



1. Project Data

Project ID

P122008

Project Name

CN-Yunnan Tech Voc Ed

Country

China

Practice Area(Lead)

Education

L/C/TF Number(s)

IBRD-81630

Closing Date (Original)

31-Dec-2017

Total Project Cost (USD)

49,038,914.70

Bank Approval Date

15-May-2012

Closing Date (Actual)

31-Dec-2017

IBRD/IDA (USD)
Grants (USD)

Original Commitment

50,000,000.00

0.00

Revised Commitment

50,000,000.00

0.00

Actual

50,000,000.00

0.00

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2. Project Objectives and Components

a. Objectives

According to the Loan Agreement (page 5) and the Project Appraisal Document (PAD, page 7), the project objectives were as follows:

- To improve the quality and relevance of technical and vocational education and training to produce skills that respond to labor market demand, contributing to Yunnan's economic development during the Borrower's 12th Five Year Plan period.



b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

No

d. Components

1. Improving the Quality and Relevance of Training and Vocational Education and Training (TVET) Programs in Project Schools (Appraisal: US\$ 81.56 million; Actual: US\$ 84.6 million): This component aimed to address challenges in the quality of instruction and the relevance of content to labor market demand. Activities included: development of school-industry linkages by establishing collaboration and advisory committees; development of competency-based standards and curriculum standards for selected training programs; update of teaching and learning materials; training for school managers and instructors; development of student assessment tools; and upgrading of selected training facilities. This component also allowed for the participation of non-project schools, at their own expense, in the activities on curriculum development. (Due to the government requirement to repay the loan, TVET schools in poorer areas were not able to participate directly in the project, and therefore knowledge exchange and participation in training were included to increase poverty impact.)

2. Strengthening Provincial Capacity in Coordination, Policy Development, and Monitoring and Evaluation (Appraisal: US\$ 1.0 million; Actual: US\$ 1.0 million): This component aimed to increase the capacity of Yunnan provincial authorities to coordinate the TVET sub-sector. Activities included: study tours, regular meetings and site visits for the inter-departmental TVET coordinating committee; technical assistance to selected schools to develop curricula; policy and research briefs; and knowledge sharing workshops.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost

- The original appraised project cost was US\$ 90.97 million. The actual project cost was US\$ 85.74 million.

Financing

- The original appraised International Bank for Reconstruction and Development Loan was US\$ 50.0 million, of which 100% disbursed.



Borrower Contribution

- The original appraised Borrower contribution was US\$ 41.0 million, of which US\$ 35.7 million was provided.

Dates

- *July 2015*: About 4 percent of loan funds were reallocated from civil works to teacher training/technical assistance due to higher demand for the latter.
- *December 2017*: The project closed on December 31, 2017, as planned.

3. Relevance of Objectives

Rationale

The province of Yunnan is the third poorest province in China, with its gross domestic product per capita in 2010 only half the national average. The central government prioritized the development of Yunnan province in its 12th Five-Year Plan (2011-2016), highlighting the five key industries of agriculture, tobacco, tourism, mining, and energy. The Plan signaled a shift in economic development strategy towards these higher value-added sectors, which then produced a shift in demand for a more highly skilled and productive labor force. However, despite the universal 9-year basic education policy in the country and overall increase in gross enrollment rates at the senior secondary level, the quality of human resources remains low. The central government's Education Development Plan for 2010-2020 aims to better align the education system with demand, particularly through expansion of technical and vocational education.

At appraisal, the TVET sub-sector was facing significant challenges including inadequate capacity (overcrowded facilities), low quality and relevance of instruction (outdated curricula and teaching methods, lack of industry collaboration), fragmentation of the sector (no central agency responsible for TVET), low levels of financing (primarily funded by local governments), and lack of regulation. Hence, the project objectives to increase the quality and relevance of TVET were highly relevant.

The objectives were also highly relevant to the Bank's Country Partnership Strategy FY13-16 (most recently available), which highlighted the strengthening of skills development programs as a key outcome.

Rating
High



4. Achievement of Objectives (Efficacy)

Objective 1

Objective

To improve QUALITY of technical and vocational education and training

Rationale

The theory of change was overall sound. The project outputs addressed the specific challenges of the absence of school-industry collaboration, sector fragmentation, absence of relevant and competency-based teaching, and low quality of teaching. Training of school managers and teachers was to ensure strengthened linkages between schools and industry and updated teaching methodology. Learning materials and facilities were also to be upgraded, leading to increased enrollment capacity. Updating of the curriculum, particularly towards competency-based training in the five priority sectors, was to contribute to improved quality and relevance of the instruction. Sector-level outputs, such as assessment systems, technical assistance, and coordination mechanisms, were to contribute to improved capacity to manage and oversee the TVET sector. These latter outputs were also to allow the project to have an impact province-wide, beyond the nine project schools.

According to the PAD (page 3), there were approximately 300 secondary and 51 tertiary TVET institutions in Yunnan in 2010, enrolling 663,400 and 183,300 students, respectively. This project was to be directly implemented in nine schools with total enrollment at the time of appraisal of 55,360. These project schools were selected according to the following criteria: linkages to the priority sectors, quality of the project proposal, and ability to repay the loan. As noted, provincial authority-level outputs were expected to have broader impact.

Outputs

- Development of 1,140 competency-based curriculum modules, which were reviewed by experts at the schools and by provincial authorities, and developed into teaching and learning materials. 4,699 participants received training in curriculum development (target: 110). According to the ICR (page 12), TVET institution staff can now “carry out targeted labor market enquiries, manage job function analysis and develop occupational standards, construct effective TVET curricula, critically discuss aspects of learning psychology, implement active pedagogy, support the development of competence, distinguish the various categories of assessment, carry out formative classroom observations or even write a structured lesson plan based around learning objectives.” The ICR (page 32) noted that the exceeding of targets was largely attributable to higher than expected counterpart contributions for these consultant activities, given the lower than expected utilization of project funds for civil works.
- Training of 9,229 teachers in student-centered methodology (target: 540). The percentage of teachers with both a skills certificate and academic qualifications increased from 45.0% in 2011 to 77.3% in 2017,



surpassing the target of 65.0%. The percentage of teachers trained in industry attachments increased from 2.0% in 2011 to 39.5% in 2017, surpassing the target of 23.0%. See note above on the exceeding of targets due to higher than expected counterpart contribution to these activities.

- Upgrading of TVET facilities and equipment, with a particular focus on enabling more practical, hands-on training.
- Development of teacher standards and student assessment handbooks.

The following outputs were associated with sector management, and therefore likely contributed to both improved quality and relevance:

- Development of TVET sector framework, including establishment of mechanisms for school-industry collaboration and mandates to share lessons among schools.
- Preparation of 88 research and/or policy briefs (target: 2).
- Preparation of 9 student assessment manuals (target: 9).
- Establishment of mechanisms for sharing and disseminating best practices to both project and non-project schools, including 102 knowledge exchange workshops.

Outcomes

- Enrollment among project schools increased from 58,218 to 84,602 by project closing.
- The percentage of students in the project schools who obtained both skills certificates and diplomas increased from 84% in 2011 to 96.5% in 2017, achieving the target of 94.0%. According to the project team, the government had previously been tracking only diploma acquisition to measure school quality; however, employers were more concerned with skills certificate acquisition. Therefore, the project combined the two indicators to measure education quality.
- The project's impact assessment reported that in comparing the use of active pedagogy among a representative sample of project-trained teachers with a baseline group of untrained teachers, the trained teachers showed "a much higher standard of performance, using significant appropriate teacher-student interaction with a mix of active methods covered by training" (as reported in ICR, page 12).

The project's student survey (126 respondents) reported the following responses from students: (a) 76% found that teachers clearly checked to see that a good classroom learning environment was established; (b) 42% found that teachers used different teaching and learning methods; (c) 86% said that teachers knew their names; (d) only 2% reported that teachers used more than half the time lecturing from the textbook; (e) 84% found that teachers explained how they could best help themselves to learn and showed useful ways of doing so; and (f) 92% said responded that the methods used by project-trained



teachers to help them learn were better than those used by most of their other teachers. This information provides only weak evidence of outcome achievement, given that the number of respondents is extremely low compared to enrollment figures, and the ICR does not mention any survey method information that would suggest that the 126 respondents would be representative of the student population.

Achievement of the objective to improve quality of TVET instruction is rated High due to evidence of improved quality of instruction as reported in evaluative studies, and the exceeding of the outcome indicator target on the percentage of students who earn both skills certificate and diplomas.

Rating

High

Objective 2

Objective

To improve RELEVANCE of technical and vocational education and training

Rationale

Outputs

In addition to the outputs listed above,

- Establishment of 48 school-industry collaborations and sector-specific industrial advisory committees (target: 31). These included internship programs, industry-ordered training, and factory-established branches on school campuses. Additionally, about US\$ 8.4 million in private sector financing was mobilized through these collaborations with private companies in support of the nine project schools.
- Development of 331 professional training programs with competency-based standards (target: 37).

Outcomes

- The percentage of instructors that came from industry/enterprises increased from 12.0% in 2011 to 28.3% in 2017, surpassing the target of 20.0%.
- The percentage of graduates from project schools who found employment within six months, in the specialties in which they were trained, increased from 58% in 2011 to 87.5% in 2017, surpassing the target of 77.0%.
- Employer satisfaction with graduates from project schools, as measured by satisfaction surveys, increased from 73.0% in 2011 to 92.7% in 2017, surpassing the target of 88.0%.



Achievement of the objective to improve relevance of TVET is rated High due to surpassing of targets for multiple indicators. Given that linkage to the five priority sectors was among the selection criteria for the project schools, relevance of the training provided was likely high.

Rating
High

Objective 3

Objective

To contribute to Yunnan's economic development during China's 12th Five-Year Plan period

Rationale

Outputs

See outputs listed above for improved quality and improved relevance that likely produced training that contributed to economic development.

Outcomes

- According to the ICR (page 13), prior to the project period, companies in Yunnan identified difficulty in finding skilled workers as a constraint to business growth. In 2010-2011, only 35 to 45 percent of job openings were filled, and only 50 to 55 percent of job applicants were hired. Following the project period, enrollment capacity in TVET institutions increased by almost 30,000, or 45 percent, representing the key sectors of agriculture, forestry, mining, manufacturing, and tourism, which have been growing at an average rate of about 14 percent over the 2010 to 2015 period.
- The percentage of graduates from project schools who found employment within six months, in the specialties in which they were trained, increased from 58% in 2011 to 87.5% in 2017, surpassing the target of 77.0%.
- The average starting salaries of graduates of project schools more than doubled from CNY 884 at baseline to CNY 2,309 in 2017.

Achievement of this objective is rated Substantial due to evidence of increased availability of qualified workers and increased starting salaries.

Rating
Substantial



Rationale

Achievement of the objective to improve quality of TVET instruction is rated High due to evidence of improved quality of instruction as reported in evaluative studies, and the exceeding of the outcome indicator target on the percentage of students who earn both skills certificate and diploma. Achievement of the objective to improve relevance of TVET is rated High due to surpassing of targets for multiple indicators. Given that linkage to the five priority sectors was among the selection criteria for the project schools, relevance of the training provided was likely high. Achievement of the objective to contribute to Yunnan's economic growth is rated Substantial due to evidence of increased availability of qualified workers and increased starting salaries. Taken together, these ratings indicate overall High efficacy.

Overall Efficacy Rating

High

5. Efficiency

The PAD (pages 14-15) presented an economic analysis of the project, including a cost-benefit calculation. The assumptions included the following: the number of newly admitted students to vocational institutions would increase to 5,049 in 2013 and then 10,557 in 2015; and the total number of graduates benefiting from the project would reach 96,649. These numbers were estimated based on the increased number of available seats in project schools. Benefits were calculated as the aggregate wage increase for TVET graduates. Costs were calculated as the project cost, foregone wages while students were enrolled in vocational school, and incremental administrative costs for schools due to increased enrollment. The net present value was therefore estimated at CNY 9.76 billion, and the internal rate of return (IRR) was estimated at 7.9%. The analysis noted that the estimates were considered conservative in that the wage differentials between graduates from vocational schools vs. graduates of lower level general education schools were based on starting salaries with no changes over time; moreover, social benefits associated with the curriculum clusters or contributions to institution building were not included.

The ICR (Annex 4) presented a similar cost-benefit calculation using the same assumptions, benefits, and actual costs. The revised IRR was calculated as 10.5%. This result appears relatively robust, as it holds within a range of 7.4% to 10.4% under a sensitivity analysis.

Additionally, there were other aspects of project design and implementation that indicated efficiency in the use of project resources. Project management costs accounted for only one percent of total financing. The unit cost of construction for project schools ranged from CNY 1,732.85 per square meter to CNY 2,667.71 per square meter, which compared favorably to the provincial average of CNY 3,300 for "similar school projects" (no specific information on the comparator group is provided). Lastly, numerous output targets were far



exceeded within the original project financing envelope and time frame, with implementation of key activities launched even prior to effectiveness.

Efficiency Rating

High

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	7.90	100.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	10.50	100.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance of the project objectives to improve quality and relevance of TVET is rated High. Achievement of the objective to improve quality of TVET is rated High due to evidence of improved quality of instruction as reported in evaluative studies, as well as the meeting of the outcome indicator target on the percentage of students who earn both skills certificates and diplomas. Achievement of the objective to improve relevance of TVET is rated High due to surpassing of targets for multiple indicators, including the percentage of graduates who found employment within six months in the specialties in which they were trained, and employer satisfaction with graduates. Achievement of the objective to contribute to Yunnan's economic development during China's 12th Five-Year Plan period is rated Substantial due to evidence of increased availability of qualified workers and increased starting salaries. Overall efficacy is therefore rated High. Efficiency is rated High due to higher than appraised IRR and other aspects of project implementation that indicate efficiency in the use of project resources. These ratings indicate essentially no shortcomings in the project's preparation and implementation, leading to an Outcome rating of Highly Satisfactory.

a. Outcome Rating

Highly Satisfactory

7. Risk to Development Outcome



Institutional development gains are likely to be sustained, as numerous mechanisms were institutionalized in participating TVET institutions. These included school-industry collaboration, continuous curriculum development in response to labor market demands, student assessment, and knowledge exchange mechanisms. An overall TVET framework and dedicated division within the Department of Education were also introduced to ensure a supportive policy and institutional environment. With regards to the financial sustainability of individual TVET institutions, the project team noted that due to increased enrollment and mobilization of private sector financing (from industry collaborations), risks to sustaining outcomes at the school level are low.

8. Assessment of Bank Performance

a. Quality-at-Entry

Project preparation was marked by strong counterpart participation and a high level of readiness for project launch. Local provincial government authorities and partner TVET institutions participated in study tours and training on sub-project proposal development. Numerous elements of project design, such as the results framework, implementation arrangements, and training plans, were well developed during the preparation period. These factors, along with the experience and continuity of the field office-led task team, contributed to a strong project launch. A notable feature of project design was the standardization of project implementation arrangements and procedures, but flexibility in curriculum content at the school level. Lessons from previous TVET pilot projects in other provinces and background papers were incorporated into the project design, including the effectiveness of a provincial-level interdepartmental TVET coordinating committee to address fragmentation of the TVET sector, the need to strengthen school-industry linkages, and the focus on modular, competency-based curricula to ensure flexibility and relevance of training. Overall risk was appropriately assessed as Moderate, with no risk factors considered significant or high.

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

Strong support from the Bank team and a high level of commitment from counterpart staff continued during the project implementation period. Continuous hands-on support from the Bank team, particularly in technical areas such as teacher training and curriculum design, helped keep implementation well on track. This hands-on support included site visits to project schools, classroom observations, and workshops with stakeholders. Counterpart staff was assigned to project implementation at both the provincial and school level, for key functions of curriculum development but also fiduciary and monitoring and evaluation (M&E) responsibilities. M&E was effectively carried out as planned, and problems encountered in financial management and procurement were resolved by the Project Provincial Management Office (PPMO) with assistance from the Bank team. However, there was no explicit information in the ICR about whether all project audits were clean.



Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The results framework was overall sound, with quality indicators (relevant and measurable) and baseline and target figures mostly identified. However, there were no indicators directly measuring the third objective "to contribute to Yunnan's economic growth." The M&E design included regular monitoring of project progress, as well as evaluative activities such as an impact evaluation. M&E arrangements were also clearly identified, with data collection to be performed by schools and validated by external consultants.

b. M&E Implementation

Regular project monitoring was carried out in a timely manner at the school level. Evaluative activities - including a graduate tracer study, enterprise satisfaction survey, and school internal impact survey - were conducted. However, the ICR (page 24) noted some shortcomings in data quality such as small sample size, sampling methods, comparator schools not appropriate in terms of size and enrollment, and indicators measuring enterprise satisfaction. Other sources of data verification were drawn upon to counter the weak quality of the consultant surveys, including hiring of another consultant to conduct teacher and student evaluations, as well as a beneficiary assessment conducted for the Borrower's Completion Report. A formal impact evaluation was not conducted as planned.

c. M&E Utilization

The ICR (page 24) reported that project monitoring data were regularly compiled and used to identify and address implementation problems, such as counterpart funding issues at the school level.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards



The project was classified as an Environmental Category "C" project as it was not expected to have any adverse environmental impact; however, IEG notes that there was planned rehabilitation and construction of facilities. An Environmental Codes of Practice was prepared, and Bank supervision missions included site visits to project schools to monitor construction and compliance with the Codes of Practice. Supervision reports highlighted only minor concerns such as dust and noise issues, which were subsequently addressed by the counterpart staff. The ICR did not state directly whether there was compliance with the Bank's safeguard policies.

No other safeguard policies were triggered.

b. Fiduciary Compliance

Financial management: The project's financial management system was effective in monitoring project activity. Financial information was submitted by schools and consolidated by the PPMO. Bank fiduciary support included recommendations to use a tool to monitor contract implementation progress, accelerate loan disbursement, and ensure the availability of adequate counterpart funding. Several project schools encountered delays or difficulties in the availability of counterpart funding from local governments; however, the PPMO was effective in resolving these funding issues. Project auditing was routinely carried out by the Yunnan Provincial Audit Office and submitted to the World Bank in a timely manner. The ICR did not specify whether all audits were clean.

Procurement: Procurement performance was overall satisfactory, drawing in part on the PPMO's prior experience with Bank procurement processes and additional training for project schools conducted by the Bank and the PPMO. Two procurement matters arose over the project period. First, during the bid evaluation stage for goods contracts, the Bank received an anonymous complaint letter with respect to six of those contracts due to potential collusion or conflict of interest, and these bids were thus rejected. Also, the PPMO terminated contracts to provide goods for four of the schools due to the supplier's operational difficulties in delivering the goods.

c. Unintended impacts (Positive or Negative)

None reported.

d. Other



11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Highly Satisfactory	Highly Satisfactory	---
Bank Performance	Satisfactory	Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		High	---

12. Lessons

Lessons drawn from the ICR (pages 27-29):

- Project design can effectively balance a centralized approach (to ensure proper oversight and facilitate implementation processes) with localized needs. In the case of this project, the PPMO-centralized structured allowed for proper oversight and facilitated implementation with standardized processes and documentation. However, local schools were given the flexibility to develop their own curricular focus, at the appropriate pace of implementation.
- Strong school-industry collaborations can make a significant contribution to relevance and sustainability of activities. In the case of this project, industries were brought into significant partnerships with TVET institutions, and these partnerships were then concretized into replicable and financially sustainable models.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The quality of the evidence and analysis was strong, drawing upon both regularly tracked data (i.e. enrollment, obtaining of certificates and diplomas, obtaining of jobs) and evaluative studies (i.e. student survey, impact assessment). Project outputs were highly detailed, and the economic analysis (Annex 4) was clear and robust. The lessons drawn were highly informative for other TVET operations, including an extensive discussion on project preparation and the factors that contributed to high quality at entry. However, a more direct and explicit statement of satisfactory safeguards and fiduciary compliance would have been appropriate, as well as more complete project cost data in Annex 3.



a. Quality of ICR Rating

High