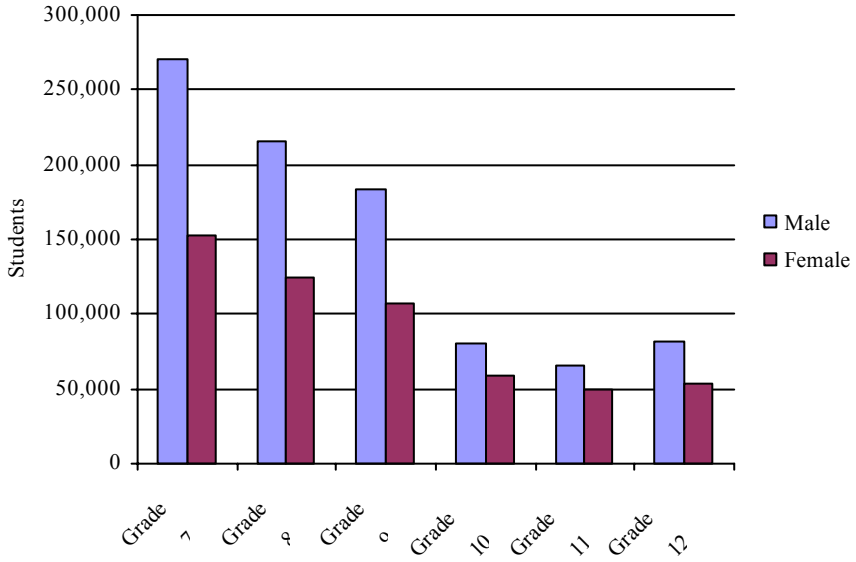
Source: Annex 1: Statistical Data for the Secondary Education Level

[18] It is unclear whether school enrolments in Northern Iraq in 2000/2001 were taken into account.

[19] The likely presence of a large number of repeaters in each grade makes it especially difficult to estimate the extent of drop out between the years of study, whether the data is based on time series or cross-sectional methods of estimation..

There was a similar pattern of drop-out between grades for both male and female students (**Figure 3.2**).

Figure 3.2. Enrolment in general secondary education, by grade and gender



Source: Annex 1: Statistical Data for the Secondary Education Level

High levels of drop out point to the need for a major review of the education system, leading to reform in key areas such as curricula and textbooks, teacher education and training, school administration, a pupil-friendly learning environment, provision of up-to-date learning materials and equipment, and renewal of infrastructure.

3.6. Teachers

Education research shows that teachers remain the most significant factor influencing the level of achievement in student learning. As managers of the teaching-learning processes in the classroom, they strive to motivate students and to shape their minds and characters to make them productive and responsible members of society.

In Iraq, the teaching profession is no longer as attractive as it used to be. During the last decade, with the decline of the Iraqi Dinar and the subsequent drop in the purchasing power of their salaries, many teachers left the profession for financially greener pastures. To fill the gap, the government was obliged to recruit less qualified teachers for secondary schools. However, in the last months some teachers have returned to the classroom attracted by the rise in salaries.

The survey data provides useful information on the current status of teachers in secondary education. This will facilitate the design of programmes to improve the quality of teaching.

3.6.1. Teaching Force and Student/Teacher Ratio

Secondary education teachers work in Intermediate or Preparatory schools or in schools with both Intermediate and Preparatory cycles. In the latter type, teachers cover both cycles. Results from UNESCO's survey show a national total of 76,216 teachers in general secondary schools. Of the national total, 41% or 31,464 were males and 59% or 44,752 were females.

About two-fifths (43%) of the teachers worked in Intermediate schools, two-fifths (42%) in schools with grades 7 to 12, and the remainder (15%) in Preparatory schools.

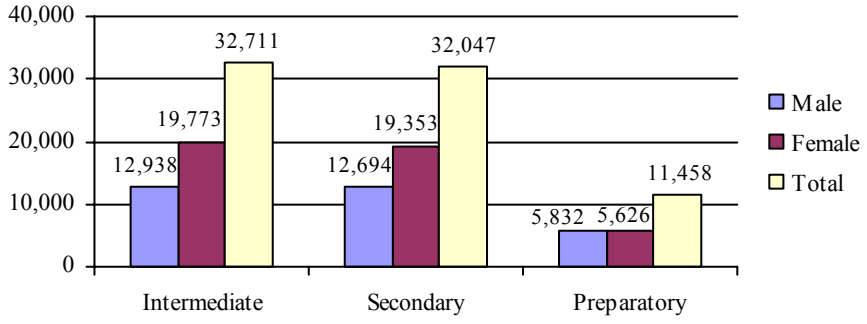
Table 3.11. Teachers in General Secondary Education, by Type of School and Gender

	Male	Female	Total	% Female
Intermediate	12938	19773	32711	60.4%
Secondary (7-12)	12694	19353	32047	60.4%
Preparatory	5832	5626	11458	49.1%
Total	31464	44752	76216	58.7%
Percentage (%)	41.3	58.7	100	

Source: Annex 1: Statistical Data for the Secondary Education Level

There was a strong predominance of female teachers at schools with classes at Intermediate level, while at Preparatory schools the numbers of men and women were about equal (**Figure 3.3**).

Figure 3.3. Gender Distribution of Teachers in General Secondary Education, by Type of School



Source: Annex 1: Statistical Data for the Secondary Education Level

Table 3.12 below shows that the governorates with the largest number of teachers were Baghdad with 18,880, Basrah with 6,597 and Babylon with 5,264. There was a predominance of female teachers in most governorates, but not in Anbar, Dahuk and Thi-Qar.

The governorates of Qadissiya and Babylon had the most favourable student-teacher ratios (12.3, 12.5 respectively). The least favourable ratios were found in Dahuk (33) and

Sulaymaniyah (27). Generally, however, the student-teacher ratio in Iraq's secondary education system was quite reasonable, with an average of 19. This represents an intermediate status, between countries such as Australia (12.7) and France (12.5), and developing countries such as India (30) and the Philippines (34).[20]

Interpreting teacher-student ratios, however, must be done with caution. There can be wide differences between schools, since staffing levels are affected by other variables such as level of schooling, school location (urban – rural), and geographical location of students. Many teachers prefer to be posted in urban areas, such as Baghdad, Basrah, Ninewa, Babylon and Erbil. Few teachers want to be posted in Muthanna, which is mainly rural and desert.

Table 3.12. Student-teacher Ratio in General Secondary Education, by Governorate and Gender.

Governorate	Number Of Teachers			Student/Teacher Ratio
	Male	Female	Total	
Anbar	1922	1527	3449	16.1
Basrah	2452	4145	6597	16.0
Muthanna	263	406	669	26.6
Qadissiya	1236	1679	2915	12.3
Sulaymaniyah	1599	1881	3480	27.2
Babylon	2520	2744	5264	12.5
Baghdad	5437	13443	18880	21.7
Dahuk	872	699	1571	33.0
Thi-Qar	2328	2018	4346	16.2
Diyala	2296	2923	5219	13.6
Erbil	1566	2406	3972	22.9
Kerbala	1189	1494	2683	14.0
Tameen	1544	1784	3328	19.9
Missan	696	730	1426	20.5
Ninewa	2013	2362	4375	21.0
Wassit	1010	1458	2468	17.2
Najaf	1127	1628	2755	17.2
Salah Al-Din	1394	1425	2819	21.4
Total	31464	44752	76216	18.9
Percent (%)	**41.3**	**58.7**	**100**	**-**

Source: Annex 1: Statistical Data for the Secondary Education Level

3.6.2. Qualifications

The minimum academic qualification normally required for secondary school teachers in Iraq is a first bachelor's degree (BA or BS) from a university, preferably from a Faculty of Education or a Faculty of Science. During the sanctions period, however, graduates from the teacher training institutes were allowed to teach students in the first years of the Intermediate Cycle. Teachers recruited under this policy were encouraged by the Ministry of Education to pursue a 4-year education degree either from a Faculty of Education in a university or from the Open College of Education in Baghdad.

[20] National Institute for Educational Research, An International Comparative Study of School Curriculum. NIER, Tokyo, Japan, 1999. p. 15.

Table 3.13. Highest Educational Attainments of Teachers in General Secondary Education

Educational Degrees	Number Of Teachers			Percent
	Male	Female	Total	
2-Yr. Cert. TT	67	76	143	0.18%
5-Yr. Cert. TT	316	444	760	0.98%
Bachelor's	31285	44637	75922	98.14%
Diploma	114	127	241	0.31%
Master's	167	111	278	0.35%
Ph.D.	11	2	13	0.01%
Total	**31,960**	**45,397**	**77,357**	

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 3.13 shows that 98% of the 77,357 secondary education teachers had a bachelor's degree. Only 903 teachers (1.16%) had less than this basic level of qualification, and steps should be taken to provide them with the opportunity to upgrade their qualifications. The rest of the teaching force had a post-graduate diploma (0.3%), master's degree (0.35%), or Ph.D. (0.01%). Interestingly, female teachers outnumbered their male counterparts at each level of qualification below Masters and Ph.D. Hopefully, female educators will soon be given the opportunity to reach parity with men in terms of postgraduate qualifications.

3.6.3. Professional Development and In-service Teachers' Training

Professional development programmes and in-service teacher training courses were not conducted regularly during the years of sanctions.[21] In the Centre/South, in-service teacher-training courses were organized by the Institute of Educational Training and Development. **Table 3.14** shows the numbers of teachers reporting attendance at such courses since January 1998.

Table 3.14. In-service Teacher Training Courses Attended by General Secondary Education Teachers, between January 1998 and August 2003.

Training Areas	Males	Females	Total	Percent Participation
Teaching Methods	1783	2523	4306	5.6 %
Educational Psychology	719	858	1577	2.0 %
Subject Teaching Methodology	7797	11978	19775	25.6 %
School Administration	1949	1371	3320	4.3 %
Others	2295	3961	6256	8.1 %
Total	**14543**	**20691**	**35234**	

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 3.14 indicates that secondary teachers attended a total of 35,234 in-service courses from January 1998 till August 2003. A significant percentage of the teachers (26%) received training to enhance their teaching skills in their respective subject specialization.

[21] In Northern Iraq under the Oil for Food Programme, UNESCO in collaboration with the respective authorities conducted in-service training courses aimed at enhancing teachers' knowledge in their subject areas and improving their skills in interactive teaching. In addition, secondary education teachers also participated in computer literacy courses, English language proficiency and school administration courses.

Other areas where teachers received training were general teaching methods (6%), school administration (4%) and educational psychology (2%). Teachers (8%) were also trained in other areas that were not identified. Even with the economic sanctions imposed upon Iraq, over a quarter of the secondary education teachers had thus attended in-service training courses in the previous 5 years[22].

Given that more than half of all teachers did not attend in-service courses, it is clear in-service training is a priority. A majority of secondary education teachers still need training in both subject areas and teaching methodologies, including classroom management and student counselling. Even teachers who have received in-service training during the last few years need refresher courses.

A majority of head-teachers had received training during the previous five years (**Table 3.15**). This reflects the crucial role played by head-teachers in promoting efficiency and innovation in the schools. Further training will be needed to ensure that head-teachers are well prepared for the changes in the education system likely to take place in the years ahead. Although more than 50% of the head teachers claimed that they had received some form of in-service training, a closer review of the type of training received would be needed to determine the future teacher education programmes required for renewing the education system.

Table 3.15. In-service Courses Attended by General Secondary Education Head-Teachers, between January 1998 and August 2003, by Governorate.

Governorate	Number of head-teachers that received in-service training
Anbar	149
Basrah	85
Muthanna	62
Qadissiya	67
Sulaymaniyah	171
Babylon	120
Baghdad	673
Dahuk	130
Thi-Qar	132
Diyala	226
Erbil	194
Kerbala	38
Tameem	153
Missan	37
Ninewa	241
Wassit	70
Najaf	70
Salah Al-Din	218
Total	**2836**

Source: Annex 1: Statistical Data for the Secondary Education Level

[22] Some teachers may have attended more than one type of training, so it is not clear how many teachers did not participate in any such training.

3.7. Curriculum

The secondary education curriculum is a responsibility of the national government. The Education Ministry, through the High Committee for the Development of Curricula, Teaching Aids and Examinations, has the responsibility of revising the existing curriculum. This committee also approves textbooks and teacher guides.

The subjects included in the curriculum were shown in chapter 2 above. The curriculum appears to put equal emphasis on the sciences and language skills. In the Intermediate cycle, the sciences have 36 class periods while the languages (Arabic and English) have 34 class periods. Similarly, in the first year of the Preparatory Cycle, the sciences have 12 class periods while languages have 10.

The last two years of Preparatory schooling (grades 11 and 12) are divided into two streams, literary and scientific.

The curriculum needs review, in terms of reducing the large number of subjects, and updating subject matter and pedagogy. The trend towards subject diversification should be replaced by curriculum integration, where several subjects with similar features or themes can be integrated into one subject area. The current emphasis of the Education Ministry on the inclusion of citizenship education is to be commended.

3.8. Textbooks and Other Teaching-Learning Materials

Prior to 1990, the Education Ministry had in place an efficient system of providing textbooks and other teaching-learning materials to students and teachers. However, the economic sanctions imposed in the 1990s severely affected the government's capacity in this respect. The breakdown of the Ministry's printing press in Baghdad worsened the situation necessitating re-use of at least 50% of textbooks by students over many years. Between 1996 and 2003, the Ministry, through the Oil for Food Programme, was able to supply approximately 30% of the needed teaching-learning materials. According to a Ministry official in January 2003, the textbook-student ratio was sometimes as low as one for every six students. During the events of March/April 2003, many schools were looted and lost valuable textbooks, library reference materials, computers and teaching kits, thereby exacerbating the resource shortages at secondary level.

The UNESCO survey recorded a stock of about 1.7 million textbooks in secondary schools, distributed between the following subject areas:

Table 3.16. Stock of textbooks reported by general secondary schools

	Math	Science	Social	Language/ Humanities	Other
Anbar	10135	10816	14649	910	11894
Basrah	5007	4240	1888	895	6866
Muthanna	4608	6802	6148	2055	5656
Qadissiya	8316	12964	11924	3261	15626
Sulaymaniyah	46827	73087	73599	12093	71564
Babylon	30731	39470	36279	7349	38077
Baghdad	71723	96191	95131	10133	109918
Dahuk	10259	15136	15257	4135	23440
Thi-Qar	25613	37136	33412	5230	52024
Diyala	1128	663	850	0	50
Erbil	33441	63621	72357	17973	95001
Kerbala	597	506	356	0	110
Tameem	6817	7596	8532	107	6439
Missan	1927	1743	1981	1323	1450
Ninewa	3028	6474	5745	150	6656
Wassit	11937	18439	14008	1900	20264
Najaf	9799	19023	18001	0	23765
Salah Al-Din	7905	9610	8249	3729	2814
Total	**289798**	**423517**	**418366**	**71243**	**491614**

Source: Annex 1: Statistical Data for the Secondary Education Level.[23]

Comparing the total stock of textbooks to the total number of general secondary students (1,443,436) gives the following ratios:

- Mathematics: 1: 5.0
- Sciences: 1: 3.4
- Social Sciences: 1: 3.5.

If the calculation were to take note of the different branches of mathematics, science and social science then the number of students having to share a particular textbook would be much higher.[24]

There is an urgent need to revise and update the contents of all textbooks. UNICEF and UNESCO carried out minimal revision in 2003, aimed mainly at removing ideological material. UNESCO supported the revision and printing of Maths and Science textbooks, for the school year 2003 –2004.

A more thorough and complete revision of all school textbooks is recommended after a national curriculum review. In addition, more textbooks must be provided with a view to eventually reaching a ratio of one book per student per subject, the universally accepted norm for secondary schools which existed in Iraq pre-1990.

Under the Oil for Food Programme, schools received substantial quantities of teaching materials and equipment, including laboratory equipment for biology, physics, chemistry,

[23] There was apparently some confusion at the data entry stage between columns five and six of the above table, due to a mis-translation of one heading.

[24] Schools can manage with a limited supply of textbooks if different classes use a class set of textbooks on different days. However, the possibilities for students to use the textbooks frequently at school or to take them home are much reduced when this system is in use. This problem is especially serious for students at secondary level.

computers, furniture for computer labs and audio-visual equipment. During the looting of schools in the Centre/South these items were among the first to be taken away, leaving a worse situation than had existed before the war. In general, teaching/learning materials are now in very short supply in most secondary schools. Where available, they are outdated and inadequate, falling far short of meeting the needs for modern teaching and quality education. As Iraq could not keep up with new advances during the sanctions era, it will be important to supply updated teaching-learning materials to all schools.

The situation regarding school libraries is very discouraging. Only 761 (19%) of the schools responding to the UNESCO survey indicated that they have a functioning library. A library is the heart of a school, with its reading and reference materials, and a school with no functioning library cannot provide quality education.

3.9. School Buildings and Other Educational Infrastructure

3.9.1. School Buildings and Classrooms

As noted above, the acute shortage of school buildings forces the education authorities to resort to multiple-shift arrangements (see **Table 3.5** above). In the most common system, two different schools use the same buildings and facilities in different shifts. In other system, the same school divides its grades into morning and afternoon shifts. The two groups may alternate lesson times every fortnight, with students attending morning classes one week and afternoon classes the next. It is universally agreed that the multi-shift school system has many disadvantages. To accommodate the different shifts, the number and duration of lessons has to be reduced, and not all subjects can be fitted into the timetable. This has a negative impact on all aspects of secondary education seriously reducing overall achievement.

A typical secondary school building in Iraq includes the standard classrooms, science laboratory rooms (physics, chemistry, and biology), library, sports storage room, fine arts (drawing room), English language/sound laboratory room, a multi-purpose hall, administration facilities, teachers' hall, playgrounds, storage, and sanitation facilities.

In terms of ownership of school buildings, the survey showed that 99% were owned by the MOE. School buildings that were previously donated for educational purposes are now state-owned. Other schools operate in state-owned buildings erected on rented land, in rented buildings or are privately owned.

3.9.2. Condition of School Buildings

'Condition' in this report is defined as the structural status of a school building and its facilities. This is measured by assessing any damage to the external structure, including the state of foundations, main wall and walls, as well as damage to the interior of the building such as partition walls, tiles, doors, windows, plaster/paint, pavement, electricity, water supply and sanitation facilities.

The notion of 'good condition' is relative as very few school buildings in Iraq could be classified as such, given the general lack of maintenance and repair work since 1990. Minor work would be required on such buildings, such as plastering, repainting, improving sanitation facilities, as well as bigger projects like installing new water and sewage

systems. According to building standards[25] this category of work would correspond to some 16-30% of the construction budget.

Respondents to the survey were asked to categorise their schools as 'partially damaged' if they required renovation work such as: 40% plastering work; 50% repair of doors and windows; repair of sanitation systems; replacement of water pipes; complete electrical rewiring; and, checking and repairing, if necessary, of roofing and insulation. This category of work would cost some 31-50% of the construction budget. The category of 'bad condition' was defined as buildings in a dilapidated state, with work needed on the main walls and slabs, roofing and insulation, and ceilings needing cement plastering and/or coating and waterproofing; 60% re-plastering and repainting; replacement of nearly all doors and windows; reinstallation of the electrical system; removal and reconstruction of the water supply system; replacement of sanitation equipment and rebuilding of toilets. This category of work would cost some 51-70% of the construction budget.

Respondents were asked to report as 'unsafe', buildings which had been looted and either partially or completely burnt or bombed, or simply abandoned and exposed to the elements for many years. For these cases demolition of the buildings is recommended, as rehabilitation could be more expensive than new construction. Attempting to save such buildings could pose real danger to life.

Regarding the 3,844 survey responses on the condition of their school accommodation, respondents indicated that:

- 20% of the schools were accommodated in buildings in good condition
- 47% were in accommodation that was 'partially damaged'
- 23% were in accommodation in 'very bad condition'
- 10% were reported that their accommodation was 'unsafe'.

There was wide variation between governorates. Some 36% of Intermediate schools were reported to be housed in buildings that were unsafe or in very bad condition. The figure was as high as 50% in Salah Al-Din and 48% in Wassit, but only 15% in Kerbala. A lower proportion of Preparatory school accommodation was in unsafe or very bad condition (21%), with some governorates reporting no schools in this category. Almost one third (32%) of Secondary (grades 7-12) schools accommodation was unsafe or in very bad condition, with Thi-Qar reporting the highest proportion of schools in this category (55%).

The number of school premises is likely to be less than the total number of schools, since some schools share accommodation on a multiple shift basis. According to Table 3.5 above on the use of shifts, there are some 2,280 schools which have their own premises, 1,649 which share them with another school, and 95 schools which share with two other schools. If most of the sharing is with other schools at the same level, the total number of school premises which accommodate one or more general secondary schools may be estimated to be of the order of 3,000. (To the extent that general secondary schools share with different types of institution, the figure would be higher.) Using this figure, it may be

[25] Building Valuation Handbook, Warsaw. May 1992.

estimated that some 600 buildings are in good condition, 1,410 partially damaged, 690 in very bad condition and 300 unsafe.

In terms of damage inflicted on secondary schools during March/April 2003, headteachers reporting some 2,000 war-related incidents. A number of schools were looted and then burnt, or looted after having been bombed. The table below shows reports of war-related damage by governorate:

Table 3.17. Number of Schools Reporting War-related Incidents, by Governorate[26]

Governorate	Looting	Burning	Bombing	Total
Anbar	49	8	15	72
Basrah	150	47	30	227
Muthanna	54	11	1	66
Qadissiya	38	5	4	47
Sulaymaniyah	10	1	1	12
Babylon	54	6	9	69
Baghdad	359	38	174	571
Dahuk	7	-	-	7
Thi-Qar	79	12	32	123
Diyala	132	10	5	147
Erbil	1	-	-	1
Kerbala	57	9	12	78
Tameem	102	16	7	125
Missan	57	7	2	66
Ninewa	116	18	17	151
Wassit	57	7	14	78
Najaf	73	7	4	84
Salah Al-Din	95	14	37	146
Total	**1,490**	**216**	**364**	**2,070**

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 3.17 shows a total of 2,070 reports of war-related incidents. Secondary schools in Baghdad reported the highest number (571) of incidents of looting, burning and bombing, followed by Basrah (227), Ninewa (151), Diyala (147) and Salah Al-Din (146). These events clearly would have had a significant negative effect on secondary education in these governorates.

3.9.3. Laboratory/specialised teaching rooms

The secondary school needs special spaces to house: a General Science laboratory, and/or individual labs for Physics, Chemistry and Biology, a Language Laboratory, a Computer Laboratory, and other activities. These rooms complement the classrooms as part of the teaching-learning area in a school. Table 3.9 below shows the availability or non-availability of laboratory rooms in secondary schools.

[26] This table contains some instances of double counting, where respondents indicated that their schools were looted and burned or bombed and looted, etc.; or where the schools sharing the same building reported the incidents on their respective questionnaires

Table 3.18. Availability of Specialised Rooms by Type of School

Specialised Rooms	Intermediate Schools		Preparatory Schools		Secondary Schools	
	Available	Not Available	Available	Not Available	Available	Not Available
Physics	314	1,740	177	292	327	1,189
Chemistry	306	1,748	162	307	306	1,210
Biology	266	1,788	162	307	278	1,238
General Science	32	2,022	18	451	22	1,494
Computer	90	1,964	115	354	118	1,398
Language	9	2,045	15	454	33	1,483
Gymnasium	23	2,031	10	459	34	1,482
Vocational	99	1,955	12	457	82	1,434
Others	6	-	3	-	9	-

Source: Annex 1: Statistical Data for the Secondary Education Level

Specialised Rooms	Total schools with use of facility	% of all schools with use of facility
Physics	818	20.3%
Chemistry	774	19.2%
Biology	706	17.5%
General Science	72	1.8%
Computer	323	8.0%
Language	57	1.4%
Gymnasium	67	1.7%
Vocational	18	0.4%

Source: Annex 1: Statistical Data for the Secondary Education Level

Note: Non-availability was estimated by deducting the number available from the total number of schools in each cycle. Some schools share buildings so the total number of actual specialised rooms available and the number of buildings lacking these facilities are both somewhat lower than the figures shown here. [27]

Table 3.18 shows a serious shortage of facilities for practical activities in different subject areas and across both cycles. There are 818 schools with use of a laboratory for physics, 774 for chemistry and 706 for biology. It is clear that a majority of schools do not have the use of a laboratory for any of these subjects, which means that the practical component of the syllabus is missing for many students. It is not possible to deduce from these figures the precise needs for these facilities, however, and further work is needed in this connection. Thus a small intermediate school might need a multipurpose general science laboratory as a first step towards practical work in science. A larger school might need a physics lab, chemistry lab, biology lab and *also* a general science laboratory. On the simplifying assumptions that each school building should have separate laboratories for physics, chemistry and biology, that 20% of schools have this and 80% lack laboratories, then a total of about 2,400 new laboratories are needed for each subject. The existing laboratories will also need updating and reconstruction.

The number of computer laboratories is clearly inadequate. In a computer-driven age, when information technology has become a cornerstone in the education system, a

[27] This calculation was based on the schools shown in Table 3.4 (total of 4,039).

concerted initiative is needed to remedy the situation for the 92% of schools without access to computer labs. Every student needs a degree of computer knowledge to survive in today's academic arena.

There is an urgent need to install laboratories in all school premises, which lack them. Computer rooms, language labs, vocational rooms and gymnasia are also needed. The survey suggests the following requirements, for the buildings in current use:[28]

- Sciences: Approximately 7,200 laboratories (2,400 each for physics, chemistry and biology)
- Computer: Approximately 3,000 labs
- Languages: Approximately 3,000 labs
- Gymnasium: Approximately 3,000
- Vocational: Needs further study.

Additional specialised rooms will be needed as part of new schools constructed to relieve overcrowding. Interim arrangements are of course needed to improve the teaching of these subjects using existing classroom space.

3.9.4. Libraries

As noted earlier, a library is at the centre of the teaching-learning process of a secondary school, and 81% of schools reported that they did not have a functioning library. Applying this percentage to the estimated number of school buildings accommodating general secondary schools (about 3,000),[29] the need for additional library rooms would be 2,430, - or approximately 2,500 since this method of estimation is not precise.

A useful interim solution might be to establish or upgrade libraries in large or centrally located schools and provide access for students and teachers from smaller schools in the same area. Mobile libraries visiting schools on a regular schedule could provide another way of improving the situation. This would have the benefit of making good libraries accessible to students in remote rural districts. In Sulaymaniyah governorate, mobile libraries were requested under the Oil for Food Programme.

3.9.5. Utilities

3.9.5.1. Water and Sanitation

In terms of facilities, only 1777 (44%) of the 4,030 schools providing information on water supply and sanitation reported having access to running water. Another 979 schools (24%) reported access to other water sources. Sanitation conditions are equally deplorable. Only 1,815 of the schools (45%) stated that their premises were connected to a sewage system, however, and of these only 605 were considered functional.

There was wide variation between governorates in the adequacy of water and sanitation arrangements.

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[28] Based on the assumption of about 3000 school premises being used for general secondary education, and consequent sharing of specialised rooms by schools. Further data on sharing patterns is needed before accurate needs assessments can be made.

[29] See section 3.8.3 above.

Table 3.19. Condition of water supply and sanitation in schools, by governorate

	Total Schools	Access to running water		Access to other water sources		Latrines connected to the sewage network		Functional Latrines	
		#	%	#	%	#	%	#	%
Anbar	244	93	38.1%	59	24.2%	99	40.6%	17	7.0%
Basrah	301	17	5.6%	81	26.9%	65	21.6%	18	6.0%
Muthanna	63	8	12.7%	10	15.9%	10	15.9%	1	1.6%
Qadissiya	106	49	46.2%	22	20.8%	35	33.0%	11	10.4%
Sulaymaniyah	261	138	52.9%	76	29.1%	150	57.5%	89	34.1%
Babylon	188	116	61.7%	47	25.0%	109	58.0%	17	9.0%
Baghdad	771	378	49.0%	117	15.2%	426	55.3%	107	13.9%
Dahuk	145	99	68.3%	22	15.2%	108	74.5%	56	38.6%
Thi-Qar	230	38	16.5%	83	36.1%	41	17.8%	8	3.5%
Diyala	262	126	48.1%	93	35.5%	149	56.9%	35	13.4%
Erbil	237	134	56.5%	57	24.1%	159	67.1%	101	42.6%
Kerbala	115	50	43.5%	23	20.0%	57	49.6%	19	16.5%
Tameem	227	116	51.1%	63	27.8%	96	42.3%	17	7.5%
Missan	87	19	21.8%	35	40.2%	10	11.5%	1	1.1%
Ninewa	263	181	68.8%	46	17.5%	183	69.6%	82	31.2%
Wassit	124	58	46.8%	34	27.4%	24	19.4%	3	2.4%
Najaf	139	83	59.7%	21	15.1%	22	15.8%	1	0.7%
Salah Al-Din	267	74	27.7%	90	33.7%	72	27.0%	22	8.2%
Total	**4030**	**1777**	**44.1%**	**979**	**24.3%**	**1815**	**45.0%**	**605**	**15.0%**

Source: Annex 1: Statistical Data for the Secondary Education Level

Interim solutions could include use of water tanks for distribution of drinkable water, and building septic tanks to improve sanitation.

A majority of schools (2792 out of 3709 respondents, -75%) reported that they organised garbage disposal themselves, while 805 schools (22%) reported garbage disposal by the municipality.

3.9.5.2. Electricity

Provision for electricity in schools appears to be rather better, with about 92% of schools (3618 of 3924 respondents) already connected to the main power grid. About 14 schools relied on generators for electricity supply; while 54 reported having stand-by generators. The problem, however, is continuity of supply, with most schools reporting frequent power cuts or not receiving any power at all, even if they were connected. Only 9% of schools reported a continuous supply of electricity. An interim solution for those schools which receive an intermittent supply of electricity and those which do not receive it at all is to provide these schools with generators. This means providing generators to almost 4,000 schools to ensure continuous power supply and create a favourable study conditions for the students.

As the lack of such basic facilities negatively affects the entire learning process, it is crucial to include provision of utilities as an integral component of future reconstruction work.

3.9.6. Equipment and Furniture

Over the last 5 years, the Oil for Food Programme brought much needed furniture and teaching equipment to all Iraqi educational institutions. One of the most successful interventions was the supply of school furniture for both students and staff. Teaching-learning equipment, such as laboratory equipment, computers and audio-visual facilities, was also provided, but the quantities were inadequate, considering the many years of decline. The spate of looting and burning resulted in significant destruction of furniture and equipment and further reduced availability.

The UNESCO needs assessment included a question on the needs for ICT and office equipment, covering both administrative and academic requirements. Table 3.10 shows the expressed need for computers and other facilities.

Table 3.20. Stocks and Expressed Additional Needs for Computers and Audio-Visual Equipment, by School Type

Equipment	Intermediate		Secondary		Preparatory	
	Existing	Stated Need	Existing	Stated Need	Existing	Stated Need
Computers	936	13,567	714	8,371	587	4,568
UPS	474	11,043	334	7,025	265	3,707
Printers	376	7,958	236	5,339	219	2,330
Scanners	465	8,508	155	6,013	99	2,054
Overhead projector	1,318	7,586	434	5,501	167	5,411
Slide Projectors	331	4,008	235	2,697	131	1,039
TV	137	3,530	134	2,500	63	1,112
VCR	120	3,452	124	2,209	35	921
Photocopiers	48	2,194	30	1,498	14	692

Source: Annex 1: Statistical Data for the Secondary Education Level

The table above shows the limited equipment available in the secondary schools. This may be partly due to in March/April 2003, with computers and audio-visual equipment being a favourite target. The data represent the entries on the questionnaire and there may be some double-counting both of existing stocks of equipment and of additional needs. The figures appear reasonable. For example, if computer rooms are supplied to 3,000 schools, and if each school receives only 10 computers, the total requirement would be 30,000. This is more than the total number mentioned by school heads when completing the questionnaires (26,506). In a large school, more than 10 computers would be needed, although it might be wise to build up the stock each year so that newer models are available for senior students.

Given the backlog of needs for school equipment and materials, together with losses in March/April 2003, it will be necessary to provide standard sets of equipment and materials for rooms used as laboratories or for other special purposes. The number of science rooms in a school and the equipment required depends on the level of studies and, at upper secondary level, on the numbers of students in science or 'literary' streams. However, most of the schools definitely need new equipment. Most schools need language laboratory equipment and equipment for physical education/gymnastics. Likewise, most schools need books and equipment for a school library.

School desks and office furniture are required as well. The furniture required for students enrolled in the estimated 1,000 school buildings classified as unsafe (10%) and badly

damaged (23%) would include, - in rounded figures, some 1,000 chairs, desks and cabinets for head-teachers, 12,000 teacher chairs and desks for classrooms and similar seating for staff rooms, 12,000 blackboards and cupboards, and 360,000 school desks and seats.[30] Some additional school furniture will be required for the estimated 2,000 school buildings that were partially damaged or in good condition. These needs would have to be verified on the spot.

[30] Assuming an average of about 12 classrooms per building, with each room seating about 30 students, and a total of about 3,000 school buildings used for general secondary education.

4. VOCATIONAL PREPARATORY SCHOOLS

This chapter presents the situation of the vocational Preparatory schools, which offer industrial studies, commercial studies, agriculture and home science. These institutions have been badly affected by the economic decline following the 1991 conflict and imposition of sanctions. The number of students fell from 147,942 in 1989/1990 to 65,750 in 2000/2001, which is a decrease of 56%. During the same period, the number of teachers in these schools also fell, from 9,223 to 7,483.[31]

4.1. Number and Types of Vocational Schools

Vocational education is offered in the Preparatory stage of the secondary cycle as an option for students completing the Intermediate cycle. Vocational education includes schools in the fields of industry, commerce, agriculture and home science, with 21 areas of specialization. The vocational cycle is of 3 years duration (grades 10-12), ending with national examinations. The top 10% of students in these final examinations can go on to pursue degree programmes in technical colleges.

The UNESCO survey team received a total of 231 questionnaires completed by vocational schools across the country. This figure differs from the total of 258 vocational schools cited by Education Ministry officials, indicating that up to 27 vocational schools did not respond to the UNESCO survey. Table 4.1 shows the distribution of the 231 vocational schools by gender by governorate.

[31] UNESCO, "Situation Analysis of Education in Iraq," Paris, April 2003.

Table 4.1. Preparatory Vocational Schools, by Gender and Governorate

Governorate	Boys	Girls	Co-Ed	Total
Anbar	12	3	0	15
Basrah	9	2	2	13
Muthanna	4	1	0	5
Qadissiya	6	1	0	7
Sulaymaniyah	3	3	3	9
Babylon	8	4	0	12
Baghdad	41	20	0	61
Dahuk	2	2	0	4
Thi-Qar	9	1	0	10
Diyala	10	3	0	13
Erbil	4	2	4	10
Kerbala	6	2	0	8
Tameem	10	2	5	17
Missan	5	1	1	7
Ninewa	8	2	2	12
Wassit	8	2	0	10
Najaf	5	1	0	6
Salah Al-Din	8	0	4	12
Total	**158**	**52**	**21**	**231**
Percentage	**68%**	**23%**	**9%**	**100%**

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 4.1 shows that out of the 231 vocational schools, two-thirds (158) catered to male students, while one third were for females only (52) or co-educational (21). Baghdad had by far the highest number of vocational schools (61), followed by Tameen (17) and Anbar (15). Seven governorates out of 18 had co-educational schools. Nearly all (97%) of the vocational schools reported that they were situated in urban areas, with only 7 being located in rural areas. **Table 4.2** shows the fields of specialisation offered by the schools.

Table 4.2. Preparatory Vocational Schools by Fields of Specialization

Fields Of Specialization	Number	Percentage
1. Industrial	131	57 %
2. Commercial	34	14 %
3. Agricultural	9	4 %
4. Household Science	2	1 %
5. Vocational	55	24 %
Total	**231**	**100 %**

Source: Annex 1: Statistical Data for the Secondary Education Level

Industry was the main field of specialisation with 58% of schools offering this field, followed by general 'vocational schools' (24%) and commercial schools (14%). Significantly for a country that is still an agricultural economy, agriculture was offered in only 4% of the vocational schools. This raises questions of policy, since Muthanna, Baghdad, Dahuk, Diyala, Erbil, Tameen, Wassit, Najaf and Salah Al-Din do not have agricultural schools. Household science, which is for girls, was offered in only 1% of the vocational schools. The low representation of agriculture and household science may reflect a lack of salaried employment opportunities in these fields.

The shift system is used in order to cope with the lack of school buildings, as shown in **Table 4.3**.

Table 4.3. Use of Shifts in Preparatory Vocational Schools

Governorate	Single Shift		Double Shift		Triple Shift		Total Schools
	No.	%	No.	%	No.	%	
Anbar	14	93.3	1	6.7	0	0.0	15
Basrah	0	0.0	13	100.0	0	0.0	13
Muthanna	2	40.0	3	60.0	0	0.0	5
Qadissiya	2	28.6	5	71.4	0	0.0	7
Sulaymaniyah	2	22.2	6	66.7	1	11.1	9
Babylon	2	16.7	10	83.3	0	0.0	12
Baghdad	36	59.0	25	41.0	0	0.0	61
Dahuk	2	50.0	2	50.0	0	0.0	4
Thi-Qar	1	10.0	9	90.0	0	0.0	10
Diyala	6	46.2	7	53.8	0	0.0	13
Erbil	2	20.0	7	70.0	1	10.0	10
Kerbala	2	25.0	6	75.0	0	0.0	8
Tameem	6	35.3	9	52.9	2	11.8	17
Missan	5	71.4	2	28.6	0	0.0	7
Ninewa	10	83.3	2	16.7	0	0.0	12
Wassit	3	30.0	7	70.0	0	0.0	10
Najaf	2	33.3	4	66.7	0	0.0	6
Salah Al-Din	2	16.7	7	58.3	3	25.0	12
TOTAL	**99**	**43%**	**125**	**54%**	**7**	**3%**	**231**

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 4.3 shows that more than half the schools were operating on a double shift (54%) or triple shift (3%). Multiple shifts impact negatively on the teaching-learning process, more so in vocational fields where long hours of practical work are required. This problem was most serious in Basrah where all 13 schools were operating double shifts, followed by Thi-Qar (90% using shifts), Babylon (83%), Kerbala (75%) and Ninewa and Erbil (70% each). This situation should be taken into account when a plan is drawn up for the rehabilitation of vocational education.

4.2. Enrolment

Enrolment in the 231 vocational Preparatory schools responding to the survey was 73,941. Baghdad (28%), Basrah (11%) and Tameen (9%) had the highest number of students (**Table 4.4)**. Over four-fifths of the students were male (60,298) and only 18.5% female (13,643), giving a Gender Parity Index of 0.23. This gender distribution indicates the need to increase the participation of girls in vocational education. For girls, the highest enrolments were in Baghdad, followed by Babylon and Sulaymaniyah. It should be remembered that girls predominate in teacher training institutes, however, which are also occupational in focus.

Table 4.4. Enrolment in Preparatory Vocational Schools, by Gender and Governorate

Governorates	Males	Females	Total	Percent
Anbar	3,078	477	3,555	13.4%
Basrah	7,821	802	8,623	9.3%
Muthanna	920	180	1,100	16.4%
Qadissiya	1,210	340	1,550	21.9%
Sulaymaniyah	1,349	884	2,233	39.6%
Babylon	3,008	1,335	4,343	30.7%
Baghdad	14,793	5,877	20,670	28.4%
Dahuk	1,299	46	1,345	3.4%
Thi-Qar	3,431	162	3,593	4.5%
Diyala	3,517	840	4,357	19.3%
Erbil	1,275	681	1,956	34.8%
Kerbala	1,823	237	2,060	11.5%
Tameem	6,761	408	7,169	5.7%
Missan	1,615	428	2,043	20.9%
Ninewa	1,853	217	2,070	10.5%
Wassit	1,675	439	2,114	20.8%
Najaf	2,887	140	3,027	4.6%
Salah Al-Din	1,983	150	2,133	7.0%
Total	60298	13643	73941	18.5%

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 4.5 below shows a concentration of vocational students in industrial fields (64%), followed by 'vocational' (22%), commercial (11%), agricultural (2%) and household science (0.1%). This distribution is similar to the data on numbers of vocational schools, presented above. The focus on industrial specialisations may reflect the trend towards industrialisation of Iraq, given its petroleum resource base and economic activities arising from it.

Table 4.5. Fields of Specialization of Students in Preparatory Vocational Schools, by Gender

Fields	Males	Females	Total	Percent of total preparatory vocational students
Industrial	44505	2924	47429	64.1%
Commercial	3712	4523	8235	11.1%
Agricultural	1352	242	1594	2.2%
Household Science	0	94	94	0.1%
Vocational	10729	5860	16589	22.4%
Total	**60298**	**13643**	**73941**	

Source: Annex 1: Statistical Data for the Secondary Education Level

As seen in Table 4.5, male enrolment was higher in the industrial, vocational and agricultural specialisations, whilst more females were enrolled in commercial studies and also household science.

Physical disability
A small number (221) of vocational education students were reported to suffer from physical disabilities, -only 0.3% of the total vocational student population. These disabilities included:

Severe visual disability: 79 (0.11%)
Physical disability: 107 (0.14%)
Severe deafness: 7 (0.01%)
Other disabilities: 28 (0.04%).

4.3. Participation Rate

The Gross Enrolment Ratio in vocational schools (estimated as the ratio of enrolment to the population aged 15-17 years) was 4.3%. GER for males was 7% while that for females was 2%. These figures reflect the limited attraction of vocational education to students as has been the case in most developing countries. The table below shows the distribution of the GER by governorates. Participation in vocational education was relatively high in Tameem (14%) and, to a certain extent, in Basrah (9%). Male participation was high in Tameem (26%) and Basrah (15%). Girls' participation in vocational education was low in all the governorates.

Table 4.6. Gross Enrolment Ratio for Students attending Preparatory Vocational Schools, by Governorate[32]

Governorate	Total Population (15-17)			Gross Enrolment Ratio		
	Male	Female	Total	Male	Female	Total
Anbar	44714	42775	87488	6.8	1.1	4.0
Basrah	50786	48584	99370	15.3	1.6	8.6
Muthanna	18417	17619	36036	4.9	1.0	3.0
Qadissiya	28103	26884	54987	4.3	1.2	2.8
Sulaymaniyah	58475	55939	114415	2.3	1.6	1.9
Babylon	61475	58809	120284	4.9	2.3	3.6
Baghdad	165782	158593	324375	8.9	3.7	6.4
Dahuk	29584	28301	57885	4.4	0.2	2.3
Thi-Qar	53371	51056	104426	6.4	0.3	3.4
Diyala	50585	48392	98977	6.9	1.7	4.4
Erbil	49669	47515	97183	2.5	1.4	2.0
Kerbala	31766	30389	62155	5.7	0.8	3.3
Tameem	25870	24748	50618	26.1	1.6	14.2
Missan	25594	24484	50078	6.3	1.7	4.1
Ninewa	79609	76157	155765	2.3	0.3	1.3
Wassit	29107	27844	56951	5.7	1.6	3.7
Najaf	33698	32237	65935	8.5	0.4	4.6
Salah Al-Din	38742	37062	75804	5.1	0.4	2.8
Total	875348	837385	1712733	6.9	1.6	4.3

Source: Annex 1: Statistical Data for the Secondary Education Level

[32] Computed from population estimates and UNESCO database, August 2003

4.4. Internal Efficiency

The present survey did not assess levels of repetition and drop out. Earlier data indicated dropout and failure rates of 1.9% and 17.7% respectively.[33] This loss represents a waste of resources.

Enrolment data collected in the UNESCO survey do not suggest high levels of drop out in the course of the 3 years of study, with 21,301 students in grade 10 and 19,960 in grade 12. 'Cross-sectional' data of this type can provide only a general indication of efficiency, however, since there could have been different numbers entering grade 10 in previous years and since the number of repeaters in each year is unknown.

Table 4.7. Enrolment in Preparatory Vocational Schools, by Grade and Gender [34]

	Male	Female	Total	Percentage Female
Grade 10	16536	4765	21301	22.4%
Grade 11	16000	3943	19943	19.8%
Grade 12	16396	3264	19660	16.6%
Total	**48,932**	**11,972**	**60,904**	19.7%

Source: Annex 1: Statistical Data for the Secondary Education Level

4.5. Teachers

The UNESCO survey found a total teaching force of 4,694 in the 231 vocational Preparatory schools that completed the questionnaire. About half of the teachers were male (2,311) and half were female (2,383). The number of teachers was substantially less than in 2000/2001, when the teaching force was estimated at 7,483.[35] The apparent decrease of one-third over this period underlines the marginalisation of vocational education.

[33] GOI, Annual Statistics for 2000/2001.

[34] A total of 11,366 boys and 1,671 girls were recorded as being in grades 7-9, which was probably due to errors made at the time of completing the questionnaire

[35] UNESCO, "Situation Analysis of Education in Iraq," Paris, April 2003.

Table 4.8. Preparatory Vocational Education Teachers by Gender, Governorate and Student-Teacher Ratio

Governorate	Teachers			Student/ Teacher Ratio
	Males	Females	Total	
Anbar	181	52	233	15.3
Basrah	190	170	360	24.0
Muthanna	23	8	31	35.5
Qadissiya	124	134	258	6.0
Sulaymaniyah	57	89	146	15.3
Babylon	112	248	360	12.1
Baghdad	394	752	1146	18.0
Dahuk	26	20	46	29.2
Thi-Qar	130	75	205	17.5
Diyala	211	194	405	10.8
Erbil	81	102	183	10.7
Kerbala	145	106	251	8.2
Tameem	137	136	273	26.3
Missan	109	52	161	12.7
Ninewa	96	83	179	11.6
Wassit	92	76	168	12.6
Najaf	78	40	118	25.7
Salah Al-Din	125	46	171	12.5
Total	2311	2383	4694	15.8

Source: Annex 1: Statistical Data for the Secondary Education Level

Table 4.8 shows that the average student/teacher ratio was 16. This tends to indicate that given the nature of vocational education, teachers need to spend more time with students, to supervise their individual practical work and skill development.

Five governorates had ratios much above the national average: Muthanna with a student/teacher ratio of 35.5; Najaf, 26; Dahuk, 29; Basrah, 24; and Tameen, 26. In contrast, some governorates had very low ratios: Qadissiya, 6; Kerbala, 8; Erbil and Diyala, 11. It will thus be important to rationalize the distribution of teachers amongst the various governorates and also between the individual schools. In one commercial school in Basrah, for example, 758 students had only 6 teachers, or 126 students per teacher. In contrast, an agricultural school in Missan had 16 teachers and only 18 students; and an agricultural school in Anbar had 16 teachers and only 50 students, -a student-teacher ratio of 3. These imbalances highlight the need for better planning in respect of teacher distribution among specializations and schools as well as governorates.

Average student/teacher ratios for the various specializations were close to the overall ratio. The ratio for Industrial courses was 16.5, while for Commercial and 'Vocational' courses it was about 18 and 15 respectively. Agriculture and Household Sciences had very low ratios of about 7 and 6 respectively, which indicate an excess of teachers, -perhaps due to lesser student interest in entering these fields of study.

Table 4.9. Student-teacher Ratio in Preparatory Vocational Schools, by Field of Specialisation

Field	Students	Teachers	Ratio
Industrial	47429	2867	16.5
Commercial	8235	455	18.1
Agricultural	1594	232	6.9
Household Science	94	15	6.3
Vocational	16589	1125	14.7
TOTAL	**73941**	4694	15.8

Source: Annex 1: Statistical Data for the Secondary Education Level

4.5.1. Qualifications

Vocational teachers are expected to hold a university degree. Most teachers for these specializations obtain a two-year diploma from a Technical Institute and then study at the University of Technology in Baghdad in the Technical Education Department for a further three years. Zafaraniya Technical Institute is the only institution of its kind in Iraq for training Industrial teachers. Similarly teachers for Agriculture receive their training at the College of Agriculture, and Commerce teachers in the College of Business Administration or Economics.

Table 4.10 below shows the highest educational qualifications held by the present teachers in vocational education.

Table 4.10. Highest Educational Attainment of Preparatory Vocational School Teachers, by Governorate

Highest Educational Attainment	Percent
Technical Institute (2 Years)	1.8%
Technical Institute (5 Years)	6.1%
Bachelors Degree	91.2%
Post Graduate Diploma	0.8%
Masters Degree	0.1%
Ph.D.	0%

Source: Annex 1: Statistical Data for the Secondary Education Level

The Needs Assessment found that 91% of the teachers had a bachelor's degree. Some 8% only held certificates from Technical Institutes, and need the opportunity to study at a higher level With the exception of teachers who had certificates from technical institutes, women outnumbered men by a small margin. The assessment confirms that in spite of the 12 years of sanctions the basis for hiring vocational teachers has not been significantly eroded.

Women accounted for 60% or more of teachers qualified in chemistry, biology, economics, geography and art, while men accounted for over 60% of teachers qualified in physical education, and industrial studies, and for 59% of teachers of mechanical engineering.

4.5.2. Professional Development and In-service Teacher Training

Due to the rapid development in technology, vocational teachers require more frequent professional development and in-service training in order to stay current with new techniques and methods. The situation in Iraq over the last decade made it almost impossible to carry out meaningful retraining or provide effective in-service courses. As a result there has been stagnation in programmes of instruction and teacher development. The lack of adequate in-service and professional development has negatively affected the capacity of teachers to meet changing requirements.

The survey confirms the limited amount of in-service training received by vocational education teachers in recent years. The total of 1,799 training sessions attended since January 1998 compares with a total of 5,137 vocational teachers, some of whom may have attended more than one course. These trainings covered methodology and educational psychology, subject teaching methodology, school administration and other topics.

Table 4.11. In-service Training Courses Attended by Preparatory Vocational School Teachers from January 1998 to August 2003

	Males	Females	Total
Teaching Methodology	233	144	377
Education Psychology	123	68	191
Subject Teaching Methodology	184	278	462
School Administration	123	68	191
Other	297	281	578
Total	**960**	**839**	**1799**

Source: Annex 1: Statistical Data for the Secondary Education Level

The survey data shows that female teachers attended more courses in subject teaching methodology while male teachers attended more of the other courses. In general, less than 10% of teachers participated in any particular type of training.

Of the 220 Head Teachers in the survey, as many as 149 (68%) had attended in-service training courses between 1998 and 2003, mostly from Industrial schools. While such head-teacher training is critical to educational change and renewal, it is essential to provide specialised training for their staff at the same time. The survey results show that a lower proportion of staff than head-teachers received in-service training. A major programme to upgrade pedagogy, subject matter and practical skills training is needed as a matter of urgency.

4.6. Curriculum

Vocational education curricula have not been reviewed for over two decades. A UNESCO Independent Technical Evaluation in Northern Iraq found that curricula were narrow and focused mostly on the acquisition of job skills in the area of specialization. In other countries, the vocational education curriculum has expanded to include courses that help graduates fit into rapidly changing workplaces or develop businesses as self employed entrepreneurs.[36]

[36] Independent Technical Evaluation Report, UNESCO, 2001.

As noted above, over 60% of the vocational students were enrolled in Industrial specializations, which are especially affected by the pace of technological change in recent decades. During this period, however, Iraq was isolated from many developments in the rest of the world. The curriculum and teaching methods are outdated. Machinery and other essential equipment necessary for practical lessons are either archaic or broken down, and cannot support the renewal of curriculum. Both factors no doubt contribute to the poor situation in vocational education and the decline in enrolment may be a reflection of this phenomenon.

4.7. Textbooks and Other Teaching-Learning Materials

The difficult economic situation led to a shortage of textbooks and other teaching-learning materials. The stock of textbooks reported in the survey was 38,190, or an average of one book for two students. However, a range of textbooks are needed by each student, according to the course taken. The number of textbooks by broad subject area corresponded to one per 7 students in science and mathematics and one per 5 students in the language/humanities group (**Table 4.12**).

Table 4.12. Stocks of Textbooks Reported by Preparatory Vocational Schools

	Math	Science	Social	Language/ Humanities	Other
Anbar	916	859	204	160	1150
Basrah	1580	500	0	7900	200
Muthanna	0	0	0	0	0
Qadissiya	0	0	0	0	0
Sulaymaniyah	1270	4445	0	0	3931
Babylon	1964	1510	973	4738	3324
Baghdad	1685	1070	0	0	1215
Dahuk	41	25	13	0	175
Thi-Qar	1020	1010	0	10	1000
Diyala	50	0	0	0	0
Erbil	665	498	130	101	1135
Kerbala	70	31	10	150	0
Tameem	31	41	20	0	10
Missan	130	0	0	220	200
Ninewa	0	0	0	0	200
Wassit	1128	89	623	0	2036
Najaf	0	0	0	0	0
Salah Al-Din	233	80	0	1946	700
Total	10783	10158	1973	15225	15276

Source: Annex 1: Statistical Data for the Secondary Education Level

There appeared to be a total absence of textbooks in the governorates of Muthanna, Qadissiya and Najaf, and less than 500 in Dahuk, Diyala, Kerbala, Tameem. This could have been due to misreporting. However, vocational education was clearly suffering badly from the shortage of textbooks, and photocopying of key pages was a poor substitute.

Other learning materials such as electronic kits and workshop tools for vocational education were procured through the Oil for Food Programme. UN observers noted, however, that in some parts of the country consumable materials used in vocational education stayed in warehouses for extended periods of time. This could have been partly due to the drop in enrolment, and partly to the unreliable electricity supply. The omission

of practical and demonstration lessons would have adversely affected the quality of vocational education. It should also be noted that supplies under the Oil for Food Programme did not include the sophisticated technical equipment needed to update existing workshop, laboratory and science facilities.

4.8. Infrastructure and equipment

Due to a shortage of accommodation, the 231 vocational schools were housed in only 165 buildings, a ratio of 1.4 schools per building. There were 99 school buildings housing one-shift schools and 66 buildings housing two or three-shift schools. The situation was worst in Basrah where all 13 schools operated on double-shifts. The logical conclusion is that new vocational schools should be constructed, so that all students have adequate time for practical as well as theoretical studies. Given the need for a closer linkage of vocational training to the employment market, however, the construction of *new* schools for vocational education should be justified by a clear national need for the skills to be taught.

It is urgent, however, to reconstruct or rehabilitate existing school buildings that were damaged during the conflict (see section 4.8.1 below), including improvement and equipment of workshop rooms in most of the vocational school buildings. Attention should be given to the problem of double-shift schools in many areas, particularly in Basrah. The use of temporary classrooms may be considered.

4.8.1. Condition of School Buildings

International efforts to rehabilitate schools in the immediate post-conflict period did not give priority to vocational schools. By the time the UNESCO needs assessment teams collected data in mid-August, only 2 vocational schools had been rehabilitated and 11 partially rehabilitated.

The UNESCO survey found that infrastructure was in a poor condition. The physical status of the buildings, estimated to total 164, was as follows:

- "in good condition": 26 (16%)
- "partially bad": 74 (45%)
- "very bad": 46 (28%)
- "unsafe": 18 (11%). [37]

As noted in chapter 3, the criteria for deciding on physical status were the extent of war-related damage or other deterioration caused by long periods of neglect and lack of maintenance. The 11% of buildings considered "unsafe" were found in Baghdad, Basrah, Muthanna, Babylon, Erbil, Thi-Qar, Diyala, Tameen, Wassit and Salah Al-Din.

[37] The number of premises was estimated based on the data on the use of shifts in Table 4.3 above.

Table 4.13. Condition of Buildings in which Vocational Preparatory Schools are Housed

	Total number of answers	Good		Partially damaged/ Deteriorated		Damaged/ Deteriorated		Unsafe	
		#	%	#	%	#	%	#	%
Anbar	15	6	40.0	7	46.7	2	13.3		0.0
Basrah	12	3	25.0	5	41.7		0.0	4	33.3
Muthanna	5	1	20.0	3	60.0		0.0	1	20.0
Qadissiya	7	2	28.6	2	28.6	3	42.9		0.0
Sulaymaniyah	9	2	22.2	4	44.4	3	33.3		0.0
Babylon	11	4	36.4	3	27.3	2	18.2	2	18.2
Baghdad	59	4	6.8	25	42.4	22	37.3	8	13.6
Dahuk	4	1	25.0	2	50.0	1	25.0		0.0
Thi-Qar	10		0.0	4	40.0	5	50.0	1	10.0
Diyala	13	3	23.1	5	38.5	3	23.1	2	15.4
Erbil	9	4	44.4	2	22.2	2	22.2	1	11.1
Kerbala	8		0.0	7	87.5	1	12.5		0.0
Tameem	15	2	13.3	8	53.3	3	20.0	2	13.3
Missan	6		0.0	2	33.3	4	66.7		0.0
Ninewa	12	1	8.3	8	66.7	3	25.0		0.0
Wassit	10	1	10.0	5	50.0	2	20.0	2	20.0
Najaf	6	1	16.7	5	83.3		0.0		0.0
Salah Al-Din	11		0.0	2	18.2	7	63.6	2	18.2
Total	**222**	**35**	**15.8**	**99**	**44.6**	**63**	**28.4**	**25**	**11.3**

Source: Annex 1: Statistical Data for the Secondary Education Level

Respondents to the UNESCO survey reported a total of 193 war-related incidents, affecting 152 vocational schools (this may include some double-counting where premises are shared). Out of this total, there were 28 reported incidents of bombing; 29 of burning, and 236 of looting. Most of the governorates affected by war damage experienced all three types of damage. Bombing was worst in Baghdad and Thi-Qar (9 and 4 incidents, respectively), and burning was highest in Tameen (6) and Baghdad and Basrah (5 each). Looting incidents were reported almost everywhere, the worst-affected areas being Baghdad (40), Tameen (13) and Basrah (11). Since buildings were often burnt as a result of bombing or after having been looted, the three damage types are inter-related. No war-related incident was cited by the 3 governorates in the north. Principals of 58 vocational schools reported that they had been used by the military as barracks, probably necessitating some rehabilitation work.

Table 4.14. Reports of War Damage to Vocational Preparatory School Buildings[38]

	War damage reported by school			Total answers	Used by military		Looting		Burning		Bombing	
	Yes		No									
	#	%			#	%	#	%	#	%	#	%
Anbar	3	20	12	15			4	27				
Basrah	11	85	2	13	7	54	11	85	5	38	3	23
Muthanna	5	100		5	5	100	3	60	1	20		
Qadissiya	6	86	1	7	1	14	5	71	1	14	2	29
Sulaymaniyah			9	9								
Babylon	8	67	4	12	6	50	6	50	1	8	3	25
Baghdad	47	77	14	61	14	23	40	66	5	8	9	15
Dahuk			4	4								
Thi-Qar	5	50	5	10	5	50	5	50	2	20	4	40
Diyala	7	54	6	13	1	8	6	46			2	15
Erbil			10	10								
Kerbala	7	87	1	8	4	50	7	87	1	12	1	12
Tameem	13	76	4	17	1	6	13	76	6	35	1	6
Missan	6	85	1	7			6	86	1	14		
Ninewa	10	83	2	12	2	17	10	83	2	17		
Wassit	10	100		10	7	70	8	80	1	10		
Najaf	5	83	1	6	4	67	5	83			1	17
Salah Al-Din	9	75	3	12	1	8	7	58	3	25	2	17
Total	152	66	79	231	58	25	136	59	29	13	28	12

Source: Annex 1: Statistical Data for the Secondary Education Level

4.8.2. Teaching area (classrooms, laboratories, workshops)

Specialised teaching spaces are especially important for vocational education. The survey showed the need for more science laboratories, computer laboratories, commerce rooms, and workshops for metalwork, woodwork, home arts and agriculture. Only 27 schools reported having the use of metal workshops, 26 of computer laboratories, 12 of carpentry workshops, 11 of special rooms for commercial studies, 9 of home arts rooms and 4 of agriculture laboratories. No school had a language laboratory. Several survey respondents (22) also indicated a need for a gymnasium for physical education classes.

Ministry officials explained that half of the vocational school buildings were originally not designed for this purpose. Clearly, there is an urgent need to create and equip specialised rooms for the different vocational fields covered by the various institutes. The quantitative needs must be decided by reference to the courses offered at the respective premises and their practical work requirements.

[38] The table shows the number of reports by school principals, with possible double counting if premises are shared

Table 4.15. Availability of Specialised Rooms in Vocational Preparatory Schools

	Schools with use of facility
Metal Workshop	27
Woodwork	12
Commerce	11
Home Arts	9
Agriculture Lab	4
Computer Laboratory	26
Language Laboratory	0
Gymnasium	15
Science Laboratory	6

Source: Annex 1: Statistical Data for the Secondary Education Level

4.8.3. Libraries

Just as in general secondary education, the availability of libraries is limited, with a consequent negative impact on the quality of learning. Of the 152 vocational schools which provided information on this matter, 76% reported not having a functional library. Given the estimated number of 164 separate premises, this means that at least 125 basic libraries need to be established. In some instances, it may be practicable to establish a good library in one vocational school centrally located in a governorate, which will provide access for staff and students of the smaller schools. The system of mobile libraries visiting schools on a schedule could be an alternative solution to this acute problem where distances are greater.

4.8.4. Utilities

Utilities such as safe drinking water, sanitation facilities and continuous supply of electricity are critical to the safe and effective education of school children and young people. The UNESCO survey found serious problems in this respect.

4.8.4.1. Water and Sanitation

More than half (53%) of the vocational schools reported that they had access to running water (**Table 4.16**). Another 22% reported access to other sources of water**. It is urgent to immediately plan for the provision of safe drinking water to vocational education students in these governorates.**

Table 4.16. Condition of Water Supply and Sanitation Reported by Vocational Preparatory Schools, by Governorate

	Total Schools	Access to running water		Access to other water sources		Latrines connected to the sewage network		Functional Latrines	
		#	%	#	%	#	%	#	%
Anbar	15	10	66.7	4	26.7	6	40.0	2	13.3
Basrah	13	3	23.1	4	30.8	7	53.8	2	15.4
Muthanna	5	1	20.0		0.0	4	80.0	2	40.0
Qadissiya	7	3	42.9	1	14.3	1	14.3	1	14.3
Sulaymaniyah	9	8	88.9		0.0	8	88.9	4	44.4
Babylon	12	11	91.7	1	8.3	10	83.3		0.0
Baghdad	61	34	55.7	14	23.0	41	67.2	9	14.8
Dahuk	4	3	75.0	1	25.0	4	100.0	1	25.0
Thi-Qar	10	4	40.0	3	30.0	1	10.0		0.0
Diyala	13	8	61.5	2	15.4	6	46.2	1	7.7
Erbil	10	5	50.0	3	30.0	7	70.0	4	40.0
Kerbala	8	3	37.5	2	25.0	2	25.0		0.0
Tameem	17	8	47.1	2	11.8	13	76.5	5	29.4
Missan	7	1	14.3	3	42.9		0.0		0.0
Ninewa	12	9	75.0		0.0	9	75.0	3	25.0
Wassit	10	3	30.0	5	50.0	3	30.0	1	10.0
Najaf	6	6	100.0		0.0	4	66.7		0.0
Salah Al-Din	12	3	25.0	6	50.0	2	16.7		0.0
Total	**231**	**123**	**53.2**	**51**	**22.1**	**128**	**55.4**	**35**	**15.2**

Source: Annex 1: Statistical Data for the Secondary Education Level

Concerning sanitation, only 35 or 15% of the vocational schools surveyed reported having functioning latrines connected to a sewage disposal system. Another 93 schools reported that their premises were connected but did not have functioning latrines. Almost half (45%) were not connected to a sewage disposal system. Since sanitary conditions are imperative amongst school children and young people, this is another urgent matter.

On the other hand, garbage disposal appears to be well organized. Respondents to the survey indicated that there is a joint effort between the school, community and municipality to organise the disposal of garbage.

4.8.4.2. Electricity

Power supply is another facility that is important to students. Adequate supply of electricity is crucial to the instructional process for vocational schools, which need it for practical and demonstration lessons. Some 90% of vocational schools (208) reported that their premises relied solely on the main grid. Only 1 vocational school reported relying on a generator while 12 others reported having a connection to the main grid as well as owning generators for back-up.

In spite of near-universal connectivity to mains electricity, the power supply was irregular. Two thirds (141) of the 222 schools which responded to this question reported having an intermittent supply of power while 43 others (19%) reported not receiving electricity at all.

Table 4.17. Availability of Electricity Reported by Vocational Preparatory Schools, by Governorate

	Electricity Source									Electricity Available in classrooms						
	Total answers	Power Grid		Generator		Both		Other		Total answers	Always		Intermittent		Never	
		#	%	#	%	#	%	#	%		#	%	#	%	#	%
Anbar	15	15	100.0		0.0		0.0		0.0	15	1	6.7	13	6.7	1	6.7
Basrah	10	9	90.0		0.0	1	10.0		0.0	11	1	9.1	7	9.1	3	27.3
Muthanna	5	3	60.0		0.0	2	40.0		0.0	5	2	40.0	2	40.0	1	20.0
Qadissiya	7	7	100.0		0.0		0.0		0.0	7		0.0	6	0.0	1	14.3
Sulaymaniyah	9	8	88.9	1	11.1		0.0		0.0	9	4	44.4	5	44.4		0.0
Babylon	12	8	66.7		0.0	4	33.3		0.0	12	5	41.7	5	41.7	2	16.7
Baghdad	59	59	100.0		0.0		0.0		0.0	59	9	15.3	37	15.3	13	22.0
Dahuk	4	3	75.0		0.0	1	25.0		0.0	4	3	75.0	1	75.0		0.0
Thi-Qar	10	9	90.0		0.0	1	10.0		0.0	10		0.0	3	0.0	7	70.0
Diyala	13	13	100.0		0.0		0.0		0.0	13	2	15.4	9	15.4	2	15.4
Erbil	10	9	90.0		0.0	1	10.0		0.0	10	5	50.0	5	50.0		0.0
Kerbala	8	8	100.0		0.0		0.0		0.0	8		0.0	7	0.0	1	12.5
Tameem	15	15	100.0		0.0		0.0		0.0	15	4	26.7	9	26.7	2	13.3
Missan	6	6	100.0		0.0		0.0		0.0	6		0.0	2	0.0	4	66.7
Ninewa	11	11	100.0		0.0		0.0		0.0	11	2	18.2	8	18.2	1	9.1
Wassit	10	9	90.0		0.0	1	10.0		0.0	10		0.0	8	0.0	2	20.0
Najaf	6	5	83.3		0.0	1	16.7		0.0	6		0.0	6	0.0		0.0
Salah Al-Din	11	11	100.0		0.0		0.0		0.0	11		0.0	8	0.0	3	27.3
Total	**221**	**208**	**94.1**	**1**	**0.5**	**12**	**5.4**	**0**	**0.0**	**222**	**38**	**342.4**	**141**	**63.5**	**43**	**19.4**

Source: Annex 1: Statistical Data for the Secondary Education Level

An interim solution for those schools receiving an intermittent supply of electricity and those which do not receive it at all is to provide them with generators. This means providing generators to almost 200 schools to ensure continuous power supply, and create a favourable study conditions for the students.

4.8.5. Equipment and Furniture

Before the March 2003 conflict, vocational schools were generally well supplied with basic office equipment and supplies and furniture, thanks in part to the Oil for Food Programme. Workshops had basic equipment for the specialization being offered, although outmoded, -often dating from the 1980s. There were many restrictions during the sanctions period on the types of equipment that could be imported. After 2001 the institutions received a limited amount of modern equipment such as oscilloscopes and training models for some of the specializations.

Unfortunately, looting and arson in the aftermath of the conflict seriously affected vocational schools. The results from the survey indicate that two-thirds of the equipment used in laboratories and workshops, as well as furniture and office equipment, were looted or destroyed in the bombing and arson that followed the war. Education Ministry officials put the figure at 80%. This is a major blow to the vocational schools, as the quality of learning will be seriously affected. Vocational institutions were probably attractive targets to looters as the materials and equipment could easily be used for commercial purposes. At the resumption of schooling in May 2003, many vocational schools completed their academic year by covering only the theoretical component of the curriculum, making use if necessary of secondary or primary school facilities.

Assuming an average of 12 classrooms per vocational school, the 64 buildings that are in very poor or unsafe condition or substitute buildings, will need after rehabilitation to have furniture and equipment for some 768 classrooms, which will each need to be furnished with a teacher's desk and table, blackboard, cupboard and some 30 school desks. This is in addition to the provision of a chair, desk and table for the head teachers and a set of tables and chairs for the staff room. Some additional furniture will also be required for buildings in good or 'partially damaged' condition.

The workshops, laboratories, computer labs and other specialised rooms will have to be fitted with the corresponding furniture and equipment. Given the length of time during which equipment and spare parts were not available, it will be safest to assume that all these rooms need a new set of standard equipment. This means provision of a complete set of science laboratory or workshop equipment, computers and audio-visual and language laboratory facilities, as appropriate. Laboratory and workshop equipment are essential for the practical component of vocational schooling.

5. TEACHER TRAINING

This chapter presents the survey data on the institutes which train teachers for primary schools. These institutions, managed by the Ministry of Education, admit students who have completed the Intermediate or Preparatory levels of secondary education. Mention is also made here of teacher education activities at university level, so that a complete picture of the resources allocated to teacher preparation is provided. The education colleges and teacher colleges in the universities are discussed in more detail in chapter 6.

5.1. Types and Number of Teacher Training Institutions

There are several types of teacher training institutions. Teacher Training Institutes (TTIs) enrol graduates of the Intermediate cycle, after they complete Grade 9, and offer a five-year teacher preparation programme: 3 years for general education and an additional 2 years for subject specialization. Central Teacher Institutes (CTIs) enrol graduates of the Preparatory level of secondary education, after they complete Grade 12, for a two-year pre-service programme. Fine Arts Institutes enrol graduates of the Intermediate cycle for a 5-year period of study.[39]

Graduates from these institutes were permitted in recent years to teach at Intermediate as well as primary level, to meet teacher shortages. Teachers for general secondary education are normally graduates of the colleges of education in universities, and of education courses offered by faculties of sciences, physical education and fine arts. Some graduates from these university courses opt, however, to teach in primary schools because of proximity to their residence. At university level, there are 8 of such education colleges. In addition, the universities have teachers colleges which prepare teachers for primary and pre-primary education.

In recent years there has been a marked growth in the number of teacher education institutes. Currently there are 136 of these institutions covering grades 10-14 or 13-14. Of these, 28 are Central Teacher Institutes and the majority (108) are Teacher Training Institutes. **Table 5.1** below shows the institutes by type.

Table 5.1. Teacher Training Institutions and Fine Arts Institutes, by Type and Gender

Type	Male	Female	Co-ed	Total	Percent
Central Teachers Institute	9	10	9	28	18.7%
Teachers Institute	33	70	5	108	72.0%
Fine Arts Institute	3	5	6	14	9.3%
Total	45	85	20	150	

Source: Annex 1: Statistical Data for the Secondary Education Level

Out of the 136 TTIs and CTIs, 42 (23%) were schools for males, 85 (62%) were for girls and 20 (15%) were co-educational. These statistics are in line with the strong role played by women in primary education.

[39] Fine Arts Institutes are not discussed in detail in this study. Since these Institutes operate under the auspices of the Ministry of Education, and since their graduates often become teachers, it was decided to include some information on them, alongside TTIs and CTIs.

Almost all (98%) of the institutions reported that they were located in urban areas, i.e., districts, sub-districts and towns. Only 2% indicated a village or rural location. The governorates with the largest number of these institutions were Baghdad (20%), Basrah (9%), and Diyala and Wassit (8% each). Muthanna (2%) and Kerbala and Missan (3% each), had the lowest number (**Table 5.2**).

Table 5.2. Teacher Training and Fine Arts Institutions, by Type and Governorate

	Teacher Training Institutes	Central Teacher Institutes	Fine Arts Institutes	Total
Anbar	8	0	0	8
Basrah	11	1	2	14
Muthanna	3	0	0	3
Qadissiya	5	3		8
Sulaymaniyah	0	0	2	2
Babylon	5	1		6
Baghdad	20	6	4	30
Dahuk	4	1	1	6
Thi-Qar	8	0	0	8
Diyala	9	4		13
Erbil	3	3	2	8
Kerbala	4	0	0	4
Tameem	2	2	1	5
Missan	3	1	0	4
Ninewa	3	0	2	5
Wassit	10	2	0	12
Najaf	4	1	0	5
Salah Al-Din	6	3	0	9
Total	**108**	**28**	**14**	**150**

Source: Annex 1: Statistical Data for the Secondary Education Level

Teacher training institutions had to resort to the shift system in order to accommodate students. The UNESCO survey reveals that only one quarter had the full-time use of their building without the necessity for shifts, while the remainder were in accommodation that was used on a double shift basis. All institutes in Qadissiya, Diyala and Kerbala were on double shift. On the other hand, all institutes in Missan were on single shift.

Table 5.3. Use of Shifts in Teacher Training Institutions and Fine Arts Institutes

	Number of answers	Percentage
Single Shift	40	26.7%
Some classrooms used in two shifts	4	2.7%
All classrooms run double shifts under one school administration	10	6.7%
Building used for two administratively separate schools	95	63.3%
Other	1	0.7%
Total	150	

Source: Annex 1: Statistical Data for the Secondary Education Level

Interviews with concerned education authorities revealed that teacher training institutions often function as guest schools in the premises of Intermediate and/or Secondary schools. This arrangement had permitted an expansion of the number of institutes, which

informants said was needed to compensate for teacher turnover caused by low salaries as well as to meet the requirements of an expanding population. The guest school arrangement, however, places a limit on the hours of study of both the host and guest school, with a negative impact on educational quality. It also increases the use of materials and wear and tear on equipment and furniture.

Given this lack of accommodation, and the lack of Central Teacher Institutes in some governorates, a 'school mapping' analysis is needed to guide future investment in rehabilitation and construction in this sub- sector. It is vital to ensure that potential teachers throughout the country have access to quality teacher training.

5.2. Enrolment

Total student enrolment in the teacher training institutions was 52,891.[40] Of these, 83% were in the five-year Teacher Training Institutes. Two thirds (68%) of these TTI students were female, as compared to only half (49%) of those in the Central Teacher Institutes (**Table 5.4)**. This may indicate a preference of female students and their families for institutions nearer to their places of residence. There were 5,374 students in the Fine Arts Institutes, of whom 27% were female**.**

Table 5.4. Enrolment in Teacher Training Institutions and Fine Arts Institutes, by Type and Gender

Type	Male	Female	Total	Percent Female
Teacher Training Institutes	13970	30091	44061	68.3%
Central Teacher Institutes	4494	4336	8830	49.1%
Fine Arts Institutes	3922	1452	5374	27.0%
Total	22386	35879	58265	

Source: Annex 1: Statistical Data for the Secondary Education Level

Enrolment was highest in the governorate of Baghdad, with 14,132 students in teacher training institutes, but there was access to teacher training in each governorate **(Table 5.5).**

[40] These figures may be compared with the survey estimate of as many as 59,248 students enrolled in 39 education colleges in 14 universities at the end of academic year 2002/03 (see chapter 6). Out of the total pre-service teacher students in universities, 49% were females and 51% were males, giving a GPI of 0.96.

Table 5.5 Enrolment in Teacher Training Institutions and Fine Arts Institutes, by Type, Gender and Governorate

	Teacher Training Institutes		Central Teacher Institutes		Fine Arts	
	M	F	M	F	M	F
Anbar	320	1937				
Basrah	791	2882		47	153	310
Muthanna	348	627				
Qadissiya	1669	1170				
Sulaymaniyah			997	1647	837	212
Babylon	780	1405		155		
Baghdad	2625	9006	2068	433	1795	347
Dahuk	767	905	154	337	214	101
Thi-Qar	906	1902				
Diyala	1086	2617	117	229		
Erbil	466	504	422	859	295	161
Kerbala	899	982				
Tameem	20	470	270	369	37	36
Missan	719	1086	28	0		
Ninewa	140	678			591	285
Wassit	1465	1462		116		
Najaf	969	1176	0	52		
Salah Al-Din	0	1282	438	92		

Source: Annex 1: Statistical Data for the Secondary Education Level

Not many students were reported to suffer from disability. Only 0.3% amongst the students were suffering from severe visual disorder (0.2% or 101 students); severe deafness (one student); physical disability (0.1% or 73 students); and, other physical disorders (10 students). The low number of cases does not mean that students who were reported to be suffering from physical disability should be neglected. An efficient health care system and psychological counselling should be provided to them and all students in the teacher training institutes, in preparation for their professional duties.

5.3. Internal Efficiency

Unfortunately, indicators of internal efficiency such as dropout and repetition rates are not available. However, reference may be made to the results of the students who graduated from the 2- and 5-year teacher training institutions and Fine Arts Institutes in 2000/01 (**Table 5.6**). As many as 96% of trainee teachers passed the final General Examination. This statistic, however, does not indicate the quality of the courses provided at the institutes.

Table 5.6. Results of General Examinations in Teacher Education Institutes (2000/2001)[41]

	2/5-Year Teacher Training Institutes	Fine Art Institutes	Total
Number of Students who sat for General Examination	6,260	721	6,981
Number of students who passed General Examination	6,010	627	6,637
Percentage of Students who passed General Examination	96%	87%	95%

Source: Annex 1: Statistical Data for the Secondary Education Level

5.4. Teaching Staff

Teachers in teacher training institutions play a vital role in imparting knowledge, skills and values to future teachers who in turn will help shape the minds of the young citizens of the country. **Table 5.7.** shows the distribution of teaching staff according to the type of institute.

Table 5.7. Teacher Training and Fine Arts Staff by Type of Institution[42]

Type	Number Of Teachers
CTIs	309
TTIs	2,396
Fine Arts	477
Tourism Institute	11
TOTAL	3,193

Source: Annex 1: Statistical Data for the Secondary Education Level

The survey data reveals that at least 2,705 teacher trainers were working in the teacher training institutions, the majority in the five year institutes. Comparing this figure with the student enrolment in TTIs and CTIs (52,891) suggests a student/teacher ratio of 20.

There was approximate gender parity with 47% male staff and 53% females. There was a slight predominance of women in the TTIs and Fine Arts Institutes (52% each); while male teachers constitute 53% of the staff of the Central Teachers Institutes.

5.4.1. Qualifications

A majority of staff of the teacher training institutions hold bachelors degrees (66% of those for whom information on qualifications was provided), while a further 0.2% had a Post Graduate Diploma, 12% a Masters Degree, and 3% a Ph.D.[43] At least 28 teachers did not

[41] Data from the 3 Northern Governorates were not available

[42] Some institutes did not record the number of teachers when completing the survey questionnaire. Hence the true number is somewhat higher than shown here

[43] In contrast, the education faculty in the universities mostly hold postgraduate qualifications, - 28% with doctorates, 44% with master's degrees; and 28% with a bachelor's degree.

hold a university degree and should be helped to upgrade their educational qualifications to meet this requirement.

Table 5.8. Highest Educational Qualification of Graduate Teachers at Teacher Training Institutions and Fine Arts Institutes, by Gender and Governorate[44]

	PhD			Master			Bachelor		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Anbar	1	0	1	8	9	17	25	130	155
Basrah	3	3	6	18	28	46	65	149	214
Muthanna	0	0	0	0	0	0	18	28	46
Qadissiya	2	0	2	8	1	9	65	64	129
Sulaymaniyah	0	0	0	3	2	5	75	40	115
Babylon	0	0	0	1	6	7	37	63	100
Baghdad	32	26	58	40	71	111	132	353	485
Dahuk	1	0	1	3	0	3	55	56	111
Thi-Qar	1	0	1	2	0	2	45	46	91
Diyala	0	5	5	10	21	31	7	77	84
Erbil	1	0	1	17	6	23	78	62	140
Kerbala	3	0	3	4	0	4	44	10	54
Tameem	0	3	3	16	3	19	51	46	97
Missan	0	0	0	1	6	7	27	41	68
Ninewa	20	6	26	46	33	79	40	54	94
Wassit	3	0	3	1	1	2	50	73	123
Najaf	0	0	0	11	0	11	48	53	101
Salah Al-Din	2	1	3	11	5	16	10	101	111
Total	**69**	**44**	**113**	**200**	**192**	**392**	**872**	**1446**	**2318**

Source: Annex 1: Statistical Data for the Secondary Education Level

5.4.2. Professional Development and In-service Training of Trainers

The survey indicated that only a minority of the institute staff had participated in in-service training courses since January 1998. A reported 477 (15%) participated in in-service training courses in teaching methods in their respective subject specialization; 162 (5%) in general teaching methods; 124 (4%) in educational psychology; 74 (2%) in school administration; and 192 (6%) in other training areas.

Information is not to hand on the quality of the training received. Recent UNESCO experience in Northern Iraq indicated, however, that there was limited understanding among many teacher trainers about modern approaches to pedagogy. A massive retraining of teacher trainers will be needed to update their teaching methods and subject knowledge. Training in education for life skills, tolerance and active citizenship is also recommended. Educational counselling is another area that the Ministry may wish to consider, given the need for teachers and school children to cope with social change and economic development. It is also crucial that institute principals benefit from training in planning and management as well as new teaching methods.

Professional development for the staff of teacher institutes may be coordinated with that of the education faculties in the universities. There is a need for renewal of pedagogy at both primary and secondary level, and new curricula at both levels should reflect modern child-centred active learning approaches. Hence education faculty, who will play an active role in curriculum change, textbook development, and teacher training for the schools, need training in interactive teaching methods, as well as education regarding the psychosocial needs of students, life skills and educational counselling. It is significant to note that not all these staff graduated from education faculties. Many of them graduated from other

[44] This question was not answered for all staff

faculties such as sciences, social sciences, mathematics, business administration and management.

5.5. Curriculum

Teachers' Training Institutes offer five-year training; three years of general education and two years of study in specific subjects. Students specialize in one of the following fields: Islamic Studies; Arabic Language; English Language; Mathematics and Sciences; Physical Education; or Fine Arts. Central Teacher Training institutes offer two years of study in one of these fields. Fine Arts Institutes offer three years of general education and two years of study in Fine Arts.

In the first 3 years of study, all TTI students take a total of 36-37 classes that include Islamic Education, Koran Reading, Arabic Language, English Language, Kurdish Language, General Science, History, Geography, Civic/National Education, Principles of Education, Educational Research, General Psychology, Teaching Method, Primary and Adult Education, Child Psychology, Physical Education, Fine Art and Calligraphy, Family Education, Agriculture, Mathematics. In years 4 and 5, the curriculum includes Civic/National Education, Physical Education, Teaching Methods, Public Health and general subjects, such as Teaching Method in an Islamic Education Environment, Evaluation and Measurement, Educational Counselling, Educational Psychology, Administration and Supervision. The curriculum of Central Teacher Institutes is similar to that of the 4^{th} -5^{th} years of Teacher Training Institutes. The curriculum for Fine Arts Institutes is similar to that for the Fine Arts specialization in TTIs.

In general terms, the teacher education curriculum is highly centralized. Curricula and textbooks for all subjects are centrally produced by the Ministry of Education. However, the teacher education curriculum needs renewal, in line with new school curricula and a more child-centred or constructivist pedagogy. A first step is training of trainers who can introduce new teaching methods and values to the staff of the teacher institutes. Trainers and curriculum experts need exposure to international developments in the field of teacher training, leading to the development of a new pre-service teacher training curriculum and a new generation of textbooks. These developments will need to be linked with the renewal of curricula at the university faculties of education.[45]

5.6. Textbook and Other Teaching –Learning Materials

Availability of textbooks is a problem in the teacher training institutions. Students in 82 (76%) of the TTIs were stated to have access to textbooks, of which 15 stated that their students were sharing textbooks (2 – 4 students per textbook). The situation was similar in CTIs, 20 of which indicated that their students had access to textbooks, of which 7 mentioned sharing of textbooks. Most institutes required students to return their textbooks

[45] At present, the students in these faculties specialize in a particular subject such as English, Arabic language, History, Geography, Sociology and Anthropology, Psychology, Home Economics, Children and Kindergarten, Computer Science, Islamic Studies, Biology, Chemistry, Physics, Mathematics, and Kurdish Language (in the north).

at the end of the academic year. The survey data, albeit incomplete, indicated an average textbook-student ratio of 1 : 5.

Before the war, the Education Ministry periodically supplied textbooks to the institutes. Complementing the efforts of the government was the initiative of families to buy textbooks for their children. Photocopying of textbooks was also prevalent; during the 12 years of economic sanctions the government could not buy textbooks from abroad. The Oil for Food Programme had provided some assistance, however, in procuring textbooks for teacher training institutions. Clearly there is an urgent need to equip all teacher training institutions with new textbooks.

5.7. Open College of Education

In order to encourage primary school teachers to upgrade their qualifications through distance education, an Open College of Education was established in Baghdad in 1998, with campuses in 8 governorates and a central campus in Baghdad. The College is affiliated to the Ministry of Education and received technical guidance from the Ministry of Higher Education and Scientific Research.

Before the conflict in March-April 2003, the College was self-financed and students had to pay tuition fees. However, after the conflict, the College was supported by government funding.

The target groups of the Open College are primary education teachers with a diploma from a two year or five year teacher training institute, primary education teachers with only a diploma from Preparatory school, and primary education teachers with a university degree in a non-teaching-related subject. Students are expected to continue their work as primary school teachers after graduation. The College began enrolling students in 2000/2001. The number of satellite centres increased from 8 in 2000/2001 to 15 in the next academic year.

The College offers a four-year distance education programme in 9 subject areas: Islamic Studies, Arabic Language, Mathematics, Physics, History, Physical Education, Art Education and Educational Psychology, leading to a bachelor's degree in education.

The Open College of Education had 9,051 students at the beginning of the 2002/03 academic year, attached to 15 satellite centres. Fifty percent of the students were female. The distribution by subject specialization was as follows:

Table 5.9 Enrolment of Students at the Open College of Education, 2002/2003, by Subject of Study

Students	Percentage	Topic
1,780	19.6%	Islamic Education
1,692	18.7%	Arabic Language
1,229	13.6%	English Language
1,237	13.7%	Mathematics
260	2.9%	Physics
1,594	17.6%	History
626	6.9%	Physical Education
368	4.1%	Art Education
265	2.9%	Education and Psychology.

Source: Ministry of Education, 2003

The curriculum of the Open College is similar to that of the education faculties at the universities. The organization of its teaching/learning, however, is quite different. Students are given packages of learning materials for self-study. In addition to self-study, students have to attend 4 – 6 hours of lectures per week. The courses are organised in modules. In the case of students with English major, for example, students have to complete about 10 modules per year or about 40 modules over 4 years. Examinations are organized twice a year.
According to information supplied to the UNESCO team, there were 49 faculty members at the Open College of Education, Baghdad, of whom two-thirds (67%) were women. Regarding the qualifications of teaching staff, 13 (26.5%) had PhD, while 36 had master's degrees.

During the conflict, the college infrastructure was affected by looting and arson. Two English-language laboratories, two computer laboratories, a television system and a complete recording and montage system were all looted. In addition, the Arabic Encyclopedia Library, an affiliate of the Arab League Educational, Scientific and Cultural Organization (ALESCO), was completely looted, including its holding of the best Arabic encyclopedias. All student desks and office furniture were looted, together with all the College documentation. Moreover, there was considerable damage to the college building. In one of the first-floor rooms, a reinforced concrete slab had been badly affected by the extreme heat of burning, causing a visible deflection. Windows were broken and all the rooms were without doors, air-conditioners or ceiling fans. The building had no electricity at all, with the circuit breakers having been looted and installation wires having melted in the fire. This represents a real set-back to the process of teacher education and training, which must be remedied as a matter of urgency.

5.8. Institute of Educational Training and Development

The Education Ministry established the Institute of Educational Training and Development in 1984, with the following objectives:

(1) organizing in-service training programmes periodically for teachers, educational administrators, and other education staff

(2) preparing outlines and printed materials for local training programmes (organized at the level of each governorate)

(3) participating in the preparation of textbooks, educational materials, and educational programmes.

In 1989, the Institute trained 7,265 active teachers and educational administrators and organized 242 in-service training programmes. However, the number of in-service training programmes decreased during the 1990s, due to resource constraints.[46]

In order to fill the gap, UNICEF supported some in-service teacher training in the Centre and South of Iraq. In the 3 Northern governorates, UNESCO and UNICEF organised several in-service teacher training sessions, in co-operation with the local authorities. From January 1998, 29,255 teachers of secondary education, vocational education, and teacher education, participated in different in-service training courses supported by UNESCO. Of those who attended the in-service course, 12,322 (42%) were males and 16,933 (58%) were females. The majority of the trainees attended courses in the sciences (41%), languages (29%) and social sciences (9%).

5.9. Infrastructure

Except for the 3 governorates in Northern Iraq, all governorates indicated that teacher training institutes were affected by the March-April 2003 conflict.

Survey respondents indicated that 40 school buildings operated on single shift; thus, leaving the remaining 55 buildings for 110 institutes operating on double shift arrangements (see Table 5.3 above). The situation was acute in Sulaymaniyah, Erbil and Kerbala where 100% of teacher training institutions operated on double shifts. Based in these figures, it can be estimated that the 150 teacher training institutions and fine arts institutes were housed in at least 100 buildings (more than 100, if some of them shared the premises with institutions that were not in this category).

5.9.1. Physical Condition

Survey respondents indicated that out of the 150 institutes, only 41 (27%) had the use of buildings that were in good condition. Fifty six (37%) were in buildings that were partially damaged, 31 (21%) in buildings that were seriously damaged, and 22 (15%) in premises that were considered seriously unsafe.

A total of 77 war-related incidents were reported by survey respondents, in 15 governorates. (There may have been some double-counting if different respondents shared the same building.) Looting was most common (55 reported incidents), followed by burning (12) and bombing (10). It was also reported by 31 institutes that they were used by the military as barracks following the war. Baghdad reported the highest number of incidents: 16 reports of looting, 5 of bombing and 12 of torching. Second was Basrah with 7 looting and 3 torching incidents. These events have destroyed most of the school furniture and equipment of the affected institutes.

[46] UNESCO, 2000.

Table 5.10 Number of Teacher Training Institutions and Fine Arts Institutes Reporting War-related Incidents, by Governorate

	War damage Yes		War damage No	Used by military		Looting		Burning		Bombing	
	#	%		#	%	#	%	#	%	#	%
Anbar	2	25.0	6		0.0	1	12.5		0.0		0.0
Basrah	10	71.4	4	6	42.9	7	50.0	3	21.4		0.0
Muthanna	1	33.3	2		0.0	1	33.3		0.0	1	33.3
Qadissiya	3	60.0	2		0.0	3	60.0	3	60.0	1	20.0
Sulaymaniyah		0.0	5		0.0		0.0		0.0		0.0
Babylon	3	50.0	3	3	50.0	3	50.0		0.0		0.0
Baghdad	20	66.7	10	11	36.7	16	53.3	3	10.0	5	16.7
Dahuk		0.0	7		0.0		0.0		0.0		0.0
Thi-Qar	2	25.0	6	2	25.0	2	25.0		0.0		0.0
Diyala	5	38.5	8	1	7.7	3	23.1		0.0		0.0
Erbil		0.0	8		0.0		0.0		0.0		0.0
Kerbala	3	75.0	1	2	50.0	3	75.0	2	50.0		0.0
Tameem	2	40.0	3	2	40.0	2	40.0	1	20.0		0.0
Missan	2	50.0	2		0.0	2	50.0		0.0		0.0
Ninewa	4	80.0	1		0.0	3	60.0		0.0	1	20.0
Wassit	7	58.3	5	2	16.7	5	41.7		0.0	1	8.3
Najaf	2	40.0	3		0.0	2	40.0		0.0		0.0
Salah Al-Din	5	55.6	4	2	22.2	2	22.2		0.0	1	11.1
Total	71	47.0	80	31	20.5	55	36.4	12	7.9	10	6.6

Source: Annex 1: Statistical Data for the Secondary Education Level

5.9.2. Laboratories/specialized teaching rooms

Teacher training institutes need space for laboratory activities, since it important that future teachers learn real science rather than memorising experiments from their textbooks. Respondents to the survey reported the use of only 31 science laboratory rooms, 12 computer rooms and 17 language laboratories. This is grossly inadequate considering the number of teacher training institutes notwithstanding the significance of the institutes in preparing the future teachers of Iraq. The number of governorates that were reported to have no specialized teaching rooms in any of these institutions was as follows: Physics lab, 10 governorates; Chemistry lab, 13; Biology lab, 12; Computer lab, 9; and, Language lab, 7. **Table 5.11** shows the limited availability of specialized rooms:

Table 5.11. Availability of Specialised Rooms for Use by Teacher Training Institutions and Fine Arts Institutes

	Available	Not Available
Physics Laboratory	11	139
Chemistry Laboratory	7	143
Biology Laboratory	6	144
General Science Laboratory	7	143
Language Laboratory	17	133
Computer Laboratory	12	138
Gymnasium	2	148

Source: Annex 1: Statistical Data for the Secondary Education Level

Note: Non-availability was estimated by deducting the number available from the total number of institutes. If some of these institutes share premises then the numbers of available and non-available rooms are over-estimated.

There is a need for one or more science laboratories in almost all the teacher training institutes, together with over 100 computer rooms, language laboratories and gymnasia for physical education classes. In addition to constructing these specialized teaching rooms, the provision of their specialised furniture and equipment is essential.

The data on libraries is very discouraging, with only 21% of the institutes reporting that they have functioning libraries. As many as 7 governorates apparently had no teacher training institute with a functioning library. In Baghdad, only 3 among the 30 institutes were reported to have a library. At least 80 institute buildings thus require establishment of a library. In addition to constructing the space for a library, it is essential to furnish it and provide reference materials and computers, as well as other equipment such as photocopiers.

5.9.3. Equipment and Furniture

Looting and arson in the aftermath of the conflict seriously affected about half of the teacher training and fine arts institutions. The Ministry of Education indicated that there were approximately 12 classrooms per institute. After the rehabilitation of the estimated 36 buildings in very poor or unsafe condition, or substitute buildings, there will be a need for refurbishing and equipping of some 432 classrooms. Each will require a teacher's desk, table, blackboard, cupboard and some 30 school desks. This is in addition to the provision of a chair, desk and table for the head teachers and a set of tables and chairs for the staff room. Some additional furniture will also be required for buildings in good or 'partially damaged' condition.

The workshops, laboratories, computer labs and other specialised rooms will have to be fitted with the corresponding furniture and equipment. Given the length of time during which equipment and spare parts were not available, it will be safest to assume that all these rooms need a new set of standard equipment. This means provision of a complete set of science laboratory or workshop equipment, computers and audio-visual and language laboratory facilities, as appropriate. Laboratory and workshop equipment are essential for the practical component of vocational schooling.

5.9.4. Utilities

The problem of availability of water supply, sewerage connection and electricity is similar to that noted in chapters 3 and 4. The survey reveals that out of the 150 institutes, only 49% had access to running water, while 19% had access to other sources of water (of unknown quality). While half the institutes were in premises that had sewage connections, only 17% had functional latrines. It is necessary, therefore, to ensure that clean drinking water for the students and staff of the teacher institutes, and to repair latrines as a matter of urgency.

Table 5.12. Water and Sanitation at Teacher Training Institutions and Fine Arts Institutes

	Total Schools	Access to running water		Access to other water sources		Latrines connected to the sewage network		Functional Latrines	
		#	%	#	%	#	%	#	%
Anbar	8	4	50.0	2	25.0	5	62.5	1	12.5
Basrah	14		0.0	2	14.3	1	7.1		0.0
Muthanna	3		0.0		0.0	1	33.3	1	33.3
Qadissiya	5	1	20.0	2	40.0	1	20.0		0.0
Sulaymaniyah	5	3	60.0	2	40.0	5	100.0	3	60.0
Babylon	6	5	83.3		0.0	4	66.7	2	33.3
Baghdad	30	16	53.3	3	10.0	22	73.3	6	20.0
Dahuk	6	6	100.0		0.0	5	83.3	3	50.0
Thi-Qar	8	3	37.5	2	25.0	3	37.5		0.0
Diyala	13	7	53.8	2	15.4	7	53.8	1	7.7
Erbil	8	5	62.5	3	37.5	3	37.5		0.0
Kerbala	4	3	75.0	1	25.0	2	50.0	1	25.0
Tameem	5	4	80.0	1	20.0	4	80.0	2	40.0
Missan	4	2	50.0	2	50.0	1	25.0	1	25.0
Ninewa	5	5	100.0		0.0	5	100.0	3	60.0
Wassit	12	7	58.3		0.0	1	8.3		0.0
Najaf	5		0.0	4	80.0		0.0		0.0
Salah Al-Din	9	2	22.2	2	22.2	5	55.6	2	22.2
Total	**150**	**73**	**48.7**	**28**	**18.7**	**75**	**50.0**	**26**	**17.3**

Source: Annex 1: Statistical Data for the Secondary Education Level

91% of the institutes reported access to the main power grid for electricity, but only 6% were receiving continuous power and 80% received intermittently.

6. HIGHER EDUCATION

Iraq is proud of its traditional role as a regional centre of learning, as was demonstrated in 1963 when one of the most prestigious universities of the country was named after the traditional "Mustansiriya" school that had been founded in Baghdad in 1280.

At the time of writing this report, Iraq's higher education system comprises 20 universities and 47 technical institutes, under the general management of the Ministry of Higher Education and Scientific Research (MHESR).[47] There are also about 10 private colleges, offering studies in computer science, business administration, economics and management, which have not been covered in the present survey.

Modern universities in Iraq were established in the second half of last century. Iraq's first and largest university, Baghdad University, was founded in 1957, uniting several colleges that had been established earlier, including the College of Law (founded 1908), the Higher Teachers' Training College (1923), the College of Medicine (1927), the College of Pharmacy (1936) and the College of Engineering (1942).[48] During the 1960s, five more universities were established, namely the University of Technology and the Al-Mustansirya University in Baghdad as well as the universities of Basra, Mosul and Sulaymaniyah.

The development of higher education during the 1970s was characterised mainly by the creation of technical institutes. At the beginning of this development (in 1969), they were part of the University of Baghdad, but they soon received an independent status (1972). This reflected the immense demand for qualified technicians and workers created by the booming oil industry at that time.

During the last 20 years, the official policy of establishing a university in each governorate has led to a considerable quantitative expansion, with 14 new universities. Two of them, those in Thi-Qar and Kirkuk were established as recently as 2002 and Wassit in February 2003. [49]

The oldest universities remain the largest and most renowned. The establishment of new universities was based mainly on the need to meet the growing demand for higher education facilities and the principle of equitable geographical distribution. It corresponds with the international trend of expanding higher education. Nevertheless, quality assessments will be needed to assess the capacities and needs of these institutions.

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[47] The technical institutions are currently under the supervision of three governing bodies (see section 7.2). Additionally, two Commissions for postgraduate studies, one for Computers and Informatics, and one for Medical Specialisations, are under the supervision of MHESR. These institutions were previously tied to the office of the president, as was also the case for two universities, Al-Nahrain and Islamic University, and the Iraq Academy of Science.

[48] See: " Efforts made by Higher Education in Iraq to follow up the implementation of the Decisions of the International Conference on Higher Education, held in Paris 1998".

[49] The Open College of Education, which is described in the previous chapter, is under the administrative responsibility of the Ministry of Education, but the MHESR advises on the scheme of studies.

6.1. University Education

The UNESCO survey reveals that the 20 universities of Iraq that existed in August 2003 had some 200 colleges with about 800 departments and 28 specialized institutes or research centres. This is in addition to the Commission for Computers and Informatics (CCI),[50] offering specialized courses for postgraduate students. Baghdad University had 23 colleges, while some recently established universities had only three or four.[51]

As shown in Table 6.1 below, 5 universities and 13 research centres were concentrated in Baghdad. Only 2 governorates, Muthanna and Missan, did not have universities, mainly due to geographical conditions. Muthanna is largely desert and Missan is marshy, leading to low population and minimal economic activities. Except for Baghdad, which is the capital of the country, the universities catered mainly to the higher education needs of their respective constituents. Specialized institutes and research centres were concentrated in the largest and most developed universities such as Baghdad, Basrah, Mosul and Mustansirya.

Table 6.1. Iraqi Universities, Location, Year of Foundation, Number of Colleges and Institutes/Centers per Governorate

Governorate/ City of Location	Name of University	Year of Foundation	Number of Colleges	Number of Institutes/ Research Centers
Anbar/Ramadi	Anbar	1987	11	-
Babylon/Hilla	Babylon	1988	11	2
Baghdad/Baghdad	Al-Nahrain	1988	6	1
Baghdad/Baghdad	Baghdad	1960	24	5
Baghdad/Baghdad	Commission for Computers and Informatics	1972	1	1
Baghdad/Baghdad	Islamic Studies	1989	3	-
Baghdad/Baghdad	Mustansiriya	1963	10	5
Baghdad/Baghdad	Technology	1960	13	1
Basrah/Garmat Ali	Basrah	1967	14	6
Dahuk/Dahuk	Dahuk	1992	9	-
Diyala / Ba'qubah	Diyala	1995	6	-
Erbil/Erbil	Salah al-Din	1981	15	-
Kerbala / Kerbala	Kerbala	1987	4	-
Missan	-	-	-	-
Muthanna	-	-	-	-
Najaf/Najaf	Kufa	1987	7	-
Ninewa/Mosul	Mosul	1963	18	7
Qadissiya/Diwaniyah	Diwaniyah	1987	9	-
Salah al-Din /Tikrit	Tikrit	1988	11	-
Sulaymaniyah/Sulaymaniyah	Sulaymaniyah	1968	18	-
Taameem/Kirkuk	Kirkuk	2002	4	-
Thi-Qar/Nasiriyah	Thi-Qar	2002	4	-
Wassit/Al-Kut	Wassit	2003	3	-
Total			201	28

[50] The National Computer Centre was established in 1972 and it was under the responsibility of the Ministry of Planning until 1997 when it was shifted to the Ministry of Higher Education. It offered ICT courses for postgraduate students and short-term courses for the public.

[51] The University of Technology in Baghdad differs from other universities in its nomenclature, referring to what would be 'colleges' in other universities as 'departments'. For the purposes of the present study they are treated as colleges.

Source: Annex 2: Statistical Data for the University Level

6.1.1. Structure and Management

All universities are under the authority of the MHESR. Discussions with higher education administrators indicated that the structure of the Ministry might change in the coming months. A major structural challenge, noted by several respondents in Baghdad and Northern Iraq, will be to deal with the former *de facto* existence of 2 different administrative and political systems in Northern Iraq during recent years.[52] Elsewhere, the administrative structure was highly centralized. The implications for structures, content of studies, selection of staff and students and inter-university relations have to be reviewed, to ensure higher efficiency and build a spirit of national unity.

At the university level, deans of colleges constitute the University Board, together with a representative of the academic staff and representatives from Ministries relevant to the specialization of a university (e.g. the Ministries of Industry, Reconstruction or Health) and/or deans of colleges in other universities with identical or similar studies. In some universities, a student representative has a seat in the Board.[53]

One main demand from all higher education personnel interviewed for this study was for more autonomy of higher education institutions. This should be one of the issues to be taken into consideration when restructuring, updating and prioritization of teaching and research activities inside Iraq are envisaged, in order to guarantee more flexibility and to facilitate the reintegration of Iraqi scholars into the international academic community.

6.1.2. Fields of study

The major fields offered by the universities are: Education, Arts, Law, Social Sciences, Administration, Economics, Pure and Natural Sciences, Engineering and Technology, Medical Sciences, Veterinary Medicine, and Agriculture. Education is offered in nearly every university (17 out of 20), followed by the traditionally highly regarded studies in law (14), engineering (14) and medicine (13). All universities with the exception of the University for Islamic Studies offer basic subjects in sciences.

In the field of education**,** there are 24 education colleges preparing teachers for secondary schools, 7 teachers colleges preparing teachers for primary schools and kindergarten, and 7 colleges for physical education. Five colleges are only for girls. Baghdad University has different education colleges for arts (Ibn Rushd) and sciences (Ibn Al-Haitham). Only the University of Technology has a specialized college for technical education, which trains teachers for vocational schools and technical institutes.

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[52] Prior to the regime change in April 2003, the University of Suleimaniyah (Suleimaniyah Governorate) was under is own 'ministry of higher education and scientific research'; while the University of Salahaddin (Erbil) and University of Dohuk (Dohuk) were under a Council for Higher Education, which reported to the Council of Ministers based in Erbil Governorate.

[53] The Dean is responsible for overseeing the operation of a college, including the implementation of the academic programmes, and is supported by Assistant Deans, who manage the administration, student affairs, personnel and scientific affairs. The administrative units in a college comprise registration, personnel, financial/accounting and legal affairs. Special units were created to deal with specific needs in each university such as the Certificate and Consolidation Unit at the University of Mustansirya, a Planning and Information Unit and a Scientific Performance Unit at the College of Computers and Mathematics, University of Mosul. Most universities have their own engineering support unit for maintenance and warehouses.

The typical subjects at educational colleges are Arabic, English, History, Geography, Biology, Chemistry, Mathematics and Physics. Educational and psychological studies are offered as major subjects in 12 of the educational colleges, and computer sciences in 11. The Kurdish language is taught only in the 3 educational colleges in the North, i.e. in the universities of Salah al-Din, Sulaymaniyah and Dahuk. Islamic education and methodology of teaching Quran are offered in 4 education colleges.

The standard subjects of physical education colleges include individual games, team games and theory. Baghdad University has a different approach to physical education, dividing its departments into teaching methods, training and recreation.

Subjects offered by the 6 teachers colleges differ from the subjects in colleges of education since the former specialize in basic education and kindergarten. Subjects like art education, special education, kindergarten and domestic education are offered only in these colleges. They complement the standard subjects of Arabic, English, Mathematics, Social Sciences and Physical Education. Among teachers colleges, Diyala and Sulaymaniyah Universities offer Computer Sciences.

There are 16 colleges of **law** in Iraq's universities, with two (Salah al-Din and Sulaymaniyah) offering law studies in evening courses. The range of study topics in law colleges includes public law, private law, criminal law, international law, law and politics and law and shari'a.

Medicine is offered in 14 colleges of 12 universities (Baghdad University and Mosul have 2 colleges of medicine each). Allied fields of study are offered in 24 colleges, including 7 colleges of dentistry, 5 for nursing, 6 for pharmacy, and 6 for veterinary medicine. There are also 4 specialized research centres in Iraqi universities. Baghdad University covers the broadest range of core studies of all the medical colleges of the country (anatomy, biochemistry, community health, gynecology, medicine, microbiology, pathology, pediatrics, pharmacology, physiology, surgery) and also has a special computer centre for its medical colleges, a college for nursing, dentistry, pharmacy, a research centre specialising in embryo research and infertility treatment, and an institute of genetic engineering and biotechnology for postgraduate studies. It also has a College of Veterinary Medicine. Mosul University is second in having 6 colleges offering medicine and allied medical professions such as dentistry, pharmacy, nursing and veterinary medicine. It has also a unit for medical plant research as part of its college of pharmacy. Al-Mustansiriya University in Baghdad is another centre for medical studies with its colleges of medicine, pharmacy and dentistry and 2 medical research centres. The medical college in Bahrain University in Baghdad is equipped with very good medical equipment, including a library which has an access to electronic journals. The quality of its staff and students is highly regarded, and it has a good student-teacher ratio (with a maximum of 50 students per year). Until August 2003 it was the only university that had its own teaching hospital linked to the medical college.[54]

Engineering is also well developed in Iraqi universities. The University of Technology in Baghdad may be regarded as the leading centre for engineering studies, with 13 different colleges (originally named as departments) offering different engineering fields. In addition, 12 other universities offer engineering studies. The engineering fields that are

[54] This hospital is now under the responsibility of the Ministry of Health. Cooperation with the hospital in training the students of the medical college is nevertheless continuing.

offered by most of the universities are civil engineering (12, plus 4 departments called architectural engineering, 3 architecture departments and 1 department called building and construction), mechanical (12) and electrical engineering (11). There are 14 ***ICT- related engineering*** departments, like computer engineering, information technology, electronics and communication engineering, situated in the engineering colleges of 6 universities (Baghdad University, Basra University, Diyala University, Mosul University, University of Technology in Baghdad, Al-Nahrain University). The Commission for Computers and Informatics in Baghdad also offers an ICT-related engineering field. Other engineering fields offered are chemical engineering (6); material engineering (3); and mechatronics, industrial and environmental engineering (2 each). Specialized engineering studies are also offered such as air conditioning, automotive, aircraft, metallurgical, biomedical, surveying, nuclear engineering and aeronautics at Baghdad University, power technology and satellite communication at Diyala University, highway and transport engineering at Mustansiriya University, and marine engineering at Basrah University.

It may be noted that in a country with some of the largest reserves of oil, courses in **petroleum engineering** and oil and gas refining engineering are only offered in two universities (University of Technology in Baghdad, and Baghdad University). Much of the training in these fields is handled by special institutes (located in Baghdad, Basrah and Kirkuk), attached to the Ministry of Oil. The Technical College in Basrah and the Technical College in Kirkuk specialize in fuel and energy technology.

During the years of economic sanctions, the import of **computers** was restricted, and only 5 universities were reported as having special colleges offering computer engineering, software engineering, information systems, information technology and related subjects.[55] However, 29 departments offering computer science were reported as part of the various colleges of science and education, and 8 computer science departments were reported in engineering colleges. Two universities (Anbar and Mosul) combined mathematics and computers in special colleges. In Mosul, the medical college has a special computer unit and its college of administration and economics offers management information system courses. Computer units were also reported in the college of commerce of the University of Sulaymaniyah and in the college of arts of Baghdad University. Courses on information systems are likewise offered in 6 universities while subjects on software development can be studied in Mosul, Salah Al-Din and Baghdad (University of Technology and Al-Nahrain). Four universities also reported having computer centres as common facilities for students. Additionally, the Commission for Computers and Informatics in Baghdad is specialized in computer studies, including information systems, computer and software engineering for postgraduate students and continuing education for employees of administrative units, industry and the community.

Some universities have embarked on **new** academic frontiers such as remote sensing at the University of Baghdad and Mosul; atmospheric sciences at Mustansiriya; laser engineering units at Al Nahrain University and University of Technology; mechatronics at Baghdad University and the University of Technology; biotechnology centres at Nahrain and Baghdad University; and satellite communication at Diyala.

[55] Technology University of Baghdad, University of Baghdad, Mustansiryah University, Basrah, Mosul, Anbar universities. The universities of Kufa, Wassit and the Islamic University did not report having computer studies.

Iraq is famous for its tradition in **agriculture and irrigation techniques,** dating back to the era of Mesopotamia. Nowadays, 9 agriculture colleges were reported to be offering plant production, plant protection, animal production, agricultural economy, extension and machinery, field crops, food science and technology and soil and water studies. Due to geographical factors, a specialized department of fishery is part of the agricultural college in Basrah. Forestry is offered in Mosul and Dahuk and desert studies in Anbar. Mosul University has the only agricultural research centre in Iraq.

Irrigation studies are offered in departments in 5 universities, as dams and water resources engineering in Anbar, water resource engineering in Dahuk, and irrigation and drainage engineering in Mosul, Sulaymaniyah and Baghdad universities.

Environmental studies are also starting to take shape. Pioneers in this field are Baghdad University and Mustansiriya University, with their departments of environmental engineering; Diwaniyah University, which set up an environment unit within its science college; and Mosul University, where an environment research centre has been established. The University of Babylon also reported to have an environment centre.

Mass media and communication courses are offered at the University of Baghdad., including studies in the fields of print journalism, radio and TV and public relations. Journalism is also offered in the humanities department of Sulaymaniyah University, concentrating on journalism in Kurdish and for the Kurdish population.

Another interesting observation from the survey is that in a country known as the cradle of civilization and with scores of archaeological and historical sites, no university has a college of archaeology. Only 4 universities (Baghdad, Diwaniyah, Mosul and Sulaymaniyah) offer archaeology within their arts colleges. Mosul has a department specializing in cuneiform script. Thi-Qar University offers courses in history of civilization in its education college.

Islamic studies are offered at the University of Islamic Studies in Baghdad (until April 2003 this university was named Saddam University of Islamic Studies), in a college of Islamic Studies at Baghdad University, and colleges of shari'a or shari'a and law at Salah Al-Din University in Erbil and Sulaymaniyah and Dahuk Universities. Additionally, Islamic studies or methods to teach the Quran are offered in several colleges of education or teacher colleges (Mosul, Baghdad and Mustansirya universities), colleges of historical studies (Basra) and in humanities (Diwaniyah and Sulaymaniyah).

Only Baghdad University reported a diversified **language college**, teaching the main European languages (English, French, German, Spanish, Italian, Russian) as well as Persian, Turkish and Hebrew. Mosul and Mustansiriya each have a department for 'translation' in their arts college. Most universities offer only Arabic and English in their colleges of education, teachers colleges or colleges of arts (there are 27 departments for Arabic and 32 for English). Kurdish is taught only at the 3 northern universities (Salah al-Din, Sulaymaniyah and Dahuk). French is also taught not only in the language college at Baghdad University but also in the arts colleges of Mosul and Mustansiriya Universities. Persian language is offered in the College of Arts of Salah al-Din University in Erbil besides Baghdad University. Only Mustansiriya University has a special institute for teaching Arabic to foreigners. Arabic is also offered at the Islamic University in its college for Quran studies.

Mosul and Mustansiriya universities offer **librarian studies** in their colleges of arts.

Sociology, philosophy, psychology and anthropology are offered in the colleges of arts of the universities in Baghdad, Mosul, Mustansiriya and Erbil and in the humanities college in the University of Sulaymaniyah and as subjects in education colleges.

The **fine arts** colleges in the universities of Babylon, Baghdad, Basrah, and Sulaymaniyah have departments offering theatre, plastic arts and music. Sulaymaniyah offerings tend more towards traditional arts like painting and pottery. Baghdad University has departments for calligraphy, design and audio-visual arts.

Only 3 universities have special colleges for **political studies** (Baghdad, Nahrain and Mosul) while 3 other universities (Basra, Salah al-Din and Dahuk) offer studies in political sciences within their colleges of law. The former Institute for National and Socialist Studies at Mustansiriya University has been renamed as "Higher Institute for Political and International Studies."

Colleges of Administration and Economics are rather well represented with 11 colleges in 20 universities. However, specialized research centres or institutes were reported only for economic studies in Mosul and for financing and banking in Baghdad University.

6.1.3. Access, duration and level of courses

Higher education is open to all students who have successfully completed the preparatory stage of secondary schooling. The application process is centralized at the MHESR. The Ministry defines the level of attainment needed for acceptance in special fields of study, based on the number of students and the ranking of the university (Baghdad, Mosul and Basrah were the 3 top-ranking universities). The highest gradings are required for medical studies and engineering. The placement system also considers other facts, like repetition of a year, knowledge of additional languages and the permanent residence of the student. One suggestion during the interviews with university staff was for universities to have more freedom to choose students and also to admit more foreign students.

Universities offer first-degree courses mostly of 4 years duration. Veterinary medicine, pharmacy, dentistry and architecture require 5 years of studies; and, medicine 6 years.

The survey showed that there are only a very limited number of special institutes for postgraduate studies, like those for laser sciences, urban and regional studies and biotechnology at Baghdad University, the Institute for Informatics in Baghdad or remote sensing at Mosul University. However, most universities offer courses leading to a master's degree (2 years) and Ph.D. (3 years).

Master's degree programmes are offered in most fields such as in arts, exact and natural sciences, engineering and technology, medicine, dentistry and agriculture. Ph.D. programmes increased during the 1990s, partly due to the limited opportunity for studying abroad. The quality of these programmes is somehow contested by the Iraqi faculty, pointing to the shortage of qualified supervising faculty members in most of the fields and inadequate laboratory equipment. Nevertheless, internal training of faculty was the only way to overcome the shortage of qualified staff during the last decade.

The system of separate day and evening studies is rather common in Iraqi universities. One third of the students are registered in evening studies, combining work with learning. Some universities have established centres for continuing education, like the University of Technology.

6.1.4. Enrolment

The UNESCO survey showed a total student enrolment of 251,175 from the 20 universities that responded to the survey questionnaire.[56] [57] Of these students, some 42% were women.[58]

With regard to the geographical distribution of students, the 5 universities in Baghdad accounted for about half (49%) of all university students. The distribution of students amongst these universities was very uneven, with 2 universities (Nahrain University and Islamic University) having less than 2000 students, while about two thirds of all students were at Baghdad University. The high reputation of the universities was given as the main reason for students flocking to these institutions, indicating a clear need for other universities to improve the quality of their teaching. But it may also be due to the wide range of academic disciplines and special study fields offered at Baghdad University. The universities of Basrah and Mosul with about 20, 000 students each were the next largest in enrolment.

During the process of data collection, several academics articulated their doubts regarding the existence of small universities, like those of Wassit and Kerbala. Contradictory opinions were offered about the future of Al-Nahrain University, which is located just beside Baghdad University but has a different system and had different (very favourable) operating conditions until March 2003.

[56] The CPA estimate for mid-2003 was 246,267.

[57] This includes postgraduate students. Many respondents to the UNESCO survey did not give a breakdown by level of study. As an example, however, Salahaddin University in Erbil indicated that out of 1018 graduates of this university in 2001, 72 received a master's degree and 4 graduated with a Ph.D.

[58] Gender breakdown was not provided by most respondents. For the colleges which did provide this data, the proportion of female students was 42%.

Table 6.2 below shows the distribution of students in the 20 universities and one 'commission'. Two governorates where there was no university are not represented.

Table 6.2. Number of students in Iraqi universities

Governorate	Name of University	Number of Students (UNESCO survey)	Percent
Anbar	University of Anbar	7 222	2.8
Basrah	University of Basrah	18,422	7.4
Qadissiya	University of Diwaniyah	9,412	3.8
Sulaymaniyah	University of Sulaymaniyah	7,903	3.1
Babylon	University of Babel	13 563	4.5
Baghdad	Baghdad University	67 002	28.7
	Mustansiriya University	35,244	14.2
	University of Technology	12,681	5.1
	University for Islamic Studies	1,437	0.5
	Al-Nahrain University	1 568	0.7
	Commission for Computer and Informatics	400	0.1
Dahuk	University of Dahuk	3,347	1.3
Thi-Qar	University of Thi-Qar	2,046	0.8
Diyala	University of Diyala	5,572	2.2
Erbil	Salah Ad-Din University	12,800	5.1
Kerbala	University of Kerbala	3,979	1.6
Tameem	University of Kirkuk	1,649	0.6
Ninewa	University of Mosul	23,431	9.4
Al-Kut	University of Wassit	4,270	1.7
Najaf	University of Kufa	7,508	3.0
Salah Al-Din	University of Tikrit	6,015	2.4
Total		251 175	

Source: Annex 2: Statistical Data for the University Level, 2.Teacher/Student Ratio for Universities and Colleges

The 251 175 students in the 20 universities were enrolled in various fields of studies such as education, sciences, engineering, agriculture, law, social sciences, medicine and humanities. The distribution of students by fields of study as found in the survey is shown in Table 6.3.

Table 6.3. Percentage Distribution of Students by Fields of Study

Fields of Study	Percentage
Education	32
Sciences, engineering and agriculture	28
Law and social sciences	15
Medicine	12
Humanities	11

Source: Annex 2: Statistical Data for the University Level

At 32% the proportion of students enrolled in educational colleges was high in comparison to other countries in the region: Egypt and Jordan had only 16% and 12% respectively[59]. The comparatively high figure of 28% of students in sciences, engineering and agriculture matched those in developed countries like France (25%), UK (29%) and Germany (31%),

[59] For international comparative figures see: UNESCO Statistical Yearbook, 1999, pp. 470-473. Iraq was not included in these statistics.

and its regional neighbours like Jordan and Syria (27% each), but was remarkably higher than in Egypt (15%) or Saudi Arabia (17%).

Despite the difficulties regarding import of computers and software, about 12,000 students were studying computer sciences, computer engineering, software engineering or information technology within these colleges in 2002/2003. Furthermore, the Commission for Computers and Informatics (CCI) trained about 400 post-graduate students (from 1-3 years duration of studies) in computer systems applications and networking, including e-libraries, e-learning and tele-conferencing, as well as software applications.

6.1.5. Efficiency and quality

In higher educational institutions, which are much more complex and different from each other than schools, indicators of internal efficiency such as rates of repetition of courses and survival rates by grade or year are not easily available and were not included in the survey analysis.[60] [61] In the questionnaire, few colleges answered the question on the percentage of students who were successful in the final examinations. However, the interviews with staff indicated that the success rate of students in medicine and law colleges was higher than that in education colleges. The success rate was also higher for those pursuing master's degrees and Ph.D studies.

Data on external efficiency, notably employment of students after graduation was also not available. Education officials stated that graduates have difficulty finding work particularly in an environment where economic sanctions had been imposed. The experience of the Oil for Food Programme shows the mismatch between graduates' qualifications and the employment market, with engineering graduates sometimes working as drivers or clerks. This was corroborated in a UNESCO labour market study conducted in Sulaymaniyah governorate which showed mismatch in many occupations. Employability of students after graduation will be an important quality indicator for universities in the years ahead.

Besides the formal efficiency criteria given above, the situation in the educational sector in Iraq in general, especially the availability of qualified teachers, was raised constantly in discussion meetings, such as the stakeholders' meeting in higher education for the UNDG/World Bank report in August 2003. Teacher availability is a very complex matter that has different elements (motivation related to level of salaries, social reputation, working conditions etc.) For the higher education sector, where the majority of future teachers are educated, the following problems were raised during the discussions as well as in interviews:

- Education colleges were getting students with weaker performance than other colleges especially those of medical and engineering.
- The importance of education science has always been underestimated
- New methodologies in teaching, particularly methods that promote creativity and practical experience are urgently needed

[60] The CPA reported that over 90% of the university undergraduate students had successfully completed the academic year 2002/03, registering a repetition rate of about 10 percent. MHESR Weekly Update, 19 July 2003.

[61] 49,036 students graduated out of the 79,109 new students admitted in 1996/97, indicating a survival rate of 62%. MHESR Official Statistics, 2002.

- International exchange is needed for staff to get acquainted with actual trends in education
- New structures and courses might be considered for the educational colleges, such as offering special education studies mainly at the master's degree level for graduates of colleges of arts and sciences.

The educational colleges clearly need special attention in the process of restructuring and renewal of the higher education system aimed at improving initially the quality of future teachers, given the importance of education in the emerging knowledge-based society. Some observers consider that the number of educational colleges might have to be reduced, in order to raise the quality of their output.

Al-Nahrain University is a special case, having received favourable treatment under the previous regime, being directly attached to the Presidential Office. It was the only university that had admission examinations strictly based on scientific performance, accepting only a very limited number of students yearly (25 in each department at the engineering college and only 50 at the college of medicine). Only Ph.D. holders were employed to teach and the student-teacher was only 7. The percentage of post-graduate students (about 25 % of all students) was high. Teaching was based on the American credit hour system (the only university in Iraq to use this system). The university had a special budget, which allowed procurement of high quality equipment. Al-Nahrain had a well-equipped hospital attached to the medical college, and centres for biotechnology, laser engineering and informatics. The university had a well-developed system of publications and libraries (including access to electronic journals).

The University of Al Nahrain did not allow any repetition. Students who did not reach the minimum of 65% in examinations had to transfer to other universities. But such cases were rare, due to the quality of students, teaching methods and learning environment. This university certainly meets the criteria of a centre of excellence. Nevertheless, its existence is contested by many academicians from other universities, not least because it was attracting the best teaching staff, which was viewed as creating problems for the other universities. In view of the heated discussions on the pros and cons of an elite university like Al Nahrain, it will be important to reach a balanced decision on its future status.

Until recently, students usually stayed in the same college for the whole period of studies. The study programme was organized by the university and inter-action between universities and colleges was reduced to exchanges of staff mainly. Mobility of students during their studies, inside the country as well as to universities abroad, will have to be taken into consideration or to be revived when restructuring the higher education sector, especially given the need to catch up on international developments in the various fields of study. This will require new frameworks, accreditation systems, and decisions regarding specialization of universities, as well as the provision of scholarships.

6.1.6. Academic Staff

Out of the 19,112 university teaching staff reported in the survey, an estimated 56.5% were males and 43.5% females. Faculty members were concentrated in Baghdad, which accounted for more than 37% of all higher education teaching force in the country. This is somewhat a little less than the concentration of students, of whom 43% were in Baghdad.

Table 6.4. Number of Faculty Members by University by Governorate[62]

University Name	Total	Total Female	Total Male	Teacher-Student Ratio
Anbar	800	216	584	8
Babylon	882	343	539	13
Baghdad	3962	2004	1958	17
Basrah	1898	888	1010	8
Diyala	442	189	253	13
Diwaniyah	658	294	364	14
Islamic University	36	0	36	40
Dahuk	277	n.a.	n.a.	12
Kerbala	264	138	126	7
Mosul	2935	1148	1787	10
Kirkuk	60	n.a.	n.a.	27
Kufa	410	n.a.	n.a.	18
Mustansiriya	1584	853	731	22
Salah Al-Din	1427	596	831	10
Sulaymaniyah	489	n.a.	n.a.	16
Technology	1267	543	724	10
Thi-Qar	227	89	138	9
Tikrit	1084	330	754	6
Wassit	99	22	77	43
Al Nahrain	275	106	169	7
Iraqi Com for	36	10	26	11
Total	**19,112**	**7769**	**10107**	**13**

Source: Annex 2: Statistical Data for the University Level

6.1.6.1. Student-Teacher Ratio

The average student-teacher ratio in university education was found to be 13 students per teacher. This was more favourable than in the neighbouring countries of Jordan (30) and Saudi Arabia (20). However, there were extreme variations amongst Iraqi universities. For example, the University of Wassit and the Islamic University had high ratios of 43 and 40, respectively. Others, such as the University of Tikrit and Al Nahrain University, had low student-teacher ratios of 6 and 7 respectively. Except for the Islamic University, the universities in the Baghdad area had intermediate student-teacher ratios: Baghdad University (17), University of Technology (10) and University of Mustansiriya (22). The average student-faculty ratio at the University of Technology was similar to the international standards of between 7 and 10 for engineering, sciences and medicine.[63]

There were also extreme differences in the student-teacher ratio according to the field of study. Favourable ratios were found in medicine (6) and agriculture (8). The ratio for medicine at the Al-Kindy Medical College of Baghdad University was as low as 2.4 and at Al Nahrain University only 2.6 and the Al-Kindy Medical College of Baghdad University (1:2.4). The student-teacher ratio at the College of Agriculture and Forestry of Mosul University was also very low (4). Higher ratios were found in the colleges of administration and economics, education and law. The average student-teacher ratio in administration and economics was 33 (ranging from 12 in Dahuk University to 47 in Kufa University). The average ratio in education was 27, but differences amongst universities were also noted such as the high ratio amongst the newly created universities like Wassit

[62] Gender of faculty from 4 universities (Kufa, Sulaymaniyah, Kirkuk and Dahuk) was not available. Thus the total for females and males does not tally with the grand total

[63] See European University Association Annual Conference, April 12-14, 2002, Roskilde, Denmark. A Working Document.

(60) and the low ratio in the older but more established universities like Tikrit (6) or Kirkuk (7). The colleges of law had an average ratio of 30, varying from 81 at Kirkuk University to 10 at Nahrain University. Given the fact that there is only one college of mass communication in Iraq, the number of students per teacher there was very high at 52. But even higher was the student-teacher ratio at the only language college in the Centre/South (61).

Comparing the student-teacher ratio in other study fields with international standards[64], Iraq's universities were good in some fields like medicine. In engineering, the University of Technology in Baghdad, Basrah University and Salah Al-Din University in Erbil were above the international standard. In economics, where the international standard is 20 – 25 students per teacher, the average in Iraq was higher.

6.1.6.2. Faculty Qualification

In Iraq, the minimum educational qualification for a teaching post in higher education is a master's degree. Faculty members with Ph.D. studies are preferable because of their capacity to handle graduate students and to advise them in their master's and Ph.D. theses. The survey showed, however, that about one third of faculty members lack a master's degree. The distribution is shown in Table 6.5.

Table 6.5. Highest Educational Qualification of Iraqi University Staff[65]

UNIVERSITY	Faculty Total	PhD Female	PhD Male	PhD Total	PhD %	MA/S Female	MA/S Male	MA/S Total	Masters %	Bachelor Female	Bachelor Male	Bachelor Total	Bachelor %
Anbar	800	9	183	192	24.0%	36	223	259	32.4%	171	178	349	43.6%
Babylon	882	11	177	188	21.3%	110	198	308	34.9%	222	164	386	43.8%
Baghdad	3962	390	1127	1517	38.3%	948	621	1569	39.6%	666	210	876	22.1%
Basrah	1898	66	257	323	17.0%	303	428	731	38.5%	519	325	844	44.5%
Diyala	442	15	94	109	24.7%	63	87	150	33.9%	111	72	183	41.4%
Diwaniyah	658	5	58	63	9.6%	83	182	265	40.3%	206	124	330	50.2%
Islamic Univ	36	0	11	11	30.6%	0	25	25	69.4%	0	0	0	0.0%
Karbala	264	1	16	17	6.4%	23	61	84	31.8%	114	49	163	61.7%
Mosul	2935	163	778	941	32.1%	608	757	1365	46.5%	377	252	629	21.4%
Mustansiriya	1584	143	358	501	31.6%	331	252	583	36.8%	379	121	500	31.6%
Salah Al-Din	1427	21	219	240	16.8%	207	353	560	39.2%	368	259	627	43.9%
Technology	1267	45	225	270	21.3%	227	328	555	43.8%	271	171	442	34.9%
Thi-Qar	227	6	17	23	10.1%	24	82	106	46.7%	59	39	98	43.2%
Tikrit	1084	45	334	379	35.0%	92	194	286	26.4%	193	226	419	38.7%
Wassit	99	0	40	40	40.4%	7	30	37	37.4%	15	7	22	22.2%
Al Nahrain	275	44	159	203	73.8%	21	8	29	10.5%	41	2	43	15.6%
Iraqi Com Computers & Informatics	36	1	18	19	52.8%	3	5	8	22.2%	6	3	9	25.0%
Total	**17876**	**965**	**4071**	**5036**	**28.2%**	**3086**	**3834**	**6920**	**38.7%**	**3718**	**2202**	**5920**	**33.1%**

Source: Annex 2: Statistical Data for the University Level

As shown in Table 6.5, out of the 17,876 faculty members of universities providing this information, 28% had Ph.D, 39% had master's degrees, and 33% had only a bachelor's

[64] European University Association Annual Conference, Working Documents. Roskilde, Denmark, 12-14 April 2002.

[65] Faculty members from 4 universities (Kufa, Sulaymaniyah, Kirkuk and Dahuk) are not included in this table, since these universities did not respond to the question. The total number of faculty members in these universities was 1,236. It was noted in other documents that 20% of the faculty of Sulaymaniyah and Dahuk universities had Ph.D. degrees

degree. With one-third of the total faculty lacking the minimum requirement, one could surmise the impact on the quality of education. It is important to note that the smaller universities had a higher percentage of under-qualified faculty members, as in Kerbala (62%), Diwaniyah (50%) and Thi-Qar (43%). However, the bigger universities like Basrah and Babylon each had as many as 44% of their faculty members with only a bachelor's degree. Even Baghdad University had 22% of its teaching force with only a bachelor's degree while Mustansirya had 32% of its faculty educated only at this level.

The table also shows that Ph.D. holders were concentrated in Baghdad, where universities like Al Nahrain, Baghdad and Mustansirya had 74%, 38% and 32% respectively of their faculty with Ph.D. studies. Again, the more established universities had higher proportions of faculty with Ph.D. than the smaller and newly established ones. These figures indicate enormous differences on the quality of the teaching in different institutions, assuming that higher educational attainment of staff results in more effective teaching in the classroom.

6.1.6.3. Professional Development and In-service Training of Academic Staff

Looking at faculty qualifications, the need for professional development and in-service training of academic staff is obvious. In all meetings and discussions with representatives of the Iraqi academic community, this issue was constantly emphasized. In recent years, there were very limited opportunities for faculty members to be involved in any kind of training activities, much less those outside the country.

In late 2002, UNESCO had proposed to the MHESR to conduct an in-service programme for faculty members that would be funded from non-Oil for Food funds. This proposal was accepted in principle, but the programme did not materialize because of the subsequent events. In the northern governorates, UNESCO had organized several training workshops for faculty members of the universities in Dahuk, Salah al-Din and Sulaymaniyah.

Asked for their needs concerning short-term in-service training programmes and/or long-term programmes including faculty exchange with universities abroad, the respondents to the survey questionnaires indicated the need to train about 40% of the teaching force in their respective subject areas and teaching methodologies. Engineering, medicine (including dentistry and pharmacy), education, computer sciences and marine sciences were identified as priority areas for training. Relatively few and more general training needs were expressed in administration and/or economics.

The range of training needs in the ICT sector comprised subjects from programming to networking, including neural networking, speech recognition and satellite communication. Web page designing is a field that was neglected in the past. Besides the need for specialized computer colleges and departments, computer training was indicated as a priority for the staff in the higher education system in order to promote the wider use of ICTs.

Respondents indicated the need to upgrade the academic qualifications of staff who have only a basic bachelor's degree. The computer colleges specifically identified the need for advanced degrees particularly Ph.D. courses. Joint research projects were identified as a priority concern of the engineering and pharmaceutical colleges.

One of the main needs expressed in the UNESCO survey was for international exchanges of faculty and students. Iraq was sending high numbers of students and graduates abroad in the 1960s and 1970s for studies and higher qualifications. As noted above, about a third of the university teaching force now has only a bachelor's degree. This group should study for higher qualifications, preferably in foreign universities, in order to inject new ideas into the Iraqi institutions.

On the other hand, Iraqi universities must continue to attract students and faculty members from other universities, especially from Arab countries, to work and study in Iraq. Before 1990, foreign students had flocked to Iraq but the situation changed in the 1990s. Only 7 universities (Anbar, Baghdad, Basrah, Mosul, Mustansirya, Erbil, Technology and Tikrit) reported hosting foreign academics (60) since 1992. The exception was Mustansirya University, which was reported to have hosted a large number of Arab international experts. The countries that sent academics to Iraqi universities were Algeria, Libya, Yemen, Jordan, Syria, Sudan, France, Italy, Germany, the USA and Canada.

The need for professional development is also closely related to the need for updating the curricula in most of the colleges. It was reported in interviews that curricular revision was done every 2 years but this was merely the updating of faculty syllabi, such as broadening the topics and agreeing on changing the number of contact hours. Revision, therefore, was not a holistic curricular change. The last curricular revisions were in the 1980s and 1990s, including law, pharmacy and physical education at Mosul University, and the arts college in Mustansiriya University (banking and marketing, 1995, and tourism and management, 1998). Despite the favourable conditions at Al Nahrain University, the last updating of its curricula was in 1998 for chemical engineering and in 1999 for mechanical engineering.

The need for curriculum revision was strongly emphasized by survey respondents in the following fields: education, medicine, pharmacy, dentistry, architecture, engineering, computer science, agriculture, environmental studies, languages and social sciences, particularly history and political sciences. Even though a number of colleges reported some updating of their curricula in 2001/2002, they underlined their wish to get in contact with international partners in order to bring their standards to international level.

6.1.7. Textbooks and Other Teaching Materials

6.1.7.1. Textbooks

Textbooks were normally provided free at Iraqi universities. In addition, there was a long tradition of private and public library systems. Hence, in the 1950s all provincial and district centres had public libraries with a good stock of books, supplemented in some instances by non-state libraries run by religious and charitable organizations.

The situation deteriorated in the 1990s because of lack of financial resources, especially when economic sanctions were imposed on Iraq. Due to problems of printing capacity during the years of sanctions, the re-use of textbooks became necessary. Computerization projects were abandoned. Training for librarians was stopped and many librarians left the country. Even with the intervention of UNESCO under the Oil for Food Programme, the situation was not alleviated. The average number of volumes per student in most universities was 5 – 15 with the exception of Dahuk (32), Basrah (40) and Kufa (51). The

internationally accepted standard is 100 volumes.[66] Exacerbating the textbook situation, many colleges were left without any textbooks after the March-April 2003 conflict, primarily because of looting or complete destruction of their libraries.

The survey indicated that 7 universities (Anbar, Basrah, Baghdad, University of Technology Baghdad, Al Nahrain, Mosul, Thi-Qar) had suffered looting of one or more of their libraries (central or college libraries). The library of the College of Law of Al Nahrain University in Baghdad, for example, was gutted to the ground.

The number of available volumes reported in UNESCO's current assessment (424,937) differs from that of the CPA (984,274), probably due to missing responses from some libraries. The journals available were stated to be 17,367. These figures may be compared with the former collections of university libraries (about 1,880,000)[67]. In addition, computers, copy-machines, micro-films and audio-video equipment were lost since this kind of equipment was the main target of looters.

The survey indicated that 80% of university libraries located in the Centre/South need rehabilitation, including the provision of library books, materials and furniture. Respondents indicated the need for an additional 465,875 books and 39,512 journals.

The availability of books and journals in the 3 universities in Northern Iraq was better, since these universities were not affected by the conflict. The University of Sulaymaniyah reported a total of 86,220 titles; University of Salah Al-Din, 256,144; and, University of Dahuk 38,569.[68]

In response to the aforementioned losses, several university libraries received private donations of books and journals since April 2003.

During interviews and field visits, university officials repeatedly requested support for the establishment of virtual libraries as critical to restoring the effectiveness of higher education in Iraq. Universities like Al-Nahrain had already established relations with SilverPlatter, a provider of electronic scientific literature on CD-ROM. Some CDs were made accessible to staff and students. Due to financial difficulties, this service had not been updated since April 2003. The importance of access to electronic scientific literature cannot be overestimated, since it will be the fastest way to fill the gaps caused by the looting of books in university libraries. Virtual libraries would, however, only complement the "real" libraries and will not be a complete substitute for them.

[66] UNESCO, Situation Analysis of the Education Sector in Iraq, Paris. 2003.

[67] CPA/MHESR Database, August 2003.

[68] UNESCO and WHO provided 2213 and 1787 titles in 2001 to the university libraries in the North and procured a further 16,000 books from a Book Fair in Baghdad.

6.1.7.2. ICT equipment

ICT equipment was one of the main targets of the looters during and even after the conflict. Only 3,400 computers out of 11,800 existing at universities before March 2003 were left after the looting.[69] In the Commission for Computers and Informatics, which was looted and burned during the war, only 3 out of 600 Pentium IV PCs were left.

Respondents to the survey indicated the need for 58,220 computers, comprising 23,288 computers needed in the short term and an additional 34,932 in the medium-term. Accessories, such as software and peripherals, are also needed, to enhance ICT teaching and learning and to make it part of the whole teaching process. There were very few electronic teaching/learning aids, like videos, CD ROMs etc., reported in the survey, numbering only 630 in the whole country. Respondents to the survey indicated a need for 8,512 electronic teaching-learning aids of various kinds (teaching-learning kits, besides electronic journals and books).

Access to Internet was available to Iraqi universities before March 2003, although there were restrictions on the use of the web pages. Since May 2003, some of the major Iraqi universities (Baghdad, Technology, Nahrain, Mosul, Basrah) have succeeded in re-establishing this service to a certain extent. For example, the University of Technology was reported to have about 50 PCs connected to the internet in December 2003.

6.1.8. Research and Publications

The MHESR determines the policy framework for research for the universities. Before April 2003, there was a "National Committee for Science and Technology," composed of university presidents, in charge of coordinating research activities. However, key informants during interviews stated that this committee did not play a major role in coordinating research. Stakeholders of research centres, universities and institutes, companies and ministries, were said to have acted more or less independently from each other, perhaps to follow their own respective research agendas. Informants indicated that there were significant interactions between the economic sector and universities, but mainly arranged through personal contacts.

Research centres had received generous financial support in the 1970s when the oil industry was booming, but the situation changed in the 1980s because of the conflict with Iran. The lack of funding, materials, equipment and literature became even more evident in the 1990s, when international sanctions prohibited the import of materials and equipment with a possible 'dual use'. Given the budget shortages, research activities relied mainly on post-graduate students, and were often undertaken in co-operation with partners from the economic or military sector which funded specific projects.

The presentation of research papers is traditionally an essential condition for the promotion of faculty members in Iraq. It is incumbent upon assistant lecturers, lecturers and assistant professors to publish at least one research paper per year. However, the choice of research topic was severely limited by the scarcity of scientific equipment and materials, including literature, needed for research.

[69] Information from CPA-MHESR, August 2003.

Research results are published in university periodicals, as well as in regional and international scientific publications. Most of the universities have their own publications and the big ones also have printing offices. National publications focused mainly on engineering and medicine and to a lesser extent on social sciences and education. Respondents to the survey indicated that they were publishing, before the war, a total of at least 116 scientific journals on a monthly, quarterly or yearly basis (see annex). Iraqi scientists also published in regional journals like the "Eastern Mediterranean Health Journal", printed in Alexandria, Egypt, or in academic reviews such as the "Journal of Yarmook University" in Jordan. Very few articles were published during the last decade in internationally refereed journals, even though Iraqi scientists indicated that there was no political restriction on publication of scientific papers outside Iraq during the previous regime. As an example, informants at the Institute for Training of Technical Instructors in Baghdad-Zafaraniya reported that their staff members published several articles in the journals of the US-based Institute of Electrical and Electronics Engineers.

6.1.8.1. Research Centres

Iraq's universities follow the British tradition of scientific research. The large universities, like those of Baghdad, Basra, Mosul, have between 5 and 8 specialized research centres/institutes each. Research activities take place also in laboratories of some colleges, like those of science, education, engineering and medicine. It was stated during interviews that research topics pursued by university researchers were oriented towards finding practical solutions to problems that beset the society. In medicine, research activities were community-oriented, whereas in physics, chemistry, biology and technology they were more industry-oriented.

Table 6.6 shows the research centres or institutes at the university level.

Table 6.6. Research Centres in Iraqi Universities

University	Research Centre/Unit , Institute
Al Nahrain	International Law Studies Centre
	Biotechnology
Babel University	Environment Protection Centre
	Psychological Research Centre
Baghdad University	Accounting and Financing Institute
	Embryology Research Centre
	Genetic Engineering and Biotechnology Institute
	Postgraduate Institute for Urban and Regional Planning
	Postgraduate Institute for Laser Studies
Basrah University	Marine Science Centre
	Polymer Research Centre
	Date Palm Research Centre
	Persian Studies
	Gulf Studies
Mosul University	Agriculture Research Centre
	Economics Research Centre
	Environment Research Centre
	Remote Sensing Centre
	Mosul Studies Research Centre
	Turkish Studies Research Centre
	Dams & Water Resources Research Centre
	Computer Engineering Centre
Mustansiriya University	National Diabetes Centre
	National Hematology Centre
	Higher Institute for Political and International Studies
	Arab Homeland Centre
	Institute for Teaching Arabic to Foreigners
Commission for Computers and Informatics	Informatics Institute for Postgraduate Studies

Source: Annex 2: Statistical Data for the University Level

Besides the aforementioned centres/institutes, some colleges have departments with special research functions, such as the Desert Studies Unit at the College of Agriculture at the University of Anbar. Several Colleges of Agriculture have experimental stations.

The table shows that most centres are devoted to medicine, science and technology. Medical research in institutes/centres was reported to focus on some important diseases (cancer, diabetes), pharmacology, fertility, and psychology. Some studies were based in public hospitals such as the National Center of Haematology in Mustansirya, which has a hospital with 30-bed capacity. In several colleges of medicine, special investigations were conducted on infectious diseases transmitted through water, especially those affecting children.

Among the science and technology research centres, mention should be made of the Polymer Research Centre in Basra University. Some of the researches undertaken in this Centre were published in a prestigious international review, "Journal of Polymer Science".

Iraq has a Date Palm Research Centre in Basra University. Being one of the main exporters of dates, of which Iraq has 120 kinds, this type of research is considered as very important.

The Marine Research Centre, hosted by the only harbour in Iraq, has departments of physical oceanography, marine geology, marine chemistry, marine biology and marine vertebrates. The Centre, with its 29 specialized laboratories, published its own scientific review, the "Marina Mesopotamica".

The 2 commissions for post-graduate studies, the Commission for Computers and Informatics (CCI) and the Commission for Medical Specialization (CMS), played an important role in the training of research staff as well as in promoting research activities.

At the CCI, post-graduate students study between 1 and 3 years to receive a higher diploma, master's or PhD degree. It has Centres for Information Technology, for Scientific and Technological Information and for Computer Sciences, which undertake teaching and research. It has also a special training centre that offers short- and long-term studies for the public. Until 2003, about 400 students were registered in these centres. During the conflict, the CCI was completely destroyed, -a large portion of its buildings were burnt and its technical equipment (among others 600 Pentium IV PCs) was stolen or damaged. Since August 2003, some parts of the building that were not damaged have been used on a temporary basis by the MHESR.

The CMS, unlike the CCI, does not have separate facilities but uses hospitals and public clinics to train post-graduate students who, after training, could work as specialists in one of the medical specializations (medicine, histology, radiology, pediatrics, anesthetics, or surgery). The CMS headquarters is located at the College of Medicine of Baghdad University.

Socio-political researches were conducted in centres such as the Gulf Study Centre at Basra University and the International Studies Centre at Mustansiriya University. The Iranian Studies Centre in Basrah and the Turkish Studies Centre in Mosul have three departments: social and economic studies, political and cultural studies, and historical studies.

Archaeological research was undertaken largely by museums, notably the Iraqi National Museum in Baghdad, not in universities or academies, in spite of the existence of archaeology departments in 5 universities.[70] Mosul University has a department specialising in cuneiform script. It was stated during interviews that no institutionalized relations existed between universities and the renowned Iraqi museums, and the reputation of archaeological studies, according to key informants, was rather low.

Research autonomy existed in academic studies as stated by the respondents in the survey. But the frequent teaching overload of university professors and lecturers posed a serious obstacle to the development of high quality research. Extra teaching hours provided supplementary income for faculty members.

[70] Even before the recent conflict, the scientific equipment of these centres/institutes was already limited, mainly as a consequence of the embargo. After the war, the situation became much worse. As a result of the looting, the Centre for Babylon Studies, for instance, which is in charge of study of one of the most impressive sites in the world, has no facilities at all at the moment.

Participation in international research projects was extremely limited during the last years even though relations at the regional level have somehow continued. The 17 universities that supplied information on this matter reported only 12 joint research projects since 1992. Half of these research projects were in cooperation with French institutions in different fields such as pharmacy, law, architecture and archaeology. Other joint projects were in agriculture (2) with the International Centre for Agricultural Research in Dry Areas (ICARDA), in electronics (USA) and archaeology (Germany).

6.1.8.2. Research Centres for History and Academic Tradition

There are two famous institutions in Iraq focused mainly on the history and academic tradition of the country and the region, namely "The House of Wisdom - Beit Al-Hikma" and "The Iraqi Academy of Sciences - Majma' Al-'Ilmi al Iraqi".

"Beit Al-Hikma" took its name from a translation/research institute founded by the Abbasid Caliph Al-Ma'mun in 832 AD, which was famous for its translations of Greek philosophical texts into Arabic. The government established the modern Beit Al-Hikma in 1995 to function as a research centre, with lecture facilities, publications, a library and a museum. The institute also organized international scientific conferences related to historical contexts, such as a recent conference on Islamic medicine. The faculty associates of "Beit Al-Hikma" were drawn from the various universities in Baghdad. Junior researchers received scholarships and office space at the institute. It published several journals, including a monthly magazine of general cultural interest, the "Majallat am Hikma," including translations of important documents written in foreign languages. The centre suffered heavy losses during March/April 2003, when parts of the building were destroyed, the library was looted and artefacts from the small museum stolen. After April 2003, " Beit Al-Hikma" was placed under the authority of the Ministry of Culture and was therefore not included in UNESCO's needs assessment. Nevertheless, due to its strong relations to the Iraqi academic community, its historical significance and premises, it could play a major role in future higher education activities in Iraq.[71]

The Iraqi Academy of Sciences was founded in 1948 under the Hashemite Kingdom, following the model of the Cairo and Damascus Academies. It was a centre for fellows from various disciplines including modern and ancient Middle Eastern languages, history, social sciences and physical sciences. Faculty associates and researchers were given office space, research support and library access. In its premises, the Academy also housed conference rooms, storage space and a print shop.

The Academy's main goal as stated in a law adopted in 1995 was to promote the Arabic language and heritage as well as "to promote scientific studies and research in Iraq to keep up with the scientific progress in the world" and "to encourage and aid authorship and research in science, letters, and arts." In reality, it was focused mainly on the sciences and produced dictionaries for the translation of scientific and technical texts.[72] The active

[71] See also: "Opening the Doors": Intellectual life and Academic Conditions in Post-War Iraq. A Report of the Iraq Observatory, 15 July 2003p.11f.

[72] Before the war, the budget of the Academy was 150 million ID per year or approximately US$ 100,000 which was given by the State and complemented by income generated from its activities such as the sale of its publications or donations (if approved by the Presidency or Diwan). In practice, this supplementary income was merely symbolic; thus, the Academy was dependent on the state for its budget.

members of the Academy were appointed by a Republican Decree, and the honorary members needed the ratification of the Presidency *Diwan*. In 2002, the Academy had 37 highly specialized academicians as its members, while in August 2003 there were 29. The Academy enjoyed considerable autonomy concerning the choice of research themes and staff.

Until April 2003 the Academy had a somewhat autonomous status under the responsibility of the Presidential office. It was subsequently put under the authority of the MHESR, but by December 2003, it again was autonomous.

The Academy has the following five scientific departments and three commissions:

- Arabic language: origin of languages, cultural terminology
- Arab and Islamic heritage: history of civilisation, ancient languages, arts and architecture, history of science
- Humanities: education, psychology, sociology, arts, philosophy
- Pure sciences: mathematics, computer science, physics, chemistry, biology
- Applied sciences: medicine, engineering, agriculture
- Research terminology, translation and publishing.
- Kurdish language: history and heritage, terminology, Kurdish language
- Syriac language: history and heritage, terminology, Syriac language

Each of these departments/commissions has conducted research activities. Research outputs were published in the Academy's publications such as the *Academic Journal* (quarterly), *Awraq Maimaiya* (monthly), *Academy Journal* (Kurdish review) and *Academy Journal* (Syriac review), published by its own publishing house and printing press. The Academy also published books and studies concerning terminology and had organized conferences and published the conference proceedings. Its digital library and the traditional library, containing especially books about ancient languages, were partially looted. Microform copies of manuscript and periodicals, as well as some old books in Arabic, Ottoman and Persian, were damaged or stolen.

Due to its respected position in Iraqi society and its solid tradition of scholarly excellence, many Iraqi scholars stated that the Academy could regain its status as one of the leading scholarly/professional research centres in the country. It might be able to provide a venue for greater co-operation between intellectuals of different backgrounds both nationally and internationally.

Urgent interventions are needed to rebuild the Academy's damaged infrastructure, including the provision of furniture and ICT equipment and books to complete the collections of its 6 libraries. Training is also urgently needed in the fields of computer science, internet and library management. An investment in the printing facilities of the Academy would facilitate the resumption of the publications of Iraqi academic journals and could also support the reprinting of scientific literature, including those from the universities. A modest $825,000 was indicated in the survey as the initial requirement to refurbish its libraries, which would greatly benefit the research community.

Even though research has always played a major role in the Iraqi higher education system, its role in building sustainable development needs to be redefined due to the emerging political, economic and social developments not only in Iraq but also on the international

scene. The impact of globalization and the rapid development in information and communication technologies, which did not impact much on Iraqi institutions as long as they were in isolation, will necessitate new approaches in Iraq's institutional research structure as well as definition of topics.[73]

6.1.8.3. Ministry of Science and Technology

In August 2003, the Ministry of Atomic Energy was dissolved and its employees (about 1,500 engineers and scientists from the former defence industry) and assets were transferred to the Ministry of Science and Technology. The mission of the latter Ministry is to "work with public and private industry, governmental agencies, and educational institutions to lead scientific and technological development for the purpose of fostering the restoration and improvement of Iraq's infrastructure and industrial base," in fields such as fossil fuel/solar energy, environmental protection, ICTs, agriculture and food, chemical/industrial development.[74]. There will need to be close liaison between MHESR, the Ministry of Science and Technology and the universities in the coming years, to ensure optimum use of resources.

6.1.9. Infrastructure, Equipment and Furniture

The March-April 2003 war led to the destruction of the infrastructure of higher education institutions in Iraq, including buildings, laboratories, libraries, furniture, equipment and books.

6.1.9.1. Condition of Buildings

As noted above, Iraq has 20 universities with an enrolment of approximately 250,000. The estimated total area in the 20 universities is 3,163,300 square meters, giving a national average of 13 square meters per student. This ratio is acceptable, given the international standard of 15 square metres per student. At present, the area of usable space per student may be less than indicated, due to damage to university premises.

Damage to university infrastructure was very serious in the Centre/South of Iraq. The 3 universities in the North were not affected by the war but reported the need for rehabilitating their respective university infrastructure, with 2 of them, i.e., Sulaymaniyah, and Salah Al-Din in Erbil, wanting to be relocated to larger campuses. In the Center/South, two-thirds of the 199 colleges included in the survey were affected by the conflict. All colleges in the University of Qadissiya, University of Technology and Islamic University in Baghdad, University of Thi-Qar, University of Kerbala and University of Diyala were damaged by burning or looting or both. In addition, 15 colleges in other universities were also reported to have incurred damage from burning and/or looting. Most damage was reported for laboratories, computer rooms, workshops, libraries and convention/seminar rooms. There were a reported 40 incidents of bombing, 25 of burning and 101 of looting (Table 6.7).

73 A "Commission for Scientific Research" has recently been established under the MHESR.

[74] See CPA Order No. 24 which can be accessed at www.cpa-iraq/regulations.

Table 6.7. Damage to University Infrastructure[75]

University	No. of Declared Colleges	Not Damaged	Number of War-Related Incidents		
			Bombing	Burning	Looting
Anbar	11	2	3	1	9
Basrah	15	1	5	2	8
Diwaniyah	9	0	2	7	O (new=8)
Babylon	11	3	2	1	7
Baghdad	23	5	9	6	11
Mustansiriya	10	1	3	4	7
Technology	13	0	1	6	15
Bahrain	6	1	4	0	2
Islamic University	3	0	0	0	3
Thi-Qar	4	0	2	3	3
Diyala	6	0	2	0	4
Kerbala	4	0	3	1	3
Mosul	18	4	2	2	15
Tikrit	11	4	2	1	5
TOTAL	144	21	40	25	101

Source: Annex 2: Statistical Data for the University Level

Mustansirya University may be considered as an example of these damages. Mustansirya is the second largest university in Iraq and has an architectural design similar to the University of Baghdad. After the war, 5 of its buildings were extensively damaged, i.e., the university administrative building, presidency, College of Education building, Political Institute and the Student's Club.

Damage to Mustansirya University, March/April 2003

The administration building has 48 rooms and its area is about 1,500 square meters. It suffered extensively from fire, damaging the deepest part of the building including its vertical foundation, supporting walls, tiles of the floor surface and doors and windows. All of its furniture and equipment were burned. The presidency building also suffered extensive damage, including the president's office and all the rooms in the building. Damage to the College of Education building was most serious on the first floor and the intermediate level where 10 classrooms, 4 laboratory rooms and 12 academic rooms with a total area of 1,200 square meters were destroyed. Damage to the Political Institute building includes the administrative offices, classrooms, conference room and a cafeteria. The Students Club which was located in a 2-storey building with an area of about 1,400 square meters suffered damage on its vertical foundation, supporting walls, tiles, doors and windows. All the equipment in these buildings such as computers, photo-copiers, lab equipment, air conditioners and furniture were completely destroyed.

The rehabilitation of the damaged infrastructure in higher education is a priority element of the strategy for the renewal of the sub-sector. Without an environment that motivates and encourages quality teaching-learning, delivery of higher education programme is imperilled.

[75] This total does not include the colleges from Kufa, Wassit and Kirkuk in the Centre/South (data not provided) and Dahuk, Erbil and Suleimaniyah in the North , where no damage was reported

6.1.9.2. Condition of Utilities

Building utilities such as water, sanitation and electricity are crucial to health and effective study. The condition of these utilities as reported in the UNESCO survey is poor, as indicated below.

Water and Sanitation

All universities which responded to the questionnaires reported that they were connected to a main sewage system and water supply. However, the systems were not functioning efficiently, and sanitary conditions were often unsatisfactory. About 60% of the responding colleges (92 out of 154) reported that some 25% of the latrines were not functioning properly. Only a few colleges (12%) responded that 75% of their latrines were functional.

There is, therefore, an urgent need to repair the water and sanitation systems in buildings occupied by universities and colleges. Rehabilitation may include the use of water tanks for the distribution of drinkable water and the building of septic tanks to improve sanitation.

Electricity

With respect to electricity, all responding universities stated that their buildings were connected to the main power grid. Many of them, however, were not receiving a continuous supply of power, needed for lighting and ventilation as well as for practical classes in laboratories and workshops, and for use of computers and other ICT and office equipment. Twelve out of the 18 universities which responded to the question reported that their generators were looted. It is important to check the situation in detail, as some data may be exaggerated; one university reported the looting of 100 generators with 250 KVA. In any case, the need is great and the provision of generators must be a priority. In addition, repair and maintenance must be facilitated because of the many years of neglect of these facilities.

Equipment and Furniture

Over the last 5 years, procurement under the Oil for Food Programme brought much-needed equipment and furniture into all Iraqi universities. One of the most successful interventions was the supply of furniture for both students and staff. Teaching and learning equipment such as science laboratory equipment, computers and audio-visual facilities were also provided.

Unfortunately, the recent spate of looting and burning resulted in significant destruction of this equipment and furniture. As an example, the University of Technology in Baghdad reported the following loss of equipment and furniture, as well as other damage:

- Library — Looted
- Presidency — Looted and damaged
- 4 dormitories — Looted and damaged
- Continuous Education Centre — Looted and damaged

- College of Electronic and Electricity — Looted, damaged and burned
- College of Architecture — Looted, damaged and burned
- College of Material Engineering — Looted
- College of Metallurgy and Production Engineering — Looted, damaged and burned
- College of Mechanical Engineering — Looted
- College of Computer Engineering — Looted
- School of Applied Science — Looted
- College of Computer Science — Looted and damaged
- College of Building Construction — Looted and damaged.

The scientific equipment that survived the damage and looting may be deemed obsolete due to the sanctions that did not allow the import of many laboratory instruments and equipment for fear of "double use." In the universities visited by the survey team, it was estimated that 75% of the equipment needs to be replaced.

6.2. Technical Education

Technical education in Iraq (UNESCO survey data, 2003)

- 37 Technical Institutes and 9 Technical Colleges
- *58,540 students*
- 22% of students were female
- *2,837 teaching staff*

Iraqi higher education has a relatively strong orientation toward technical education in general and applied technical studies in particular, especially through the technical institutes which had a phenomenal growth shortly after their inception in 1969. The boom in the oil sector in the early 1970s created a demand for qualified workers and technicians, leading the government to support the establishment of the technical institutes with an initial funding of US $700 million. Simultaneously, the government waged an intensive campaign to raise the social standing of technicians.

Thus, from 5 small technical institutes with an enrolment of about 1,000 students at the end of the 1960s, the number of technical institutes went up to 25 in 1981. The increase in the number of technical institutes was basically the work of a special Committee for Development, working in close cooperation with other relevant ministries, like Housing and Construction, Planning and others. This Committee based its plans on the analysis of expected demographic, economic and educational developments. In parallel, training for specialized staff was conducted both inside and outside Iraq, and a system of four levels for the teaching staff (assistant technical lecturer, technical lecturer, assistant technical professor and technical professor) was established.[76]

The special characteristic of technical education in technical institutes, which award a Diploma, and technical colleges, which award a degree, is its emphasis on practical education (50-70% of the study hours), implemented in the workshops and laboratories of the institutes, as well as through practical placements in enterprises, offices or medical institutions. Over the last three decades, the number of teaching fields has increased impressively, covering about 60 fields of specialization in engineering, administration, medical subjects, agriculture and applied arts.

Data from the UNESCO survey indicates that there were about 66,000 students studying in morning and evening courses in 37 technical institutes and 9 technical colleges. There is at least one institute in each of the 18 governorates. Baghdad, with an estimated population of 6 million, has 7 technical institutes and 4 technical colleges (Table 6.8). It is also the venue of the Staff Development Centre servicing the staff of all the technical institutes.

[76] Interview with Mr. Hisham Abdul Wahab, former president of the Foundation for Technical Education, Paris, 11 October, 2003.

Table 6.8. Technical Institutes in Iraq

Governorate	Name Of Technical College/Institute	Year Of Foundation	City Of Location	No. Of Departments
Anbar	TI Anbar	1977	Fallujah	10
Basrah	TI Basrah	1971	Basrah	17
	TC Basrah	1994	Basrah	5
Muthanna	TI Samawah	1989	Samawah	6
Qadissiya	TI Qadissiya	1988	Diwaniyah	5
Sulaymaniyah	TI Sulaymaniyah	1974	Sulaymaniyah	15
	TI Koya	1996	Koya	6
	TI Kalar	1994	Kalar	5
	TI Chamchamal	2000	Chamchamal	3
Babel	TI Babel	1976	Hillah	11
	TI Musayab	1979	Musayab	9
	TC Musayab	1998	Musayab	5
Baghdad	Applied Arts Institute	1969	Baghdad-Zafaraniya	5
	TI Zafaraniya	1969	Baghdad-Zafaraniya	8
	TI for Medical Technology	1966	Baghdad-Bab Al-	10
	TI Administration	1976	Mu'adham	6
	TI Administration	1969	Baghdad-Zafaraniya	6
	TI Mansour	1988	Baghdad- Rasafa	7
	TI Technician Training	n.a.	Baghdad ,Al-Karkh	4
	TC for Management	n.a.	Baghdad-Zafaraniya	3
	TC for Electricity and Electronics	1999	Baghdad- Al-Mu'adham	3
	TC Baghdad	1993	Baghdad-Dora	7
	TC for Medicine &Health	1994	Baghdad-Zafaraniya Baghdad	8
Dahuk	TI Dahuk	1988	Dahuk	10
	TI Akre	2000	Akre	3
	TI Zakho	n.a.	Zakho	2
Thi-Qar/	TI Nasriyah	1979	Nasiriyah	9
	TI Shatra	1979	Shatra	10
Diyala	TI Ba'qubah	1988	Ba'qubah	9
Erbil	TI Erbil	1987	Erbil	15
	TI Soran	2001	Soran	4
	TI Shaqlawa	1999	Shaqlawa	6
Kerbala	TI Kerbela	1988	Hindiya	6
Tameem	TI Kirkuk	1976	Kirkuk	14
	TI Huweja	1979	Huweja	7
	TC Kirkuk	1998	Kirkuk	6
Missan	TI Amara	1979	Amara	10
Ninewa	TI Mosul	1976	Mosul	21
	TC Mosul	1993	Mosul	4
	TI Ninewa	1993	Mosul	6
Wassit	Ti Al –Kut	1980	Al-Kut	9
	TI Suweirah		Suweirah	4
Najaf	Ti Najaf	1978	Najaf	10
	TC Najaf	n.a.	Najaf	2
	TI Kufa	1980	Kufa	9
Salah Al-Din	TI Al-Door	n.a.	Al-Door	5

Source: Annex 2: Statistical Data for the University Level

The table above shows the location of the 37 technical institutes and 9 colleges. The total number of departments in these institutes and colleges was 345. (A department in technical institute or college is an academic unit that offers a field of specialization.) Baghdad's

technical institutes and colleges had 67 departments or 19% of the total. Sulaymaniyah in the north had 4 technical institutions and the rest of the governorates had 1, 2 or 3, servicing the needs of youth in their respective localities.

6.2.1. Structure and Management

During the first years of their existence, the Technical Institutes were attached to the College of Engineering of the University of Baghdad. In 1972, they were placed under a 'Foundation for Technical Education' (FTE), - now called the Commission for Technical Education[77] (CTE), under the direction of the MHESR. The Foundation was guided by an Executive Governmental Board including stakeholders of significance for technical education, such as the Ministries of Planning, Industry, Health, the Teachers Union, and the Students Union.

In the Northern governorates, technical institutes began in the 1990s. There are now 11 institutes, a sharp rise from only 4 such institutes in 1996. The 6 institutes in the governorates of Erbil and Dahuk were under the responsibility of the 'Foundation of Technical Institutes' in Erbil, whereas the 5 in Sulaymaniyah were under the authority of the 'Foundation of Technical Institutes' in Sulaymaniyah.[78]

Several ministries operated their own technical education institutes, which were loosely affiliated to the Commission for Technical Education. In total there were 10 such institutions, which were under the Ministry of Oil (3), Ministry of Industry (1), Ministry of Transportation and Communication (1), and the Ministry of Defence/Military Industrial Commission (5).

6.2.2. Enrolment

Students enrol in technical education courses directly after the completion of the Preparatory cycle of general education. The best-placed graduates of vocational schools can also be admitted to technical institutes. The number of students reported in the present survey is shown in Tables 6.9 for Technical Institutes and 6.10 for Technical Colleges. Overall enrolment was 65,908. A majority of the students were males (78%).

The majority of students were taking two-year courses at the technical institutes (about 89% or 58,540) to obtain a technical diploma, a much faster avenue to land in an income-generating job than taking a degree program at an university. The biggest technical institutes are in Basrah, Baghdad (Zafaraniya and Rasafa), Kirkuk and Mosul, with student enrolment ranging from 3,000 to 5,000. The institutes in the north had smaller enrolments, with those in Sulaymaniyah and Erbil each having less than 2,000 students.

[77] The Foundation for Technical Education in the Centre and South was renamed as the Commission for Technical Education (CTE) in June 2003.

[78] There was little communication between the technical institutes in the North and those in the Centre and South in recent years. The first meeting of representatives from the CTE and the FTIs of Erbil and Suleimanya took place in August 2003 in Erbil, facilitated by UNESCO.

Table 6.9. Enrolment in Technical Institutes, by Governorate

Governorate	Name of Technical Institute	No of students
Anbar	TI Anbar	1675
Basrah	TI Basrah	5066
Muthanna	TI Samawah	864
Qadissiya	TI Qadissiya	1258
Sulaymaniyah	TI Sulaymaniyah	1196
	TI Koya	381
	TI Kalar	212
	TI Chamchamal	184
Babel	TI Babel	2534
	TI Musayab	1546
Baghdad	Applied Arts Institute	703
	TI Zafaraniya	5411
	TI for Medical Technology	995
	TI Administration, Zafaraniya	2110
	TI Administration , Rasafa	4483
	TI Mansour	1845
	TI Technician Training	1540
Dahuk	TI Dahuk	779
	TI Akre	141
	TI Zakho	58
Thi-Qar	TI Nasiriyah	2007
	TI Shatra	1239
Diyala	TI Ba'qubah	2854
Erbil	TI Erbil	1328
	TI Soran	169
	TI Shaqlawa	216
Kerbala	TI Kerbala	1222
Tameem	TI Kirkuk	3391
	TI Huweja	348
	TC Kirkuk	1782
Missan	TI Amara	2153
Ninewa	TI Mosul	3128
	TI Ninewa	509
Wassit	TI Kut	663
	TI Suweirah	720
Najaf	TI Najaf	2008
	TI Kufa	2025
Salah Al-Din	TI Al-Door	1579
Total		**58,540**

Source: Annex 2: Statistical Data for the University Level

The total enrolment in the technical colleges was 7,368. These students were pursuing a bachelor's degree. The technical colleges accept graduates from the general branch of secondary education and the top graduates from vocational schools as well as graduates from the technical institutes, with the students from the latter starting at the second year. Recently, technical colleges began to offer post-graduate studies.

Table 6.10. Enrolment in Technical Colleges by Governorates

Governorate	Name Of Technical College	No. Of Students
Basrah	TC Basrah	1158
Babel	TC Musayab	706
Baghdad	TC for Management	891
	TC for Electricity & Electronics	776
	TC Baghdad	775
	TC for Medicine & Health	407
Tameem	TC Kirkuk	1782
Ninewa	TC Mosul	454
Najaf	TC Najaf	420
TOTAL		7368

Source: Annex 2: Statistical Data for the University Level

6.2.3. Fields of Study

The majority of students in technical education study engineering and technology (61.5%), followed by administration (20.5%), and medicine and allied medical fields (15%). Just over 1% of the students were enrolled in agriculture and in applied arts. A few were enrolled in journalism. Nearly 30% of the students were studying in evening classes, a system that was introduced in 1994/95. Table 6.11 shows the distribution of students by fields of study.

Table 6.11. Enrolment by Field of Study and Gender[79]

Main Study Fields	Field of Specialization	Number of Students			No of TI/TC Offering this Field of Study
		Female	Male	Total	
Administration	Accounting /Administration / Business Administration/Management	2034	2346	4380	21
	Banking	450	503	953	3
	Insurance	241	133	374	1
	Legal Administration / Management	580	1214	1794	10
	Library Management	131	100	231	5
	Secretarial / Office Management	691	731	1422	10
	Storage Management	599	1327	1926	13
	Tourism Management	7	402	409	3
Agriculture	Agriculture / Plant Production / Plant Protection / Animal Production	64	691	755	8
Applied Arts	Architectural Decoration	80	93	173	1
	Design & Tailoring / Textiles	363	256	619	6
	Interior Design	70	54	124	1
Medicine	Anaesthetics	117	335	452	6
	Clinical Pathology	413	412	825	2
	Community Health	565	617	1182	16
	Dialysis	10	33	43	1
	Intensive Care	6	6	12	1
	Nursing	511	1619	2130	18
	Pharmacy	854	975	1829	7
	Physiotherapy	88	88	176	6
	Radiology	104	65	169	4
	Medical Technology (including Dental and Optical)	629	743	1372	13
Technology	Automobile Technology	0	1437	1437	8
	Building & Construction / Civil Works	303	803	1106	9
	Chemical Industries/Technologies	154	531	685	6
	Computer Systems / Software Engineering / Communication Systems	1582	1877	3449	22
	Dies & Tools Technology	5	133	138	1
	Electricity / Power Technology	444	9506	9950	23
	Electronics	337	3777	4114	10
	Environment & Pollution	26	77	103	1
	Equipment & Machinery	24	3045	3069	8
	Irrigation & Drainage /Water Technology	61	241	302	7
	Mechanics	183	8401	8584	21
	Petrochemical Technology, Fuel and Energy Technology	193	701	849	3
	Refrigeration & Air-condition Technology	114	236	350	4
	Welding Technology	4	103	107	1
Journalism / Media		70	55	125	2

Source: Annex 2: Statistical Data for the University Level

The table above shows a clear concentration of students in electrical and mechanical subjects, and computer studies, followed by administrative fields of study and medical specialisations. The number of students in these fields corresponds with the number of technical institutes and colleges offering such studies. The number of institutes (8) and students (1,437) involved in automobile technology was rather low. Even fewer students were enrolled in refrigeration and air-condition technology (350), which is perhaps surprising given that Iraq is a country where temperatures soar to 50 degrees Centigrade in summer. One college in Basrah offered environment and pollution studies, with an enrolment of 100 students. Interestingly, storage management was offered in 13 institutions with nearly 2,000 students.

The number of technical institutes/colleges offering studies in computer systems, software development and communication systems was relatively high (22 out of 46),

[79] The total number of students reflected in this table is only 55,843. Some departments did not provide information on the number of students

considering the embargo policy of the last years. Only 2 institutes offered journalism. Tourism management, offered in 3 institutes, could be one of the fields that needs expansion, if Iraq again becomes open to international tourists and travellers, given the historical and archaeological importance of the country.

The proportion of female students was near to 50% in medical subjects, administration and applied arts. In technology- related subjects the percentage was lower, giving an overall proportion of about 22%.

According to key informants, the CTE was envisaging the introduction of new management technologies, including quality control, as well as new technologies in medical, agricultural and engineering fields of study. Quality assessment of the existing studies and their competitiveness on regional and international levels seems also to be imperative.

6.2.4. Internal Efficiency

There is limited data on internal efficiency. However, the failure rates in examinations in technical institutes in the Centre and South were declining, the 2000/01 rates being nearly half those recorded in 1995/96. In Iraq, students who take annual examinations are given a chance to repeat subjects failed. Those who still fail in the re-sit examinations are obliged to repeat the year. Despite the visible improvement of efficiency, the fact that more than 20% of the students in technical institutes were not able to graduate with their cohort group indicates the need for improvement of educational quality (Table 6.12).

Table 6.12. Failure Rate in Technical Institute Examinations (Centre/South), 1995/96 – 2000/01

Academic Year	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01
No. of Students[80]	62279	69697	61777	51319	38239	51673
Failures	25439	23715	17301	17307	9676	11196
% Failure rate	40.8	34.0	28.0	33.7	25.3	21.7

Source: Annex 2: Statistical Data for the University Level

Failure trends in technical colleges were not consistent. There was a sharp drop after the poor 1995/1996 results (31.2% failure) to a failure rate of 18.3% the following year. The rate remained more or less held steady for the following 2 years, increased in 1999/2000, and fell to 11.9% the following year (Table 6.13).

[80] Total number of students in the first and second year

Table 6.13. Failure Rate in Technical College Examinations (Center/South) 1995/96 - 2000/01[81]

Academic Year	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01
No. of Students	231	405	477	632	831	2152
Failures	72	74	91	130	209	257
%Failure	31.2	18.3	19.1	20.6	25.2	11.9

Source: Commission for Technical Education

As the education process at technical institutes and colleges is focused on practical applications linked to the reality of the world of work, the CTE has developed its own textbooks during the last years. At the same time, special attention was given to establishing specialized and updated libraries in all institutions. Many of these libraries, however, were looted and/or burnt during the conflict, causing major problems for students.

6.2.5. Faculty

An estimated 2,837 faculty members were teaching in technical institutions which responded to the survey question on teaching staff. Out of this total number, 2,560 were teaching in technical institutions in the Centre/South and 277 in the North.

6.2.5.1. Faculty Qualifications

The basic qualification to teach in the technical institutions is a master's degree. Instructor assistants are required to have a first degree. However, due to a shortage of adequately qualified teachers, individuals with lesser qualifications were hired. Thus, 50% of the faculty had only a bachelor's degree, while 40% had master's degrees and 10% hold a PhD. The situation was less satisfactory in the North where only 3% of the faculty held PhD, 37% master's, and 60% only bachelor's degrees. Baghdad had the best staffing with two technical colleges having over 40% of their staff with PhD degrees.

[81] **Total number of students in all levels**

Table 6.14Academic Qualification of the Technical Institutes/Colleges Faculty

Governorate	No of institutions	PhD	MSc	BSc	Total
Total Iraq	**47**	**277**	**1125**	**1435**	**2837**
Anbar	1	9	13	19	41
Babylon	3	48	72	84	204
Baghdad	12	90	380	409	879
Basrah	2	9	64	151	224
Dahuk	2	1	18	21	40
Diyala	1	6	32	21	59
Erbil	4	4	69	107	180
Karbala	1	4	22	22	48
Missan	1	2	26	26	54
Muthanna	1	1	8	17	26
Najaf	3	9	58	78	145
Ninewa	4	48	194	211	453
Salah al-Din	1	3	9	13	25
Sulaymaniyah	3	2	25	45	72
Tameem	3	26	89	132	247
Thi-Qar	3	8	30	62	100
Wassit	2	7	16	17	40

Source: Annex 2: Statistical Data for the University Level

Data obtained from the CTE in Baghdad gave the breakdown of the qualifications of all the faculty members by highest educational qualification by field. **Table 6.15** shows that only about half of the faculty had the minimum qualification (master's degree or doctorate) required for a teaching post. Faculty-wise, the small numbers of arts staff were well qualified (30% of Arts and 18% of Humanities staff with doctorates), while the proportion of staff with doctorates was lower in other subjects: Medicine 12%, Agriculture 11%, Administration 9%, Technology 6% and Pure Science, 6%.

Table 6.15. Faculty Qualification in Technical Institutes in the Centre/South by Field

Specialty	Technology	Admin.	Medicine	Agriculture	Arts	Humanities	Pure Science	Other Specialties	Total	%
B.Sc.	356	197	92	80	2	5	24	30	786	45.6
Higher Dip.	18	32	25	1	0	2	1	0	79	4.6
M.Sc.	245	203	92	83	14	11	39	17	704	40.9
PhD.	41	41	30	21	7	4	4	6	154	8.9
Total	**660**	**473**	**239**	**185**	**23**	**22**	**68**	**53**	**1723**	**100**

Source: Commission for Technical Education, Baghdad, 2003

The staffing situation in technical colleges is much better, since 89% of the staff had master's and Ph.D. degrees. Fifty-two percent of the faculty members in the field of administration had Ph.D. degrees.

Table 6.16. Faculty Qualification in Technical Colleges in the Centre/South by Fields

Specialty	Technology	Admin.	Medicine	Agriculture	Humanities	Pure Science	Other Specialties	Total	%
B.Sc.	14	4	0	12	0	3	0	33	11
Ms.Sc.	66	17	19	9	2	39	17	169	56.3
Ph.D.	23	23	10	15	0	15	12	98	32.6
Total	103	44	29	36	2	57	29	300	100

Source: Commission for Technical Education, Baghdad, 2003

In order to upgrade the background of its staff, the CTE developed special programmes leading to a high diploma and master's degree in the fields of technology, health and medicine and agriculture. Courses for higher diplomas had already been introduced for welding technology, electrical power technology, community medicine and pathology. Master's degrees are offered in the following fields: casting technology, communication technology, molding technology, surveying, dynamic system technology, welding, computers, concrete technology, pathology, prosthetics, animal biotechnology, tissue transplant, antibiotics and plant growth technology.

The offering of higher diploma and master's degree courses in the technical colleges was controversial. The CTE justified these programmes by indicating the need for a cadre of qualified manpower to keep up with technological change. Cooperation with the University of Technology appears to be imminent. Stakeholders were also suggesting the upgrading of the CTE into a university, in line with the offering of post-graduate studies in the technical colleges.

The problem of staff development was highlighted during a Stakeholders Workshop held by UNESCO in Baghdad in August 2003. The workshop, which was attended by senior faculty members, emphasized the need to uplift the level of faculty if the objective of quality education were to be achieved. Participants indicated that the problem of quality had several dimensions. The first was clearly that of raising the current academic minimum standard of faculty to that of a master's degree as stipulated. The second was that of exposure to professional activities outside of Iraq. Their concern was that due to the isolation brought about by sanctions, faculty members had lagged behind their counterparts outside. They therefore pressed the point that future staff development programmes should have a significant component of external training.

6.2.5.2. Student/Teacher Ratio

The survey indicated that there were an average of 23 students for each teacher. For institutions that emphasize practical training this ratio is high, since teachers need to spend more time with individual students to ensure that skills are inculcated and gradually perfected. However, teachers are assigned aides for practical lessons, which reduce pressure on them during these lessons. The aggregate ratio, however, masks the wide-ranging ratios obtaining in individual institutions and within departments. The Institute of Medical Technology in Baghdad, for example, had a comfortable average student-teacher ratio of 8, Shaqlawa Technical Institute in Erbil, an inefficient ratio of 2, while the Electrical and Electronic Technical College in Baghdad had a poor ratio of 90.

6.2.5.3. Professional Development and In-Service Training

Due to the rapid development in technology, technical teachers require more frequent professional development and in-service training in order to stay current with the state of the art. Professional development has been hampered by sanctions in the last 12 years. Travel restrictions were also imposed by the government of Iraq, particularly for faculty members with Ph.D. degrees who required special permission to leave the country. The resulting isolation meant that faculty could not interact with peers internationally or even regionally, leading to stagnation in their skills and scientific development. The quality of the faculty in turn affected the quality of the manpower and womanpower trained in technical education.

Professional development is critical in ensuring that technical education in Iraq produces quality graduates. The survey results showed that half of the staff in technical institutions lacked the minimum teaching qualification of a master's degree, which was a sad pointer to the state of professional development of the faculty. A rigorous plan must be put in place to upgrade of the 50% of faculty who do not hold the required minimum qualification.

As members of faculty in higher education institutions, staff in technical education are expected to be involved in research and publishing activities to enhance their professional development. Respondents to the survey indicated little involvement in publication activities. Only 9 journals were being published by these institutions, with 6 of them produced by Baghdad-based institutions. Staff had published only 50 articles within Iraq in recent years, with all except two being from the Institute of Medical Technology in Baghdad. There is clearly a need to motivate staff to be involved in research and publication.

6.2.6. Curriculum

In technical education institutions, students follow practically-oriented curricula. Students in Iraq are expected to spend 70% of the time in practical activities and 30% in theoretical learning. In comparison to similar international-based institutions, this is a ratio more suitable to secondary vocational education. Education at tertiary level now requires a stronger time allocation to theory than that applied in Iraq.

Economic sanctions impacted severely on the technical education programme, as it was not possible to keep up to date with changing technology in the world. In order to enhance the skills of the students a month of practical training is required each summer. Ideally this training component should be undertaken in a related work environment outside of the institutions but, in practice, the programme has been conducted mainly within the technical education institutions themselves. The summer practical training programme made up for some of the time lost during the academic year due to lack of continuous electricity supply.

The technical education curriculum needs to be flexible in order to permit ongoing change in line with changing technologies. This has not been the case, however, as the CTE in the Centre/South and the FTIs in the North have retained central control of curricula and examination issues. It was only in 2002 that the CTE allowed each institution to prepare and mark its own examinations. Since the curriculum content is the same in all

institutions, each year the CTE designates a college that prepares an examination paper in a particular subject, which is taken by all institutions. The CTE explained that this strategy was to ensure quality control, as none would know in advance the subject to be selected and who would prepare the examination.

The authorities have left the curriculum substantially unchanged for over two decades, with the exception of the health programme in the North, which was reviewed with the help of WHO in 2000. The ITE report[82] noted that curricula tended to be narrow, focusing only on specific subjects directly related to professional requirements. However, similar programmes internationally now expose students to a variety of courses designed to enhance their ability to adapt to the changing work environment, improve their lifelong learning abilities, and impart entrepreneurial skills to improve their ability to start and run their own businesses.

The CTE has recently developed its vision for future changes in undergraduate and post-graduate studies. Emphasis is given to electrical and power technologies, medical technologies (including organ transplant technologies and biotechnology) and agricultural technologies. Environmental problems as well as computer-related subjects have become priority subjects for research papers and conferences organized by the CTE.

One major shortcoming of the highly centralized education system in Iraq is the lack of interaction between the institutions offering the training and the work environment in which the graduates will be employed. This gap often creates a mismatch between the knowledge and skills imparted in the institutions and those required at the work place. Modern trends in technical and vocational education require close liaison with the workplace to ensure relevancy and flexibility.

6.2.7. Textbooks and Other Teaching-Learning Materials

As a component of the higher education sub-sector, technical institutions suffered the same paucity of approvals as universities, regarding the import of teaching and scientific equipment under the Oil for Food Programme. Important and necessary equipment including computers was routinely placed on 'hold' by the 661 Committee under the perception that they could be diverted for other uses. Textbooks suffered the same fate, forcing higher education institutions to re-use old books that were outdated. Additionally, lack of access to the Internet denied both faculty and students the opportunity to seek information from websites, something that is being taken for granted by students at similar levels in most countries of the world. Thus keeping abreast of technological changes was difficult for both faculty and students.

Responses to the survey indicated that there were a total of 138,326 books in the technical institutions, with the additional needs being reported as 203,129. It is possible that if the staff were more highly qualified and exposed to trends worldwide the reported needs would be significantly higher.

Regarding information technology, the survey found that only 249 computers were available in the technical institutions (data from 17 governorates). The Computer

[82] UNESCO, Independent Technical Evaluation, 2001.

Technical Department in the Electrical and Electronic Technical College in Baghdad, for example, reported being in possession of only one computer, having presumably lost equipment through looting following the conflict. The institutions reported a further need of 1,923 computers to meet their immediate demands. Without this vital equipment the quality of technical education will be seriously impaired.

A UNESCO report from the North indicated that technical institutes there were generally better equipped, particularly for the teaching of practical skills. UNESCO delivered educational materials worth $10.2 million between 1997 and 2003 to these institutions[83]. In the North, the survey found more computer equipment than elsewhere. As of the end of 2002, universities and technical institutes in the North received computers valued at $ 1.5 million. After the March 2003 war, UNESCO procured additional computers for higher education valued at $1.9 million.[84]

6.2.8. Infrastructure

The war caused extensive damage to some technical institutes and colleges but looting and arson caused most of the damage. The institutions in the Centre/South of Iraq suffered more damage, and about 80% of them were affected.

6.2.8.1. Condition of Buildings

The UNESCO survey found that out of the 46 responding technical institutes and colleges, the buildings in 14 were considered as unsafe, 5 were badly damaged, 11 were partially damaged e.g. through looting, and 17 were in good condition (Table 6.18).

[83] This value represents goods distributed/installed up to Phase 6 of the Oil for Food Programme. After the war, additional educational goods and materials were being delivered.

[84] In Dohuk Technical Institute, for example, the computer systems department reported having 40 computers compared to the 9 institutions in Baghdad that reported possessing a total of only 24 computers.

Table 6.18. Damage to Infrastructure of Technical Institutions[85]

	No. Of Institutes Responding	Not Damaged	Number Of War-Related Incidents		
			Bombing	Burning	Looting
Anbar	1	1	0	0	0
Basrah	2	0	2	0	2
Qadissiya	1	0	0	1	1
Muthanna	1	0	0	0	1
Sulaymaniyah	4	4	0	0	0
Babylon	3	2	1	0	1
Baghdad	12*	0	5	8	12
Dahuk	3	3	0	0	0
Thi-Qar	2	0	1	1	2
Diyala	1	1	0	0	0
Erbil	3	3	0	0	0
Kerbala	1	0	1	0	1
Tameen	3	0	2	0	3
Missan	1	0	0	0	1
Ninewa	3	0	0	0	3
Wassit	2	1	0	0	1
Najaf	3	1	2	1	1
Salah Al-Din	1	1	0	0	0
TOTAL	**47**	**17**	**14**	**11**	**29**

Source: Annex 2: Statistical Data for the University Level

The 14 technical institutions considered as unsafe were found in Baghdad (5), Tameen, Najaf and Basrah (2 each), and Thi-Qar, Babylon, and Kerbala (1 each). Most of these buildings were completely burned or bombed or extensively looted and destroyed. Buildings under this category need almost complete reconstruction. For these cases, demolition of the building is recommended as rehabilitation may be more expensive than building a new one.

The 5 badly damaged technical institutions were located in Baghdad (4) and in Qadissiya (1). There were 11 partially damaged technical institutions, in Baghdad (3); Ninewa (3); and in Muthanna, Thi-Qar, Missan, Tameen and Wassit (1 each), which incurred damage while being looted.

Seventeen institutes were found to be in good condition, in Erbil (4), Sulaymaniyah (3), Dahuk (3), Babylon (2), and Anbar, Diyala, Wassit, Najaf and Salah Al-Din (1 each). As noted earlier, however, the notion of 'good condition' is relative since very few buildings in Iraq may be classified as such. Even these buildings need rehabilitation, given the long period of neglect and lack of building maintenance which characterized the past decades.

6.2.8.2. Condition of Utilities

Survey respondents indicated that (at least) 67% (32 out of 48 responding to the question) of the technical institutions were connected to the main electrical grid. The problem, however, as with universities and secondary schools, is that these institutions were not receiving continuous power supply, which has a severely adverse impact on the training in laboratories as well as the evening classes. Forty percent reported that their generators

[85] Includes the Commission for Technical Education

were looted. This is a priority. Electricity is essential for technical education, especially the practical component.

Regarding water and sanitation, 28 technical institutions reported being connected to a water system, while only a few reported that they were connected to the main sewage system. The latrines of the technical institutes were reported in varying degrees of usability. Eighteen institutes reported that only 25% of their latrines were working; 10 institutes reported 50%; and 9 institutes reported 75%. Clearly there is an urgent need to repair the water and sanitation systems of most of the technical institutes.

6.2.8.3. Equipment and Furniture

The general view before the March 2003 war was that higher education institutions had been well provided for by the Oil for Food Programme in terms of basic office equipment and supplies, furniture, air conditioning facilities and vehicles. This perception may be correct given the total applications approved for higher education in the amount of US $ 18 million from Phase 4 to 9 of the Programme. However, the UN 661 Committee regularly blocked teaching and scientific equipment procurement applications.[86] Most workshops had basic equipment for the specialization being offered, although it dated back to the 1980s.

Unfortunately looting and arson, in the aftermath of the war, seriously affected these resources. Results from the UNESCO assessment indicate that 29% of the technical institutes and colleges lost their equipment, with losses ranging from 20-100%. The situation was so bad that most of the institutions completed their academic year in secondary school facilities teaching only the theoretical component of their courses. As with the vocational schools, the equipment in technical fields was attractive to looters, due to its saleability. In effect, the technical institutes and colleges affected by damage and looting need new furniture and almost all institutions need a complete set of modern equipment and teaching-learning materials for laboratory and workshop studies.

All governorates, except in the North, reported that vehicles were looted or damaged during or after the war. In total 164 vehicles were affected. Vehicles were of special interest to looters and those that were saved were probably in the possession of senior staff.

[86] Starting from Phase VII some applications for laboratory equipment were approved. This equipment, however, did not arrive in the country until mid-2003.

7. CONCLUSIONS

This chapter reviews the principal findings of the UNESCO survey, in the light of the reconstruction and renewal process of Education in Iraq. The survey has indeed highlighted the common concerns of Iraqis from different backgrounds to the urgent need of revitalizing and renewing the education system in order to meet the social-economic and cultural requirements of the reconstruction process of their country. All consider that education is a key element for the promotion of national peace and harmony, and that it is vital to renew the rich 'educational capital' of Iraq, with its broadly developed network of institutions of secondary and higher education. There are ample human resources (teachers, educators, civil servants, support staff, civil society partners), which given the opportunity to upgrade themselves through appropriate learning facilities, and the provision of innovative materials, methodologies, pedagogy and curriculum reflecting the national cultural identity and the messages of tolerance, democracy and civic education, can contribute more effectively to this national endeavour.

During the discussions with stakeholders and people interviewed, expressed a strong commitment to revive the Iraqi traditions of providing quality education to its younger generation. They all emphasised the urgent need to prevent further degradation of the educational system, which has already suffered from the adverse effects of economic sanctions as well as the conflict leading to regime change. Moreover they wanted to seize the present window of opportunity to renew and modernize the system. The UNESCO Needs Assessment recognizes the importance of the process of discussion, policy dialogue and consensus-building as essential elements in the elaboration of the new vision for education in Iraq. The assessment also noted urgent need to strengthen the national capacity in priority areas of policy formulation, planning and management, to achieve this objective and translate it into concrete action. The overall education renewal should englobe, not only its managerial and financial dimensions, but also the learning environment and educational content. Issues relevant to improving education quality will be at the heart of this initiative (curriculum renewal, in-service training of teachers, pedagogical and learning materials). Updating of information and the establishment of a solid database on the current education will be an indispensable step for ensuring the proper management of the overall system and its needs, in order to determine the priorities and future policies. The Needs Assessment also enabled the national teams to consider education in its totality, with a holistic approach although the survey concentrated essentially on post-primary education.

Clearly the challenge now for the national decision makers and stakeholders is to prioritise the needs of the education system in terms of programmes the immediate, near and medium term future implementation within common socio-economic macro framework for reconstruction.

7.1. Issues and needs

7.1.1. Establishing a National Framework for Education

The reconstruction of education at a time of national transition should build on a shared view on the appropriate educational policies and programmes for the future.[87] All stakeholders should be involved in national consultations on these matters, - a process which can help create a sense of national cohesion. Most citizens would like their children and grandchildren to study in well-functioning institutions and gain nationally recognised qualifications that lead on to employment. There is thus a strong incentive to rebuild a national education framework and ensure its successful implementation.

This framework should be sector-wide in scope, with attention not only to the various sub-sectors but to their inter-relationship. The location and size of secondary schools should relate to the output of children from the upper grades of primary school. Decisions on expanding existing secondary schools or establishing new ones must be based on school mapping that covers the two sub-sectors, taking especial account of gender issues. Access to education at 'Preparatory' level, whether general schooling, vocational education or teacher training, should relate to the outputs of the 'Intermediate' level of education. The strengthening of education faculties at universities will be critical to the modernisation of the various educational institutions at secondary level, in terms of pedagogy as well as supporting the renewal of curricula and textbooks.

A national framework is thus required, which sets out the role of each sub-sector within the overall context of educational and societal renewal. The framework must further cover the principles of educational governance, and the role of education in promoting social and economic renewal, as well as human rights and national unity, together with respect for diversity.

In order to provide the necessary leadership for this process, it will be helpful if senior managers in the Education Ministry and Ministry of Higher Education and Scientific Research, as well as institutions of higher education, have the opportunity of participating in technical seminars, study visits and other means to upgrade their skills and acquaint them with international experiences and best practises relevant to education renewal. National consensus building and policy dialogue is important at this stage. The creation of national commissions and fora to discuss and formulate the education vision and policy, would be conducive to mobilizing the required support for the renewal and reconstruction. This process will also have to take into consideration legislation and administrative practises on which to build the renewed education system with relying on the coordination of the multiplicity of private and other education initiatives.

7.1.2. Decentralisation of Decision-Making

Effective field offices are vital in the delivery of educational services. The structure of the educational system has some elements of decentralisation, through the Directorate General for Education at the governorate level. In many respects, however, the system has been heavily bureaucratic and centralised.

[87] In the past, educational policies were influenced by the philosophy of the former regime. Examples included special quotas for admission of students to universities and selection of students for postgraduate studies. There is a need to establish arrangements that are equitable, favour educational quality, and meet the needs of national development.

It will be important to determine the most effective and efficient structure for decision-making, including any appropriate devolution to the governorate and district level, given the large number of decisions that will have to be taken in the process of reconstruction. It will be necessary to train field staff in the processes of educational planning and management, management of information systems, including the principles of school mapping.[88] The communication facilities between the ministries and local office, centres and institutes have suffered considerably due to logistics and security problems. This issue has to be addressed.

The process of decentralisation will be especially important in the field of higher education, where the pursuit of academic excellence as well as more academic freedom may require more decision-making by individual universities and technical institutes, within the framework laid down by the Ministry of Higher Education.[89]

7.1.3. Capacity-building for Education Planning and Management

Planning and organisation of reconstruction will place an immense demand on the planning and managerial staff of the education ministries. The widespread damage and deterioration of infrastructure, as well as severe shortages of furniture, equipment and materials hamper considerably the execution of daily tasks. There are massive needs in terms of teacher training and the renewal of curriculum and textbooks. The concerted efforts to meet the immediate needs in order to ensure the completion of the school year and continuity in the education services have enabled the national authorities to overcome some the main obstacles, but these are only stop-gap measures. Serious consideration will have to be given to ensuring sustainability of the system and channelling of the resources into prioritised areas within a programme framework. The national staff are willing to contribute to this reconstruction effort but will require the modern techniques and skills to do so.

There will be difficult problems of prioritisation, in terms of rehabilitation of infrastructure, provision of equipment and materials, curriculum renewal and teacher training. To successfully plan and manage these operations, key officials in the education planning and statistics departments of both ministries will need exposure to modern techniques of educational planning and management. There will be a need for constant readjustment of the short and medium term plans for the rehabilitation and reconstruction of the education sector, according to trends in enrolment, unforeseen changes in the implementation rate of different investment projects, and so on.

Education planning and management requires sound and updated education statistics. An Educational Management Information System (EMIS) will be needed, covering the primary and secondary schools, and linked to EMIS systems covering other sub-sectors,

[88] UNESCO conducted a School Mapping Project in northern Iraq in 2001 to provide detailed school statistics and other relevant data needed to determine the optimal pattern for expansion of education facilities. Statisticians and educational planners were trained in data collection and analysis. Data collected included the number and location of schools, students, teachers and staff members and the physical condition of the schools including the availability of facilities such as electricity, water, sanitation, together with needs for rehabilitation and/or reconstruction.

[89] Under the Oil for Food Programme, UNESCO assisted higher education institutions in northern Iraq to enhance their research orientation and capacity. Thematic discussions and interaction with international specialists on relevant topics were encouraged. Round-table discussions on areas such as identifying research problems, developing research frameworks and fleshing out research methodologies were common. Funds were also provided for the rehabilitation of research laboratories and basic research materials.

notably vocational, teacher training, non-formal, university and technical education. The management of the procurement services and the delivery systems of books to schools will also have to be programmed in a way that materials and textbook production and operational chains are optimized.

7.1.4. Renewal of Outdated Curricula and Textbooks

The survey team noted a consensus among educators that Iraqi curricula at all levels were outdated. In many instances, they had not been substantially changed during the last decade or more. School curricula were considered to be 'overcrowded' and burdened with too many subjects. Mismatch was found between requirements of the labour market and skills taught in vocational schools. There was a need to review the approach to pedagogy in the curriculum of teacher training institutes. And updating was especially urgent in higher education, where there was regular formal updating but often little change in the substance of the various courses.[90] Curricula in higher education need to be oriented towards international economic trends as well as scientific development, and international support in this endeavour would be very important. More emphasis will be needed on practical work in laboratories and workshops as well as in the application of theoretical studies in field settings and the workplace.[91]

A new generation of textbooks will be required, in line with the renewal of curriculum and of pedagogy. Meanwhile, the existing textbooks need urgent revision so that students can have reliable and unbiased materials on which to base their study.[92]

The renewal of vocational and technical education will require attention to the demands of the labour market. This will affect the areas of study to be offered in the various institutions as well as requiring updating of the content of the curricula.[93]

7.1.5. Need for a Comprehensive Programme of Teacher Education

Teachers play a critical role in the learning achievements of students in Iraq. At the national level there is no acute shortage of teachers in terms of absolute numbers, as indicated by the student-teacher ratio. Most secondary school teachers have the basic qualification of a degree, although there is a need to upgrade the qualifications of the general secondary school teachers, vocational and teacher training staff that fall below this level.

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[90] The CPA started the first move to revise the curriculum by creating the Temporary Advisory Committee on Curricular Reform in higher education to develop a plan for a comprehensive review, suggest policies, and identify potential avenues for international support. The same process was envisaged for secondary education.

[91] In recent years, UNESCO supported field-based training activities for students in the 3 universities in northern Iraq aimed at enhancing students' knowledge and skills in the practical component of their respective fields of study such as physics, biology, geology, agriculture, administration and economics. These projects helped students apply the concepts and theories learned in the classroom.

[92] UNESCO supported the revision and printing of all mathematics and science textbooks.

[93] A Labour Market Survey was conducted in Suleimaniyah from November 2001 to August 2002, under the auspices of UNESCO. Aimed at obtaining information on different occupational groups in the labour market, the findings were used to rationalize vocational education training. The results of the survey showed, *inter alia*, that 52% of the labour force worked in agriculture; that 75% of those surveyed had completed only primary education or less; and that 85% did not have the qualifications appropriate to their work. There was a discrepancy between the demands of the labour market and the programmes provided by educational institutions particularly vocational and technical education. The study recommended the review and restructuring of the vocational and technical education curricula.

Institutions of higher education, however, face a serious problem in terms of teacher qualifications, since many of their staff only hold a bachelor's degree, whereas a master's degree or preferably a doctorate is the norm.

The apparently favourable national student-teacher ratio, hide internal discrepancies, imbalances and shortages of qualified teachers in particular subject areas. At secondary level, there is a shortage of teachers in the fields of mathematics, science and English language. At university level, there is a shortage of well-qualified staff in the sciences and engineering.

The survey showed that only a small proportion of secondary teachers received in-service training during the previous five years. Much of this was related to specific subjects. Only a limited number received training in pedagogy, much of which remains teacher- and subject-centred. A major initiative is needed to introduce more active learning methods, and encourage critical and creative thinking. Educators are acutely conscious that they have been cut off from international developments in the field of education and in their own specialist fields in recent years, - to the extent of not having access to foreign publications as well as restrictions on studies abroad.

Teachers interviewed regretted the lack of contact with the changes and development taking place in the pedagogical and education fields. Urgent action to restore the connections with the relevant professional networks would assist considerably in improving staff motivation as well as their skills Staff development plans for higher education are vital, to ensure quality teaching competitive with that in other countries. International exchange schemes will be essential. A special 'mobility fund' may be introduced, to enable academics to link with joint research programmes in other parts of the world.

7.1.6. Raising Teachers' Morale and Remuneration Packages

Teachers' salaries have been an issue during the last 15 years, as monthly take home pay has fallen in value from $ 500 - $ 1,000 to some $ 5 - $ 40. The decision to pay secondary teachers $65 per month and university professors, including administrators, a monthly salary of $160 - $ 300, was a welcome first step in this regard. The salary range is still viewed as inadequate, however, and has only partially stemmed the exodus from the teaching profession, particularly of experienced and talented teachers who can easily be absorbed in other occupations, and –especially in the case of university teachers, may find employment abroad. Pending an increase in salary, steps may be taken to raise teacher morale through public recognition, access to in-service training and ICTs, and attention to their welfare needs.

7.1.7. ICTs in schooling and higher education

The introduction of ICTs was limited during the period of economic sanctions. The recent destruction and looting has compounded the problem and a highlights the need for a systematic approach to assessing the requirements in this area. The introduction of ICTs in secondary schools has to be weight carefully with the capacity of the system utilize them effectively and maintain them. The optimal use of modern technologies has to be seriously

considered both for managing the education system as well as a working and learning tool for students.

The renewal of higher education will rely heavily on ICTs, which will provide access to current developments in the various academic fields. ICT equipment and connectivity is essential to support the rebirth of the culture of research in institutions of higher education, and the associated quality improvement in undergraduate and postgraduate education.[94]

Printed learning packages still prevail as the modality of distance learning at the Open College of Education. There is a need to upgrade this system and other in-service teacher education towards the use of TV networks and e-learning.

7.1.8. Supply of Books, Equipment and Teaching-Learning Materials

An acute shortage of books and reading materials was found in all sub-sectors. For some years, several students have had to share each secondary school textbook. This situation was exacerbated by the destruction of many school and college libraries and the looting of books and reference materials, including library furniture and equipment. At the time of the survey, the total number of books in general secondary schools, for all subjects combined, barely exceeded the number of students In the universities, the number of volumes in their libraries is now well below international standards.

Even before the war, education quality was already constrained by the lack of equipment and facilities needed for practical subjects like science. The modest supplies of computers, audio-visual equipment, workshop tools and science equipment were priority targets of looters. Laboratory equipment is vital in secondary and higher education, so that science lessons have a practical component, while at higher education level there is the additional consideration that education quality is enhanced by a culture of research. Workshop equipment is likewise vital for vocational and technical education. Equipment for this purpose is a high priority, and will help teachers to update their specialist knowledge.

7.1.9. Limited space for academic activity

The destruction and looting following the conflict has had a serious impact on the educational infrastructure, which was already insufficient before the war due to inadequate maintenance and repair. As reported by survey respondents, lack of maintenance and recent incidents meant that 47% of secondary school buildings were partially damaged, 23% badly damaged, and 10% completely unsafe. Vocational schools were in a similar situation with 45% partially damaged, 28% badly damaged, and 11% unsafe. Teacher training institutes were in almost as critical a state with 37% partially damaged, 21% badly damaged, and 15% unsafe. Likewise extensive damage was found in two thirds of the universities and technical institutes. Given this widespread deterioration and damage, combined with shortages of space that had for some time led to extensive use of multiple shifts, it is clear that rehabilitation and reconstruction of space for teaching-learning is an

[94] Under the Oil for Food Programme, UNESCO procured computers for both secondary and higher education in northern Iraq. By the end of 2002, secondary schools and institutions of higher education had received computers valued at $213,318 and $1,512,247 respectively. After the conflict in March/April 2003, UNESCO procured additional computers for secondary and higher education in these governorates valued at $5,005,996 and $1,924,562 respectively. Training courses were provided to enhance the level of computer literacy of the staff. The project aimed at an average of 20 computers in every secondary school.

immediate and long term priority. Double shift arrangements have a negative effect on the achievement of curriculum goals due to the shortened contact hours between students and teachers.[95]

7.1.9.1. Need for systematic planning to enhance access to secondary and higher education

Steps will be needed to raise levels of participation in schooling, which – in terms of the Gross Enrolment Ratio, mean that barely a half of boys and a third of girls in the age group 12-17 are enrolled in secondary education (grades 7-12), with very small proportions of the age group enrolled in the upper secondary 'Preparatory' level (grades 10-12). Issues of quality are relevant here, as are measures to bring schooling closer to students' homes, - especially important in the case of girls. This will require school mapping exercises, which will help prioritise the priority locations for investment in infrastructure renewal, as well as specific measures such as provision of school buses, especially to girls' schools.[96] Similar concerns apply to higher education. Although the rapid extension of higher education to new governorates in recent years has raised some questions regarding quality, the aim of extending educational opportunity is a valid one.

7.1.9.2. De-Baathification measures

The de-Baathification measures immediately after the conflict led to the removal or suspension of a considerable number of education officials and university professors from their posts. These measures[97] led in general to a feeling of insecurity among the faculty members and contributed to the shortage of qualified staff in universities and technical institutes. Interviews conducted by the needs assessment team indicated that this policy was triggering a brain drain from universities, as experienced professors have left the country.

7.2. Constraints

The process of educational change and renewal is not easy in any society. In Iraq, in particular with its atmosphere of *political uncertainty* in the post conflict situation, education reform will have little meaning if it is not built on national consensus. A first

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[95] The condition of buildings in northern Iraq was illustrative of the deterioration during the 1990s. Under the Oil for Food Programme, UNESCO completed the rehabilitation of 88 primary and 41 secondary school buildings, and constructed 11 schools, while other agencies likewise rehabilitated and constructed primary and secondary school buildings. Two significant construction projects were brought to the design stage: (1) the Education Resource Centre in Suleimaniyah Governorate, intended to house the production of teaching aids for secondary education and an audio-visual and photography laboratory; (2) the Vocational Education Complex, which would bring together the existing vocational schools in one compound for easier networking and rational utilization of workshop facilities. In higher education, UNESCO renovated 13 academic buildings, 6 dormitories and 1 staff house as well as constructing 8 buildings. In addition, 61 construction projects were on-going when the war broke out in March 2003, including the project of transferring the University of Suleimaniyah to another location outside the city to reduce overcrowding.

[96] Under the Oil for Food Programme, UNESCO hired buses to transport secondary students in the governorates of Erbil and Dahuk to their respective school sites, including rural-based students transported to their school in the town and urban-based students whose schools were located at the outskirt of the city. In 2000-2001, 7,310 students were the beneficiaries of this project, rising to 14,779 in 2001-2002. In the Governorate of Suleimaniyah, education officials decided to request UNESCO to procure buses rather than hire them to transport students. When the Programme was interrupted because of the war, 90 buses valued at $3.3 million were being distributed. Vehicles were also procured for the education offices in northern Iraq. They were used in secondary education for the supervision of educational programmes as well as for the transportation of educational materials to school sites. In higher education, they were used for the transportation of students and staff during field trips under the field-based programmes. By the end of 2002, vehicles valued at $1,255,000 had been supplied for secondary schooling and $4,959,522 worth of vehicles for higher education.

[97] Reversed in April 2004.

step is to lay the foundations for such reform through strengthening capacity for planning and management of the system, building a modern information base, and building expertise in curriculum and textbook development and teacher training. At the same time, the process of national policy development should be encouraged, involving representatives of all key stakeholders.

Security problems make it difficult for students and teachers alike to go to schools and attend to classes regularly; as well as hampering the organisation of workshops and seminars for in-service teacher training, curriculum renewal and so on. This remains a major problem in the rehabilitation of the education sector.

Lack of resources and *uncertainty* regarding the availability of national and international funding for education is a critical constraint. Large sums are needed just to pay teacher salaries, making it difficult for the authorities to sustain the recurring cost of education activities. These impacts on the availability of funds to rebuild, upgrade and extend the dilapidated and damaged educational infrastructure, to provide the needed equipment and educational materials, and support curriculum renewal and in-service teacher training. To the extent possible, therefore, external assistance should be committed over the medium term rather than on a short-term basis.

8. RECOMMENDATIONS

This chapter presents recommendations formulated by the persons interviewed with the view to the renewal of the education sector in Iraq built on quality. Strategies are proposed for the renewal of the education ministries and the sub-sectors of general secondary education, vocational education, teacher training and higher education.

8.1. Capacity building for education policy formulation, planning and management

8.1.1. Policy Review and Formulation

Educational policy at the national level will need to be renewed in the light of the countries socio-economic and cultural vision for the future and strategic guidelines for the management of education programmes will need to be elaborated. The review process should involve all national stakeholders so that the new vision, policy and strategy are fully appropriated by all those concerned. For this purpose the national authorities could setup wide-based commissions or fora to review and formulate the national educational policy and its priorities. The policy review and formulation will have to cover areas such as:

- Consultations and consensus-building on the national framework for education
- Ensuring access to education, including equitable access for girls and children from poorer and rural families
- Teachers' professional development and welfare
- Curriculum and textbook renewal, textbook production and distribution
- Community and stakeholder support in the management and development of educational institutions
- Labour market requirements
- Prioritisation of capital investment in rehabilitation and construction of infrastructure and in procurement of educational equipment
- Criteria for student admissions, scholarships, national examinations
- Status and management of educational institutions, including charters for universities.

Attention will have to be paid to the participation of all stakeholders in the policy review and formulation process and to building national capacity for selecting and prioritising the needs. A holistic approach will have to be adopted to deal with the country as a whole with its diverse population groups, their respective interests and aspirations, and to translate these into a coherent national vision and programme.

8.1.2. Structural Analysis and Re-organization

The organizational structure is the framework within which decisions in education are made, implemented, monitored and evaluated, and influences the level of rationality, efficiency and effectiveness of decision-making in education. A comprehensive structural analysis and review of organisational design in Iraq is needed, to lay the foundations for

the renewal of the education system and its functioning. In order to enable the ministries concerned to carry out this task, they could make use of methodologies such as Mission-Function-Tasks Analysis. Specifically, this is done by:

- Organization of a group of experts (for each ministry) with terms of reference to undertake a comprehensive review of the current organization of the MOE or MHESR, problems encountered, supported by capacity-building for the task.
- Preparing a framework for re-structuring educational administration and management, including indicators of rationality, efficiency and effectiveness in core management tasks, such as management of the teaching force, infrastructure renewal, procurement and distribution of education materials and equipment, etc.
- Examining specific units of the existing structure and determining their levels of rationality, efficiency and effectiveness.
- Developing suggestions for re-organization of specific units and the structure as a whole, and decision-making on these proposals.
- Pilot-testing, where appropriate, and introduction of reforms.

8.1.3. Training in Strategic Planning for Key MOE/MHESR Officials

Given the huge task of educational reconstruction, in-service training for strategic planners in both the MOE and the MHESR was identified as a priority area. These planners will guide the development, implementation, monitoring and evaluation of national plans sector-wide and in the respective sub-sectors. They have to balance the interests of the different levels and types of education, as well as diverse user groups, and optimise resource allocation in terms of access, education quality, and providing specialist human resources for social and economic development. Resource mobilisation is a key skill, as is effective coordination of reconstruction efforts.

In this context, it is imperative to develop a programme of capacity building for senior ministry personnel, together with intensive training for the cadre of specialist planners, including those at governorate level. In higher education, senior managers of universities and technical institutes should be included. UNESCO, through its International Institute for Education Planning (IIEP) and regional services, can train high-level officials as well as senior planners. Some staff should be trained as trainers, to undertake in-service training within the country.

8.1.4. Developing and Installing an Education Management Information System (EMIS)

The practice in Iraq has been to collect school data every year, through the school census organised by the Statistics Department. In addition, data was collected by other directorates in the Ministry of Education, to meet their specific needs. The development of a computerised EMIS will enable all departments to have a common reference point for planning and decision-making. The EMIS should generate indicators that measure educational access, education quality and management effectiveness. In the longer term it should link into an 'information highway' that connects the ministries with the education directorates in the 18 governorates and, if possible, at local level.

The various sub-sectors of education covered by the Education Ministry need EMIS programmes to meet their specific need but with common features. Likewise EMIS programmes are needed for university education and for technical education, under the auspices of by the Ministry of Higher Education and Scientific Research. These various elements should be designed for compatibility, to facilitate a sector-wide approach to educational planning and management.

Establishment of an EMIS ideally requires:

- Specification of educational indicators that cover the whole spectrum of education at the national, regional, district and school levels
- Development of an EMIS framework using a platform that permits a sector-wide approach and decentralised access
- Development of data collection tools and processes that meet the needs of decision-makers at all levels
- Human resource development for EMIS at the national, governorate and institutional level.

8.2. Renewal and improving quality of secondary education

Renewal of secondary education is imperative given the strong demand for education and the urgent need to provide the required skills for reconstructing the country and the economy. The quality of education has been adversely affected by the years of economic sanctions and the conflict, leading to outdated curriculum and textbooks, weakened teacher education and training, scarcity of teaching-learning materials and equipment. Access to education has been weakened by social and economic factors, as well as by damage to infrastructure.

Renewal of secondary education requires measures to modernise the content and methodology of the teaching-learning process, increase access and participation, and strengthen the organization and management of the sub-sector.

8.2.1. Renewal of Curricula and Textbooks

The secondary education curriculum has changed little since the 1980s. A process of curriculum review and renewal is essential, to update the subject matter content, modernise the teaching learning methods to be used, and to ensure that curricula prepare students for their roles as citizens in a democratic state. A process of staff development is needed, in the fields of curriculum and textbook development, pedagogy and subject teaching methodology, so that Iraqi experts are exposed to current international standards and approaches. This should lead into the development of a national curriculum framework, focused on broad goals and specific educational outcomes, involving a wide range of stakeholders. The process of mapping out curriculum for the various key subject areas will follow, again in consultation with key stakeholders. The process of curriculum renewal will need to harmonise with the development of a society with respect for human rights and democratic processes, and with national unity founded in a respect for the rich cultural heritage of the nation. It must provide students with the life skills they need to cope with an era of rapid social change and with the competencies needed to gain employment and contribute to the nation's social and economic development.

The process of curriculum renewal will in turn lead to the development of a new generation of textbooks. This process is time-consuming, in that new materials and methodologies need to be tested in the schools, revised and tested further. Textbooks have to be written and introduced in the schools on a sequential basis, so that students have continuity of approach as they progress through the system. The production and introduction of a new generation of textbooks is thus something to begin as soon as possible, even though it will take several years to complete.

Meanwhile, the process of revising existing textbooks must continue. At secondary level, textbooks are an essential tool for students. Moreover, the ongoing revisions constitute a way of helping teachers update their lessons, prior to extensive in-service training. Each year's printing of existing textbooks may usefully incorporate revisions of some elements so as to update content, improve methodology, remove elements that promote negative images of others, and offer positive modelling of gender-sensitive behaviours, tolerance and concern for others, peaceful conflict resolution and environmental responsibility, among other objectives.

Specific activities for the renewal of textbooks, teacher's guides and other teaching-learning materials include:

- Review of the present textbooks and teaching-learning materials, including an analysis of how they are used and of associated practical activities undertaken (or not undertaken) in the schools, and teacher feedback on problems encountered
- Development of a framework for meeting the new curriculum objectives, in terms of subject matter and methodology, for each year of study
- Development of a framework for the review and development of textbooks, teacher's guides and other materials
- Revision or complete rewriting of textbooks
- Pilot testing, feedback and revision
- Preparation and testing of teacher's guides
- Expert review of content and methodology, prior to printing.

8.2.2. Upgrading Teacher Skills

Qualified and well-trained teachers are central to quality education. There is an urgent need to train trainers who can conduct large-scale in-service training for the teaching force as a whole. The barriers to international communications and exchange of experience in recent years mean that many trainers as well as teachers lack the skills of active pedagogy and updated subject matter knowledge. Students who simply learn notes or the contents of a textbook by heart are not well-prepared for a world of modern technology where change is of the essence, nor for the challenges of active citizenship, which requires the skills of creative and participative problem-solving at local and national level.

Training of teacher trainers should lead on to a multi-year programme of intensive nation-wide in-service training for the 76,000 or so teachers in general secondary education. The training should not be ad hoc but should be structured in a way that leads to progressive improvement in the capacities and knowledge of the teachers. If possible, the in-service

training modules should lead to some form of cumulative certification. This certification process may also include the results of classroom observation and review of teachers' own records how they have applied the training on a regular basis. Expressed training needs include subject areas such as sciences, mathematics, and English language, including interactive teaching methods, classroom management, and guidance and counselling.

In this context, open and distance learning should constitute an important tool in training and retraining of teachers, including those in the rural and remote areas. Resources are urgently needed to strengthen the Open College of Education, to upgrade the qualifications and expertise of practising teachers.

In addition to the programme of in-service training of teachers, consideration may be given in the longer term to developing a 'teachers' professionalization plan' covering the career path of a teacher including recruitment, ongoing professional development, transfers, promotions, and retirement. The concept of compulsory periodic in-service training may be explored. Furthermore, the plan should include incentives to make the teaching profession more attractive.

8.2.3. Improvement of Educational Supervision

Educational supervision was identified by the directors of education interviewed as a weak link in Iraq's secondary education system. Worldwide, there is a problem balancing the tasks of administrative supervision and professional training. If these tasks are to be combined, education supervisors need to be closely involved in the process of in-service training of teachers, and to receive training as trainers themselves, so that they can support the teachers in the classroom. Renewal thus requires:

- Specification of the managerial and administrative tasks of the education supervisors, and training for these tasks
- Clear delineation of the advisory and mentoring role of the education supervisors
- Possibly, deployment of full time mobile trainers and of in-school mentors to complement the supervisors' advisory and mentoring role
- Development of an updated classroom evaluation system
- Training of all educational supervisors in classroom monitoring and teacher guidance
- Training supervisors in the principles of school mapping, to optimise educational access and quality of education in the geographic area for which they have responsibility.

8.2.4. Provision of Equipment and Other Education Materials

Secondary education is in dire need of equipment and materials. Top on the list are the expressed equipment needs such as computers, UPS, printers, scanners, overhead projector, slide projectors, TV sets, VCR and photocopying machines. This is over and above the provision of equipment for laboratories and other specialised purposes. The total number of items mentioned in the questionnaire responses to the UNESCO survey was as follows:

- Computers 26,506
- UPS 21,775
- Printers 15,627
- Scanners 16,575
- Overhead projector 18,498
- Slide Projectors 7,744
- TV sets 7,142
- VCR 6,582
- Photocopiers 4,384

These estimates include some double-counting where schools share the same premises. Existing stocks of equipment are small, often obsolete and in poor condition. Since the extent of school sharing is not clear, and needs depend on enrolment, grade (year) of schooling, etc, it is not possible to make precise assessments of needs. For planning purposes, it is best therefore to assume that a minimum of 10 computers is needed for each of the estimated 3,000 school buildings. There seems to be a fairly widespread use of audiovisual aids notably overhead projectors; and stated needs in this respect can be reviewed with senior Iraqi educators, taking note of the way the aids are used by teachers at different levels of secondary education.

In addition to the above-mentioned equipment, it is necessary to provide standard sets of equipment and materials for rooms used as laboratories or for other special purposes. The number of science rooms in a school and the equipment required depends on the level of studies and the numbers of students in science or 'literary' streams at the upper secondary level, but most of the schools definitely need new equipment. Most schools need language laboratory equipment and equipment for physical education/gymnastics. Most schools need books and equipment for a school library.

For planning purposes, a first step would be to procure the following for educational purposes (assuming that the schools can find rooms where the equipment can be safely used and stored), pending a more detailed investigation:

Computers and supporting equipment: 30,000 (followed by 30,000 more the next year)
Slide projectors: 3,000
Overhead projectors: 3,000
TV & VCR: 3,000
Heavy-duty photocopiers: 6,000 (for reproduction of educational materials).

8.2.5. Provision of School Furniture

School desks and office furniture are required for effective functioning of a school. In recent years, it was common to see students sitting on the floor during class hours because of lack of school desks, and teachers standing throughout the class session because of the absence of a teacher's chair and desk in the classroom. This situation must be remedied.

The furniture required to relocate students enrolled in the estimated 1,000 school buildings classified as unsafe (10%) and badly damaged (23%) would include, - in rounded figures, some 1,000 chairs, desks and cabinets for head-teachers, 12,000 teacher chairs and desks for classrooms and similar seating for staff rooms, 12,000 blackboards and cupboards, and

360,000 school desks and seats.[98] Some additional school furniture will be required for the about 2,000 school buildings that were partially damaged or in good condition. These needs would have to be verified on the spot.

8.2.6. Improving Access: School Mapping to Identify Catchment Areas and Needs.

At present, many students have less than satisfactory education because of the widespread use of the multiple shift system. Likewise, many students are accommodated in schools that are in need of rehabilitation or reconstruction. Some have been relocated because their school was destroyed or is unsafe. A long term capital investment plan is needed so that buildings can be repaired, replaced, or expanded, and new buildings constructed, in a way that best improves access to education and the quality of the school environment. In the short term, hard decisions have to be made about how to spend the limited funds available for infrastructural improvement. In these circumstances, it is important to train education planners at governorate level in the principles of school mapping, so that optimal decisions may be made regarding infrastructure development.

As part of this exercise, steps should be taken to identify the factors leading to the lesser participation of girls in the various levels and types of secondary education (other than teacher training), having regard to the different conditions in rural and urban areas, and other relevant parameters.

8.2.7. Provision for Student Transportation

A high proportion of students live reasonably close to their secondary school or means of transport to reach it. However, in some areas, lack of access to public transportation and security issues may prevent children from attending classes. This is an especial problem for girls, if they have to walk a long distance to reach the school or a means of transport. School mapping analyses will help show up the needs in this respect. Especial attention should be given to the 28% of schools that reported their location as being in rural areas. Ideally, each of these schools should get one bus, unless they are adequately served by other forms of transport. In some cases, school clusters can be served by 1 or 2 buses.

8.2.8. Rehabilitation and/or Reconstruction of Damaged School Buildings

High priority for the renewal of general secondary education is the rehabilitation and/or reconstruction of its educational infrastructure, damaged during the events of March/April 2003 as well as by the lack of funds for maintenance during the years of economic sanctions. Mention should be made here also of the need for demolition and reconstruction of the Ministry building, which is critical for effective management of the sector.

The survey of general secondary education indicates the following needs for rehabilitation and/or reconstruction of premises serving general secondary schools at present:

[98] Assuming an average of about 12 classrooms per building, with each room seating about 30 students.

- School Buildings
    - Demolition and reconstruction of about 300 school buildings considered as unsafe
    - Reconstruction/rehabilitation of about 700 school buildings considered as badly damaged
    - Rehabilitation of the remaining about 2,000 school buildings.

- Specialised Rooms
    - Construction of specialist science rooms for physics, chemistry and biology (one room for each) in about 2,400 school premises serving general secondary schools; rehabilitation/updating of these laboratories in buildings which already have them (about 600).
    - Construction/ rehabilitation of about 3,000 computer laboratories
    - Construction of about 3,000 language laboratory rooms
    - Construction of about 2,500 library rooms; rehabilitation/updating of about 500 rooms)
    - Construction of about 3,000 gymnasia

- Provision of Utilities

    - Installation/rehabilitation of potable water supply and sanitation (needed for most of the estimated 3,000 school premises, due to lack of connection to water supply and sewage disposal, or deterioration of water pipes, taps, latrines etc).
    - Provision of standby generators to the estimated 3,000 schools; rehabilitation of electrical fittings in a high proportion of the schools.

Additionally, the existing premises need to be supplemented by construction of new school buildings in the medium term future so that multiple shifts can be discontinued. As noted earlier, decision-making on whether to extend existing schools or establish new ones should take account of the findings of school mapping exercises in each catchment area.

8.3. Renewal of Vocational Schooling

Vocational education in Iraq has been in decline for over a decade, with a steady fall in student enrolment. This is an indication of a serious problem. Education officials interviewed for the present study suggested that vocational education has been badly affected by a mismatch between the courses offered and the needs of the labour market, as well as often outdated curricula, ineffective teaching methodologies and obsolete equipment. The same factors were noted in the labour market survey conducted by UNESCO in Sulaymaniyah governorate in 2001.

In this context, it is important that a special review is made of current vocational education programmes, - their mode of delivery and content, and how to make them more demand driven. Several steps can be taken in the interim. These include:

- developing closer linkages with workplaces
- improving the physical infrastructure;
- provision of teaching learning materials
- in-service training of vocational teachers
- conducting a labour market survey
- review of the compensation package for teachers.

8.3.1. Developing Links with the Economy and Labour Market

Vocational education is often supply driven, based on the traditional areas of study, rather than current employment opportunities, as stated by the persons interviewed. There is a need to conduct labour market surveys, and tracer studies of employment of ex-trainees, in order to determine what vocational skills are accepted or needed by the market. Based on these surveys, the range of courses offered in different vocational schools can be adjusted to meet current and future needs, including the development of new courses in line with new areas of employment. The current curriculum may need to be adjusted to match the skills and knowledge required for immediate needs of the labour market as well as for newer skills opening up with the modernization and opening up of the economy. Such labour market surveys are needed at regular intervals. Schools should keep records of the employment obtained by their graduates, and try to keep in touch with their careers, as another source of information about the needs of the market.

In this context, it is important that teachers and vocational education administrators cultivate closer ties with employers who may hire their students after training. This should be done through regular formal consultations, through providing students with work experience in industries or offices, and through seeking input from the workplace during curriculum review. Each vocational school should designate senior staff members responsible for liaison with employers regarding the demands of the labour market, and employ placement officers responsible for organising work experience/internships as well as assisting graduates to find employment.

8.3.2. Renewal of Curriculum, Textbooks and Assessment Procedures

A major training programme is needed, to update leading vocational education specialists in respect of curriculum and textbook development. Key officials and trainers of trainers need exposure to current approaches to vocational education, in terms of content and pedagogy. A two-pronged approach will be needed in which existing textbooks are updated for immediate use, while a new generation of curricula and textbooks/manuals are conceptualised and developed. Representative stakeholders from the world of work should serve as advisers and as a reference group in the process of curriculum renewal. Faculty of universities and technical institutes responsible for training of vocational school teachers need to be closely involved in this process, and to have access to international best practice in order to guide their work and their contribution to curriculum renewal.

Vocational students need to develop lifelong learning skills to be able to cope with the pace of change in technology and the work environment. This will have profound implications for the content of their studies, which need to provide a broad foundation of core competencies including ‘learning to learn’.

Staff concerned with preparation of vocational education examinations and assessments, including practical skill tests, will need training on assessment procedures appropriate to the new curricula and their objectives.

8.3.3. In-service Training of Vocational Teachers and Head-teachers

Vocational teachers have been cut off for many years from the developments within their professions, whether the content of their specialisations, modifications of the equipment used, or teaching methodologies. They will need in-service training to prepare them to use revised textbooks and later to implement new approaches to curriculum and pedagogy. Suggested plans of action to implement this strategy are as follows:

- In-service training for the majority of vocational teachers in subject specializations, teaching methodologies, and use and maintenance of workshop equipment
- In-service training for the 231 head-teachers of vocational schools on modern teaching methodologies and assessment, as well as how to prepare development plans for their schools and build good working relations with employers in their field and geographic area
- Upgrading the almost 400 (8% of the total teaching force) vocational teachers who do not hold a university degree, where appropriate
- Training of senior teachers and vocational education supervisors in providing on-the-job training of vocational school teachers at classroom level
- Development of indicators of quality teaching in vocational education for use by education supervisors during classroom observation
- International study visits for ministry officials, university and technical institute specialists concerned with the education and in-service training of vocational school teachers, and for selected head-teachers and staff of vocational schools, with the capacity to serve as trainers for other teachers.

8.3.4. Remuneration and Distribution of Vocational Teachers

The critical decline in teachers' salaries has been a severe problem during the period of sanctions, as noted earlier. The situation of vocational school teachers is especially problematic. If remuneration is poor, the more capable vocational teachers may be attracted to work in industry and commerce. This problem could become acute if there is a revival in the level of economic activity. This is a difficult area of policy, but an important one, and measures should be taken to improve the status and morale of vocational teachers, so as to increase their loyalty and commitment to the profession.

Attention is needed to the geographic distribution of vocational school teachers. At present, there is over-staffing in some schools while others are understaffed in the same specializations. The Ministry should undertake a thorough audit of vocational teachers and develop a redistribution strategy to ensure equity and efficiency.

It is possible that after a market survey and restructuring of vocational education courses and curricula, some vocational teachers might become redundant. If possible, these teachers should be retrained in ways that build on their existing expertise.

8.3.5. Provision of Textbooks, Tools, Equipment and Furniture

Vocational schools were special targets for looters, following the conflict, as the workshop and commercial equipment could easily be sold to local businesses. Vocational schools are estimated to have lost over two-thirds of their equipment. The survey also showed an acute shortage of textbooks. The textbook-student ratio was found to be about 1: 5, whereas for vocational education it is preferable for each student to have a copy of each textbook or manual for his or her own use.

Complete sets of textbooks and of modern workshop tools, equipment and furniture, together with computer laboratories and audio-visual aids are needed for the following vocational specialities. The numbers given are those of schools which offer the named specialisation. If some pairs of schools share the same premises and offer the same courses, then the number of sets of materials required will be less (until new premises are built).

- Industrial 131 sets
- Commercial 34 sets
- Agricultural 9 sets
- Household Science 2 sets
- Vocational (general) 55 sets.

Without these workshop tools and teaching materials, it is not possible for vocational education to meet the requisite standards. Replacing what was lost will take time and money. It is, therefore, possible that in some locations, enrolment in certain courses may have to be deferred until the equipment has been replaced. The procurement of replacement equipment will have the effect of introducing new technology in the various specializations. Teachers will need training on the use of new equipment as it becomes available.

Furniture will be needed for schools affected by damage and looting, as well as – in the medium term, for other vocational schools. The estimated needs for the 64 buildings in unsafe and badly damaged categories are for nearly 800 classrooms, each requiring a teacher's desk and table, blackboard and cupboard, similar seating for the staff room, and some 10,000 school desks; together with about 64 principal's chairs, desks and cabinets.[99]

8.3.6. Improving the Physical Infrastructure

Deterioration of buildings during the years of sanctions, combined with recent damage, means that about four-fifths (84%) of buildings used for vocational schools need repairs or complete reconstruction. Vocational education cannot be undertaken without the needed classrooms, workshop rooms, laboratories and administrative facilities, so action in this regard is urgently needed. An estimated 18 buildings need to be demolished, and 46 need extensive reconstruction, while 74 need rehabilitation and the remaining 26 need basic maintenance.

[99] Assuming about 12 classrooms per school. building.

Very few of the school buildings had specialised rooms for practical activities, -many of the buildings were not designed as vocational schools. Hence it is fair to assume that all the estimated 164 buildings need new facilities such as a computer laboratory, language laboratory, library and gymnasium. It is not possible to estimate without further study how many buildings require construction or rehabilitation of specialised workshops, commerce rooms, etc.

Urgent action is needed to provide, improve or rehabilitate the water supply and sanitation arrangements for the estimated 164 buildings used by vocational schools, about half of which lacked access to running water, and only 15% of which reported having functional latrines.

Action will be needed to construct new buildings so that the use of multiple shifts can be discontinued, giving students more time for their practical work. Decision-making in this regard should take note of the school mapping exercises conducted in each location, so that students completing the Intermediate cycle have access to a range of vocational options. It should also take note of labour market opportunities in the area and in the various fields of specialisation.

8.4. Renewal of Teacher Training

At the time of this survey, the teacher training institutes were found to have 52,891 students, while university colleges of education and teachers colleges had an enrolment of some 59,248 students. Teachers for secondary schools are prepared in the education colleges, whereas the other institutions mainly prepare teachers for primary schools. This section reviews the situation of the 136 teacher training institutes, which provide 5-year courses for students who have completed the Intermediate cycle and 2-year courses for students completing the Preparatory cycle. These institutes fall under the responsibility of the Ministry of Education, like the 14 Fine Arts Institutes described in chapter 5 above.[100]

Teachers trained by the teacher training institutes will play an important role in preparing the next generation to contribute to the development of a peaceful and prosperous society. To accomplish this goal, there needs to be a renewal of curriculum and pedagogy in the institutes and refresher training for the teacher trainers, as well as replenishment of furniture, equipment and libraries, and rehabilitation/reconstruction of infrastructure.

8.4.1. Review and Development of Teacher Training Curriculum and Textbooks

The curriculum for pre-service teacher training has not been significantly changed for many years, and renewal of this curriculum is a high priority for education reform. The present emphasis on subject matter knowledge must be complemented by more emphasis on pedagogy and teaching practice. UNESCO's experience in northern Iraq indicates that teacher trainers are keen to learn more about child-centred active learning methods. A first step is to provide opportunities for Ministry personnel and senior teacher training staff, as well as curriculum specialists from the universities, to undertake study visits to countries

[100]Circumstances did not permit the UNESCO team to study the work of the Fine Arts Institutes, but these institutes are included in the survey data since some of their graduates enter the teaching profession.

where active learning methods are in use, for classroom visits to schools and visits to institutions providing teacher education. Especial attention should be given to the time allocated for supervised teaching practice.

Consideration may be given to some form of collaboration between teacher education institutions abroad and corresponding institutions in Iraq. Within Iraq, it is important to build a critical mass of educators who understand the modern approach to pedagogy, and who can support the process of change. Seminars and workshops for key stakeholders may be envisaged for this purpose. In-service training of head-teachers can be held to prepare them to accept newly trained teachers using modern approaches into their schools and to provide them with the necessary support. Outreach of teacher institute staff to support their ex-trainees through classroom visits may be introduced, which would also provide valuable feedback for improving the effectiveness of the institutes.

New textbooks will be needed which introduce trainee teachers in Iraq to child-centred education, positive approaches to classroom discipline, and other aspects of modern primary education. As a short-term measure it may be useful to translate some key texts for this purpose, if they are not already available in Arabic elsewhere in the region. Textbook writers will need to be trained, however, and exposed to international best practice. The draft textbooks should be trialled in the teacher institutes before finalisation, and should be subjected to peer review by Arabic-speaking specialists in modern pedagogy.

8.4.2. Provision of Books, Equipment and Furniture

Students in teacher training institutes are in dire need of books. In the UNESCO survey, only half of the institutes reported having books for their students. Other institutes reported that books are shared between several students. In order to alleviate this situation, a core set of textbooks should be procured and distributed to the teacher institutes that lack them, as a matter of urgency. At the same time, a plan should be developed for systematic procurement of needed textbooks and replenishment of libraries.

Like other education institutions, the teacher institutes face shortages of equipment, teaching-learning materials and furniture, due to the effects of sanctions and recent events. Purchase of computers, office equipment, audio-visual aids, and equipment for laboratories, gymnasia, art etc should be planned on the basis that most of the 136 institutes will need these supplies. The number of buildings concerned is at least 100 (it is uncertain how many institutes share their premises with institutions with similar needs). Minimum requirements would include:

Computers and related equipment:	100 sets (of 10 or 20 computers/institute)
Slide and overhead projectors and TV/VCRs:	100
Heavy duty photocopiers:	200
Science equipment:	100 sets
Equipment for art, physical education, etc:	100 sets.
Library:	100 sets (books, equipment)

Each institute also requires at least two minibuses, to support a focus on students' classroom exposure and teaching experience in nearby schools, and staff support to these activities as well as providing in-service training and mentoring to their ex-students and other practising teachers. Transport facilities should be provided on the basis of plans of work submitted by the institutes concerned.

Furniture will be required most urgently for the estimated 36 buildings that suffered severe damage. This will entail 36 sets of desk, table, cabinet for the institute principals, sets of teacher table, chair, blackboard, cupboard for each of about 432 classrooms, and about 30 desks for each classroom (about 13,000).[101]

8.4.3. Rehabilitation and Reconstruction of Teacher Institute Infrastructure and Utilities

The rehabilitation and reconstruction of infrastructure is vital, to provide an environment enabling quality teaching-learning processes. The UNESCO survey revealed that 15% of institutes were in buildings which respondents considered unsafe, while a further 21% were in buildings that were badly damaged. Using an estimate of 100 for the total number of premises gives a total of 15 buildings to be demolished and 21 requiring reconstruction, although this may be a slight underestimate.[102] The remaining buildings require rehabilitation (37) or maintenance (27).

Improvements in the supply of drinking water and in sanitation are needed in many of the institutes. Steps should also be taken to ensure that each of the estimated 100 buildings has a standby generator, to ensure that equipment, lighting and ventilation function even when power supplies are interrupted.

8.5. Renewal of Higher Education

The philosophy behind the need for the renewal of higher education in Iraq may be anchored on the vision for higher education of a recent global conference: "Without adequate higher education and research institutions providing a critical mass of skilled and educated people, no country can ensure genuine endogenous and sustainable development and, in particular, developing countries and least developed countries cannot reduce the gap separating them from the industrially developed ones. Sharing knowledge, international co-operation and new technologies can offer new opportunities to reduce this gap"[103]. It is important for Iraq to develop a perspective of this kind at this time, - the vision of producing a critical mass of skilled and educated Iraqis, in touch with modern developments, who can help the country move towards peace and prosperity in the years ahead.

Participants at the stakeholders' meeting on higher education, organised by UNESCO and the MHESR in late August 2003 in Baghdad, strongly emphasised their ambition to use

[101] Assumes an average of 12 classrooms per building and 30 students per classroom.

[102] The number of buildings lies between the estimate of 100 based on the assumption of sharing of premises with other teacher institutes through multiple shifts and the total number of institutes, 136 (applicable if all sharing of premises is with institutions other than teacher institutes).

[103] *World Declaration of Higher Education for the twenty-first century: vision and action*, document of World Conference in Higher Education, 5-9 October 1998.

the process of rehabilitation and reconstruction of higher education for renewal and reform of the system. Their aim was to establish a system that is up to the highest standards and able to compete internationally.

8.5.1. Capacity-building for Policy Formulation, Planning and Management

Higher education has to respond to the needs of a rapidly changing environment, taking account of demands for access, requirements for nation-building, competition for resources and resource constraints. In this context, policies are needed that will promote efficient, effective and rational use of the available resources. The MHESR should lead a process of **policy review and formulation involving key stakeholders**, to build consensus on a national policy for the future of higher education. The individual universities and institutes likewise need to develop a vision and strategic plan as a management tool, establishing their mission and objectives, identifying strengths and weaknesses in terms of management and educational quality, and setting development priorities.

One of the main points of criticism within the academic community was that of extreme centralisation of the system. Following the strong demand for more academic autonomy and academic freedom, there will be a need for training of key officials as well as administrators within the academic institutions to define and prepare **new planning and management procedures and regulations.** New approaches will be needed in budget preparation and resource mobilisation, financial and personnel management, and the project cycle. Managers and administrators within academic institutions will need the capacity to work with international partners. Information and training sessions may be required to facilitate access to international and regional academic networks. Training might be offered in cooperation with international organisations and institutions such as UNESCO's International Institute of Education Planning.

A **higher education management information system**, or HEMIS, can play an essential role in the effective planning of the reconstruction and development of the higher education sector. Based on standardised indicators, it could also serve as a useful tool for quality assurance. (The HEMIS should be harmonised with the Education Ministry's EMIS, so that the two Ministries use a similar platform and software for database management.)

8.5.2. Quality Improvement through the Design and Implementation of a Faculty Development and Exchange Programme

The data from the present assessment confirm the repeatedly emphasised demand for faculty development. The years of international isolation had a serious impact on possibilities for capacity building and research in Iraqi institutions of higher education.

A major training programme is needed to upgrade and update the expertise of the staff of higher education institutions. The one-third of university staff (over 6,000) holding only a bachelor's degree need the opportunity to extend their studies through **seminars, conferences, short courses and as soon as possible through formal postgraduate studies.** Where possible, foreign universities should be encouraged to assist in these initiatives, as far as possible through training on the spot in Iraq. These carefully tailored programmes could also involve some study visits at universities with a reputation for

excellence in the fields most relevant to Iraq. The same applies to the 50% of faculty (1,435) in technical institutions who hold only a bachelor's degree. Moreover, selected staff with master's degrees need the opportunity to proceed to doctoral studies, preferably abroad, and with thesis topics related to the current priorities for the social and economic progress of Iraq. Selection for advanced training opportunities should be based on merit as well as the needs of particular faculties departments; and for this reason, selection panels will be needed that can apply objective criteria. The training programmes should be combined with research projects to build the motivation of the participants and generate income through linkages with the economy and other social sectors.

Just as junior staff need the opportunity to upgrade their qualifications, senior staff need the opportunity to update themselves in their respective fields of specialisation, so that they can provide leadership in the process of curriculum reform. **Fellowship and scholarship schemes for study visits and postgraduate studies are a priority area for international assistance.**

The creation of a **'mobility fund'** for academic exchanges, within the MHESR and/or individual academic institutions would enable and accelerate the participation of Iraqi academics in a large variety of international activities (research networks, professional conferences, training for young scientists, etc)

A supporting step is to restore access to the international community of scholars through access to **journals, textbooks and monographs**, in print and virtual form. The supply of technical equipment enabling access to electronically available academic literature would be an essential contribution to overcoming the shortage of these materials in university and institute libraries, whether caused by the years of sanctions or by war damage and looting. Access to foreign language and I.T. training will be helpful in this regard, as well as facilitating international communications.

Professional development also entails a **transformation of teaching methods.** An interactive student-centred approach is needed which will shift the emphasis from teaching to learning, accentuating enquiry and cooperation, as well as class discussion. Staff will also need to provide support in the coming years to students facing a heavy load of unfamiliar practical laboratory work. Staff can inculcate values such as tolerance, human rights and active citizenship by example, as well as through exploration of these themes where they relate to the course of study. Engineering staff, for example, should be able to introduce students to the social and environmental impact of major engineering projects.

The political and economic changes in Iraq have serious psychological and social impacts on staff and students. Workshops in skills such as conflict resolution and interpersonal life skills, might assist in healing the wounds within society and help staff and their students cope with psychosocial problems arising from the conflict, insecurity and the rapid pace of societal change.

The faculty development process entails concern for staff morale and for staff retention. This requires the development and legitimisation of a package of faculty incentives such as: (a) a new salary structure commensurate with the professional level of a faculty member; (b) clear criteria and policies on recruitment, promotion, transfer and retirement; (c) opportunities for continuing professional development and in-service programme; and, (d) other non-monetary incentives such as health care and housing plans, amongst others.

If adopted and implemented properly, this package of incentives may result in better delivery of quality higher education.

8.5.3. Renewal of Curricula, Teaching-Learning Materials and Teaching Methods

Higher education institutions have been cut off from international developments in the various academic fields for over a decade. Travel was restricted, and few journals were received. The process of curriculum renewal will begin as senior staff gain access to the international literature and return from study visits abroad. However, the MHESR can facilitate a speedier and more effective process of curriculum renewal by constituting study groups, panels, etc to review curricular options for different subject areas on an inter-institutional basis. These panels may also review the existing textbooks and other teaching-learning materials in current use, those in use in the region and those available internationally. Based on this, plans can be made where necessary for textbook revision or the writing of new textbooks with a modern perspective for the various types of course and years of studies.

The new curricula must take into account innovative educational approaches such as invoking critical thinking and creativity. It is imperative to use new methods to go beyond knowledge of subject matter. New pedagogical and didactical approaches should be accessible and promoted in order to facilitate the acquisition of skills, competencies and abilities for communication, creativity and critical analysis including independent thinking and teamwork in multicultural contexts. The new curricula must take into account the gender dimension and the specific cultural, historic and economic context of the country.

The curriculum must help students to become well-informed and deeply motivated citizens, who can think critically, analyze problems, look for solutions and apply these solutions within the perspective of social responsibility and national economic recovery. The value framework of human rights and civic responsibility should be reflected in the content and method of studies, as well as in the management of the universities and institutes (the 'hidden' curriculum). The establishment of a UNESCO Chair of Human Rights could facilitate the dissemination of international experiences in this field within the academic community in Iraq and contribute to the understanding of this subject in a historical perspective worldwide. Likewise, environmental studies are rather new entrants to higher education in Iraq. However, there are numerous environmental problems caused by neglect, military conflict, industrial pollution and, probably, agricultural practices. It is therefore urgent not only to introduce environmental studies as a subject into the programmes of universities and colleges but also to ensure an environmental and social dimension in the teaching of science, engineering and technology (and into research programmes in these areas.)

8.5.4. ICTs in Support of Higher Education

The new millennium is an era of information highways and the knowledge economy. Higher education in Iraq can take advantage of these developments. As just noted, the virtual library has great possibilities, as a contribution to overcoming the gaps confronting staff and students in Iraqi universities at this time. This includes use of the internet and of internationally procured CD-ROMs, to access the current state of knowledge. Students in many subject areas will need to use computers for technical activities within their fields of

study, whether economics or engineering. Distance learning/e-learning and videoconferencing will enable scarce expertise to be widely shared, as will the use of audiovisual materials such as pre-recorded lectures and demonstrations. One initial project under this strategy should be to ensure the interconnection of the universities (academic intranet) and their access to the internet. Furthermore, it will be necessary to provide computer laboratories and tuition in basic computer skills for all staff and students in higher education institutions.

8.5.5. Provision of Books, Equipment and Furniture

The number of books that should be held by Iraqi institutions of higher education if they are to meet international standards of 100 per student would be 25 million for universities, and 6.6 million for the technical institutions. As against this, a total of less than a million volumes remain, so **replenishment of libraries**, supported by the equipment needed for their proper functioning, is a high priority. A first priority is of course the **replenishment of textbooks**, drawing in part on the resources of the region in Arabic language as well as texts in other international languages. There is an urgent need to **revise and update key textbooks** used in undergraduate courses. Access to virtual texts is important for modernising courses of postgraduate studies and for research.

Support for the refurbishment and equipment of the specialist libraries at the **Iraq Academy of Sciences** in Baghdad would provide an in-country resource that can be consulted by Iraqi scholars and permit the resumption of publication of Iraqi journals. A sum of $825,000 was indicated in the survey as the initial requirement for this task.

Responses to the survey indicated a need for **computers** for the universities (some 60,000, of which some 23,000 are needed urgently) and technical institutes (some 2000 computers needed urgently). Accessories such as software and CD-ROMs are needed, as well as hardware and related equipment such as **heavy duty photocopiers** for reproduction of teaching learning materials. **Audiovisual aids and general office equipment** are required by most institutions.

Almost every college in the universities and departments in technical institutes require an **updated package of equipment** for their:

- Biology Laboratories
- Physics Laboratories
- Chemistry Laboratories
- Language Laboratories
- Workshops
- Audio-visual Rooms.

Also required is many institutions, and most urgently in those that have been looted, are **school desks, teacher chairs and tables, office furniture and library and other laboratory room furniture.**

8.5.6. Establishment of a Culture of Research

Research is always an integral part of a university, and impacts favourably on the quality of its teachers and teaching. The institutionalization of research and development requires a supportive environment, with the necessary reference materials, specialist equipment and associated materials, support staff and so on. At this stage in the nation's history, resources will be needed for research and development work to support the process of social and economic renewal. Issues to be considered include:

- Deciding on research specialisation and coordination within and between academic institutions, based on special competencies and centres that are already present, in fields such as medical specialisations, environmental sustainability, satellite communication, ICTs etc
- Developing international exchanges of faculty and joint research activities with international partners (network development)
- Promoting innovation through establishment of science and technology parks
- Capacity building for research administration, in the MHESR and universities.
- Role of advisory councils (preferably with research budgets to administer) for the different areas of study to help in the task of prioritisation and to ensure communications between institutions working in related areas.

8.5.7. Quality Assurance in Higher Education

The quality assurance element of the renewal strategy is aimed at ensuring an internationally accepted standard of teaching-learning in universities and technical institutes. Iraqi courses should be brought back in line with international standards. Measures to institutionalize quality assurance may include:

- Strengthening quality assurance activities of the MHESR
- Strengthening international linkages at Ministry and university/institute level to facilitate quality assurance for different fields of study
- Developing indicators to measure the level of performance of universities and technical institutes in terms of the quality of teaching-learning and student attainments.

8.5.8. Rehabilitation of Higher Education Infrastructure

Without an environment that motivates and encourages quality teaching-learning, the delivery of higher education programmes is imperilled. The renewal of infrastructure is thus critical to the aim of quality assurance. The study has classified needs in this area into 3 categories: rehabilitation and/or reconstruction of severely damaged buildings; rehabilitation of moderately damaged buildings, such as those which were vandalised and looted; and restoration of buildings that have suffered from lack of maintenance and repair over the period of economic sanctions. Prioritisation among these categories will depend on local circumstances. Small funding allocations are best used to rehabilitate buildings that are structurally sound. Large funding allocations should be used to deal with the buildings which have suffered more severe damage or need replacement. Especial attention should be given to students' welfare, given the difficult times through which they have passes. Thus dormitories should be restored as a matter of priority, together with other student facilities. It was reported that some dormitory buildings were used by the

military as barracks and may have incurred damage in the process. Particular must be paid to ensuring security for dormitory facilities for girls.

Category 1: Rehabilitation and/or Reconstruction of University Buildings

Some 61 universities and college buildings were reported to have been war damaged and/or burned. They need substantial investment for rehabilitation or reconstruction. This is in addition to the need for urgent action to make buildings safer such as repairing broken windows and doors, upgrading their utilities such as electricity supply, water and sewage systems, and the provision of appropriate lighting and ventilation.

Amongst the technical institutions, a system of priority was devised by the Commission of Technical Education based on its assessment of the damage inflicted on the buildings of the different institutes. The priority list includes 19 school buildings declared as war damaged and/or burned, located in Baghdad (8), Najaf, Basrah and Tameen (2 each), Thi-Qar, Kerbala, Qadissiya and Babylon (1 each)

Category 2: Buildings that have suffered moderate damage, notably through looting.

Some 101 college buildings were stated to have been looted, and will need rehabilitation. The Commission on Technical Education has included 11 buildings in this category, located in Baghdad and Ninewa (3 each), and Wassit, Muthanna, Thi-Qar, Tameen, and Missan (1 each). Urgent action is needed to make the buildings safer such as repairing broken windows and doors, repairing or upgrading their utilities such as the electricity, water and sewage systems, as well as provision of appropriate lighting and ventilation.

Category 3: Buildings needing maintenance and repair due to neglect

The remaining college buildings not mentioned above were not affected by the war but may need extensive rehabilitation because of the many years of neglect. The Commission on Technical Education reported 17 buildings in this category. Urgent action is needed to make the buildings safe such as repairing broken windows and doors, repairing or upgrading their utilities such as electricity supply, water and sewage systems, as well as the provision of appropriate lighting and ventilation.

Before any decision to rehabilitate and/or reconstruct a building, it is imperative to undertake a detailed technical survey in order to find out the actual condition of each building. This includes the assessment of other buildings on a particular campus or even outside the campus that serve as dormitories, administrative offices, etc. It is important to look into the status of libraries, dormitories and administration buildings, including those buildings that were not affected by war.

8.6. Phasing of the process of renewal

Some aspects of phasing have been covered in the paragraphs above. In the short term, the most urgent tasks are to provide safe classroom accommodation for students and teachers, provide an adequate supply of teaching-learning materials and in-service training for teachers. The needs assessment supports the medium term priorities identified by the Ministry of Education:

- Improving the quality of data for planning and management, including establishment of an EMIS.

- Upgrading the management capacity of the Ministry, within a new organisational structure and professional development of education staff.
- Renewal and physical rehabilitation of educational infrastructure.
- In-service training for teachers, focusing on instructional methods as well as citizenship, democracy and nation building.
- Ensuring closer linkages between technical and vocational education, higher education, and the labour market with a view to responding more closely to the socio-economic needs for reconstruction.
- Building consensus on the future vision of education and its strategic policy framework.
- Initiating processes of curriculum and textbook reviews and reform.[104]

Regarding higher education specifically, particular attention, together with the priorities mentioned above, should be drawn faculty development programmes to upgrade the qualifications of the many staff that only hold a bachelor's degree. It will be important to provide opportunities through seminars, study visits and communications facilities for faculty members to update their professional expertise, after years of isolation from the international community of scholars. The renewal of a culture of research, linked to the process of social and economic development, will enhance the quality of teaching as well as making a significant contribution to the future of the nation.

[104] A. Alwan (2004) 'Education in Iraq: current situation and new perspectives', Ministry of Education, Baghdad.

List of Tables