Connecting Vocational Training Centers in Bolivia and boosting training performance

1.	Context:	4
2.	Project objective:	4
3.	Project high level description	5
4.	Project benefits	5
5.	Project duration and deliverable	6
6.	Trainings to be recorded/ digitized	6
7.	Starting training material.	7
8.	Distribution model :	7
9.	Metrics	8
10.	Schedule	9
11.	Team structure	11
12.	Partners Roles and Responsibilities	12
13.	Budget	13
14.	Reporting process	14
15.	Risk assessment	.14

1. Context:

In Bolivia, a majority of children live in rather precarious situations. Public authorities and NGO's are attacking these problems by concentrating on their most fundamental needs: food, health, safety, education... But their mission is really accomplished only when these children have got a job and are professionally integrated into the society in which they live. In Bolivia, education is often inadequate for various reasons: lack of training centers, parents enforcing children work, insufficiently qualified teachers lacking motivation given their low wages. The situation is worse for professional training because equipping workshops is expensive. Thus it is often unavailable or very inadequate in the countryside. Teenagers, however brilliant, cannot afford a two or three year course in the capital to obtain a professional degree. Good teachers tend to stay in the capital because they can earn more there. Therefore the situation of these hundreds of thousands of children seems to be at a standstill. To depict the magnitude of the problem, in Bolivia 762.074 (56%) persons aged between 14 and 25 years are not registered in any sort of education institution, the majority of them living in rural areas.

FAUTAPO (http://en.fundacionautapo.org/) FAUTAPO's mission is to contribute to the comprehensive training of men and women in Bolivia by supporting and strengthening training institutions in order to promote social and productive development at local, regional and national levels. Among others this includes teachers' capacity building and workshop equipment. In 2011 Fautapo has facilitated 301 technical training sessions (average 9 months duration) in 156 Professional Training Centers CEA's (Centros de Educacion Alternativa) and ETA's (Educacion Tecnica Alternativa) for the benefit of 5027 students.

There are also some 307 public training centers offering *technical education* to over 10000 youngsters but overall this number is clearly insufficient. The majority of these centers provide qualifications for *basic level technicians* given that they target school dropouts and excluded people who have not concluded junior high school and often not even primary education. As stated above, these centers suffer from a lack of equipment in the workshops but above all their teachers and instructors are insufficiently trained and lack the technical skills they are supposed to teach.

Connected Schools, a French NGO whose mission is to improve disadvantaged school dropouts' professional training and insertion, came up with the idea that if the country's best teachers were recorded and if less qualified (provincial) teachers were provided with these videos, the latter would be able to self-train without going to the capital and reuse these recordings for their own classroom thereby giving lectures of the best national level to their students. But whatever the quality of these recordings, the provincial teacher and his/her students will still have questions, hence the need to also connect provincial schools to the Internet, in order to enable distance tutoring between the reference teachers and their provincial less qualified colleagues. Connected Schools has successfully implemented its project in Cambodia. https://www.connectedschools.org/index.php?lang=es

2. Project objective:

The primary objective is to significantly improve vocational training and professional insertion of Bolivia disadvantaged youth, with a special focus on school dropouts, which represents more than half of the Bolivian youth. The strategy to achieve this objective is to improve Bolivia CEA's teachers pedagogy and competencies with a very innovative approach making use of Internet and Training videos (CEA stands for Centros de Educacion Alternativa).

3. Project high level description

Connected Schools and FAUTAPO are partnering to provide Bolivia insufficiently qualified teachers in the "Centros de Educacion Alternativa" with:

- Video lessons of technical trainings (both theory and practice) recorded in Spanish by Bolivia best technical teachers. Each CEA is equipped with a video server to enable high speed video streaming in the classroom or workshop.
- A computer & projector setup in their workshop to enable them to run their courses using these recorded lessons.
- An access to the Internet in each CEA:
- o To update regularly the CEA video server from the central server located in Fautapo premises with the latest training contents.
- To enable CEA teachers tutoring by their "reference" colleagues by means of conferences. One conference per topic is scheduled every week by the project team (Fautapo/ Connected Schools) in which all CEA teachers of this topic can participate. Main functionalities are multipoint audio + screen sharing.
- o To enable CEA teachers to write emails to their colleagues when they need help.
- To browse the "Useful Web sites" specific to each topic which the project team (Fautapo/ Connected Schools) updates regularly. This enables the teachers to enhance their own training with the latest and greatest developed by other teachers and experts in the world.
- o To browse the "Frequently Asked Questions" specific to each topic and be able to answer students questions better. This section is maintained by the project team (Fautapo/ Connected Schools).

4. Project benefits

- The primary benefit is to enable Bolivia's Vocational Training Centers insufficiently qualified teachers to run courses at the best national level.
 - But the project actually comes with multiple of secondary benefits.
- First and foremost the beauty of the project is that once they have been created, the same training videos can be replicated throughout all of Bolivia technical training centers at very little cost in a variety of media: computer hard disk but also USB key, SD Card, DVD or even Smartphones.
- Actually the same training content can be used throughout all Spanish speaking Latin America
 countries suffering the same teachers' qualification problem. Indeed for the majority, the topics that
 will be recorded are rather generic: computer basics, car repair, bakery, sewing, electricity house
 wiring, chicken raising, hair dressing, welding, vegetables growing, small engine repair, carpentry ...
 and should therefore be 100% reusable in most Latam countries
- Third it will be a major step towards curriculum standardization for basic technical trainings in Bolivia.
- Fourth it enables quick ramp up of a new teacher without experience in case of attrition of a good teacher in a CEA

5. Project duration and deliverable

The project will last **four years** and will encompass:

- the video recording of :
- o 7 service oriented technical trainings,
- 7 agriculture oriented trainings
- o 3 academic trainings (Mathematics, Spanish, English)
- o 3 transversal trainings (entrepreneurship, self-esteem, civic instruction)
- the installation of computer/projector equipment in the workshops of fifty CEA's,
- the connection to the Internet of the same fifty CEA's
- the training of the CEA teachers to the proper usage of the system
- the scheduling of weekly teachers tutoring conference calls
- the assessment of the project impact on the students understanding and motivation
- the writing of a detailed project report including metrics (see list of metrics in Chapter 8)

The main deliverable is a training database accessible on a video server with a friendly user interface comprising for each of the above mentioned topic:

Deliverable		Format
Training curriculum		Text, graphics, pictures
Lesson Plan		Text, graphics, pictures
Training lessons	Theory	Richmedia. The minimum version will consist in PPT
		slides with simple animations, annotations, teachers
		voice explanations and periodical appearances of the
		teachers video
	Practice	Videos of the teachers technical gestures in the
		workshop or in the field
	Quiz	Flash
	Exercises	Videos of the teacher explanations
Useful Websites		Hyperlinks
Textbooks		Text, graphics, pictures

6. Trainings to be recorded/ digitized

Given the target population, the training level shall be what is currently named "tecnico basico". The trainings will be recorded in Spanish. The recordings will include Theory AND Practice. As part of the project, all necessary side documentation will be digitized. At first glance, the list of trainings to be recorded is rather long since it embraces:

- Production oriented trainings: chicken raising, pig raising, cattle management, dairy products, growing vegetables, post-harvest, honey, flowers, special crops (quinua), food processing...
- Service oriented trainings: construction, electricity, plumbing, carpentry, computer basics, motorbike repair, car repair, small engine repair, computer repair, telephone repair, hotel and tourism, cooking, pastry, bakery, sewing, welding, air conditioning
- Academic courses: Spanish and Maths above all, but also possibly Physics, Guarani, Quechua...

• Transversal courses: successful behaviors at work, gender, environment, self-esteem, civil rights but above all emphasis shall be placed on developing entrepreneurship skills

We will therefore prioritize the above list using the following list of criteria's:

- i. Criteria 1: Economic impact of the training
- 1. Job opportunities (quantity/ average salary)
- 2. Production improvement (number of people affected/Income improvement per family unit \$\$)
- 3. Number of CEA's already delivering the training
- ii. Criteria 2: Feasibility
- 1. Student scholarship level prerequisite
- 2. \$ investment to start a business after the training
- 3. Training resources requirement
- a. workshop equipment
- b. land size (agriculture)
- c. climate conditions
- iii. Criteria 3: Availability of a good reference teacher
- 1. Technical skills
- 2. Pedagogical skills
- 3. Communication skills (in front of the camera)
- 4. Neutral Spanish accent
- 5. Comfortable with computers
- 6. Availability

7. Starting training material.

It is worth noting that FAUTAPO has already developed extensive training documentation which is available in the usual Microsoft Office format (Word, Excell, Powerpoint): curriculum, textbooks, lessons and pedagogical manuals. This will help reduce the project lead times.

8. Distribution model:

The guiding principles for distribution are that "education should be free" and in particular for those in need. Therefore the training contents will be made available free of charge to the FAUTAPO supported CEA's participating to the project, by means of the installation of the full video server at the CEA premises. In order to prevent piracy and resale, a banner will scroll at the bottom of the videos explaining that the video is a compliment of FAUTAPO and Connected Schools. The project stakeholders however do not intend to publish the contents openly on the Internet (Youtube) but would rather distribute them to selected partners in Latin America willing to also contribute their own trainings to the database.

Alternatively, the project team will consider delivery of DVD or USB or MicroSD containing individual video trainings to the students who have completed the training at the CEA, the intent being to enable them to review it at home and continue to train during their professional life.

9. Metrics

- Subjective metrics (questionnaires)
- iv. Teachers self-assessment
- 1. Impact on their competency
- 2. Impact on their pedagogy
- 3. Impact on their motivation
- 4. Impact on student understanding
- v. Teacher evaluation of
- 1. Video usefulness
- 2. Conferences usefulness
- 3. Internet (for education) usefulness
- vi. Students assessment
- 1. Impact on their motivation
- 2. Impact on their understanding
- 3. Video usefulness
- Objective metrics (measurements)
- i. Student performance improvement versus project cost adder (see example)

	1H-	2H-	1H-	2H-	1H-	2H-
Trainings	2014	2014	2015	2015	2016	2016
Number of trainings recorded (cumulative)		12		20		
Total number of CEA's equiped	10	20	30	40	50	50
Number of students benefiting from the project	480	960	1440	1920	2400	2400
Cost of CS project per student		\$355	\$176	\$123	\$77	\$40
Project cost adder versus total training cost per student		39%	20%	14%	9%	4%
Students exam score improvement		10%	15%	20%	20%	20%

- ii. Business income improvement
- iii. Professional insertion improvement

10. Schedule

It is proposed to deploy the project over 4 years

- **Pilot phase:** 2013-1H2014. It is recommended to run a pilot phase first to:
- i. Test reference teachers comfort level with various recording options :
- 1. Screen capture of PPT slides with voice (Camtasia)
- 2. E-learning content authoring of PPT slides (Articulate)
- 3. Handwriting annotations (PC Tablet)
- 4. in class with students versus stand alone after class
- 5. indoor and outdoor (for agriculture)
- ii. Test students perception of the various options above
- iii. Test province teachers comfort level with the database user interface and conferencing tools In this phase we would record:
- a) 1 production oriented training
- b) 1 service oriented training
- c) 1 transversal oriented training
- d) 1 academic training
 And equip 5 training centers (CEA's).

• Full roll out 2H2014- 2016:

- i. Record the remaining 16 training contents for a total of 20. Proposal is as follows:
- e) 6 production oriented trainings
- f) 6 service oriented contents
- g) 2 transversal oriented contents
- h) 2 academic contents
- ii. Equipment of 45 CEA' throughout the country

Schedule									
	2H- 2012	1H- 2013	2H- 2013	1H- 2014	2H- 2014	1H- 2015	2H- 2015	1H- 2016	2H- 2016
Finalize project plan	t								
Sign partnership agreement	t								
Recruit and train team									
Identify pilot phase recording teachers	t								
Record pilot phase video trainings									
Gather/develop all side documentation									
Build video server database									
Equip pilot CEA/ETA's									
Train CEA/ETA teachers									
Pilot phase training									
Run distance tutoring conferences									
Run preliminary questionnaire to all parties					t				
Compute preliminary metrics and edit report					t				
Finetune training recording and editing processes				•					
Record all topics									
Equip new target CEA/ETA's				•					
Train CEA/ETA teachers									
Second phase training									
Run distance tutoring conferences									
Run questionnaire to all parties									t
Run final exam									t
Compute metrics and write project report									t

11. Team structure

The following is a proposal for a standalone project team. It comprises an overall project manager and three teams.

- 1. Project Manager:
- a. Decides and prioritizes topics to be recorded
- b. Travels to the CEA's to meet local staff and students initially to capture requirements, later to follow up usage and capture improvements opportunities
- c. Looks for and hires reference teacher for each topic
- d. Drives the creation team: objectives setting, day to day tasks assignment, problem resolution, performance review
- e. Seeks Fautapo IT technicians for computer related problems resolution
- f. Communicates project progress weekly to all stakeholders
- g. Proposes solutions in case of schedule slippages.
- 2. CEA Interface team
- a. Interacts daily with the CEAs on all project matters
- b. Communicates formally and informally with all project users (CEAs teachers and students) to understand true system usage and to gather users feedback: benefits and drawbacks
- c. Formally captures training requirements from the CEAs and content improvements needed
- d. Decides which format is best suited for the content (PPT with animations, audio, video, screen capture)
- e. Makes sure the content creation process is followed: videos duration, quiz insertion, lessons plans quality, correct archiving on the database
- f. Trains the CEAs teachers on system usage
- g. Communicates with the CEA director to organize project successful implementation
- h. Schedules the weekly conferences
- i. Captures Questions and Answers arising in the conferences and documents them on the project forum.
- j. Organizes the final examinations at the CEAs
- k. Runs students and teachers questionnaires and gathers all metrics
- 3. Content Creation Team
- a. Coaches the recording reference teacher on good recording practices
- b. Shoots good training videos (cameraman) in different lighting conditions: Indoor, Outdoor with good sound quality (wireless microphones) in various noisy conditions.
- c. Edits and produces the videos to produce finished trainings
- d. Digitizes recording teacher existing training material if need be and produces Powerpoint slides with animations
- 4. IT support team
- a. Creates and administrates the Video server.
- i. Installs and manages the video server (likely a Linux machine)
- ii. Designs the user interface in Moodle or Joomla environment
- iii. Archives and manages training contents on the database
- iv. Updates remote video servers through VPN synchronization
- Installs and maintains all project related equipment (video server, computers, projectors, loudspeakers, Internet access, Local Area Network) in the CEAs with relevant firewalls and usage rules

c. Gathers IT metrics: downtime, anomalies

FAUTAPO will provide for a number of other functions, in particular the management team to establish contacts with the various stakeholders (Ministry of Education, CEA's directors...) as well as some basic administration support for travels, Internet, banking, office supplies.

12. Partners Roles and Responsibilities

- Fautapo
- i. Selects the topics to be recorded
- ii. Identifies the "best" reference teacher for each topic
- iii. Hires (or nominates) the project manager (e-learning expert) and the database manager (IT expert)
- iv. Provides equipment in each CEA/ETA participating to the project
- 1. Computer and projector in each teacher workshop
- 2. Local Area Network
- v. Drives metrics collection and reporting
- Connected Schools
- i. Advises FAUTAPO team on all process items
- 1. Recording processes
- 2. SW tools: content authoring, editing, production
- 3. Training content database user interface design
- 4. Video server SW tools (Linux) and configuration
- 5. Conferencing tools (audio/video/ screen sharing/ whiteboard sharing) and conference master process
- 6. Other HW/ SW tools (forum, interactive whiteboards, low power equipment for mobile trainings)
- ii. Hires and funds video technicians and all associated tools (HW and SW)
- iii. Provides equipment
- 1. Video server
- 2. Conferencing HW/SW Tools
- iv. Trains CEA/ETA teachers on proper tools usage (training videos, conferences)

13. Budget

Project team operating expenses (in Dollars)	Monthly Price	1H- 2013	2H- 2013	1H- 2014	2H- 2014	1H- 2015	2H- 2015	1H- 2016	2H- 2016	Total Project
Project Manager	-	1	1	1	1	1	1	1	1	
Salary + Social coverage	1000	6000	6000	6000	6000	6000	6000	6000	6000	48000
Teacher training and support team		2	3	4	5	6	6	6	6	
Salary + Social coverage	500	6000	9000	12000	15000	18000	18000	18000	18000	114000
Video server & IT network administrator	-	1	1	1	1	1	1	1	1	
Salary + Social coverage	750	4500	4500	4500	4500	4500	4500	4500	4500	36000
Video technicians	-	4	8	8	8	8	8	4	0	
Salary + Social coverage	500	12000	24000	24000	24000	24000	24000	12000	0	144000
IT technicians		0	0	3	5	6	6	6	5	
Salary + Social coverage	500	0	0	9000	15000	18000	18000	18000	15000	93000
Teachers supplementary hours to record content	100	2400	4800	4800	4800	4800	4800	2400		28800
Number of CEA's equiped		0	0	10	20	30	40	50	50	
Internet for CEA's	60	0	0	3600	7200	10800	14400	18000	18000	72000
CS France International Travels (consultancy)		1500	1500	1500	1500	1500	1500	1500	1500	12000
Project team Infrastructure costs										
Travels, accommodation and miscellaneous office costs	20%	6480	9960	12360	14160	15360	15360	12480	9000	95160
Total		32880	50760	56760	62160	66960	70560	56880	39000	64296
Capital (in Dollars)		1H- 2013	2H- 2013	1H- 2014	2H- 2014	1H- 2015	2H- 2015	1H- 2016	2H- 2016	Total Projec
Project Team Equipment		11406		11406						
CEA's fixed training equipment			0			13000	13000	13000		
CEA's mobile training equipment		44400	0			7150	7150	7150		40044
Total Capital		11406	0	31556	20150	20150	20150			10341
Grand Total		\$44 286	\$50 760	\$88 316	\$82 310	\$87 110	\$90 710	\$56 880	\$39 000	\$746 3

14. Reporting process

The project manager shall report weekly in writing on project progress, issues and action plans. A formal project review shall take place quarterly with all stakeholders' managers to review progress and address issues that need escalation

15. Risk assessment

Risk Description	Likelyhood & Criticity	Risk Mitigation Plan	Corrective Action Plan
Difficulties to find skilled video technicians at a reasonable price	L= Medium, C= Medium	Identify at least "ONE" skilled technician and be ready to pay him well. Then get in touch with the « Escuela de Cine » to hire interns. Train them and hire the best ones.	Contract the work to a professional "movie maker" (more expensive and less flexibility)
Difficulties to free up "best in class" reference teachers for recording	L= Medium, C= High	Identify two reference teachers for each topic. Talk to them several months in advance. Offer them both options: in class or after class. Pay them supplementary hours.	Split the work between Theory and Practice. Then identify one "professional" to record the practice and one "university" teacher for the theory. Worst case, look for another teacher outside the country.
CEA's teachers are afraid of using computers and changing working habits	L= Medium, C= Medium	Name one IT technician responsible to train them on system usage (two hours per week). Preferably select motivated volunteers. Do not enforce	If ALL CEA's teachers resist the project, simply select another CEA.
CEA's teachers do not want to recognize that the reference teacher in the video is "best in class"	L= Medium, C= High	Explain the project benefits: saves preparation time, improves students understanding But preferably select motivated volunteers. Do not enforce	If ALL CEA's teachers resist the project, simply select another CEA.
Security: computer equipment installed in the CEA's gets stolen	L= Medium, C= High	Sign a "rules of engagement" with CEA director that computer equipment will not be installed without a proper security plan (guard or locked rooms)	Specify a reimbursement clause in case of theft in the "rules of engagement" and/or contract an insurance policy against theft.
Some remote CEA's are good candidates for the project but do not have electricity	L= Medium, C= Low	Extract relevant training from the server into USB key and install low power mobile setup in the CEA (LED projectors with integrated media player- 45 Watts running off 12 Volt battery).	