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# ICT for Development: Two Contradictory Stories of an ICT Initiative

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## ABSTRACT

In this study we explore two different perspectives of one ICT project. The “mainstream” believed that an educational ICT project for Taiwanese aboriginals was successful, while the local aboriginals and local teachers did not. Using ethnographic research, we investigated the possible reasons for the disparity between the views of the mainstream and the locals. Our findings indicate that the paternalistic nature of the ICT project as well as a belief in technological supremacy contributed to the discrepancy of views regarding the success of the project. We use postcolonial theory to draw attention to the (often forgotten) voice of the aboriginals.

## Keywords

ICT Development, Postcolonial Theory, Paternalistic, Technological Supremacy

## INTRODUCTION

ICT has been considered critical to achieving socio-economic progress for developing countries and disadvantaged groups by governments and international NGOs (Walsham & Sahay, 2006). According to the World Bank (2008), a total of \$16 billion for ICT development was invested in developing countries between 1997 and 2006 in the attempt to boost economic productivity and government revenue. Many developing countries see ICT as an opportunity for social and economic growth.

Most studies related to ICT development projects in developing countries tend to adopt a positive and technologically deterministic viewpoint that emphasizes potential benefits rather than actual negative outcomes (Grimshaw & Talyarkhan, 2005; Heeks, 2002). Although much had been written about the *potential* of ICT to improve people’s lives, research documenting the actual development outcomes is rather sparse (Castells, 1999; Curtain, 2004). Several researchers have pointed out that, without much empirical evidence, an overly optimistic stance about the contribution of ICT to development has been taken (Curtain, 2004; Heeks, 2002).

Hence, the purpose of this study is to examine one specific ICT development project in Taiwan. It provides some empirical evidence about the actual development outcomes of this project. The ostensible purpose of the project was to contribute to the educational and economic development of the aboriginals in one Taiwanese village.

Our study reveals that there was a disparity between two perspectives about ICT in this Taiwanese aboriginal community. The “mainstream story” sanctioned by the government and the media declared the apparent success of this ICT for development initiative. The other story, which has been largely ignored until now, represents the perspective of the aboriginal people, and sees ICT development as a myth. By adopting postcolonial theory, this ethnographic study attempts to grasp how and why these two contradictory stories emerged.

## THE EDUCATIONAL ICT PROJECT

This study is about an ICT educational project deployed in an elementary school of a remote aboriginal village in Taiwan. The village, TY (a pseudonym), has about 350 households and 1500 aboriginal people of Bunun ancestry. The ICT project aimed to improve the educational and economic outcomes for the local aboriginal people. Recognizing the frequent rotation of teachers and the limited information resources, the principal of the elementary school envisioned an ICT learning

environment for students to help overcome their disadvantages. Both the government and the principal aspired to expand ICT into the community so that local residents could be trained to sell local products through the Internet to improve their economic situation. Table 1 provides details of this ICT project.

### **Study Background**

In TY, most Bunun young people have left for the city to earn their living. Most who stay in the community are farmers, local government officials and the elders. Despite some parents moving back to TY from cities (often because they felt they were not respected in the cities due to their aboriginal descent), most parents are compelled to work outside the villages. Consequently, children are often raised by their grandparents who complain that they have only limited understanding about how to educate the children. This phenomenon prevails throughout the community, with poor educational conditions in villages leading to an intergenerational vicious-circle.

Being in a remote rural area, the aboriginal community tends to be excluded from rapid changes in life-style that occur in the cities. Village children are not up to speed with the latest fashions or technological developments. One teacher told us that she was shocked to learn that none of her students knew what elevators and escalators were. It is somewhat ironic, however, that while residents have little opportunity to become familiar with mainstream Taiwanese culture because of their remoteness, the traditional language and culture of the aborigines village is quickly vanishing (fewer and fewer inhabitants are able to speak their own language).

### **THEORETICAL BASIS**

Postcolonial theory was originally used to study the cultural production of post-independence nations and communities (Anderson, 2002; Ashcroft, Griffiths, & Tiffin, 1998). More recently, this theory has been adopted for historical, political, sociological, and economic analyses of the contradictory and complex relationship between the “metropolitan” and the “periphery” in a global world (Adam & Myers, 2003; Mishra & Hodge, 1991). Through the lens of postcolonial theory, ICT can be seen as a western, colonial project which is often brought in from the “outside” and marginal groups have difficulty defining in their own terms due to an imbalance of power (Rydhagen & Trojer, 2004). These marginal groups usually end up relying heavily on the intentions of donor nations and organizations.

We suggest that postcolonial theory helps to explain the contradictory stories about the success (or failure) of one particular ICT project for development in Taiwan. Before 1945, Taiwan had been the subject of colonization for over 300 years. Taiwanese aboriginals, who have lived in the island of Taiwan for over 2000 years but have lost their political independence, are marginalized both socially and economically. The aboriginals are also the group with the lowest rate of ICT usage in Taiwan. The ICT project in this study was introduced by the new principal of the local school to this aboriginal village with the intention of improving educational and economic outcomes, and reducing the “digital divide.” However, this initiative resulted in two contradictory stories about the apparent success of this particular ICT project.

### **RESEARCH METHOD**

The research method used was that of interpretive ethnography (Klein & Myers, 1999; Myers, 1999). One of the authors conducted intensive fieldwork in TY for almost two years. Multiple qualitative data sources including documents, field notes, videos, photos and archival information were used. Forty one formal interviews with informants from various stakeholders served as important data sources. Although the formal interviews were pre-arranged and audio taped with permission, most other interviews with the local people were ad-hoc. Often follow-up discussions with interviewees were arranged to verify prior understandings. Due to the sensitivity of the data, the names used in this paper are fictitious.

For analyzing both primary and secondary empirical material, we followed broadly the approach outlined in Walsham and Sahay (1999). We first of all studied the data to identify the relevant themes. An open coding process involving a line-by-line analysis of the interview transcripts and field-notes was followed. The main emerging issues were placed into conceptual categories (Strauss & Corbin, 1997). To obtain a better understanding of the categories identified in previous stage, we further reviewed the interview transcripts and the field notes. Once the relationships between the categories became clearer, they were combined with the secondary data for a draft describing the case. The refined themes were re-examined to determine the most important themes relevant to the research topic. The authors then engaged with the empirical material in an iterative fashion with the theoretical framework informing this interaction.

Step	Start from	Goals	Sponsor/Funding Source	Progress
International Collaboration	July/2006	Stimulate students' self-knowledge, cross-cultural understanding and global perspectives	Ministry of Education (Part of National Integration of ICT into Teaching Project)	Nov/2006 Trial Collaboration w/ local schools Feb./2007 Visit Japanese Partner School May/2007 Director of computer center in MOE Visit Sep./2007 TV Station visit Jan./2008 Japanese partner schools visit
Wireless Hubs Installment	Sep./ 2006	Extend students' learning to home & enable teachers to perform ICT education	Local county government	Dec./2006 Wireless Hub installed
Free Computer Donation	Sep./2007	Enable students to learn at home & teachers to perform ICT education	Two National Business Companies	Nov./2007 Meeting with parents and explained rules of used computers Dec./2007 Received 40 donated computers & 27 were distributed
Digital Learning Program	Dec./2007	Extend students' learning into digital content and relieve teachers' load	Private Education Foundation & University	Dec./2007 Introducing ICT Math Program: Students from 3rd to 6th grades attended two-hour math program weekly. Feb./2008 Initiate first e-tutoring interaction

**Table 1. The Educational ICT Project**

## THE POLARIZED VIEWS

*“Papa, how to spell “Google” ?”*

*“What? To go?”*

*“No, “Google”, teacher taught us today, but I don’t remember it!”*

*“To go? dog? Is it English? If it is English, I don’t know. English may know me, but I know nothing about English!” (6<sup>th</sup> grade student Hua & his father, 091807)*

During data collection, the polarized viewpoints between the mainstream Taiwanese culture and the locals become apparent. The mainstream includes officials of both central and local government, the press, and the school principal, all of whom claimed that the educational ICT project had achieved its goals and that the digital divide was narrowed. The local viewpoint is provided by both the parents and teachers who expressed their disappointment and unfulfilled feeling towards the project. Parents and teachers gradually realized that the ICT project was not the magic cure for their children and community. Table 2 provides a brief summary of these two viewpoints.

### International Collaboration

**“Step out”** In the view of the mainstream, the educational ICT project enabled the students to step outside the confines of their own village and reach the world. For example, the principal was glad that students had shown their potential and self-confidence when interacting with Japanese students over the Internet. Students could overcome the limitation of their location and exchange information with their international partners. The government also promoted TY School’s International Collaboration as a symbol of success for its ICT policy in newspapers, magazines, and TV programs. In the introduction of one TV program, for instance, it stated that ICT allowed TY School to build friendship with Japanese schools through the Internet; and students had exchanged and shared Bunun culture with Japanese students. Other coverage pointed out that the International Collaboration had helped students to raise the level of their English language ability and expand their global vision.

**“A Show”** As opposed to the mainstream viewpoint, teachers did not regard the international collaboration as being of any real benefit to their students. After experiencing visitors and reporters coming and going, the teachers concluded that both they and students were simply a tool for the mainstream to promote ICT projects, and that the international collaboration was merely “a show.”

*The students can’t collaborate because they don’t speak English well enough. What they have done basically is saying “hello” to each other. When you can’t speak English at all, how can you communicate with Japanese students? It doesn’t benefit students.... we all know we are acting in a play. When we had visitors, we performed the international collaboration. When TV reporters came, we showed them international collaboration. When the officials of the government came, we collaborated, too. International collaboration is no longer about teaching; it is a show, a program. Teachers know and students know, too. (Aong ,061507)*

Ironically, a reporter who was assigned to cover TY also questioned if students could communicate during the international collaboration. He stated that the whole collaboration was not as impressive as he had expected. He said:

*It was obvious that the students couldn’t answer those questions. They probably didn’t understand them at all. The teachers had to tell them answers all the time and students were probably just repeating the sound. Did you notice that? Their answers were very short. Usually, they only answered “yes” or “no”. I don’t remember them asking any questions. ...It is impressive only because this happens in an aboriginal school. (FN091807)*

Step	The Mainstream Viewpoints	The Local Viewpoints
International Collaboration	<ul style="list-style-type: none"> <li>● Step out               <ul style="list-style-type: none"> <li>■ Encourage students' potential and self-confidence</li> <li>■ Overcome the limitation of the location and time</li> <li>■ Build friendship and share Bunun culture with Japanese partners</li> <li>■ Raise students' English ability and develop global vision</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● A Show               <ul style="list-style-type: none"> <li>■ A show for visitors</li> <li>■ Poor English ability &amp; unable to communicate with Japanese students</li> <li>■ Time-consuming; encroached upon the regular school program</li> </ul> </li> </ul>
Wireless Hubs Installment	<ul style="list-style-type: none"> <li>● Be Connected               <ul style="list-style-type: none"> <li>■ 15 hubs were installed</li> <li>■ Elevate remote students' usage of the Internet</li> <li>■ Ready to learn digitally</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Shut Down and Save Money               <ul style="list-style-type: none"> <li>■ Wireless Hubs never worked</li> <li>■ The Internet was often overloaded with poor response time.</li> </ul> </li> </ul>
Free Computer Donation	<ul style="list-style-type: none"> <li>● No More Digital Divide               <ul style="list-style-type: none"> <li>■ Reach 100% computer ownership</li> <li>■ Extend students' learning and International Collaboration to home</li> <li>■ Parents can access ICT</li> <li>■ The only aboriginal school in Taiwan without the digital divide</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Obsolescent Computers               <ul style="list-style-type: none"> <li>■ Stop using donated computers due to frequent computer difficulties</li> <li>■ Unable to distribute all donated computer as parents turn it down due to school policy</li> <li>■ The distribution task exhausted and upset teachers</li> </ul> </li> </ul>
Digital Learning Program	<ul style="list-style-type: none"> <li>● Digital Learning               <ul style="list-style-type: none"> <li>■ Extend students' learning with digital content</li> <li>■ Offer more educational resource</li> <li>■ Relieve teachers' workload through e-tutoring</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Enduring and Suffering               <ul style="list-style-type: none"> <li>■ Show little interests in both e-math and e-tutoring courses</li> <li>■ Attend courses only for playing online games</li> <li>■ E-tutoring cancelled after the principal left</li> </ul> </li> </ul>

**Table 2. The Summary of Two Polarized Viewpoints**

Meanwhile, the local teachers thought that international collaboration was, in fact, very time-consuming and encroached upon the regular school program, especially when visitors came up and classes had to be cancelled or postponed. As teachers realized that their students were falling behind in their learning, they became very concerned with the encroachment. Two teachers explained:

*You see that we do have lots of activities. We should have seven classes today; however, we can only teach one because the international collaboration has taken up all class time. However, we don't have any choice. Sometimes, I really want to ask the Principal to stop all the activities. (Feng, 091807)*

*We have to set up the hardware and everything. Students cannot understand what Japanese children try to say... I talked to the Principal the very last time before I left and told him that all teachers felt very tired now and didn't have time to teach. But, nothing changed. (Muan, 081607)*

### Wireless Hubs Installment

**“Being Connected”** After receiving funding from local government and communicating with villagers, 15 wireless hubs were installed in late 2006. According to the government report filed by the principal, students’ usage of the Internet increased and they were now ready to learn digitally. Moreover, he stated: “As we have had wireless Internet connections, students can access the Internet and learn at home once we obtain free computers.” In the press coverage, TY School was lauded as the only aboriginal school in Taiwan without the digital divide as it got both wireless Internet access and computer hardware.

**“Shut Down Hubs and Save Money”** Despite the hubs having been set up since late 2006, the wireless Internet only worked inside the school and in only one particular spot near school. In other areas, most hubs were unable to function properly after installation. As a consequence, parents turned them off to save on electricity costs. One teacher pointed out that wireless Internet was not suitable to cover the whole village anyway. He said:

*Can you image how slow it would be once all people connected to the hubs? (Muan, 081607)*

### Free Computer Donation

**“No More Digital Divide”** In late 2007, free computers were distributed to students of TY School. The principal stated: “computer ownership of students has reached 100 percent”. According to the mainstream viewpoint, the digital divide in this community was narrowed and parents could now access and learn ICT at home. The principal also planned to introduce an e-tutoring program to help student study at home. Furthermore, according to the news report, after the computer donations, students were able to extend their learning and interact with their international partners at home. There is no more digital divide.

**“Obsolescent Computer”** Meanwhile, neither parents nor teachers applauded the installation of used computers that were donated to the community. Out of the 40 used computers received from two companies, 27 were distributed to students from Grades 3 to 6 who had no computer at home and 13 remained discarded at school. Worrying about the responsibility of taking care of the new computer and the high cost of maintenance, some parents decided to buy a new one rather than accept one from the school. One mother expressed her concern about the school policy:

*We have to sign a statement in order to get a used computer. It says that computers have to be returned when our kids graduate from school, and parents will have to support and join the school activities. My kid will graduate in two years. What if I break the computer when I use it during these two years? Maintenance could cost a lot. Moreover, I don't know what the activities will be? It is kind of complicated. (FN091807)*

Most of the distributed computers ended up just sitting at home, either because computers were installed with out of date software, or because the wireless access had not been set up. Without Internet access, students gave up using the computer at home, preferring instead to go to the Internet Café. Several students mentioned “that computer is not working.”; “I don't want to use it, it can not connect to the Internet.” Very few parents turned it on. One parent said: “The free computer is actually occupying our home space.” Eventually, some computers were broken as they hadn't been turned on for a long time. One parent concluded: “A used computer is no good. Now we know that we need a brand new one.”

Teachers felt upset as the distribution and installation of the used computers cost lots of time. They had to check hardware and software, set up the computers at students’ homes, and complete all the corresponding paperwork. Worse, teachers received numerous complaints after the computers had been delivered, as parents called repeatedly to report problems relating to computer hardware and the lack of Internet access. All of this was seen as exhausting by the teachers. Gong, who was in charge of this particular sub-project, expressed her anger:

*Parents kept calling us once they had problems. How can we handle it? Am I responsible for it? Parents should try to solve problems by themselves. We have given them computers. Don't they think that they should pay something themselves if they really want to use ICT so badly? ... Giving computers is for the official record; it is like something you put in much hard work for, but get very little result. (FN032408)*

### Digital Learning Program

**“Extend learning with digital content”** A local charity foundation donated e-learning software for elementary mathematics. According to the viewpoint of the mainstream, the digital learning of TY School had moved forward due to the introduction of this Math Program. Students were gathered to attend the two-hour evening class and practice maths questions on computer. The principal believed this was useful to extend students' learning into digital content.

**“Enduring and Suffering”** During an evening class, ten students practiced maths on a computer inside the lab. No teachers were present and students rushed to finish the exercise by sharing answers with each other. When they were asked why they were in such a rush to finish math practicing and if they understood the e-learning materials, they answered without hesitation:

*“We are enduring and suffering with all the math questions now. We are here because we want to go online and play.”*

*“We want to play games here. The computers at home are no good. We don't want to use them.” (FN121707)*

The responsible staff member explained to us the way he ran the program. Once students arrived, he set up the program and left the lab. He told students that they could go online once they finished the program. Normally, he came back to the lab after 40 minutes of the class and enabled Internet access for the students. He said:

*The reason why students come here is because they want to play online games and they don't have Internet at home. If they can reach 70 points, I will let them play, which will keep them coming to class. I know they are sharing answers but I can't be here all the time as I have my routine to do too. (Nen, 032408)*

Another distant e-tutoring program was set up with a university in the city so that TY students could receive instructions from tutors. According to the principal, through e-tutoring TY students could obtain learning resources provided by the university and the teachers' workload could be reduced. However, the teacher responsible for this sub-project stated:

*We had e-tutoring for one or two times. But, now we don't do it...I know the university wants to keep it going; however, I can't gather students to come and participate in e-tutoring.... It is very difficult to keep them sitting there and looking at the monitor for tutoring, especially as they prefer to use computers for game playing, not learning. After knowing they can't play games, they don't want to come. (Cung, 090408)*

### DISCUSSION

*“We are tired of being on TV. It is boring. Every time, we have to do the same thing, dance, talk to the Japanese.” (6th grade student, Mei, 091807)*

*“Oh, sometimes I can understand a little (what the Japanese partner says). When I don't understand, I just say nothing. (6th grade student, Phi, 091807)*

After receiving repeated press coverage, TY School has become a role model for both ICT education and aboriginal education in Taiwan. The principal received many invitations to give speeches around the country. Many officials in the Ministry of Education and local government visited TY School and gave their applause. They were amazed that aboriginal students could communicate with Japanese students in English through the Internet. According to the mainstream, the digital divide was narrowed, and the aboriginals had stepped out and spoken up for themselves.

What cannot be seen in these short visits are the exhausted teachers, helpless parents, manipulated students, as well as abandoned wireless hubs and donated computers. Teachers' original duties of teaching and administrative work were still there. To carry out additional tasks for the ICT project and deal with all these visitors, the teachers' workload increased substantially. They also became very concerned about the possibility of students becoming addicted to computer games. Students, who received little training in English, could not communicate effectively in English to Japanese partners. With the exception of playing computer games, their ICT skills did not improve while they showed little interest in attending the maths program and e-tutoring. As for the parents, they could only feel helpless since their complaints related to the difficulty of using ICT went un-noticed.



### Whom is ICT Serving?

Whom is this ICT project serving? This ICT project had the ostensible aim of helping aboriginal students to learn, of improving educational and economic outcomes, and thereby helping to narrow the digital divide. At the end of the day, the principal and TY School won a reputation for ICT education among the mainstream and the government viewed this project as a success (due to the strong positive press coverage). However, both students' learning and their ICT skills were not improved, teachers were exhausted, many computers not functional, and the e-learning programs were not effective.

Our findings from this research project lead us to raise an interesting question: whose criteria should be taken and which stakeholders should be consulted when evaluating ICT for development project outcomes? As we stated earlier, ICT development projects are often described in overly optimistic ways. According to the stance taken by the mainstream, the digital divide was narrowed based on criteria such as the number of free computers, the installation of wireless Internet, the introduction of e-learning and e-tutoring programs, and the completion of the international collaboration study. However, a complete disconnect with the views of local aboriginals is discovered if we look closer: from the aboriginals we learn about the nervous students who have to struggle in poor English, the restless and disappointed teachers who fight with additional tasks, and unsatisfied parents whose complaints about the ICT development project are ignored.

### "It Is Good for You."

In this study, we have seen that aboriginal people, realizing how isolated they have been, were eager to "step out" to make an appearance for their village and culture. Understanding the eagerness of the villagers and the poor economic state of the community, the mainstream believed that ICT was the solution. Equipped with the knowledge of ICT and the authority of the government, the believers of ICT said "*It is good for you*" and "*this is the only way for you to step out.*" Yet, as increasing complaints and criticism from the locals emerged, the mainstream simplified all opposition as misunderstanding or ignorance. The Principal said "*they can't see my vision.*" Ignoring the difference between the reality of the mainstream and the reality of the locals, the mainstream defined the needs of the aboriginals and actually believed that they were seeking the best interests for the locals. The paternalistic nature of the mainstream, however, only served to enlarge the gap between the perspectives of mainstream and the locals with respect to ICT.

### Technological Supremacy

In postcolonial theory, ICT tends to be viewed as a colonial project in which the under-privileged groups have difficulty developing their own visions due to the imbalance in power (Rydhagen & Trojer, 2004). This educational ICT project, endorsed by the officials, seemed to be very promising, particularly as this ICT project actually belongs to a national ICT educational project. The aboriginal people, who have known little about ICT, did not question this project at the beginning and looked forward to the ICT promise. In the end, however, the local aboriginals were dissatisfied with the outcomes. They chose to hide their thoughts from outsiders and only murmured their complaints within their own group. They were also concerned that they would become the subject of humiliation by the mainstream if their disaffection became widely known. As a result, only the rosy picture of ICT success was presented. Similar to what Edward Said declared, the mainstream's ideas of technological supremacy has been accepted and internalized by the aboriginals who can only obtain the knowledge about themselves through the representation of the mainstream (Said & Viswanathan, 2001).

### CONCLUSION

In this study, we have presented two different perspectives of one ICT project for development. The mainstream perceived TY's educational ICT project as successful and believes that ICT is an effective tool in helping the "marginal" aboriginals. The local aboriginals and teachers, by contrast, were dissatisfied with the outcomes of the ICT project. By adopting postcolonial theory, this study enabled us to compare and contrast these two viewpoints and, to some extent at least, explain them. Through the lens of this theory, the ICT project for aboriginal development is seen as very paternalistic project. The mainstream seems to have an almost magical belief in ICT as a simple solution to educational and economic development. However, there was very little educational or economic development of any substance in this case. Some of the problems outlined by this study lend themselves to further investigation. For example, it would be interesting to compile longitudinal data on educational ICT projects in both urban and remote schools. The possible factors behind the disparity also merit further investigation.

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