ICR Review

Operations Evaluation Department

Report Number : ICRR10460

1. Project Data :	
OEDID :	L3137
Project ID :	P005140
Project Name :	Engineering and Technical Education Project
Country :	Egypt
Sector :	Vocational / Teacher Training
L/C Number :	L3137
Partners involved :	
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2. Project Objectives, Financing, Costs and Components :

Goals

- Raise the productive capacity of the Egyptian population through the expansion of the role of the private sector
- Modernize production technology and accompanying investments in human capital
- Improve the productivity and raise employment prospects of young graduates
- Support the Government's 1988 strategy for improving engineering and technical education

Objectives

- Improve the quality and occupational relevance of the existing system of technical and engineering education while strengthening its coherence and restraining its growth

Components

Engineering education development program

- Upgrade facilities, laboratory equipment, instructional materials
- Provide technical assistance to develop : a more applied orientation in engineering and technical education through stronger linkages with industry, more relevant curricula, and better qualified teaching staff

Technical teacher education program

- Provide equipment and technical assistance to develop a new system for the professional preparation of teachers to serve secondary and post -secondary schools which integrates theory and practice
- Establish two new technical teacher training colleges for the above purpose

Finance

Appraisal Estimate: IBRD: US$30.4 M; Govt: US$8.2 M
Actual Latest: IBRD: US$29.6 M; Govt. US$9.4 M

Costs

Appraisal Estimate: US$38.6 M
Actual Latest: US$39.0 M

3. Achievement of Relevant Objectives :

The ICR reports that the developmental objectives for the engineering education component were substantially achieved.

- The content of basic engineering and engineering science courses were assessed, quality standards were established with participation from industry, and model curricula developed which integrated theory and laboratory practice and met international standards .
- The construction of new laboratory facilities and the provision of new equipment occurred on the basis of competitive proposals prepared by faculty and reviewed by peers and industry experts as planned . To ensure effective management of laboratory and equipment maintenance, provision of maintenance training and maintenance contracts and warranties were included as criteria for assessing the quality of proposals for constructing and upgrading laboratory facilities .
- The project financed the development and testing of computer and multimedia -based curricula and courses

that have been evaluated positively by outside experts and are being disseminated to all engineering schools in Egypt.

The ICR assesses the project activities designed to reform the content of technical teacher education and improve the capacity to train teachers for the sub-sector as satisfactory:

- The two new Industrial Education Colleges were established and are operating as planned. New curricula were developed in 10 subject areas to reflect emerging technological disciplines and the integration of theory and practice in teaching technical education.

- New IEC faculty received post-graduate training in the Netherlands and the UK and participated in a British Council organized study tour (financed out of project technical assistance) to the UK and North America to learn about strategies and models in industrial education and to discuss possible twinning arrangements. Teacher trainees participated in practice teaching assignments in technical secondary schools and internships in industry. The two colleges have graduated 1,413 new teachers with competencies in theory and practice.

International and local technical assistance were used effectively for both components and contributed to the achievement of positive project outcomes.

4. Significant Achievements:

The ICR recognizes that it is too early to measure the overall impact of the project on quality and occupational relevance of engineering and technical secondary education. However, initial feed back from engineering graduates and from principals of secondary technical schools is positive. In addition the ICR and the Borrower report that:

Outcomes for the engineering component include improvements in the programs of individual engineering education departments as well as benefits to overall engineering education in Egypt:

- Students are more aware of and able to apply engineering issues and problems to real-life situations. The project financed 50 student projects developed together with industry.
- A computerized library system was established which facilitates the cataloguing and sharing of library resources among all the engineering schools in Egypt.
- A comprehensive equipment database was developed and is being used as a planning tool for engineering institutions in Egypt.
- Peer reviewers found significant improvement in the quality and relevance of the new instructional materials for engineering education financed by the project compared to the ones used before.
- A system for auditing the quality of engineering programs based on self-assessment followed by peer review was developed and tested. Participating universities are considering using the pilot assessment system in all university departments and also as the basis for an engineering education accreditation system.

For the technical education component.

- The demand for access to the Industrial Education College programs by practicing and aspiring teachers is high, as is the demand for its graduates.

- An evaluation by international experts rated highly the improvements in the curricula for technical teacher education. The quality of the new faculty, the physical, as well as the educational and training resources in the new Industrial Education Colleges have also been rated highly. Equipment represents the state of the art in technology education and some workshops are better than those found in engineering departments at university. For one of the colleges, the number of graduates prepared using the new curricula have almost doubled since 1993/1994.

- Technical Teacher Development Centers have been established in the two colleges to provide inservice training for teachers in technical institutes and for training of trainers in industry. The College at Kubba has already developed and carried out an inservice program in various disciplines to upgrade the qualifications of practical subject-matter teachers in technical secondary schools.

5. Significant Shortcomings:

Project implementation was slow and the project had to be extended three times. The ICR indicates that this was due in part to lack of financing for project activities prior to effectiveness, and because the PIU was composed of university professors working part-time on project implementation. Delay in establishing procurement procedures acceptable to the Government and the Bank and in setting up the special account also slowed the progress of implementation. Project implementation improved after new, full time procurement and financial staff were recruited and trained at the Bank's Cairo Office and at the ILO training center in Turin, Italy.

6. Ratings:	ICR	OED Review	Reason for Disagreement /Comments
Outcome:	Satisfactory	Marginally Satisfactory	Short-term achievements are satisfactory. However, by supporting the existing secondary technical schools, the project risks compromising the prospects for early reorganization of this outdated type of training. Since this was a substantial component, the overall outcome is rated as satisfactory but with a serious shortcoming arising from unresolved strategic issues at the project's design stage.
Institutional Dev .:	Substantial	Substantial	
Sustainability :	Likely	Likely	
Bank Performance :	Satisfactory	Satisfactory	
Borrower Perf .:	Satisfactory	Satisfactory	
Quality of ICR :		Satisfactory	

7. Lessons of Broad Applicability :

- The ICR indicates that the project has become a catalyst for reform in the education sector because the objectives were clear and consistent with the broader strategy of reform owned by the Government. Government commitment to build on its accomplishments is seen in its plans for future project operation and for a comprehensive evaluation of the outcomes and impact of the project on the labor market. The project experience informed later investments in the secondary and higher education sub-sectors.

- To ensure that policies and investments are not misdirected, the Bank should avoid financing components known to be of doubtful efficacy. The Bank appears to have made this error in Egypt by inappropriately financing technical teacher training to serve a low quality technical secondary school program which ought to be terminated. As the ICR states, improving teacher education in technical schools will not address all the problems of technical secondary education in Egypt and that there is a need for comprehensive reform of the secondary sub-sector. The ICR notes the need to close down or transform inadequate technical secondary schools. OED notes that the proportion of students in Egypt enrolled in technical secondary schools of dubious quality is high by international standards. In OED's view, secondary education as it is currently organized will make it difficult for Egypt to achieve its goals of a flexible and trained work force. The Bank's Vocational and Technical Education and Training Policy (1990) and international experience indicates that general education followed by on-the-job-training is the most efficient and effective way to equip students with the knowledge, skills, and flexibility required to cope with the evolving needs of the labor market in an environment of rapid technological change. In deciding whether to approve an investment project, the Bank must weigh carefully whether key components are consistent with Bank subsector policy as well as with Government strategy. If the two are inconsistent, as in this case, the Bank should decline to finance investments run counter to Bank policy and are likely to be unproductive for the country in the long term.

- The ICR reports that the system of competitive awarding of grants using peer reviews to upgrade and improve individual engineering programs contributed to greater cooperation and exchange of views and experiences among faculty members. The Borrower adds that competitive grants made procurement more complex as it resulted in numerous individual tenders for the procurement of often identical equipment. The acceptance of group tenders would have saved time and reduced procurement delays.

- OED notes the positive contribution to project outcomes of the representation and active participation of industry in every phase of project activities--program development and sub-project selection; standards setting for course content, laboratories, and equipment; inspection procedures and quality control; and advice on technical school management. This should help improve the relevance of the skills of engineering and technical education graduates and form the basis for stronger and more fruitful linkages with industry.

- The Borrower points out the need to appoint specialized engineering and architectural consultants to supervise civil works to ensure quality control and adherence to construction schedules. OED recognizes this as a lesson from Bank education project experience (Ghana, Pakistan, Uganda, Vanuatu).

8. Audit Recommended? ● Yes ○ No

Why? A learning audit may be worthwhile, conducted in parallel to the planned evaluation by the country of the project's impact on the labor market. This would feed into OED review of the CDF approach to long-term, comprehensive reform, results-based management, and training quality, including private sector participation in technical and vocational training and education.

9. Comments on Quality of ICR :

The ICR was well written and presented. Its analysis was comprehensive and evaluative.