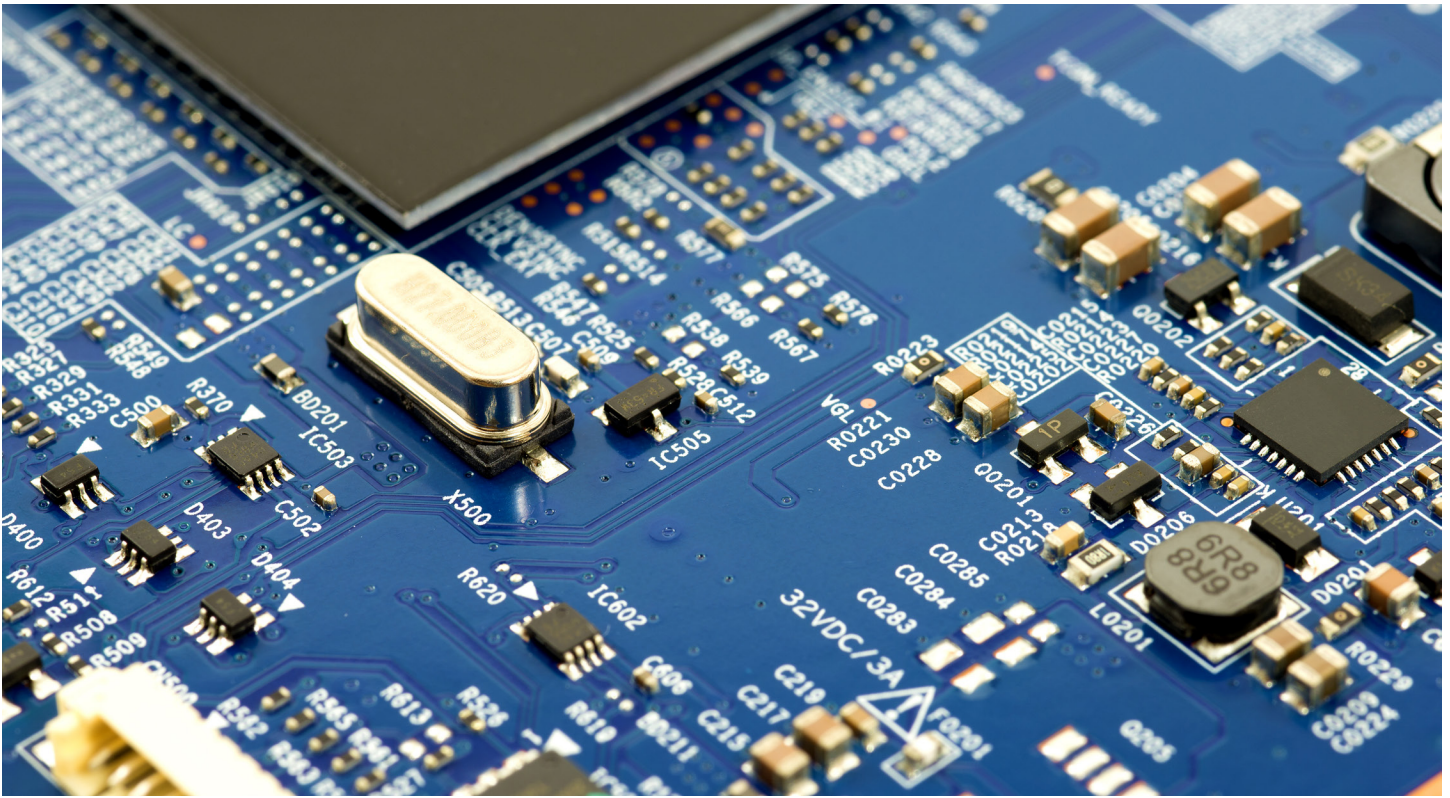


Creating and Evaluating a Credentialing System for **Vocational Schools in China**

Phase 2 Final Report, 2015

Electronic Industry Citizenship Coalition (EICC)
Stanford University's Rural Education Action Program (REAP)





PROBLEM: CHINA'S LABOR SHORTAGE AND THE UNFULFILLED POTENTIAL OF VET

China's labor shortage is making it increasingly difficult to find reliable, quality labor. One large potential source of reliable, quality labor may be student workers. As **vocational education and training (VET)** programs have expanded across China, firms have begun relying on VET schools—either by hiring current VET students for temporary internships or, even more, by hiring VET graduates for full-time work.

However, as the potential of the student worker labor force is gradually being recognized, so is the concern that its quality may be low. In 2013-2014, the Phase 1 study by Apple Inc., Dell, and Stanford University's Rural Education Action Program (REAP) found that:

- The quality of VET schools is highly variable. Some VET schools do a good job of educating student workers and providing them with safe and productive internships, while many do not.
- Neither firms, nor students, nor even the government have any idea which schools are of high or low quality.

The 2013-2014 Phase 1 study also showed why it was important to partner with good VET schools and help them to improve quality. By conducting a large scale survey of new hires from one large electronics industry firm, the study found that:

- Former VET students with higher levels of vocational skills are more likely to receive high performance evaluation scores (higher overall work performance, higher product quality, and so on) from managers. For example, workers with higher vocational skill levels improve attention to product quality and increase problem-solving by 5%;
- Former VET students with higher levels of non-cognitive skills are similarly more likely to receive higher performance evaluation scores from managers.
- VET grads (as compared to VET dropouts) are less likely to exit the firm, reducing monthly worker exit rates by 4%.

One of the primary reasons for this variability in school quality is that the VET system has **no systematic monitoring or accountability**. Schools are not systematically assessed and are not held accountable for student outcomes.

As a result, students and their families have no way of telling which schools are good. Schools have no incentives to provide high quality education and safe and productive internships. And EICC members have no way of telling which schools they should be partnering with when hiring student workers or VET graduates.

Better monitoring and accountability for VET schools is essential to ensuring that EICC members can best utilize VET schools as a source of labor, as well as ensuring that millions of students in China can receive the education they need to live more fulfilling lives.

OVERALL GOALS

In 2014-2015, the EICC and REAP conducted a new program (Phase 2). The new program was designed to drive further, sustainable change in VET schools by increasing monitoring and accountability.

Specifically, we created and evaluated a **pilot credentialing program** in one Chinese province (Henan Province) with the full buy-in and participation of provincial government and the electronics industry. This credentialing program rigorously assessed vocational schools and tied the results of the assessment to concrete incentives for schools. We examined whether or not the credentialing system improved school quality and helped EICC members protect student workers.

The ultimate goal of conducting the credentialing program is for China's government to scale it up and pay for it on its own, resulting in sustainable, long-term policy change that can benefit students and industry across China.

WHY HENAN PROVINCE?

Henan Province is one of China's most populous provinces, with a population of over 100 million people. It has the largest population (nearly 20 million) of school-aged children in the country. It is located at the heart of China and is often the primary source of labor for firms across the country. This profile makes it a key province in terms of educational and labor issues.

As a result, the province is considered a model for a number of educational policies. It is often where new education programs are piloted. In particular, Henan Province has been designated as a "key province" for vocational education – this means that the Henan Provincial Department of Education is expected to find ways to innovate and improve the VET system that can be taken up and applied across the rest of China.

These factors and the benefit of enthusiastic and highly motivated government partners within the Department of Education, make Henan the perfect launching pad for scaling up the credentialing program across all of China.

APPROACH

STEP 1. LAUNCHING THE CREDENTIALING SYSTEM (PHASE 2)

With the full participation and support of the Henan Department of Education, we launched a credentialing system across seven of the largest prefectures in the province.

Under this credentialing system, we assessed 118 schools at the end of the 2013-2014 academic year and then again at the end of the 2014-2015 academic year using the suite

of assessment instruments we developed in Phase 1. This allowed us to determine whether the schools reached our standards.

We also told half of the schools in the sample (treatment schools) that they would be eligible to participate in the credentialing system and earn a credential if they met certain requirements.

What kind of schools could receive a credential?

Treatment schools could receive a credential on the basis of their ability to achieve two primary goals:

1. Effectively educate their students
 - a. Teach math skills
 - b. Teach vocational skills
 - c. Minimize student dropout
 - d. And more...
2. Meet compliance standards for internships
 - a. No overtime
 - b. No underage
 - c. Direct payment
 - d. And more...

What incentives do credentialed schools face?

Treatment schools faced tangible incentives to meet our standards. Credentialed schools were to receive the following benefits:

Industry incentive: EICC members will be more likely to partner with credentialed schools.

Funding incentive: The Henan Department of Education pledged that the dispensation of government resources would be preferential towards credentialed schools.



STEP 2. EVALUATING THE EFFECTIVENESS OF THE CREDENTIALING SYSTEM

The second part of the Phase 2 approach was to *evaluate* whether introducing this credentialing system motivated schools to improve their quality and meet compliance standards for internships. Showing that the program actually works is vitally important to ensuring government uptake.

To do so, we conducted a Randomized Controlled Trial – the gold standard for rigorous impact evaluation in the academic world.

At the beginning of the year, we had randomly assigned the 118 schools into the treatment (credential program) and control (no credential program) groups. In other words, we implemented the credentialing system in half of our total sample of 118 VET schools (the Credentialing Group). In the other half of schools (the Control Group), we made no intervention whatsoever.

We evaluated all of the schools (in both groups) at the beginning and end of the academic year using the suite of assessment instruments we developed in Phase 1. By looking at differences in student outcomes and school quality between the Credentialing Group and the Control Group, we can isolate the impact of the credentialing system.

For a more detailed explanation of our approach, please see the **Appendix**.

IMPACT: PROGRAM RESULTS

Our results suggest that the credentialing program has had a positive and statistically significant impact on student learning, school retention and general wellbeing. These improved student metrics also translate into happier, healthier and more productive workers in EICC member companies.

EDUCATIONAL IMPACT

The credentialing program had a direct statistically significant impact on student educational outcomes. These impacts on student educational outcomes, as found in the Phase 1 study, have important implications for the quality and reliability of workers who enter firms in the electronics industry.

1. Improved vocational skills by 55%

This result is important because according to the Phase 1 results, former VET students with higher levels of vocational skills pay more attention to product quality, are better learners and are better problem solvers than those with lower levels of vocational skills.

2. Improved math skills by 34%

This result is important because math skills are foundational to critical thinking. Math is also highly

PROGRAM RESULTS

55%

Improvement in vocational skills

34%

Improvement in math skills

15%

Reduction in school dropout

transferable between career paths - a crucial factor for enhancing workers' future opportunities and the quality of China's labor force.

3. Reduced school dropout by 15%

There are about 20 million students in vocational education in China today. If this project were extended, reducing dropout by 15% would result in about 3 million kids being prevented from dropping out each year. Over twenty years, that's 60 million students. As mentioned above, the Phase 1 study further showed that VET dropouts appear to be much more likely to exit factories than VET graduates.

CONCLUSIONS AND NEXT STEPS

We have shown that a credentialing program has a positive and statistically significant impact on student learning and the development of productive future workers for the electronics industry.

It should be noted that this is the first study anywhere in the world to find a clear and simple policy change that can be used to raise the quality of vocational education. This is big news and more than we could have hoped to achieve.

Now is the time to take action to turn the exciting results of this pilot project into lasting change for students across China.

The results of phase 2 and a proposal for phase 3 will go to the EICC board for review in January 2016.

APPENDIX: APPROACH

In this project, we seek to answer the following research questions:

1. Which vocational schools are “high quality schools” as assessed by indicators such as student achievement levels, value-added gains in general (academic) and technical skills, retention rates (or low rates of drop out), and internship quality?
2. Can a pilot credentialing system bring about measurable improvement in school quality as measured by indicators such as student achievement levels, value-added gains in general (academic) and technical skills, and retention rates (or low rates of drop out)?
3. Can a pilot credentialing system motivate schools to meet compliance standards for student internships?

We have taken the following steps to answer these questions:

STEP 1 ASSESSING BASELINE SCHOOL QUALITY (BASELINE ASSESSMENT):

At the beginning of the project, we conducted a “baseline” assessment among second and third year students in 118 vocational schools. We collected information on the following metrics (with a focus on teachers and students to avoid opportunities for misrepresentation):

- a. Fully-proctored, standardized tests of students’ academic and vocational skills
- b. School resources, including teacher qualifications, finances, facilities
- c. Teaching/curricula (how teachers are instructing students)
- d. School governance
- e. Dropout rates collected by following a cohort of students
- f. Student internship experiences

Note: We used the Phase 1 data to serve as our baseline assessment.

STEP 2 MEETING WITH POLICYMAKERS:

Policymaker engagement is vitally important to this project. At the very beginning of this project, we worked with our collaborators at Henan University to reach out to our contacts in the Henan Provincial government. We conducted meetings with these contacts to inform them about the latest updates on the project plan, solicit their advice and suggestions, and invite their participation in all stages of the pilot project.

STEP 3 INTRODUCING THE CREDENTIALING SYSTEM:

After the baseline assessments, we contacted each of the 118 schools. When contacting the schools, we (a) explained that we would be returning at the end of the school year to conduct an evaluation and (b) gave each school a brief report detailing how it performed on the baseline assessment.

We also randomly selected *half* of the schools to introduce the credentialing system. These are called our “treatment” schools.

In October 2014, the Henan Province Department of Education invited representatives from the 59 treatment schools to a central meeting in the provincial capital. During the meeting, the treatment principals were informed that they had been enrolled in a new pilot assessment and accountability system. Under this system, all treatment schools would be evaluated by REAP. Schools that are able to meet a set of criteria (a finite list of attributes passed out to the principals: contributing to student learning, maintaining low rates of school dropout, and meeting legal and EICC standards for internship behavior) will have the opportunity to receive a credential. This credential will give schools increased opportunities for government funding and industry collaboration (through the EICC). Un-credentialed schools will not be given these opportunities.

The other 59 “control” schools were not held to this credentialing system. This group forms the counter-factual by which we can judge whether or not the credentialing system had an impact.

Because the schools were randomly assigned to one of the two groups (treatment or control)—and there was therefore no difference between the two groups of schools at the time of the baseline survey—any observed difference in their outcomes at the time of the endline assessment can be interpreted as the impact of the credentialing system itself.

STEP 4 ASSESSING THE CREDENTIALING SYSTEM (ENDLINE ASSESSMENT):

In April 2015 (at the end of the school year), we returned to the schools to assess them (using the same measures as in Step 1). We used the endline measures to evaluate whether “treatment” schools were actually incentivized to care for and teach their students more effectively relative to the other schools. Specifically, by comparing changes in the performance of “treatment” and “control” schools (see step 2 above), we are able to determine whether the credentialing system works.



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