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**REVIEW AND ANALYSIS OF THE
VOCATIONAL AND TECHNICAL TRAINING
SECTOR OF JORDAN'S EDUCATIONAL SYSTEM**

TERMS OF REFERENCE

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EDUCATION AND HUMAN RESOURCES SECTOR

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I. BACKGROUND

By the end of 1990, Jordan will have completed the thirtieth year of its development efforts. These include major expansions of the economic base, impressive strides in increasing life expectancy rate, and increases in literacy and employment, Jordan has also restructured an effective educational system, including kindergarten, primary and secondary levels, and all levels of post secondary education. A unique improvement during the last 10 years is apprenticeship and nursing cooperative type of training programs. The following is but a brief description of major factors and advances during this period.

A. ECONOMIC DEVELOPMENTS (1981-1985)

Jordan's economic ability to respond to change is manifested in the country's capacity to absorb investments and realize high economic growth rates. Part of the real growth rate was principally brought about by an enormous rise in remittances by Jordanian workers abroad, increases in Arab official aid, and an increase in domestic exports. Recent developments such as economic decline in the Gulf State and the wars in Lebanon and the Gulf have led to a decline in domestic and external demand.

B. EMPLOYMENT

Agriculture realized an annual growth rate of 7 percent from the 1981 to 1985. In the electricity and water sectors the average growth rate was at 9.6 percent. Construction realized a 2.1 annual increase while the transportation and communication sectors each had a 5.5 percent increase. Public administration and defense grew at 2.2 percent annually. Last, the trade sector grew at a 4.3 percent rate.

C. POPULATION AND MANPOWER

During the last three decades there have been significant rises in total population and a shift in demographic distribution. Internal migration from the West Bank, from rural areas to the cities, and outmigration of workers, were also contributing factors. These factors and others have produced some permanent changes and demands on the public sector service, housing, education, and employment.

The general population has grown from 680,000 in 1952 to a projected 3,000,000 in 1988. The birth rate continues to climb at about 4 percent annually. Over 50 percent of the current population are under the age of 15. The cities of Amman and Zarqa account for about 75 percent of the Nation's population when their urban belts are considered. About one third of the Kingdom's population is in the north.

D. MANPOWER

Jordan's manpower profile is complex. Participation of women in the workforce continues to grow. It was 12.5 percent in 1985 from 3.1 percent in 1961. The overall participation in the workforce is at a declining 21 percent (1981) mainly due to the fact that over 50 percent of the population are under the age of 15 and the numbers of elderly are increasing.

It is estimated that the labor force is at around 510,000. It increases by about 3.5 percent annually. There are also 145,000 guest workers in the country. The real unemployment level is 15 percent. Also important to note is the very large emigration of Jordanian

manpower to the Gulf, with 1985 estimates at around 340,000. Jordan has been transformed from a full employment state in the late 70's to a state of surplus in some academic specialties and occupations. Unemployment will continue to be concentrated in the production workers as well as among specialists and technical staff, mostly teachers. The highest unemployment will be among college and university graduates. This condition could be worsened by a smaller number of Jordanians going to the Gulf for employment due to many factors. Within the five year plans the following problems and characteristics, goals, and organizational measures were reported for possible action.

1 . Problems and Characteristics

- Sluggish economy will force an even greater imbalanced labor market.
- Persistent low labor market participation rate.
- Slackening of migration rate of Jordanians abroad.
- Reverse migration on the rise.
- Qualitative and quantitative shortage of skilled and semi-skilled Jordanians; high surplus of higher level trained workers.
- Youth/young adults entering market place are more educated.
- Poor wage and allowance incentives for worker geographic reallocation needed.
- Poor vocational training agency coordination and planning.
- Insufficient private sector participation in vocational training.
- Legislation needs updating in areas of labor, social security, and vocational training.
- Lack of sufficient regulating system (occupational classifications).
- Dearth of statistical information and studies.

2 . Goals

- Formulate clearer labor market policies.
- Expand vocational education both horizontally and vertically.
- Increase VTC enrollment to 30,000 with 20,000 apprentices.
- Increase MOE vocational education enrollment to 50 percent of high school student population.
- Improve integration of general and vocational education.
- Increase dramatically private sector participation in vocational training.

- Improve and adopt overall systems of occupational descriptions and classification.
- Develop national system of labor statistics.

3. Organizational Measures

- Strengthen Ministry of Labor's capacity.
- Reduce unemployment.
- Develop labor education institutes.
- Improve and expand partnerships with Arab and international organizations.
- Expand and improve vocational evening training centers and expand others to deal with new specialties and provide greater regional capacity.
- Greater cooperation between ministries regarding improvements and articulations across varied delivering systems now operating.
- Expand role of VTC in areas of industrial expansion.
- Develop system that regulates vocational aspects of industrial labor.
- Develop labor-related relationships and partnerships to help spawn vocational training efficiencies.
- Develop labor/vocational training research capacity and output.
- Increase exchange of experts with Arab and international organizations.

E. WOMEN ISSUES

It has been determined that the female illiteracy levels remain unacceptably high, especially in rural areas. While there has been an encouraging downward trend in female school truancy and dropout rates, remains unacceptable.

Females still concentrate in the academic and are not convinced, with some exceptions (nursing, cosmetology, apparel and commercial), that vocational training is of benefit to them. There are increased needs for female employment in the areas of nurseries and day care centers, while their participation in senior management positions remain very low.

There is a need to increase female representation on various boards and councils, including VTC, so their voices can be heard. This could be fueled by intensifying information and education programs to bring out the importance of working women in Jordan.

F. EDUCATION-VOCATIONAL TRAINING

Dramatic changes and improvements have occurred at all levels and in all types of education over the past decade. Enrollments are bulging at 880,000, teachers reached a level of 35,000, and compulsory education in 1988 was raised from ninth to the tenth grade.

The MOE employs about 76 percent of the total educational workforce (35,000). There are over 9000 administrators with the vast majority being male.

Truancy fell from 4.7 percent in 1980-1981 to 3.2 percent in 1984-1985. The enrollments in kindergarten continue to rise at an acceptable level and vocational enrollments doubled during the past five years.

Some of the dropout and truancy rates are associated with the need for using rented classrooms (7525 - 1985) and double shifting (3527 schools 1985). A very large construction plan is correcting this, at great expense.

G. CHARACTERISTICS AND PROBLEMS

There is a general lack of opportunity for students to plan and decide on their own, what stream and career field they'd like to go into. Likewise, planned discussions and presentations on educational and social issues are lacking.

Textbooks need major rewriting and new ones developed for new specialty fields. The World Bank is assisting the financing of a comprehensive textbook development program. Over 500 titles (covering pupils' textbooks, teacher guides, and other supplementary materials) are already under development to be completed by 1992. More self-paced and modularized products will hopefully result.

H. POST SECONDARY EDUCATION

Jordan is second to none in providing opportunities for post-secondary education. In 1985, 21.4 percent of the age 18-23 year olds were attending some form of community college or university education. Almost 49 percent of these were in 4 year universities. Of all post-secondary students in 1988 37 percent are attending institutions in other countries. Also in 1983-84, there were over 46,000 Jordanian students studying abroad. Education majors represent almost 36 percent of enrollments in community colleges and 3.5 percent in Jordan Universities. Commerce (33 percent) and engineering (15 percent) are the next largest enrollments at the community colleges while arts and humanities (24 percent), economics/administrative services (16 percent), and science (16 percent) are most popular at the university level. Because there is a serious imbalance between the field of study enrollments and the labor demand, a large portion of graduates are unemployed or underemployed.

I. EDUCATIONAL SUCCESS

There is little formal data on what students, in what specialties, involved in what streams and levels of education, obtain employment in the field of the training. Due to high unemployment in some sectors, and worker demands in others, it would appear that better planning and counseling is needed.

Jordan is in the developing stage of institutionalizing a National Center for Educational Research and Development which will help correct the problem in the near future. There is no data on the job success rate of VTC's apprentices after certification.

While Jordan is a regional leader in making educational improvement including improvements in vocational education, it now wants to conduct an objective assessment of what is working and why, what needs to be corrected and how, and how to increase school responsiveness. In addition, Jordan wants to become more efficient in meeting the country's social, cultural, religious, academic, and work related training needs.

II. SCOPE OF WORK

A. PURPOSE OF STUDY

The primary purpose of this study is to provide the government of Jordan a complete and in-depth review and analysis of the vocational and technical sector of its total educational system. Specifically the salient features of such a study or assessment will be to (a) analyze current data and make projections of future demands on the overall country wide vocational and technical education training system, (b) determine estimates as to the likely nature, size, and cost of existing programs and recommend new programs required to meet such demand, and (c) to express the effectiveness of the current system in meeting existing demand and the likely capability in meeting forecasted future needs and, to make priority recommendations, with detailed specifications, on how the country should/could improve its efficiency, flexibility, and effectiveness of the system. In essence the final report will provide a blue print of realistic actions and policy to ensure that the future vocational and technical training system will be able to meet annual demand and be flexible enough to adjust to trend changes.

It is planned that the result of the study will be used extensively by the Ministries of Education, Labor, Planning, and Higher Education as they cooperatively plan changes, improvements, expansions, and articulations. It should help such leadership to estimate and plan projects and fiscal resources that deal with all the factors found later in Figure 1. Of particular importance will be the recommendations and suggested strategies related to:

- Developing a uniform and highly articulated and unified system of vocational and technical education for both Jordan's youth and adults.
- Improve curriculum, teaching methods, mastery standards, and evaluation system to assure uniformity of delivery.
- Improve and expand the country's ability to recruit the best and brightest to enter the vocational/technical training teaching and administration field, provide high quality pre-service and in-service/renewal programs, coupled with a new credentialing system and set of standards.
- Provide sufficient labor market forecast demand data and methods to use these data for strategic enrollment planning in their various specialties and at the various levels of education.
- Improve the existing system of open access for females, handicapped, and others that would provide greater options and individual freedom of specialty choice.
- Provide a special report on the operation of the VTC, concerning expansions, new construction, new programs for what aspects of the labor market, and so on should they be considering, with supporting data.

Secondary purposes of the study are to complete the following:

- To leave behind after the study, completion of a complete needs study package, improved after its project used, for later use by Jordan's researchers.
- To build a staff capacity in needs assessment, survey methods, and report writing by planned involvement in the project. The level of this effort will be conditioned on the level of resources available.
- To provide a briefing/seminar of persons assembled by the USAID and HCST on the findings and recommendations.

B. SPECIFIC STUDY OBJECTIVES

The following are the minimal objectives criteria for proposal preparation. The offerer is open to suggest creative, time efficient, and cost effective methods of bringing these objectives to their fullest completion. If there are other objectives that could be served within the proposed study design, the offerer is encouraged to offer them.

1. To Have Results of an In-depth and Comprehensive Review of Current Vocational and Technical Operation and Planned Improvements

This will include at least a review of the literature, aspects of laws, policies, procedures, formal and informal, from all sectors who are involved in the governance, delivery or evaluation of the system, or have influence on any aspect of vocational and technical education. Resulting from this review will be a report that accurately sets the context that will govern the design and direction of the study. A copy of this draft report should be completed before data collection begins and a copy sent to the CO. A full reference of all documents, data bases, and sources for the review should be included. The report should be viewed as a stand above document for possible independent use.

2. To Complete an Assessment of Training Needs in Regards to Current Job Market, Short-term or Long-term Projected Demands

This assessment will be conducted by interview, individual or group, from all relevant sectors that influence the labor market, run the industry and business sectors, and those who prepare, initial and ongoing, the trained semi-skilled, skilled, technical and professional manpower. Figure #1 provides an idea of factors and sectors that will need to be assessed. Within a 2 month time frame, offerers are encouraged to use their imagination on where and who to survey and what methods will be used. The result of the assessment should be a highly organized set of qualitative and quantitative data targeted upon each factor or issue the study targets on. Any cross links between data sets should be so coded for analysis purposes. It is planned that a report of data summaries will be made available prior to the study team departure from the in-country office and presented orally to the CO.

3. To Provide a Complete Set of Goals, Priorities, and Recommendations for Changes Improvements, or Expansions of Vocational and Technical Education

This report section will reflect the analysis of all data collected, set in logical order and priority sequence as supported by the data. For each recommendation a full discussion of the rationale, characteristics of the change, improvement or expansion should be provided. Additionally, full documentation, coded back to the data section should be included.

4. To Provide a Set of Detailed Specifications on How the Study Team Believes Each Recommendation Should be Implemented.

Such specification, should where possible, be linked to time and provided in a logical and sequential order. Each specification should also be directed to the agency or agencies that should give it leadership and how needed articulation might be accomplished. Along with the implementation time table should be an estimate of approximate costs eg: construction, staff time, equipment, training, developmental costs, and so on. Each recommendation, will have a time table and total suggested cost.

5. To Gain Insight on How Costs Associated with Objective 4 Can be Financed

It is our desire to have the study team develop a most creative scheme for new financial resource generation. Hopefully this scheme would include ideas well beyond the typical country/municipal tax, tuition, World Bank, and USAID financial arrangements. Such ideas as non traditional foundations, equipment donations, individual grants/gifts, technical laboratories as profit centers, employer incentive grants, performing functions for small business for profit, are all encouraged. It is suggested that new financial resource generation ideas be linked to a specific function eg. construction, cost of apprenticeship training, instructor renewal, use of technology in instruction. Ideally, this chapter could be a stand alone document for possible wide distribution to create an environment for its individual idea adoption.

6. To Provide Detailed Recommendations and Specifications for the VTC System

All study data will be analyzed in relationship to the World Bank questions regarding the scale and types of specialized skills required by the labor market, employers willingness to take in apprentices, and potential student demand. This special report will provide direction also for planned future investments in new construction and required equipment.

C. POSSIBLE SPIN-OFF BY-PRODUCTS OF STUDY

It is the intent to use this study as a means to obtain a tested and complete assessment package that could be used over time in Jordan without external help. As the contractor is designing, testing, and using their needs assessment instruments/protocols, as they analysis the data, as they develop rules for interpretation, and prepare reports, this concern should be of priority. The sampling procedures, agencies contacted, persons interviewed, observations implemented, etc., all should be documented in a form for future replication or modification by Jordanian officials. Copies of all instruments, codes, protocols, schedules, and so on should be maintained and made available. Last recommendations for future use based upon problems, difficulties or successes that were found during this study should be made available.

As a part of the current national planning there will be a National Center for Educational Research and Development. This center will conduct future studies on all dimensions of education including vocational and technical. Currently there is a need for experience researchers and this study can help in providing practical experience for several individuals. It is suggested that every attempt be made to use Jordanian university faculty and/or graduate students or Ministry staff to help conduct or observe the study. Jordanian graduate students at the offerers institutions or in their network could be involved in especially objectives 1 and 2. It is suggested that as many Jordanian government officials,

university faculty or university students as possible be involved in aspects of data collection, analysis, and specification development.

The best individuals to help hand off the substance of the project report (findings) is the study team itself, the authors. Much of the thinking behind the recommendations are lost in a written document and we want to take advantage of the project leadership to present the details of the study work.

It is suggested that the offerer consider ways of presenting the findings to various level leadership personnel. This could be done by private council briefings, Ministry wide presentations, training workshops, and so on

D. ISSUES FOR PRIORITY CONSIDERATION

As the Government of Jordan moves towards fully implementing its current educational reform plan, it views the vocational education segment as most critical to the nations growth and quality of life improvement. This plan, to be implemented over the 10 year period (1989-98), will be cast into three sequential phases. Historically, the Government knows that there are large economic returns resulting from educational investments and continues to implement the policy.

In essence, the Government of Jordan has decided to use a Human Resource Improvement (HRI) strategy in response to a slacking economy and high unemployment. The HRI strategy effect will be increased employment through expanding the country's labor supply quality and quantity as well as stimulating the domestic economy which will demand more and better prepared skilled labor.

This study focuses on this 10 year plan which contains in it the expectation that 50 percent of male and 35 percent of female youth will enter and succeed in vocational and technical education. This means to double the interest on the part of parents and students resulting in needed involvements. Beyond just fueling the current system, the plan calls for a much expanded and aggressive curriculum which increases the emphasis on the competencies of problem solving, critical thinking, analytical performance, and information application in new and productive ways. Coupled with this is the call for a much improved image of vocational education, better self image for many individuals, and a renovated, expanded and more flexible system to carry twice its current enrollments. This expanded system will need imagination in its flexibility to test training arrangements for occupations, view greater potential non traditional options for both boys and girls, and open its doors more often during the day and year. Small business development no doubt will be a large segment of the private sector growth so vocational education will need to identify youth and adult entrepreneurs and teach them the skills needed to establish small enterprises.

A country like Jordan, which has numerous Ministries and sectors involved in vocational skill training, including students, instructors, counsellors and administrators, must have a systematic means of assuring that all partners are working in harmony. Articulations, joint planning, sharing and plan training are but a few cooperation agenda items. Likewise, cooperative research needs to be the foundation of system improvement. Teacher effectiveness, dropout causes and effects, fiscal and instructional time efficiency and effectiveness, and curriculum impact are but a few ongoing research priorities that must be jointly undertaken.

The following is provided in order for the offerer to understand, in some detail, what are some of the major issues that Jordan is facing. These issues intended to guide the offerer in proposal preparation. There may be other issues that need examination. The study may

find some of these discussions faulty and that is what is expected. Each issue statement is followed by a list of possible questions that might be included in the study. In no way are these issues arranged in any particular order of importance or priority.

1. Strategic Planning for Vocational and Technical Education

This proposed study needs to help Jordan develop and prioritize policy and operational alternatives concerning the knowledge, skills, and disposition that its vocational and technical education system should follow. To achieve this, the study should provide insight and methods for practitioners, policy makers, and decision makers, to improve their understanding of the implications contained in different policy alternatives directed directly or indirectly at vocational and technical education at all levels. The challenge then is to provide the potential solutions for the identification, evaluation, and priority policy alternatives for addressing the country's major issues and problems facing vocational and technical education.

The Ministry of Education is not the only agency engaged in preparing the Jordanian future and current work force. The study needs to look within all relevant Ministries and sectors to find current operations and capabilities. It is obvious that the Ministries of Higher Education, Labor, Military, and the Vocational Training Corporation are likely partners because of their current financing mission. Likewise the UNRWA schools, private schools and colleges, and the private sector itself are all fully engaged in training and retraining. The study must provide insight on how these entities can better plan and operate together to avoid duplication, develop joint partnerships, and just as important, not miss labor force training needs due to independent planning.

This study needs to adopt the philosophy that change in Jordan is inevitable and may call for (require) the dismantling of old institutions, structures, relationships, policies and procedures and replacing them with modern ones. A perspective on orderly change, through cooperative strategic planning, conducted in an orderly and rational process is also needed. By studying these implementations for vocational and technical education reform, the project findings should provide policy makers with more information about the factors (political, organizational, and programmatic) that influence program improvement and its implementation. The report should also provide ideas (best ways) to affect these features that are crucial to vocational and technical educations, instructor training, governance, management, and finance.

2. Vocational and Technical Education Program Evaluation Including Follow-up

This study needs to examine the current evaluation (data collection, analysis and reporting) system across agencies in order to make progressive recommendations on improvement. Important will be the identification of all independent Ministries and sector evaluations, examination of their methods, variables used in analysis and interpretation, and the standardization of questions asked around all key issues and data needs. Recommendations need to focus on a more unified multi agency process, a stable time frame for data collection, and customized reporting formats for the variety of key users.

To guide the offerer in its attempt to focus on this area of work, the following questions, with explanations, serve as examples that may reflect the status of vocational education and the current evaluation system in Jordan.

a. In what kind of occupations (specialties) do vocational technical graduates work?

This data would help determine the percentage of students who end up working in their training specialty and if not, why not. (High school, community college, centers, etc.)

b. Do vocational educational graduates earn more after graduation than non vocational counterparts?

Important here is the comparisons not only between academic and vocational students, but also between the various delivery modes in Jordan (VTC, high school, poly tech, centers, comprehensive high school, etc). Also do some specialties produce more marketable/competitive workers than others and why.

c. What effect does vocational education have on employability skills?

It is a goal of vocational education to build all skills, especially the work attitudes, work habits, job seeking and retention values and skills as a part of technical training. Are employers helping the schools determine if they are effective and if not, provide solutions.

d. Are graduates of vocational education satisfied with their jobs?

Worker satisfaction is the single most dramatic variable to worker productivity, retention, and promotions. The study should examine means by which employer and worker satisfaction measurement could be improved, including a system that translates findings into instructional and guidance program improvement.

e. Do employers feel satisfied with the vocational education students as part time workers, apprentices, as potential or actual workers?

The true test of the vocational education system is consumers' (Pvt sector) evaluation of the product. This study should examine the process now used, how the data is being used and recommend improvement strategies.

f. What is the effect of heavy concentration in vocational laboratories and workshops on academic achievement?

Realizing that students who are selected for vocational education are lower scorers generally than other students who maintain enrollments in the academic stream, the question still is relevant. The study needs to examine the relationship between time spent on academic and application to see that both purposes are achieved but not one at the expense of the other. There might be a way of conducting some type of academic achievement score of paired groups who take differing portions of either academic or vocational. This is a challenge for the contractor.

g. Does participation in vocational education contribute to decrease absenteeism and dropout?

A better means of determining the holding of power of vocational education should result as a by-product of the study. While vocational educators are quick to claim that reductions are made, the following variables need to be examined.

- Absenteeism - What is the volume and for what reasons?

- Dropouts - What are the causes and where do students go?
- Movement - Why are students moving out of vocational education (dislike, mandated, and so on)?
- Effects - What are the social and economic effects of dropping out?

h. Does participation in vocational education enhance or deter future participation in post secondary education and training?

There appears to be a scaled structure within the various delivery elements of Jordan's Vocational and Technical Education System. Coupled with this scaled structure is a system of educational placement, secondary school and post secondary, that is governed primarily by student Tawjihi scores. In general the structure starts with the academic student; the comprehensive high school student who has exposure to vocational education, industrial, agriculture and commerce schools, MOE government centers, and last, the VTC governed centers. In reverse order, the students with the lowest scores are placed in the VTC centers and the students with the highest scores are placed in a stream to prepare them for university studies. While there is some variation, this policy is upheld. Coupled with the policy is the fact that the location of the vocational education training governs what future (upper track) opportunities are open to students. For example, if a VTC center graduate cannot easily go directly to the poly tech to finish specialty studies. Students must first work first for one year, then sit for their Tawjihi exam. If they pass, enrollment caps and the fierce competition for entry, still places vocational education students at a disadvantage. To some degree this (limiting) policy exists all the way through the graduates of the two-year poly tech institutions.

The study should examine these policies and the formal and informal methods of determining who benefits from what. Additionally, the study should make recommendations for improvement.

i. What effect does participation in the vocational education streams have on student values, self esteem, and general citizen behavior?

There are claims that because vocational education brings its students closer and more often to the work place, which contains both good worker role models and opportunities to excel in their chosen trades, there is a transfer of positive values and behaviors, and students are encouraged to think more highly of themselves and their chosen trade. The study should examine this issue. Who takes measurements of this sort, when are they taken, and how is the data used?

j. What is the participation level of special groups (girls, handicapped, and so on) in vocational education and what effect is it having on their labor market satisfaction and success?

While separated for their education and training after the sixth grade, an increasing number of females are engaged in vocational education in highly selected specialties. It is not known, except for special schools for the mentally slow and physically handicapped, what the mainstream participation of these youth and adults are or what the potential might be.

Jordan's five year plan for economic and social development (1986-1990), has three specific goals on this issue as follows:

1. To provide job opportunities for handicapped individuals who are able to do productive work and to make it easier for them to join the labor force and assume positions in public and private organizations.
2. To increase the contributions of women in the workforce through upgrading their capabilities and productive skills in the various fields.
3. To give support to vocational education for women.

Female illiteracy is still high, enrollment in higher education is making slight gains, participation in the work force (12.5 percent in 1985) is slowly gaining, and parents still direct most females to professional and technical fields. Female truancy and dropout rates are declining but are still very high, and female participation in senior management positions remains low. Last, women have very limited roles in national or municipal planning and policy setting.

In summary, this study should look at the potential and employment trends that might be door openers for both women and handicapped individuals. Recommendations are needed that focus on training, counseling, policy input, support services, and so on.

k. What are the costs, savings and other benefits to employers who participate in the VTC apprenticeship program?

It appears that only students in the VTC centers have opportunities to engage in formal apprenticeship programs. Little is known about the placement rate of apprentices with their original employers because all male students (there are no apprenticeships for females except informal ones in nursing) must interrupt their employment due to the mandatory two years of military participation. This study should examine questions such as:

- Why are there no apprenticeships for females?
- Does the current VTC system need to be more formalized?
- Should comprehensive high schools, centers (industrial, agricultural, and commercial) schools adopt such a system and why?
- Should apprenticeships in private sector workshops, acquire greater credit within education?
- What are the actual costs, if any, to employers who hire young workers for three years?
- Is the current approach effective: 3 days in school and 3 days at work (for years one and two)?
- Might the private sector finance an expanded and improved apprenticeship program and, under what conditions?

l. What labor market projections data are used, by whom, and to what degree; to plan future enrollments, specialty expansions and reductions?

There appears to be little interface between labor market projections data and actual enrollment methods being employed. This may be the function of little available and reliable labor market data. Additionally, there don't appear to be quality opportunities for employer groups to advise education on needed patterns of semi and skilled workers. This, coupled with the fact that there is up to 15 percent "real" unemployment nationally, (some of which is in specialty areas that still have high enrollments) is of concern. Because of the unemployment factor, plus the existence of over 157,200 imported workers in areas where Jordan skilled workers exist, and an increased number of off-shore skilled Jordanian workers who are returning. There is a critical need to investigate this dilemma. The study needs to examine this situation and recommend improved methods of data collection, use and decision making.

m. Where does information about vocational guidance counselors and career information exist, how is it used, by whom, and to what effect?

Vocational guidance and counseling appears to be a severe shortcoming in all levels of education. Many planning documents have strongly urged a more complete and systematic program, but little progress is being made. Reasons could be that there is no formal "Guidance and Counseling" university training program or standards and counselor certification system. Also, the distribution systems for directing students to future education and training streams are out of the guidance mission. Except for a small number of pamphlets and scheduled visits by guidance officials to schools, there do not seem to be many available tools for counselors to use. There are some prevailing attitudes that aptitude tests are not needed and that youth should find their own employment after the schools give them marketable skills. Last, there does not appear to be a discrete budget for this function. The study needs to examine the current condition, determine why this area is given such low priority, and create strategies for improvement. There are other areas that possibly need an evaluation focus. Some of which follow:

- Are vocational curricula modularize' and competency-based and are they being used effectively?
- Which teaching methods are producing the best results?
- What is the time on task condition in labs and workshops and how could it be improved?
- Do higher degreed instructors produce increased achievement for students?
- To what extent, and to what benefit and costs, are mediated instructional approaches being used?
- Is the current curriculum being implemented equally and at the same level quality within specialty areas. and across across institutions?
- Are facilities being fully used and what causes good utilization versus underuse?

- What are the formal links with the private sector and what could cause fuller participation?
- Where do multi-institutional working relationships exist and what additional ones are needed?

3. Research in Vocational and Technical Education

Jordan, especially through its unparalleled commitment to university education demonstrated by having over 100,000 individual students at home or abroad, is building an impressive research capability in all sectors, and especially in education. Jordan has invested in new universities' research laboratories and facilities. Equipment (computers) tend to be available but underutilized. Jordan's Five Year Plan for Economic and Social Development, 1986 page (263-264) lists thirteen specific research topics of priority during the next five years and recommends 250,000 JD for their implementation. The May 22, 1989, World Bank staff appraisal report suggests that there is a large need on the part of the Ministry of Education to build its research capacity and staff competence and even questions the practice of education evaluating or researching its own operation. In a September, 1988, report to the Higher Council for Science and Technology, M.P. Greene and P. W. Hemily suggest that good research is not formally encouraged in Jordanian universities. Deans appear to view research as primarily a means for the selection and promotion of faculty. The authors also demonstrate that professor teaching loads are very heavy with little exception given to those engaged in research. Generally, no release time is allowed for research or supervision of students' research. In essence, there is little incentive for research which is typically viewed as a vital part of a university's mission.

There also seems to be little articulation between university researchers and the private sector; there are a few exceptions with large corporations. Last, international and national data bank link-ups do not exist and increased researcher exchanges and cooperative ventures need to be stimulated.

One important sign of progress in this area is the creation of a National Center for Educational Research and Development. The World Bank report # 7641-JO, May 22, 1989, calls for a new national center which will have six main functions:

1. Longitudinal impact evaluations.
2. Development and maintenance of a comprehensible data base.
3. A clearinghouse for documentation and dissemination.
4. Research innovation in educational methods.
5. Research alternative management approaches.
6. Highlighting capable researchers and fostering their utilization.

This center, to be affiliated with the Higher Council, needs to be addressed during the conduct of this study.

This study is not to tackle the large issue of national research, but should look at how the current capacity could be enhanced to better serve vocational and technical education. It is possible that as a result of this sector assessment, recommendations could be made on how

the MOE could fully expect and foster greater utilization of private and public agency research capabilities. Likewise, this study should uncover a list of priority issues in vocational and technical education that should be researched.

4. Leadership, Instructor Renewal, Recruitment, and Technical Service and Training Needs

This study should examine the selection process, the requirements for the positions, the credentials needed, and the university systems' capability to orchestrate and deliver such a pre-service and in-service function. Such leadership development programs that might be examined include:

- Masters, postmasters, and doctoral university-based programs.
- Informal opportunities with private sector training departments, including internships.
- Graduate research associateships for current leaders to return to school, including paid sabbaticals.
- In-residence programs.
- Workshops, seminars, conferences, study tours, and so on.
- Leadership institutes.
- Leadership education consortium with the private sector.

As the study examines the current and future needs of Jordanian national and institutional vocational and technical education leadership, it should consider some of the following principles:

- The benefits of reduced emphasis on technocratic governance characterized by centralization of control, bureaucracy, and standardization.
- A stronger emphasis on the subjective aspect of vocational-technical education reflecting the interests, motivations, and needs of all individual learners.
- New policies and operations resulting from a stronger realization that individual intellectual and technical development does not proceed in the same way for all learners.
- Flexibility in operations based upon the recognition that vocational-technical education is basically a local enterprise reflecting diverse needs and interests operating in an increasingly competitive world, characterized by diminishing economic and technological boundaries.
- Encouragement for, and greater emphasis on, creative and innovative approaches for empowering individuals to become satisfied and productive.

- New leadership emphasis regarding an appreciation of the need to help prepare all students to compete in the world marketplace of the future by being able to resolve work-related situations and to think creatively.
- A refocusing of Jordanian vocational-technical education to include:
 - The integration of content and processes of vocational-technical education in the overall educational experience of all students.
 - Core skills that can be delivered through a coordinated vocational-technical education curriculum, across specialties.
 - Expanded use of hands-on learning experiences for all specialties, both in laboratories and private sector workshops.
 - A new awareness of Jordan's vocational-technical education's role in developing broader transferable skills as well as job-specific skills which could result in an adaptable work force.

Teacher/Instructor education in Jordan is undertaken both by government and private community colleges. Nevertheless, the Ministry of Education applies the same curricula, holds a general examination for all completors, and certifies qualified teachers, who, on appointment in government schools, become civil servants. The following are a few vocational education teachers recruitment issues for consideration:

- Do the University in-service and pre-service programs: provide mostly theory and little instructional methods, lack teaching intern experience, and lack understanding and experience in their private sector specialty workshops?
- Do training institutions provide: pedagogical training, and count and demand previous specialty experience?
- Are vocational school graduates: rich in private sector experience, and do they have sufficient teacher-method training?

Jordan's five year plan suggests that at least 5,000 new teachers are needed each year for the next five years. Because education is given lower than needed prestige by students and the community, and has relatively low earning potential, it causes difficulty in the recruitment of new male instructors. While improving, the community colleges do not provide sufficient and essential subject matter knowledge or pedagogical training. One reason could be that community college faculty lack such knowledge and experience themselves.

This study needs to examine the current condition of teacher/ instructor qualifications and recruitment, and the existing opportunities and requirements for upgrading. Specifically, the current credential process and its administration needs to be studied. Recommendations for restructuring, and improvement specifications are expected. Likewise, the current teacher incentives (housing, ownership transfers, loans, social security fund, and salary increases) need to be examined in the context of Jordan keeping their best and attracting even better recruits in the future.

The possibility of hiring experienced craftsmen (who have had some teaching methods courses) under provisional certification, needs to be closely studied. This includes the many excellent instructors that retire at an early age from the military. Also ideas on how to

bring home the thousands of university trained educators needs to be considered for new instructional leadership roles.

Last, the study needs to look at the requirements and opportunities for instructor renewal. Given the changing nature of the workforce and new knowledge of effective teaching methods, new and creative opportunities need to be created and participation highly encouraged.

5. Curriculum and Instruction, Structure, Quality, and Relevance

Jordan has undertaken a large Educational Reform Program, with the assistance of the World Bank, OECF of Japan, ODA of the U.K., and USAID. Some of the major areas are curriculum development, educational technology, text book development, libraries, and so on. Most of these developments will have only started during this proposal study. It would appear that new secondary vocational educational curricula for current specialties and additional streams will come on line during the 1990-1991 school year. The new curriculum should provide/permit greater specialization and relevancy especially to the Jordan private sector and in the areas of industrial arts. Responsibility for all vocational streams oriented to direct labor market entry would continue to be transferred to VTC's apprenticeship program.

It is unclear the degree to which vocational and technical education, at all levels, under all Ministries, will be affected. A major emphasis of this study is to examine the current curriculum and instructional delivery modes, and to develop recommendations and specifications for improvement. Such areas of investigation will include the following:

- Is each vocational education specialty curriculum being updated?
- Are vocational education content standards being modernized and by whom?
- Are vocational education textbooks being developed under the World Bank textbook subproject?
- Is curriculum being developed for future specialties, such as entrepreneurship?
- Are curricula developers (general, academic, and vocational education) working together to assure content/standards integration?
- Are student exams being restructured to reflect new content?
- Is vocational education fully represented on curriculum and textbooks committees?
- Are new curricula allowing/expecting the use of educational technologies?
- Are vocational teachers being trained in the use of new curricula?
- Are libraries being planned for separate vocational centers?
- Will libraries contain ample supplies of occupationally focused material for students and teachers?

- Will libraries contain ample supplies of occupationally focused material for students and teachers?
- Is new vocational curriculum stressing:
 - Creative thinking?
 - Inquiry?
 - Practical problem solving?
 - Information processing skills? and
 - Conceptual and analytical skills?
- Is a new vocational curriculum being built in a flexible format for use in self study, remediation, and to provide opportunities for gifted students?
- Do new teacher/instructor methods, development, and training, include sufficient focus on:
 - Activity based instruction,
 - Applied learning, and
 - Self instruction?
- Will vocational specialty curricula be the same or different across the various delivery institutions in Jordan? Will this be step offs between levels?
- To what degree is the private sector involved in the vocational curriculum renewal effort and how?

In addition, specific attention should be given to the use of Jordan's leading indicators of significant workplace changes, such as occupation restructuring due to organizational and/or technological changes, increasing educational/training requirements for entry or advancement in an occupational area, and emerging demands for technical specialists. The primary variables for curriculum improvement should be (1) occupational changes, (2) employment changes, (3) skill changes, and (4) job changes in terms of employee performance characteristics.

The investigation should consider (1) the roles of vocational technical education and small business development for increasing Jordan's competitiveness in a global economy, (2) the expansion of vocational-technical instructors' awareness of and responsiveness to the need for program options that address small business employment opportunities, and (3) curricula adjustments in content and delivery to achieve a better balance between workplace opportunities and training activities. The assessment should also look at attempts to seek and create new relationships and to expand upon existing ones and the development of linkages between public and private organizations in order to support more and better entrepreneurship training programs and services.

It will be important to identify training needs, program responses, and potential areas of collaboration and information sharing among private sector, employer-based literacy programs; government (MOE) and non-MOE vocational-technical education program delivery systems; and other Ministry-level public agencies.

The assessment should also focus on workplace settings and the ways that new job entrants adapt to occupational demand and learning tasks as they progress in their careers. A better

understanding needs to be gained of how vocational-technical education programs can and do link with and prepare individuals for future jobs and for the probable changes in their work lives. Insights gained will be valuable in interpreting data on long-range trends and their implications for curriculum and instructional needs.

In summary the study should look at the vocational and technical education curriculum issue with the following four goals in mind:

- Improving the basic skill competency levels of students who are exiting from Jordan's educational institutions, as well as those whose overall skill levels need to be updated/upgraded in order to adapt to changes in the workplace.
- Increasing the emphasis placed on problem-solving and other higher-order thinking skills and their applications in work settings.
- Expanding the opportunities for cooperative and group process learning, rather than just competitive learning, in order to enhance group-reasoning and problem-solving skills.
- Enhancing the flexibility and diversity of the curricula strategies and materials used in vocational-technical education and training settings so as to better address the learning styles of those being served, and to bring about needed improvements in their basic skills, higher-order thinking skills, and group process skills.

If Jordan's vocational and technical education leaders expect the establishment and implementation of formal articulation programs and agreements between high schools, centers, industrial type schools, poly techs, community colleges, and universities, then the following types of leadership and support should be examined:

- Integrated national plan to support such actions.
- Funding policies to reflect expectations.
- Employers as partners in articulating planning and standard building.
- Standard measures to determine competency attainment, available by program area.
- Instructors and administrators taught to value, build, and operate articulation programs and administrators skilled in their operation.
- University teacher and vocational education administrator pre-service and inservice training programs reflecting the national policy and intent.
- Research on the effects of effective articulation demonstrations.
- Competency-based curriculum to precede articulation.

It is not clear if the form of articulation (2 + 2+ 2) found in other countries will work in the Jordanian system. None the less the survey needs to examine the attitudes, turf issues, policies, potential conflicts, faculty resistance and other issues that would impede and support such future action.

6. Apprenticeship Training

Currently all apprenticeship training programs are under the authority of the Vocational Training Corporation (VTC). Since its first class of enrollees in 1982, VTC has made commendable advances. It now has 17 centers fully operating with 2 more under construction. It also works very closely with 8 private sector owned centers around the country. VTC has around 700 staff (600 males and 100 females) for an overall ratio of 1-11. The total annual intake at the VTC centers is about 9000 trainees out of the 29,000 vocational students in the public system (31 percent). It operates 19 specialty programs for boys and 6 for girls.

In 1988 VTC accepted 2600 apprentices across its specialty areas, and there were 2100 graduates the same year.

In Jordan's 5 year plan (1986 - 1990) the following goals were established:

1. Training of 20,000 apprenticeships (4000 per year).
2. Increase emphasis on agriculture and service sectors.
3. Improve instructor and supervisory training institutes.

It is important to the researchers to note some of the unique issues surrounding the current system especially in light of the national goal to increase the system output 40 to 50 percent over the next few years, as well as increasing the number of high school students participating in vocational education (all forms) from 29,000 to 50,000.

- Female participation is very low.
- The nature of the relationship with private sector is somewhat informal.
- Typically the lowest scoring/achieving students get directed to VTC.
- Over 20,000 current vocational-education students do not have access to any form of apprenticeship except to some degree in the nursing programs.
- The current specialties for apprenticeships are very limited.
- The new educational law modifies the K-12 requirement that requires all students to stay in MOE schools until after grade 10. Up to 1988 students were accepted at the 10th grade level. This means unless a student offers to stay in school 13 years he will miss the last year (fulltime work) portion of the program thus losing the certificate opportunity.

This issue is of great importance to the study for, while the current system is growing in its quality and enrollments, new laws and other factors might impact on its ability to reach national goals and private sector needs. In summary some of the issues that need investigation, recommendations and strategies for improvement are:

- Attitudes of parents, educators and private sector towards this mode of training.

- The impact the new educational law will have on the system.
- The identification and placement of students into apprenticeship programs.
- Guidance and counseling and career information.
- In-center procedures for specialty placement.
- Testing and competency completion measurements.
- Union involvement or potential.
- Placement type and rates of graduates.
- Content of curriculum - balance of basic theory and application.
- Advantage of being separated from MOE.
- Low female participation.
- Funding (current and potential).
- Turf issues - locus of control.
- Alternative models (administrative and operations).
- Adequacy of current policies.
- Participation of handicapped (mental/physical).
- Publicity and public relations.
- Incentives (students/employers).
- Follow up studies.
- Student placement assistance.

7. Technology Requirements and Equipment Needs

Instructional effectiveness must drive the nation's planning and testing of the use of new technology. Jordan needs to know, program by program and level by level, the answers to the questions; (1) What is the best way of using a technology for a learning task? and (2) Is the way a medium is used more important than which medium is used?

The changing technological workplace; telecommunications; global competition; and lifelong cycles of education, training, and work; are some of the challenges facing Jordan vocational educators. While there are an exciting and ever expanding options being offered to vocational education, Jordan is studying these technology applications carefully.

Given the interest, need, and commitment to this issue the study should give attention to the following questions:

- To what degree does existing educational technology reach the vocational instructors?
- To what degree do vocational instructors use what's available?
- What types of instructional aids do instructors desire?
- What kinds of new training do existing instructors need?
- What are the barriers to using instructional aids?
- Are there examples of effective use that could be used in training?
- How will vocational educators be involved in decisions regarding media production or use of technology?
- To what degree would the private sector help prepare work place focused software, videos, and so on?

All segments of Jordan's public and private sectors would agree that workplace related training should be conducted with equipment that represents the current and projected work environment. The questions remain as to who is responsible for such assurances, who should fund such investments, and is it necessary to have this expensive investment always on the school site?

Typically, educational agencies conduct strategic planning concerning equipment update and financing issues. Usually a plan would help assure that facilities are state of the art, optimally utilized, and would contain such issues as:

- What equipment is critical in training laboratories and what equipment is available for use? Could students move into industry to train?
- What equipment standards should be set and by whom?
- Is it only the equipment or the industrial setting where the equipment is housed, that is most the important issue?
- What barriers and resolutions would allow increased in-company vocational education training to occur.
- How should national equipment purchase foundations or coops be established?
- How should high technology centers in regions for shared use in key high technology occupational private sector training programs be established?
- How should ministries budget line items for equipment update be established or improved?
- How should an equipment pool for loan use be funded by the key industries served by vocational technical education, especially through apprenticeship training?

- What tax incentives are sufficient for greater industry donation or equipment loans?
- How can Jordan build a stronger philosophy in vocational education leadership regarding "technology driven teaching methodology?"

Jordan's five year plan (1986-1990) calls for 100 new vocational workshops. There is also money directed at suiting these specialized workshops with equipment. Few plans exist, and little money is allocated for the systematic renewal of the country's existing MOE and VTC schools/centers. Equipment is already becoming out of date and tired. This could be an even greater problem for instructional quality and private sector expectations in the very near future.

The study needs to assess this critical issue closely. The following general goals might help in structuring the studies' focus and instrumentation.

- An up-to-date computerized inventory of facilities and equipment should be maintained.
- Mechanisms should be developed for sharing underutilized facilities and equipment in educational institutions and industry.
- Institutions should seek private sector enterprises who are willing to share facilities and equipment for educational purposes and determination of costs and benefits.
- An annual plan method should be developed for ensuring the replacement of out-of-date equipment on an equitable basis. These plans should provide for additional equipment funding for those districts/regions with limited wealth or those showing the greatest need based upon demand.
- A national vocational education equipment and facility committee should be established to provide current condition oversight, make recommendations for replacement, and help form alliances and agreements to achieve needed update and expansion. Such a committee should have equal representation from the various units of public and private vocational education as well as industry, business, and labor.

8. Vocational Guidance, Counseling, Career Development, and Specialized Testing

It would appear that vocational guidance is a weak function in all levels of the educational system. This is apparent despite some attempts taken by the MOE, the MOHE, and the vocational training corporation. Attempts have been made to develop and disperse pamphlets, conduct orientation visits to schools, and provide talks to students on guidance issues. There do not appear to be any significant roles for the counselors regarding specialty or apprenticeship student decision making or specialty testing (aptitude).

Given the apparent lack of emphasis and the absence of vocational guidance in the VTC and MOE schools, the study should look for reasons why this is true, what is needed, and what are efficient ways for institutionalizing a much improved vocational guidance and counseling system in Jordan. Some of the suggested questions would include:

- Is there adequate staff numbers and qualifications at MOE and VTC to achieve improvement?
- Does the university system have the capacity to train qualified counselors and guidance leaders?
- What are the prevailing attitudes/barriers that exist that deter improvement (private sector, parents, budget, times, culture)?
- Is guidance included in the educational improvement planning (technology, training, curriculum)?
- Are there good examples of effective practice at any level of vocational education?
- What occupational and education information is available and accessible to parents, teachers, and students?
- Where counselors exist, what are their qualifications, retentions, and student ratios?
- What is the counselor's role in vocational orientation and vocational education recruitment?
- Where are the following skills being taught formally and by whom?
 - Job search
 - Employability
 - Worker traits
 - Career choice
 - Job planning
 - Job placement
 - Worker attitudes
 - Job requirements
 - Work place environment
 - Self esteem

9. Vocational Needs of Special Groups and Especially Women

Jordan, like all developed countries, holds high a goal which assures equal access to vocational education, service and activities. Such a goal includes the principle that such access and participation is free from social, socio-economic, age, ethnic or sex bias. Facilities are barrier free. Of course Jordan has a unique set of cultural roots and traditions that effect to some degree this general philosophy.

It would appear that persons in these special categories will rise dramatically during the next 5 to 10 years. Some of the factors that will place a great demand on these special services are the following:

- The population will increase (4 percent plus per year), therefore, there will be more handicapped people.
- Health care will improve and the death rate will decline.
- Fifty percent of the population are 15 years old or younger.
- There is a larger concentration in urban areas.

- There is an increased participation in education which will cause improved attitude and demand.
- Women's participation in vocational education is low.
- Foreign workers number 150,000.
- Unemployment is at around 15 percent.
- Costs of living and education are on the rise.
- Most identified handicapped are in special institutions.
- The dropout rate will increase with population growth.

While this issue is not the highest priority the study should examine the current capabilities and search for positive recommendations and strategies for improvement. A primary emphasis should be given to special problems/needs of women. The following general, but focused goals may be of some help.

- Better communication of how the unique teaching and learning opportunities in vocational education match the learning styles and needs of special populations.
- Make classrooms, laboratories, school days, and calendars more flexible.
- Determine how better instruction could be if packaged for the home-bound.
- Better market to employers the benefits of hiring trained special population members.
- Look at entrepreneurship as a viable option for some special needs individuals; particularly women.
- Examine additional incentives for schools to recruit and train increased numbers of this group.
- Develop even closer working relationships with the private sector, welfare, and corrections who also fund the support and training of this group.
- Infuse the primary and preparatory school guidance programs with stronger evidence of vocational education advantages for special needs groups.

10. Image of Vocational Education

It is generally known that vocational education opportunities are not viewed as viable by many parents, administrators, policymakers, academic teachers, employers and youth. It is a common perception that vocational education prepares youth and adults for low-status jobs. Such a perception probably is rooted in the ancient concept of mind-body dualist.

"Head" occupations generally require a 4-year college or professional degree. They have high status. Thus, courses and curricula that lead toward college also have high status and are valued by parents and students.

"Hand" occupations are frequently blue-collar, don't require a college or professional degree, and have low status. Thus, high school courses that lead toward these occupations are viewed as second class or peripheral within the high school curriculum.

In Jordan, it is the perception that vocational education typically prepares youth, especially males, for blue-collar "hand" entry level occupations. Because most parents devalue any high school program that is not a prerequisite for admission to 4-year colleges or universities, they devalue vocational education. Consequently, school officials often view and use some vocational programs as a "dumping ground" for less able students.

It is apparent that the marketing of vocational education needs to increase with additional vigor. A nationwide aggressive partnership (alliance) should be formed for work-related training, including vocational education. This alliance could include at least membership and resources from the following:

- Ministries of Education, Planning, Labor, and Higher Education.
- Organized labor unions.
- Large, medium and small industries and businesses
- Chamber of commerce
- Members of parliament
- Parent groups
- Professional organizations
- Student leaders
- Infrastructure sector representatives
- Vocational education leaders
- Productive sector representatives
- Social and service structure representatives.

The study needs to examine the issue closely. To guide the offerer the following are some critical questions:

- Do vocational education students earn more than non-vocational students?
- What effect does vocational education have on employability skills development (i.e., attitudes toward work, work habits, job seeking, and retention skills)?

- Are graduates of vocational education satisfied with the jobs they obtain?
- Do employers feel satisfied with vocational education students as actual or potential employees?
- What is the effect of participating in vocational education on students' achievements in basic skills?
- Does vocational education contribute to school retention?
- What effect does vocational education have on further education and training or vice versa?
- What is the participation of minority groups and other special populations in vocational education, and what effect does their participation have on labor market experiences?
- What are the benefits to employers of hiring vocational graduates apprentices?
- What effect does part-time work have on secondary school students?
- How are vocational education programs contributing to economic development initiatives in local municipalities and at the national level?
- To what extent are vocational education programs and services meeting the needs of unemployed workers?
- Where will the creative and aggressive leadership come from to launch an improved public relations program for vocational education?
- Who is willing to set the policy and be convincing to leaders that vocational education is viewed as the last resort and underutilized?

11. Governance and Structure of Vocational and Technical Education

Across Jordan there are many ministries and sectors involved in some form of vocational and technical education. First, the Ministry of Education (MOE), is legislatively mandated to govern all public education, grade kindergarten through grade 12. It also has the authority to certify private school teachers and to some degree certify VTC vocational students. Article 9 of the education law deals with the compulsory cycle of education which now ends at grade 10. While there is some orientation type vocational activities during these compulsory years, vocational training doesn't start until grade 11. At the end of the compulsory year (grade 10) all students are examined by the MOE and the resulting scores (an average of scores from grades 8, 9, and 10) , to a great extent, determine the options available to students for high school and further education.

MOE works closely with the VTC, who operates the apprenticeship arm of vocational education. VTC students may request and obtain certification if desired, otherwise, VTC provides certification of completion.

The vocational stream continues into the post secondary level via the Ministry of Higher Educations (MOHE) which governs the country's poly tech type community colleges.

In addition, there are many private community colleges, and the United Nations Relief and Welfare Agency (UNRWA) schools which provide forms of vocational training, as do the handicapped institutions and the Ministry of Defense,

A tripartite system of educational administration exists. State schools are financed, built, maintained and administered by the MOE through local offices of education. The MOE regulates and provides the curricula, syllabi, textbooks and standards for all the previously mentioned public and private forms of vocational education. The private sector is marginally involved in all aspects of advice or governance in vocational education with the one exception being the apprenticeship program.

This study needs to examine the current structure and method of its governance. The focus for this assessment is to determine what aspects of the current structure serve well or inhibit growth toward excellence and, what governance approaches, if modified, would provide more ownership attitudes of its delivery staff, the consumer (employers) and the parents and local educational leaders.

The following sample issues are but a few that should provide direction for this, aspect of the project.

a. Structure

1. Are there sufficient qualified MOE employees responsible for the major aspects of vocational and technical education?
2. Are there required articulation links between the vocational authorities in MOE, MOL, MOD, MOHE, VTC and the private/other government sectors that provide vocational training.
3. Does the board of education obtain sufficient advice from the vocational and private sector specialists?
4. Do the local boards of education have sufficient say in policy and operation and is vocational education sufficiently represented in their membership?
5. Does MOE vocational education leadership hold the same relative position in the structure as other disciplines?
6. Does the structure provide the necessary provisions that could deliver the national goal of 50 percent high school participation?
7. What are the advantages and disadvantages of having training centers operated by MOE, higher education (poly tech), and the VTC?
8. Why isn't there, or should there be, a parallel system in vocational education, grades 10 through 16, like that which exists for other disciplines?

b. Governance

1. Are there sufficient and qualified MOE staff to give oversight, leadership, technical assistance and program evaluation to an ever growing vocational system?
2. Are there areas of governance that could be allocated to the local units, that would provide increased efficiencies and levels of effectiveness? What are they?
3. What areas of governance are too restrictive in order to allow greater participation by the country's experienced local/institutional leaders?
4. Are there sufficient rules, procedures, position descriptions and overall planning that governs the governance operation?

12. Finances for Vocational Education Including Private Sector Participation

With few exceptions, such as minor local contributions, most vocational education costs are covered by government budgets. The general questions for the needs assessment that are critical to future change, expansion, consolidation, and financing are:

- Where are the inefficiencies in the structure using fair, quality and time comparisons?
- Is there an appropriate balance between finances for leadership, instruction, equipment and supplies, and so on?
- What aspects of instruction, guidance, and so on are hindered due to lack of finances?
- What differing funding formulas might improve the fiscal condition of vocational education?
- What roles do the private sector, Ministry of Labor, and so on play in new financing roles?
- What role, if any, should vocational education students play in the extra cost of training (much like higher education students do)?
- Where are the duplications and inefficient uses of existing funds and how could these be avoided?

There is little evidence that the private sector, even those engaged in the VTC apprenticeship program, has much involvement and opportunity for involvement in policy making, technical assistance, teacher training, student schedules, standards for vocational graduation, and so on. There appears to be a small amount of informal collaboration, usually based upon friendships established between individuals. It would appear that there is little formalization of the whole apprenticeship program.

Given the lack of data on this issue, special concentration should be given. A sample set of questions for assessment might include the following as the study team interviews a wide range of employers.

- What roles are you asked to perform?
- What roles do you perform?
- What's the obvious roles you should perform?
- What needs to change in order to have an increased voice?
- Are you willing to give of your time? In what ways?
- What trade groups should be involved?
- What investments are you making if any?
- What additional investments would you make if it meant an improved system, thus improved workers?
- What general advice would you provide the structure and governance of the current vocational education system (MOE, MOHE, MOL, and VTC)?

13. Legislation and Policies

Jordan has a new educational law (number 27-1988) including stronger references directed at vocational and technical education, while other laws have indirect influence on vocational education's operation and ability to perform. Besides the 1988 educational law, other sectors and ministries have laws that also have an impact on the system.

The focus here would be to assemble all laws, identify aspects of each that effect vocational education, place them in some articulated fashion, and determine:

- barriers to enrollment, programs, and so on;
- duplications; and
- voids.

Also, it will be important to make recommendations as to what improvements should be made on current or new classifications.

14. Unemployment and the Challenge of the Vocational System

A growing population, urbanization of increased numbers, geographical location of current and projected employment, imported semi-skilled and skilled workers, increased female participation, and so on all contribute to a critical unemployment situation in Jordan. While official figures place unemployment at 10 percent (1986) there appears to be a real unemployment of over 15 percent, the difference having much to do with criteria the system applies to there unemployment statistics.

The 1985 estimated Jordanian labor force was 502,000 with an average growth of 3.5 percent. Almost 150,000 guest workers are taking vital job slots that could be filled by the unemployed youth and adults. Additionally, emigration of Jordanian manpower continues

to increase annually by over 10 percent and it is estimated that there are 339,000 emigrants in the Gulf and elsewhere.

The issue for the study is not to correct this multi faceted unemployment issue but to look at vocational and technical education as a partial solution. In that context the following types of questions should be asked and recommendations for policy and action provided:

- Are there skill deficiencies of vocational graduates that cause their unemployment?
- Is the system producing far too many graduates in fields that are not required, and too few in critical fields?
- Is the vocational system producing specialty graduates in regions where jobs don't exist?
- Does the system know from the unemployed graduates themselves why they are not employed?
- To what extent does the two-year military service requirement cause some to fail in finding a job?
- What factors contribute to a higher proportion of unemployment in the special populations area within the trained individuals and those capable of working?

15. Facility Utilization, Conditions, New Construction and Expansion

There is a place a "Building Construction" solution employed regarding the increased youth population, increased goals for facilities, and so on. The government, with the aid of the World Bank, Japan and other donor agencies are looking at significant new vocational education facility construction and expansion.

The issue that this study should focus on deals with the premise of new construction and expansions as the only or primary solution to this problem. An objective set of questions should be studied, some of which follow:

- How could double shifting of 11th and 12th grades serve as an advantage?
- Where are the points in the system (MOE + VTC) that could consolidate mission and enrollments to reduce any duplication and unused facility time?
- What does the current capacity of existing facilities, across agencies, that could be better utilized to reduce expansion and construction costs?
- Do all MOE and VTC specialty programs demand two-year concentrations, and if not, could additional short-term required specialties utilize the current time allocations?
- Are there ways of combining lower level specialties into one specialty, with increased students, easing the need for more workshops?

- Are there high school aged students who would choose evening shifts, allowing them to work or be involved in apprenticeships, that would reduce the enrollment pressures on current facilities?
- Could some of the MOE centers, once students are transferred to VTC programming become available for modification in order to respond to new specialty needs?
- Could institutional enrollments be consolidated to free up workshop slots?

16. Labor Market Data for Vocational Education Planning

A review of a variety of Ministry of Planning, World Bank and Ministry of Education documents and plans shows an aggressive plan to diversify its specialties, construct new facilities, hire/train numerous new instructors and raise enrollments (50 percent boys and 30 percent females).

There does not appear to be a comprehensive mechanism, policy, or reporting method to provide current, short-term or long-term projections for the labor market, either public or private. Decisions about specialty enrollment reductions, expansions, new construction, facility expansions, curriculum updates, and so on seem to be developed without a strategic planning system in place or sufficient data. This study should examine the following:

- What are the planning methods employed and what data are used by vocational education leadership?
- What systems approach is used to gauge enrollments, at what skill level, at what institutions, and for what private sectors?
- To what extent are labor market data available and used by principals, instructors, and counselors for orientation and specialties placement determination?
- To what extent are the private sector, trade association/groups, union leaders, involved in data collection, interpretation and vocational education policy making?
- What does the current and projected national system of work place census look like?
- To what extent does the labor market statistics system take into account planned private or government sector future investments, such as, the Dead Sea Chemical Complex? What jobs, and at what levels of worker qualifications does it project?
- Does the labor market data system provide sufficient, specific data that suggests levels of skills training needed for each type worker within each vocational specialty area?
- Does available labor market data suggest which occupations, and at what level, need or could benefit from a structured apprenticeship program and how many students would be sufficient?

This implies that the offerer work closely with the Ministries of Labor and Planning to obtain analysis and gain an understanding of the Labor Market projections and their skill requirements. To guide the offerer in this area the following questions are offered.

- What are the re-skilling needs of large, medium and small sized industries and businesses? How do they currently, or plan in the future, to deal with such training?
- Where does industry see advantages and disadvantages of re-skilling partnerships with the government sector?
- Would allowing private sector training (re-skilling) in government facilities increase the possibility of improved supplies, equipment, and so on, and would it provide new and rich in-service opportunities for MOE and VTC instructors?
- What government sector worker re-skilling will be done in MOE and VTC facilities? Are there currently duplication of facilities that could be reduced by greater collaboration?
- How would the overall image of vocational education and its support (fiscal and otherwise) be enhanced by such partnerships?
- What should be the role of the government vocational and technical education regarding its obligation and mission, regarding upgrading of public and private sector manpower?

17. A Special Focus - Vocational Training Corporation

The government, as well as the World Bank, have raised logical and serious questions about the future mission, appropriate role, building and classroom needs, and the induction of new high demand specialties. It is apparent that soon the VTC will operate all Jordan's vocational centers that are directed toward immediate workplace readiness. This means the MOE will turn over the vocational centers (enrollment) that they currently operate. Laboratories and workshops will remain in MOE. Nonetheless, there are fundamental issues that need to be examined by the study such as:

- MOE's ongoing control of curriculum, standards, enrollment caps, teacher placement, student certification, and so on.
- Any apparent duplication of programming in industrial, agricultural, and commercial schools, vocational education in the comprehensive high school, and the poly tech.
- Quality of instructors, especially in the areas of methodology training, work experience, and provisions for upgrading.
- The apparent dead end pathway to further education by VTC student enrollment.
- Improvement of the somewhat informal nature of apprenticeship training arrangements with the private sector.

- What discouragements or barriers exist that limit higher academic students from enrolling part time or full time, for short segments, in a specialty of their choice and still obtain sufficient basis and scientific credits?
- What are the barriers preventing VTC students from formally obtaining some level of academic subjects to enhance their ability to pass their examinations?
- What is the opinion of all types of students regarding their value of VTC enrollment. Under what conditions would the students participate in their specialty on a part-time basis?
- What is the mechanism VTC uses to project specialties that need to be covered in its new projections (Dead Sea Chemical Complex, Pharmacology, Health Care Workers, and so on)?
- What are the decision rules, used by whom, that determines need for expansion and new construction?
- How well does VTC encourage students to take a third year (13th grade) so as to take advantage of the full time apprenticeship program?
- What is the rationale of programming all students into a two year sequence when some specialties need much less training and others more?
- What is the private and government sector response regarding VTC's customized medium and short-term training programs? What is the overall potential for this function?
- How effective is the VTC instructor and supervisory training program? Is it a duplication of similar programs at the poly tech?
- What are the status, usage, and problems with VTC's occupational classification and standards?
- What are the status, usage, and problems associated with VTC's standard job performance tests?
- What are the status, usage, and problems associated with VTC's skill assessment and classification system?
- To what degree is the current structure and governance of VTC effective?
- What are the prevailing attitudes about a system that puts some/most students at the early age of 16, 17, and 18 in MOE programming and puts other students in Ministry of Labor programming?
- To what degree is the 700 staff to 9000 student (1:11) ratio needed, effective, efficiently used, and so on?

- To what degree is vocational guidance provided or counseling mandated? Are test, career, and educational information available and used, prior to specialty assignment and employer placement?
- What is the faculty usage on a daily and yearly basis? Are there inefficiencies that could be avoided?
- Generally, are the supplies and type/volume of equipment and instructional aids sufficient for the entry level training objectives?
- What role and to what extent is VTC helping the private sector establish their own training centers? Do these plans include options for partnerships?
- What are the VTC projected training needs for girls, women, handicapped, and so on?
- What are the "real" placement roles of VTC students?
- Why do students leave VTC during the first or second year?
- How well are VTC instructors using MOE curriculum, training units, and so on?
- Is there room for expansion and improvement in the formal articulation between VTC, MOE, military, social development, social security, ILO, Arab Labour Organization, Arab Federation of Technical Education, and so on?

E. WORK GUIDELINES

1. Review Available Documents

The contractor will be informed, via briefings and literature review, about the history, current educational conditions, employment, economy, and vocational education trends and issues. It is especially important that the contractor know how vocational and technical education in Jordan is structured, financed, and governed. This document provides some suggested readings and provides a substantial background statement to help with the task. The sponsor will be most useful, as well as the World Bank and USAID, in responding to requests for information. This understanding should be fully reflected in the proposal background statement. A description of how the contractor intends to continue the review process if awarded the contract is also important.

2. Management Plan

The management plan should deal with the planning, organization, directions, communications, quality control, and control of work scope to assure quality achievement of the objectives and successful completion of the effort. The plan should also describe the managerial techniques and systems to be employed. The following are examples of what should be included.

a. Planning

This section should contain a Base Line Management Plan (BLMP). Minimally it should include a listing of tasks and the activities necessary to complete them. Tasks should be derived from a system of analysis based on stated project objectives. Also start and finish times should appear with all task dependencies carefully portrayed.

b. Organization

While the TOR's, within the personnel section, suggests elements of an organizational structure, the offerer is encouraged to devise an even better plan. No matter what organizational structure the offerer plans, the following items should be considered.

- Central office structure.
- Use of other agency resources.
- Agency organizational chart.
- Project organizational chart.
- Points of responsibility.
- Division of labor.
- Infield organization.
- Higher Council task/role suggestions.

c. Administrative Procedures

Administrative procedures include the following:

- Contract initiation procedures during the first month to assure sufficient personnel, travel, instrumentation, support services, special requirements, evaluation plan, quality control procedures, budget management, and so on.
- Monthly progress report. How will this be achieved?
- Detailed budget report. How tasks will be monitored and reported at mid-term and at the end of the fifth month.

d. Self-Evaluation

Description of how the project will collect, review, and utilize both field based, CO, and home office relevant data for evaluation purposes. Also, a description of how the data will be used internally and how it will be reported to the CO.

e. Subcontracting

While it is hoped that no substantial subcontracting, except for Jordanian data collectors, will be needed on this project, describe identification, selection, and contracting procedures.

3. Study Design

The contractor will conduct surveys, conduct interviews, meet with representatives from many sectors and ministries, observe facilities and vocational and technical education operations, and collect and review a host of data documents. Figures 1 and 2 will give some detailed ideas on the factors that should be considered in the proposed design.

The offerer should provide detailed specifications regarding such items as:

- Definition of data requirements.
- Instrument(s) description.
- Protocol(s) description.
- Scheduling procedures.
- Data collection procedures.
- Documentation formats for reporting.
- Identification of needed (type and number) respondent groups.
- Guidelines for purposive sample selection.
- Data collection activity schedule. The set of preliminary techniques should include at least some of the following:
 - Interviews.
 - Survey questionnaires.
 - Document review check lists.
 - On-site observations.
 - Recommendations obtained from Government officials and consultants.

All data collection devices are subject to sponsor review and approval before use.

F. REPORTING REQUIREMENTS

This TOR implies a very complex operation with large numbers of personnel interacting with many sectors, Ministries, and individuals across Jordan. Likewise, because it is possible to select a non-Jordanian based contractor, much of the leadership, data analysis, staff management and report writing will be done far from the CO and the Contracting Technical Officer (CTO).

While the offerer is open to suggest a more effective reporting set of procedures, the following are offered as minimum requirements:

Figure # 1

Sectors Of Needs Study
 Display of Proposed Factors, Agency, Data Collection Concentration

Code - .
 Area of Special emphasis

AGENCIES AND ORGANIZATIONS

FACTORS	MOE	MOL	MOP	MOHE	MOD	IND+ BUS	UNIONS	NATIONAL GOV'T	UNRWA	OTHER AGENCIES
Laws & Procedures, Regulations, Policy		
Faculty & Admin. Credentials	.	.		.						
Institutional Accrediation	.	.		.						
Institutional Articulations	
Teacher Preparation & Renewal	.	.		.						
Admin. Preparation & Renewal	.	.		.						
Apprenticeship Training			
Curriculum			
Guidance and Counseling	.	.		.						
Student / Grad. Follow Up	.	.		.						
Program Evaluation	.	.		.						
Teacher/ Counselor material	
Strategic Planning			
Manpower Data Generation			
Equity & Access		
Educational Technology	.	.		.						
Dropouts/Unemployed youth/adults	.	.		.						
Information Systems & Operation						
VOC/TECH ED Image		
Pvt Sector Partnerships			
Testing/Measurement			
Equipment & Supply Replacement		
General Financing		
Customized Training				
Research & Development		
Institutional Caps/acceptance plan		.		.				.		
Sector Council Coop Planning					

FACTORS	MOE	MOL	MOP	MOHE	MOD	IND+ BUS	UNIONS	NATIONAL GOV'T	UNRWA	OTHER AGENCIES
Off Shore Training	.	.		.						
Returning / Trained Jordanians						
Participation of mental & physical handicaped				
Small Business management Tng.			
Agency Structure	.	.		.						
Agency Governance	.	.		.						
Self study/distant learning/ In formal	.	.		.						
Facilities			
Military Training Cooperation	.	.		.						

Code

- * MOE - Ministry of Education
- * MOL - Ministry of Labor/ Including VTC
- * MOP - Ministry of Planning
- * MOHE- Ministry of Higher Education
- * MOD - Ministry of Defence
- * Ind + Bus- Industry & Business

Figure # 2

Data Collection Design

Sources of Data

Data Categories	Legislation Authorities	Ministires	Municipal	Instructors & Faculty	Students	Graduates	Employers	Parents	Community Leaders	National Experts	Documents	Facilities	Others
- Status/conditions	I-mo	I-mo	I-mo	I-S	I	I-D	I	I	I	I-D	D	S	???
- Labor Market Needs													
- Teacher needs													
<ul style="list-style-type: none"> - Facilities needs - Graduate needs - Legal mandates - National Goals/Priorities - Gov't Structure - Gov't Governess - System Operation ...Curriculum ...Instruction ...Guidance/counseling ...Admin. ...Facilities/Equip. ...Personnel ...Staff training ...Accrediation ...Certification ...Articulation ...Apprenticeship ...Equity/Access - Costs/Finance - Information systems - Strategic planning - Pvt Sector - Etc 													

Methods

- I- Interview - Individual and/or group
- Q- Questionnaire
- S- Site Visit Observation
- D- Document Review
- T- Telephone discussion
- MO- Meeting Observation

Examples Only

1. **Principal Investigator:** (PI) Plan should be in Jordan no less than three times during the project. During the first month a meeting for CO, CTO, and contractor to plan and define overall project needs will be conducted. At this time final time lines, Higher Councils accepted task responsibility, and so on, can be completed.

At mid-point of the project (data collection) the PI, field office, senior specialist, and the CO and CTO, will discuss progress and corrective actions.

Finally, the PI will meet with the CO and CTO at the end of the fifth month to make a final verbal report.

2. **Six Week Period Progress Reports:** In letter form, the PI should submit a summary report on progress to date, plans for the next period, problems encountered, help needed from the CO and CTO, and so on. The in-country senior specialist will forward input to the PI for inclusion in reports. In total, 2 reports should be submitted, for the final report will also serve as the third progress report.

G. FINAL REPORT

This report should be characteristic of a quality research report and include the following sections:

- **Title Page and Acknowledgment**
- **Executive Summary**

A written synopsis that could be widely distributed.

- **Background**

Requirements and potential of vocational and technical education in Jordan:

- Constitutional mandate.
- Demographic and economic situation.
- Status of education - Vocational and technical education.
- Student outcomes and placements.
- Private sector role.
- Financial conditions.
- Instructor quality.

- **Problems and Issues**

A summary of the major problems and issues that led to the assessment and the direction and focus of recommendations.

- **Needs Assessment**

The study's findings on:

- Vocational education needs.
- Manpower needs.
- Municipality needs.
- Student needs.
- National needs.
- Training needs.
- Governance and structure needs.

- **Proposed Vocational Education Outcomes**

- Contextual assumptions.
- Goals, objectives, and priorities.
- Policy implications.

- **Recommendations for Improvement, Maintenance, and Expansion**

- Students to be served.
- Delivery system design and structure adjustments.
- Integration and articulations.
- Curriculum and instruction.
- Staff training and credentials.
- Manpower and economic interface.
- Guidance, counseling, career information, and testing.
- Facilities and technology update.
- Operational effectiveness and efficiency.

- **Implementation Plan of Action**

The section should build specific strategies for implementation of the recommendations. Each recommendation needs at least the following detail:

- Transition process and time frame.
- Personnel needs.
- Program modification.
- Support requirements.
- Legislative and community assistance.
- Financial support plan (examples):
 - a. Transition costs by recommendation
 - b. Operating program budget
 - c. Personnel development costs
 - d. Alternative sources of funds
 - e. Proposal base of support and allocation patterns
- Needs assessment package. If packaged separately the contractor should provide a complete and tested package for future use in Jordan.

- **Training and report dissemination.** The results of this project could serve to help Jordan reach its 50 percent student The issue of how to use and present the report and its ideas is most important. The following are but a few topics for the offerers consideration:
 - a. Needs analysis methodology.
 - b. Recommendations and specifications for improvement.
 - c. Financial options and how to implement.
 - d. Interpretation of vocational technical capacity and needs interface with labor market trends.

Methods with Potential

1. Workshops - specific to groups.
2. Ministry customized briefings.
3. Private sector briefings.
4. Sector Council briefings.
5. University/Community College lectures.
6. Public Forums - Parents, unions, and so on

Sectors to be Briefed

1. Ministries of Planning, Education, Labor, and Higher Education.
2. Vocational Training Corporation.
3. Private Sector Schools.
4. Chamber of Commerce.
5. Parliament.

- **Suggested Appendices**

- Visitation and interview schedule and numbers.
- List of all personnel involved.
- Complete reference citations study.
- Recommendations on improving the use of the needs assessment package in the future.
- Others.

III. CONDITIONS

A. KEY PERSONNEL SPECIFICATION REQUIREMENTS AND USAGE

Staff and consultants on this study should be highly qualified in their professional fields, have managerial competence, demonstrate mature interpersonal skills, cross-cultural sensitivity, and extensive field experience. International experience is suggested. Professional skills and experience in National/state needs studies and evaluation are criteria because national data, sufficient to be national representative, must be collected within a suggested two month data collection period.

It is suggested that a team of senior vocational technical experts make up the contractor's office and that the senior data collectors come from the contractor's registry of experienced professionals within Jordan.

The following are the suggested staff qualifications. The offerer may add additional staff and/or consultants as deemed necessary to carry out a complete and high quality data collection and report writing effort.

1. Contractor's Staff

a. Principal Investigator/Project Director

This key senior professional will exercise all management responsibility and authority for all project activities, in consultation with the Higher Council for Science and Technology, Division of Human Resources. Responsibilities over the five months will minimally include:

1. Plan, coordinate, and manage the project need study design, instrumentation and protocol development, and final report developments.
2. Assume responsibility, leadership, and coordination of all home office staff and consultants.
3. Be the sole person who coordinates and communicates with the sponsoring agencies.
4. Oversee the field pilot testing of all instruments.
5. Fiscal control and reporting to sponsor monthly.

Experience and Qualifications

- PhD or equivalent in Vocational and Technical Education, Educational Administration or Educational Research.
- At least 10 years of related needs survey or educational evaluation studies.
- Foreign language not necessary, but preferred.

- Demonstrated ability to design, conduct, and back stop complex technical assistance and research/evaluation programs.
- Demonstrated management experience and full time permanent employment with educational research agency or university.

b. Associate Project Director

This individual will assist the Project Director in planning and achieving overall project activities. As such, this person should be able to assist in all elements of the Director's scope of work and should reflect all or most of the Director's qualifications and experience.

The Associate Director should allow at least 50 percent of assigned time to the data collection, analysis and organization function. A large portion of the Associate Director's time should be directed to the instrument and protocol development, testing and training data collectors in their proper use.

Experience and Qualifications

- While the Associate Director's overall experience and qualifications should reflect that of the Director psychometric and instrumentation skills are critical. It is expected that this person should have a PhD or equivalent and be a full time employee of the offerer's agency.

c. Research/Writer Specialist

This individual will concentrate much of his/her time in support of needed logistics of home and in the field. This would include compiling tools/data, prototypes, reports, and so on, for the Director. This person should also have excellent skills in converting statistical and narrative data into high quality reports.

Experience and Qualifications

- A minimum of a masters degree in the field of Vocational/Technical, Educational Research or Educational Administration. At least 5 years of field experience with demonstrated competence in quality report writing.

d. Graduate Student

It is preferred that the proposer hire Jordanian graduate students attending the offerer's university or one within its vicinity. These students should be in the fields of vocational and technical education, evaluation research, educational administration, planning, or curriculum. They should have experience in data analysis and conversion writing skills. These requirements are important for building research capacity. Students should have a command of the Arabic language which in Jordan will be important to the team.

e. Clerical/Office Manager

A senior administrative assistant or secretary will be required. Functions will include office management, clerical, coordination and communication with the field office, and record keeping.

Biographical information provided by offerers on their nominees should clearly demonstrate how their background and skills directly relate to the activities and deliverable of this Term of Reference.

2. Field Staff Consultants

The offerer should consider highly specialized Jordanian consultants for data collection purposes. The following are the suggested fields of expertise needed in order to provide expert coverage implied in Figures 1 and 2.

a. Category 1: Sector Senior Specialists

It is suggested that senior persons be selected to give primary leadership in the Jordanian project office. They should reflect expertise and experience in the broad fields of:

- Vocational/Technical Education, Governance, and institutional structure and facilities.
- Curriculum development and staff training.
- Research, development and information systems.
- Strategic planning and labor market forecasting.

While these fields of expertise are listed in four categories above, the offerer can mix them while selecting individuals as long as all categories are covered within the team.

One of these specialists will be identified to serve as the Field Office, Deputy Project Director. It is expected that these individuals will serve in this capacity for no less than 2 1/2 months.

b. Category 2: Field Data Collectors

No less than eight experienced Jordanian professionals in data collection procedures will be assigned to the senior specialist cadre to make up balanced teams for field work.

It is suggested that these persons be selected with the following kinds of experience and training to round out the skills needed for this comprehensive and complex data collection effort.

- Private sector partnerships, apprenticeship, and customized training.
- Guidance, counseling, career information, testing, and equity.
- Credentialing, accreditation, and institutional articulation.
- Legislation, budgeting, finance, policy, and regulations.

No less than a Master's Degree in these fields are expected and the data collectors should be available for at least two months. Their specific jobs will be in data collection, organization, and initial interpretation for home office use.

c. Category 3: Field Office Administrative Assistant

This individual will serve as the office manager, clerk, word processor, and communication technician for the Jordan field office. Ideally the person should also have skills and experience in human relationships, communication, writing and editing. The person will need to help open and close-out the field office.

d. Category 4: Jordanian Data Collectors

The offerer should include within the data collection scheme, individuals working separately or in groups. Plans to hire team members from Jordan are required. It is expected that at least some will be from a university in Jordan or from Jordan's newly established National Center for Educational Research and Development. This requirement is based upon three objectives:

1. Jordanian specialists can best facilitate schedule development, open doors, collect data, and handle language problems.
2. Local experts can help translate documents as part of the data collection.
3. This experience will build in-country expertise critical to Research and Development capacity needs of the new National Center on Education Research and Development in Jordan.

B . ORGANIZATIONAL QUALIFICATIONS AND EXPERIENCE

The offerer's previous successful experience and current work portfolio in the field of vocational and technical education and needs assessment/evaluation is most important to the sponsor selection. Considering the varied aspects of the TOR, the offerer should include at least the following information.

- Age, size, and location(s) of agency.
- Relevant experience general:
 - Domestic.
 - International.
- Relevant experience and activities in area of the TOR:
 - Domestic.
 - International.
- Size and diversification of existing full time staff.
- Utilization potential of using non project dedicated professionals.
- Computer and library capability.
- Consultant network.
- Training capability.

- **Product base from previous work.**
- **Relevant experience in Jordan.**
- **Working relationships with financial institutions (World Bank, USAID, Japan Fund, and so on).**

IV. INSTRUCTIONS FOR PROPOSAL PREPARATION

A. GENERAL

Offerers are requested to assemble the proposal in the same order and format suggested below to facilitate evaluation and award.

The proposal must be submitted in six (6) copies. To maintain confidentiality, after award of the contract to the successful bidder, only one copy of each unsuccessful proposal will be retained in the contract file and all other copies destroyed.

Since the proposal will primarily determine the capability of an organization to participate in this study, it should be complete and specific in every detail. The proposal should be prepared simply and economically, providing straightforward and concise descriptions of the offerer's plans for performing the work.

B. FORMAT

1. Abstract (3 - 5 page summary description of total proposal).
2. Introduction - Description of anticipated problems to be addressed in study and general difficulties suggested in performing the scope of work and proposed solutions.
3. Background of vocational and technical education in Jordan.
4. Strength and areas needing improvement / expansion.
5. Purpose of study.
6. Specific study objectives.
7. Plan of operation - statement of work.
8. Management plan.
9. Report preparation and dissemination.
10. Reporting requirements.
11. Personal qualifications and selection of key personnel.
12. Date consideration and project time table.
13. Budget detail and methods of payment - local contributions.
14. Organizational qualifications.
15. Suggested sub-contractor (if needed).

Suggested Appendices

1. Staff resumes.
2. Resumes of suggested consultants and letters of commitment.
3. Responsibility matrix (contractor and Jordan officials).
4. Staff/consultant assignments by study objectives.
5. Any special performance requirements.
6. Agency organizational chart.
7. Project organizational/management chart.
8. Data collection scheme and design in graphic form.
9. Preliminary report format/outline.
10. Organizational capacity and experience detail.

Note: If some of the above are best suited as integrated into the proposal text then they need not appear in appendices.

C. PROPOSAL SUBMISSION DEADLINE

Six copies of the offerer's proposal should be addressed to the

_____ by month/date, 1990. An apparent winner will be chosen within 30 days after this announcement who may be asked technical questions for clarification before the contract is awarded. The apparent winner will have 10 days to respond in writing to questions.

It is expected that the contractor can begin work 30 days after award.

D. INQUIRIES

Inquiries concerning this solicitation document should be addressed in writing and submitted by mail or Fax 011-962-6-68^A-05-89. Answers will be provided in a timely manner, with due respect and regard to the protection of proprietary information. No phone requests will be responded to.

Within time constraints, answers to inquiries containing clarifications or substantive information that could affect bidder's proposal will be sent to each person/institution previously provided a copy of this TOR.

V. EVALUATION PROCESS FOR AWARD

A. TECHNICAL CRITERIA

Proposals will be evaluated and the prospective contractor will be selected based principally on the following criteria:

Information in proposal that is directly relevant to the following criteria may be presented within the normal format of your proposal in response to this Terms of Reference (TOR's). Consideration for contract award will be limited to those offerers falling within a competitive range from both their technical and cost presentations. The technical criteria are presented by major categories, with relative order of importance indicated by weighting.

The criteria presented below have been tailored to the requirements of this solicitation. Offerers should note that these criteria (a) serve as the standard that will be used to rate all proposals and (b) serve to identify the significant matters which offerers should consider in their technical approach.

Evaluation Criteria	Weight Points Max.
I. Quality and Responsiveness of proposal to all terms and conditions set forth in TOR.	5 PTs
II. Technical Approach	30 PTs
a. Evidence of knowledge of Jordan Vocational and Technical system and 5PTs understanding of what needs to be reviewed and how.	5 Pts
b. Evidence of sound needs analysis to demand study methodologies and their application to this TOR.	5 PTs
c. Presentation of clear and complete methods for managing and administering a multi-dimensional survey design as implied in the TCR.	10 PTs
d. Quality of design and interrelated survey methods (logic, clarity, soundness, adequacy of detail) presented systematically.	10 PTs
III. Qualification and Experience of Key Personnel	30 PTs
a. Professional competence in the key professional/technical areas set forth in TOR especially related to their international experience .	10 PTs
b. Experience in similar needs studies in the area of vocational and technical education.	10 PTs
c. Degree to which they are full time, committed employees of offerer agency and documentation of their commitments for duration of assigned work.	10 PTs
IV. Qualification and Experience of Offerer	25 PTs
a. Ability to handle projects of comparable type and complexity, especially in international settings.	10 PTs

- b. Ability to dedicate highly qualified staff, specialty consultants, and office administrative support. 5 PTs
- c. Volume and success indicators of other related international work. 10 PTs

V. Cost 10 PTs

- a. Accurate and adequate. 3 PTs
- b. Reasonable. 5 PTs
- c. In kind contribution. 2 PTs

Total: 100 PTs

Note: The lowest priced and technically acceptable bid will receive the highest/maximum points.

B. SELECTION OF CONTRACTOR

The contracting officer will consider several additional factors in the selection process, which are important but have not been given point values. These include: full compliance of bid to all TOR specifications, bids that stretch the study beyond the TOR specification and bring additional value to the study, and offerers willingness to confirm to all contract requirements.

The award will be made to the bidder whose (1) proposal is technically acceptable and (2) whose technical and price relationship is most advantageous to the sponsoring agency. Although the numerical ratings may be used as a guide in the selection, the right is reserved to select a contractor who may not receive the highest numerical score. Cost will not be so controlling as to preclude an award to a offerer whose costs of performance are higher but within a negotiable range, or the technical superiority of the offerer warrants the additional cost involved but within the sponsor's available funds.

A committee of sector leaders will be used to assist in the rating of all proposals all using the same criteria and point values. This committee will give independent scores and comments to the contracting officer for final decision.

VI. CONTRACT ADMINISTRATION

A. CONTRACT CLAUSES

In addition to any clauses or conditions mentioned elsewhere in this document the following clauses will be made a part of the contract to be awarded:

1. Period of Performance

The contract period of performance shall be from the negotiated start date through the submission and presentation of the final report. It is expected that this will occur during a five month period.

The contractor will develop a milestone chart/schedule after final negotiations, for the sponsor to use in supervising the orderly and timely progress of activities. This schedule will contain exact dates for final report submission and formal presentations to the sponsor and their representatives.

In the case of changes in the proposed time schedule, or any major difficulties projected during the conduct of the study, the contractor shall immediately notify the CTO in writing, giving pertinent details and proposed solutions including help needed from the CTO. Within a reasonable time, a no cost proposal would be considered. Such notification of difficulties shall not be constructed in any way as a waiver by the sponsor of any delivery schedule or dates provided by the condition of the contracts.

2. Qualified Offerers

Only institutions (universities/college) and organizations that conduct such research or study as a primary aspect of their mission will be considered. It is expected that the organization has sufficient resources and dedicated staff so as to find a quick response to international work as acceptable and feasible. Offerers who primarily package consultants to make up the key staff are discouraged from applying. No assigned staff/consultant can be currently employed by, or serving as an agent of the Jordanian Government. It is further specified that the contractor will not perform services for persons and/or institutions and agencies that could be deemed to be in conflict with the services to be performed under this contract. Offerers who have had previous experience in working with the vocational and technical education system in Jordan are encouraged to submit bids and previous work is not viewed as improper influence.

3. Taxes

The fees paid to the contractor are not subject to any Jordan taxes, including salaries and wages.

4. Conditions

All contractor staff will obtain their own passports and required visa's before entering Jordan. It is also expected that each in country staff/consultant will take the necessary health precautions.

5. Suspension of Work

The contracting officer may order the contractor, in writing, to suspend, delay or interrupt all or any part of the work for such a period of time as the CO may deem necessary and appropriate for situations that arise at the convenience of the Government. In such cases where any suspension/delay or interruption occurs at no fault of the contractor then ample compensation will be considered and negotiated between both parties.

6. Disputes

All disputes arising under, or relating to, the contract shall be resolved under the clause. Any claim arising under the contract by the contractor shall be made in writing and submitted to the CO for a written decision within 15 days. Negotiation between the two parties will then be conducted to fully explore positive resolutions.

7. Protocols

The contractor will have a sole individual who will serve as the contractor's officer. Likewise, the government will have a contracting officer (CO) or may designate a technical representative (CTO) at the time of the award. These parties will then be responsible for the overall administration and supervision of the project work scope and quality control. No major decisions or work scope or time changes will be accepted by any other individuals.

8. Contract Payments

The bidder will include in the proposal a suggested contract payment schedule which will be a phased series of payments made according to costs progressively incurred and amount of work performed. The bidder should suggest an appropriate method of payment.

9. Key Staff

The key staff are considered the Project Director and the Associate Project Director. Any changes in these two positions will be made with the approval of the CO.

If there are major changes in other staff or proposed consultants, the CTO should be notified, provided reasons, and given names, experience and justification for proposed replacements.

10. Location of Project Performance

The field office for the project will be located in Amman, Jordan, and office facilities made available at cost to the contract. Adequate arrangements for word processing, Fax, and telephone will be provided, with details to be negotiated.

The study team needs to plan extensive travel and data collection time in numerous other urban and rural settings throughout Jordan.

All housing and travel arrangements and costs are the responsibility of the contractor. Advice will be offered by the assigned CTO.

11. Fixed Fee

Any award offered under the TOR will be considered fixed fee based. Payments to contractors will be made in the same ratio to the total fixed fee earlier negotiated in the payment schedule. Exceptions on the part of the CO would be where such payment would result in a percentage of fees far in excess of the percentage of work performed. In such cases a reduced payment or suspension of payment could be exercised until, in the CO's opinion, the contractor has made sufficient progress. The last payment agreed to will be released after the final report is deemed acceptable in terms of agreed upon criteria.

B. COST BREAKDOWN

The offerer should furnish a comprehensive and detailed cost breakdown with supporting data, including:

1. Breakdown of direct labor cost estimates by objectives.
2. Breakdown of consultant costs by objectives.
3. Travel cost estimates, destinations, trip durations, number of persons traveling, and purposes for each trip. Factors for per diem, travel, and so on should be shown.
4. Breakdown of costs for material, duplication, and postage should be displayed.
5. Indirect costs and justification should be provided.

C. SPECIFIC PERFORMANCE REQUIREMENTS

In addition to the contractual provisions specified in the TOR the offerer shall satisfy the following conditions:

1. The offerer will provide evidence of availability of key personnel to begin work on this project within 30 days of contract award.
2. When specialized service in support of the project activities are required, but are not available within the contracting agency, the contractor may execute a subcontract, subject to the prior written approval of the contracting officer.
3. Copies of all correspondence pertaining to substantive project matters between the contractor and local organization (JORDAN) shall be forwarded to the CTO.
4. The contractor will submit monthly progress reports and a mid term financial report to the CTO.

D. RESPONSIBILITY OF SPONSOR

In order to facilitate the timely progress on this proposed study it can be expected that the sponsor will provide the following resources and assistance.

1. A comprehensive library of all labor market, education, vocational education, Higher Education, information, and documents for the contractors office.
2. An office space for a team of 3 to 5 persons with basic phone, Fax, and duplication capabilities.
3. A junior person, who can serve as dispatcher, office worker, and so on and who would also serve as link with the offerer's office manager.
4. Directories of names, addresses, and phone numbers of key persons to be contacted (phone or mail) as a part of data collection sampling design (private sector, government, unions, parents, and so on).
5. Marketing service as needed.
6. At least one personal computer.
7. Information, and serve as communication link between agencies as it relates to the selection and hiring of 10 to 20 Jordanians for data collection leadership and field work.
8. Assistance in obtaining cost efficient hotel, rental cars, and other services.
9. As needed, advice and direction during the planning and data collection period, including assembling groups such as the sector committee, who because of their leadership roles can help open doors and provide hand to obtain data.

APPENDIX 1

SUGGESTED REFERENCES

- Annual Statistical Report on Higher Education in Jordan, 85/86*, August 1987, Ministry of Higher Education, Jordan.
- Five Year Plan for Economic and Social Development, 1986 - 1990*, Ministry of Planning, Jordan.
- Scientific and Technological Potential in Jordan in 1986*. Economics Research Dept., Royal Scientific Society, Sept., 1988 Amman, Jordan (9 Volumes).
- Country Development Strategy Statement*, May 1986, USAID.
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- Staff Appraisal Report, May 22, 1989*, Human Resources Development Sector Investment Loan, Report # 7641-JO.
- Jordan - Issues of Employment and Labor Market Imbalance*, World Bank, May 1986, (2 Volumes).
- Vocational Education and Training - World Bank*. Discussion Paper # 51, 1989.
- Issues and Models in Vocational Education*, Munther W. Masri, 1987, 308, pp. Reference # 37103.
- Science and Technology and Human Resources*, Adnan M. Badran, The Higher Council for Science and Technology, 1988.
- Educational Statistics (1987-1988)*, Educational Statistics Section, Directorate of Educational Planning, Ministry of Education.
- Research and Technological Development in Jordan*, A Report to the Higher Council for Science and Technology, M.P. Greene and Philip W. Hemily, Sept. 1988.
- Report on the Education Technology Plan for School Libraries and Learning Resource Centers*, J.D. Armstrong, The British Council, London, June, 1988.
- Recommendations of the National Conference in Educational Development*, Nov. 1987, #1.
- Linking Training and Employment : A case study of training system in Jordan*, 1985, #3.
- Education in Jordan*, Feb. 1988, World Bank Mission working paper # 6.
- Report on Vocational and Technical Education in Jordan*, Dec. 1988, World Bank Mission working paper # 8.

APPENDIX 2

GLOSSARY OF TERMS

- 1. Apprenticeship:** Used only in VTC centers and in 20 plus occupational specialties. In a three year (10,11,12 grade) sequence students spent 3 days a week in school/center and 3 days at work site. In year 3 they spend full time at work, supervised by instructor, and receive basic pay scale. Results in a certificate of competence.

- 2. Articulations:** Means formal agreements between levels of education where each values the others' curriculum and provides a means by which students can easily move from one level to another without need to duplicate courses. Advance standing is given if it is warranted. The term 2+2+2 indicates the 2 years of vocational training that occur in the high school, community college, and university, where all 6 years of curriculum is planned together to eliminate any duplication.

- 3. Caps:** This is used in the context of maximum limits is placed on specialties and programs at any level of education and training.

- 4. Career Information System:** An organized and complete description of job settings, worker characteristics, worker skill needs, benefits, pay, and work conditions that is available for parents, students, teachers and others to use in career planning or educational and vocational decision making.

- 5. CO: Contracting Officer:** The single highest authority selected to provide leadership and oversight on the project from the sponsoring agency.

- 6. CTO: Contracting Technical Officer:** The person designated by the CO to work on the day-to-day activities of the project.

- 7. Dropouts:** Those students who, for whatever reason, discontinue their primary, secondary, VTC, community college, and so on programs either during the school year or during the vacation or leave time between school years. If a student drops out of one program and immediately enters another the student is not considered a dropout.

- 8. Educational Technology:** The use of T.V., video, phone, radio or other visual or audio techniques for the enhancement of both teaching and learning.

- 9. Industrial, Commercial, and Agricultural Schools:** A part of MOE, where students are selected to take in-school initial training in an occupational field (up to 60 percent of school day) that leads to possible entry into Poly Techs, community colleges, or universities. It is heavy on theory and short on field applications.

- 10. Laboratory:** The portion of a vocational school where theory is applied in an experimental way.
- 11. Information System and Operation:** A mechanized system of storing and, in a customized way, analyzing and reporting manpower and educational data. A system that can be updated on a daily basis as new data comes available.
- 12. Legislation, Policies, and Procedures:** Those that have direct or indirect effects on the size, operation, curriculum, resources, and instruction of vocational and technical education.
- 13. Mentally and Physically Handicapped:** Those students who could benefit from participation in normal programs and can demonstrate initial ability as well as those who are bound for specialized institutions.
- 14. Off-shore Training:** Those technicians who receive their industrial training in other countries, including the 50,000 individuals currently enrolled in universities around the world.
- 15. Poly Technical Institutions:** Considered a community college, but in the technical fields, with students who passed their Tawjihi's. Future plans will allow movement into 3 to 4 year programs and grant Bachelor Technology degrees. They also provide short-term customized training and teacher/instructor training.
- 16. Returning/trained Jordanians:** Those Jordanian technically and skill trained individuals who have obtained jobs in the regional labor market and are returning to enter their country's job market.
- 17. Testing and measurement:**
- Graduation examination - T.C.
 - Tests of achievement, ability, and performance.
 - Tests of interest and aptitude.
 - Occupational skill/ competency measures.
- 18. Vocational Training Centers:** Operated by the VTC, there are 17 operating and 2 more under construction. Approximately 9000 students and is heavy on application through apprenticeship training arrangements.
- 19. VTC - Vocational training corporation:** Established in 1976 which now has the responsibility for the preparation of skilled manpower which combines both institutional and non-institutional types of training. (Long-term and short-term training).

They actually run the countries vocational training centers for high school aged students under national law.

20. Workshop: This term is used in two different ways. First an employer and his work place, plant, or office, is called a workshop. Second, the section of a school that teaches the application of skills in a simulated work setting is also called a workshop.

Appendix 3
EDUCATIONAL - FACULTY STATISTICS

1987 - 1988
Base Year

Main Source - Educational Statistics (1987 - 1988)
Educational Statistic Section
Directorate of Educational Planning
Ministry of Education

STATISTICS

1987 - 88 All education - Teachers (Pvt- Public)

LEVEL	M	F	Total
Secondary	5752	5469	11,221
Prep.	5419	6273	10,508
Primary	6273	1286	19,133
Kindergarden	0	1617	1,671
Vocational	1430	1034	2,464

**Total
(42,533)**

1987 - 88 Vocational Teacher Qualifications

	Ph'd	M.A.	BA + Dip.	BA	Under Grad.	Comm. college	Higher Ed.	Sec. voc.	Gen. School	Secn. or Less	Total
Total	2	11	71	1141	14	802	37	87	152	147	2464
M	2	9	36	621	12	536	31	42	70	71	1430
F	0	2	35	520	2	266	6	45	82	76	1034

1987 - 1988 - Students - Voc Ed - Public + Pvt

	Voc.Centers	Woman Ed	Nursing	Indus.	Ag.	Hotel motel	Commercial	Totals
Total	4173	3197	1755	7851	516	323	15,718	33,533
M	4173	0	130	7851	516	322	6492	19,484
F	0	3197	1625	0	0	1	9226	14,049

1987 - 88 Students - all grades & Sectors (General Ed)

	K	Primary (1-6)	Prep. (7-8-9)	Secondary (10,11,2)	Totals
Total	34,982	570,795	227,811	103,131	929,719
M	18,729	291,777	116,817	49,039	476,362
F	16,253	279,018	103,994	54,092	453,357

1987-88 Teacher Qualifications - General Ed

	Ph'd	MA	BA+Dip.	BA	under grad.	Comm. Coll.	High Ed.	Sec. Voc.	Gen. Sch.	Sec. or less	Totals
Total	8	268	1123	11028	54	26,067	137	42	1097	247	40,069
M	8	210	906	5831	29	8,685	52	20	234	39	16,014
F	- 0 -	58	217	5197	25	17,382	85	22	863	206	24,055

1987-88 Vocational Education Units/Classes

	Voc. Centers	Nursing	Women Ed.	Ag.	Industrial	Hotel Motel	Comm.	Total
Total	169	82	184	22	225	12	501	1195
M	169	3	- 0 -	22	225	12	217	648
F	- 0 -	79	184	- 0 -	- 0 -	- 0 -	284	547

1987-88 Vocational Education Buildings (All Authorities)

	Voc. Secondary	Voc. Centers	Comp. schools	Total
Total	130	68	23	588
M	50	23	15	283
F	80	45	8	259

**1987 - 88 Community Colleges
Authority**

	Class/ Unit	Enrollments	
		1st	2nd
(11) Ministry of Higher Education Colleges	324	5948	10,569
(26) Other Gov't Colleges	73	1060	1,740
(1) UNRWA College	36	403	852
(10) Pvt College	641	10592	15,835

Total # Students Year # 1 18,003 year # 2 28,998
 Total Class Units 1074
 Total # of year # 1 479
 Total # of year # 2 595

Total Faculty/ Degrees (1986 Data)

	Male	Female	Total	%
Ph'd	36	5	41	4.0
MA/MSc	110	22	132	14.1
Higher Dip.	120	48	168	17.9
BA/B.Sc.	363	143	506	54.0
Intermediate	68	16	84	0.9
Gen. Sec. Certif.	0	6	6	0.06

Total Faculty 937
 % Female 240 Total % = 25.6
 % Male 697 Total % = 74.4

COMMUNITY COLLEGE BUDGETS (1987)

Budget Total: 5,291,506 JD
Source 4,742,370 Tuition
 549,136 Other

1987-88 University Teacher Training (Education)

		Supervision & Admin.	Curricula & Ed Fundamentals	Total
Under Grad. Studies	Univ. of Jordan	1 m	58 F 112M	171
	Yarmouk Univ.	0	0	0
	Mu'ta Univ.	0	0	0
Graduate Studies	Unv. of Science & Tech.	0	0	0
	Univ. of Jordan	0	0	0
	Yarmouk Univ.	40M 7F	0	47
	Mu'ta Univ.	0	0	0
	Univ. of Science & Tech.	0	0	0

All
University
Graduates

Education	20	18m	2f
Agriculture	15	14m	1f
Medecine	22	20m	2f
Shari'ah	14	14m	0f
Science	9	9m	0f
Arabic Lang.	3	3m	0f
Engineering	23	23m	0f
Total	106	101male	5 females