# Educational Technology and the World Wide Web in the Pacific Islands

By Marie Iding and James Skouge

*"We imagine Pacific region universities as springboards for digital story telling, fostering a synergy between Western and traditional paths of knowledge."*

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T his paper describes technology issues that educators, teacher educators and students in the Pacific Islands confront, specifically in American Samoa (a U.S. territory) and Chuuk (one of the Federated States of Micronesia). We will also briefly mention issues relevant to Yap and Kosrae (two other states in Micronesia), and the Marshall Islands. Knowledge of these issues emerged from our experiences teaching education courses in American Samoa and Chuuk, and working with educators from all of these locations who are presently students at the University of Hawaii (U.H.). We begin by providing a brief general introduction to the regions of American Samoa and Chuuk, then describe some of the challenges of technology use posed in developing regions of the Pacific, and propose areas for further study that would be beneficial to consider as educators plan effective learning experiences for teacher training in island communities.

## Background

American Samoa has been a US territory since 1900 and is located about 2,600 miles southwest of Hawaii. It incorporates a major island, Tutuila, and other islands, including the Manu'a group. The population is about 57,291 people, and the majority is Polynesian (Samoan), with its own distinctive Samoan language and culture. American Samoa's people are considered US residents, not US citizens, and their economy is based upon fishing-related industries. According to the 2000 census, the median family income was $18,357 USD, and the median age was 21.3 years old (US Department of Commerce, 2004).

In contrast, the Federated States of Micronesia has been a US Trust Territory since 1947 (after colonization by Spain, Germany and Japan), and became self-governing in 1986, although it maintains a Compact of Free Association with the US, which provides some military and financial support. Chuuk is one of the four Federated States, located about 650 miles east of Guam and consisting of six major inhabited islands and a number of smaller ones, distributed over 800 square miles. The people of Micronesia are a Malay-Polynesian mix, and each of the states has its own distinctive cultures and languages. According to the 2000 census, Chuuk had a population of 53,945 people, with a median age of 18.5, and a median household income of $2,445 USD (Chuuk State Census Report 2002). Thus, the population is younger and the median family income is much lower than in American Samoa.

In both regions, English is a second language, although in American Samoa a growing minority of college students observe that their children are more frequently learning English as a first language today, and Samoan as a second language. In Chuuk, the official language of instruction is English, beginning in the third grade; and in American Samoa, the official language of instruction is English,

although the practice is likely to be a mixture of English and Samoan.

In concluding this general introduction, we emphasize that Chuuk and American Samoa represent island groups and unique cultures within the much larger area of Oceania that encompasses thousands of islands and perhaps hundreds of unique cultural regions. Oceania also encompasses a range of socioeconomic conditions, as is already apparent from our discussion of the different levels of annual family income. However, despite these differences, Pacific Islanders are sometimes included in larger demographic categories (e.g., Asian/Pacific Islander) that mask the realities of individual, comparatively small regions. For example, in a report released by Athena Alliance (Jarboe, 2001) notice how the following inclusion of Pacific Islander with Asian (including those of Japanese ancestry) could result in the conclusion that Pacific Islanders are "information rich:"

> The National Telecommunications and Information Administration (NTIA) has been collecting data on the digital divide for a number of years. Their 1999 report documents 'the persistence of the digital divide between the information rich (such as Whites, Asians/Pacific Islanders, those with higher incomes, those more educated, and dual-parent households) and the information poor (such as those who are younger, those with lower incomes and education levels, certain minorities, and those in rural areas or central cities (p. 2).

## Access, infrastructure and connectivity

As is the case with most developing countries and regions, access to the WWW is limited in Chuuk and American Samoa (i.e., evidence of the digital divide is apparent, as in many developing regions of the world). These limitations can be based in social, political and economic factors (Magenheim & Kassam, 2003). In an interview conducted by Surmacz (2001), Jarboe provided an important way to think about the digital divide:

> If you view the digital divide as nothing more than an issue of access to consumer electronics, then the divide is overstated. But, if you view information/knowledge and information technology as key production tools of the information age, then the divide is as serious as the one between subsistence farmers – the have-nots of the industrial age – and modern factory workers – the haves. (para. 4)

Clearly, the existence of a digital divide has social, political and economic implications that may not be readily apparent.

What limits access to the World Wide Web in these island communities? In the Pacific Islands, economic limitations frequently preclude access to computers. Financial expenditures related to technology are complicated by additional and frequently unforeseen costs of technology maintenance in areas where it is difficult to obtain replacement parts and where heat and humidity may be "unfriendly" to optimal equipment maintenance. Similarly, equipment that becomes quickly outdated and needs to be replaced must be ordered from distant locations at additional costs, and may take extensive time to be delivered or specialized training to maintain. For example, in a recent visit to Chuuk (2003), college educators had been awaiting the delivery of specific software for over several weeks.

For those who do have access to computers and other educational technologies, factors like frequent power outages and limited bandwidth can prevent regular use of the WWW. Not all islands have electricity or telephones, especially in outer islands (much like rural areas in other parts of the world). For example, perhaps the most reliable form of communication for general public announcements and for news in Chuuk is the radio, rather than the telephone, television, the WWW or a local newspaper. This was apparent during the first author's experiences teaching in Chuuk during the summer of 2003.

In American Samoa, by contrast, high speed internet and video teleconferencing are now available both in the public schools and the community college through the U.S. federally funded e-rate program. However, students and educators are the first and major beneficiaries of this access, in addition to those employed in some businesses. In general, internet access is not as readily or easily accessible as in the U.S., even in schools and college libraries, due to limited hours of availability, number of computers and access to updated software and web browsers, some of the issues encountered by the first author as she taught in American Samoa during the summer and fall of 2004.

Increases in information access and availability even at this level provide an even more dramatic change than it has in many parts of the developed world. Interestingly, since the advent of literacy in many islands of the Pacific, reading materials have been limited; first, due to economic limitations; and second, at least in part, due to limited or nonexistent materials in Pacific Islanders' first languages. In many Polynesian and Micronesian traditional cultures, the primary means for transmitting information and for maintaining historical knowledge is through oral tradition. Literacy was, in many instances, originally associated with the influx of missionaries and the desire to read the Bible and other religious materials (Mangubhai, 1996). Frequently, subsistence lifestyles precluded the acquisition of reading materials. Libraries at schools and even colleges are limited, with many outdated materials. Thus, the shift from extremely limited reading and research materials to relatively unlimited access to information represents a transition of major proportions.

This transition is evident in the popularity of computer and internet use. In Chuuk, the majority of 92 community college respondents to a survey indicated that they used computers regularly for research on the web, email, chat and word processing (Iding, Skouge, Cholymay, & Peter, 2004).

Computers are available in a computer lab at the community college. Similarly, in American Samoa, students in a teacher-training program use computers in community college and public school computer laboratories. Web resources and references appear to be primary information sources and reference materials in addition to course textbooks for carrying out research.

Despite this dramatic increase in information access, it is clear that not all members of these communities view themselves as potential beneficiaries of computer skills and information access. Factors like perceived lack of relevance of computers to individual lifestyles, and intimidation, described by Stanley (2003) in her work in another geographic region, are undoubtedly at work in the Pacific Islands as well.

## Language and culture

The use of English as the lingua franca for the World Wide Web exacerbates the digital divide (Downes & Niess, 2002). Other languages and translation capabilities can be found on the WWW, but smaller countries with fewer language speakers are a distinct disadvantage. For example, an online search for "Chuuk" using the Google search engine, yielded a number of entries about Chuuk, but very few incorporated the Chuukese language. A notable exception is a Chuukese Translation of the *Universal Declaration of Human Rights* (Office of the High Commissioner for Human Rights, n.d.). A similar search for "Samoa" yielded primarily entries about Samoa in other languages (such as French or English). In both cases, many of the websites were focused on tourism.

In addition to the dominance of the English language, Western cultures have shaped the World Wide Web. As a consequence, some island communities have resisted its integration. Zepke and Leach (2002) describe an adult distance education project with the Maori of Aotearoa/New Zealand, in which Maori adult education students "assert their identity as members of an oral culture wanting to learn in ways that are appropriate to them" (p. 309). In response to this need, they developed "a project that shuns the internet for an intermediate video technology …" (p. 309). While we have not encountered this sort of resistance to the internet in Chuuk or American Samoa, we feel it is important for educators to acknowledge these concerns.

## Advantages and opportunities of the web: Maintaining connections with culture

Despite its limitations and the challenges already discussed, the World Wide Web can provide a useful basis for maintaining connections with one's cultural community, especially when political or socioeconomic problems cause emigration or displacement. For example, in recent years, places like Hawaii and Guam have experienced tremendous increases in immigration of Chuukese families interested in better employment, educational or socioeconomic opportunities. Similarly, in the Republic of the Marshall

Islands (neighbors to the Federated States of Micronesia), many Marshallese have been forced to evacuate their home islands, due to environmental contamination by US nuclear bombing (Nuclear Testing in the Marshall Islands, 1996). In Banaba, a small island in Micronesia, the entire population was displaced, due to the development of phosphate mining on their home island. Personal web pages describe this event (Resture, 2004), while professional efforts help document the Banabans' lifestyle (Cooper, 1999).

Many Pacific island families are uprooted. They come to their main islands (or Hawaii, Guam or the continental U.S.) seeking work. Traditional family structures are stressed and sometimes broken. Children come to school without the stable fabric of extended family and community. Many children and families of the Pacific are now immigrants – away from home, economically poor and displaced (M. Salas, Dean, College of Education, University of Guam, personal communication, 2001; Skouge, Rao, Nobrega, Guinan, Segal, and O-Brien-Sauni, 2004).

Given these circumstances, it is perhaps unsurprising that many island peoples look to the internet for inexpensive, accessible telecommunication. Many report widespread use of "chat rooms" and "instant messaging," especially to connect with home islands from the USA. With internet-based audio and video on the horizon, telecommunications may become even more convenient and satisfying. Further, with the increasing diffusion of home video cameras, many Pacific islanders are sending home-made "video letters" with travelers back to their villages. In Hawaii, a growing number of "English as a Second Language" teachers of Micronesian and Samoan children are engaging students in trans-Pacific video teleconferences, electronic "pen pals" and video exchanges. All of these telecommunications technologies help to build bridges across the Pacific waters (Skouge, 2003; Skouge, et al., 2004)

## Cultural preservation

The WWW can also serve as a way to preserve important cultural information. For example, in Satawal, Yap, Mau Pialug was to be the last of a long line of people brought up since childhood to be a traditional ocean navigator on voyaging canoes. Since the tradition of raising children from childhood to be navigators did not appear to be continuing in the traditional way in his island community, he has shared much of his knowledge with a contemporary Hawaiian navigator, Nainoa Thompson, which has led to a resurgence and cultural revival around Polynesian navigation in Hawaii and other parts of the Pacific. In fact, Hawaii residents eagerly followed a recent voyage of Hokule'a, our traditional voyaging canoe, to the rarely seen Northwestern Hawaiian islands (Polynesian Voyaging Society, 2004). Thus, traditional indigenous knowledge is being shared in non-traditional or modern ways, before it is lost entirely.

Increasingly, Micronesian and Polynesian students at the University of Hawaii are engaging in digital story-telling in celebration of "island wisdom," producing video and

audio interviews with community elders, "how to" videos of traditional ways of life (e.g., fishing, farming and cooking), and recording traditional songs, chants and stories. Many of these cultural materials are being prepared for internet dissemination. One Micronesian student in the U.H. College of Education, for example, recently returned to her home island of Kosrae to document the wisdom of a village elder teaching about medicinal values of plants. His teachings and demonstrations were disseminated on the internet in Kosraen language. A Samoan student returned to American Samoa to record traditional church music that she posted to the internet along with an accompanying songbook. In both of these cases, the university students packaged the multimedia materials as "modules" for teachers. Skouge (2004) describes the use of technology for cultural celebration and preservation, while online archives provide an overview of these efforts (Pacific Voices, 2004; Skouge et al., 2004).

## Incorporating "technologies for voice" into island curricula

In a world that appears to be moving toward a "global culture," how do we design educational experiences and incorporate educational technologies that validate and preserve people's home cultures and first languages?

Pacific islanders come from oral and visual traditions (Hau'ofa, 1988). Knowledge and "ways of knowing" are shared through story telling, modeling and guided experience. Children are expected to listen, watch and "do." Stories, chants, songs, dances and orations are at the heart and soul of island people, sharing the origins, the places, the deeds, the values, the lessons and the visions of the people — connecting them with ancestors and with the canoe.

As the increasing hustle and bustle of Western life influences island villages, there is less time and energy for elders to share "village wisdom" with their children. People are commuting to work and school, assuming new and time-consuming obligations. Hollywood action films and other "far away" stories now fill the evening hours, the television set, as "baby sitter," glows under starlit skies. Many parents and community members already feel a sense of loss, looking to their schools to restore balance.

There is a growing consciousness among Pacific educators that bilingualism and biculturalism must be valued in Pacific island pedagogy (H. Falan, Minister of Education, Yap State, FSM, personal communication, 2001; N. Likiaksa, Bilingual Curriculum Specialist and Storyteller, Kosrae State, FSM, personal communication, 2002). Although the schools are "Western" in design and appearance (including mainly English language curriculum materials), teachers feel very real pressure from their village communities to honor and include both traditional knowledge and "ways of knowing," along with the Western curriculum (literacy, mathematics, science and technology). Similarly, curriculum specialists on the islands are exploring ways to develop curriculum materials in home languages, which in many cases is very difficult.

A science teacher in Yap summarized the challenge as follows:

> Parents return home tired at the end of the day. They no longer have the time to teach the boys and girls the traditional skills of gardening and fishing. Many of the people watch television in the evenings, rather than story telling or instructing skills. They ask us at the school to help with these important things (S. Yiluy, personal communication, recorded interview, 2001).

At the very heart of "literacy" is critical thinking and communication, through reading and writing, listening and speaking. The West has been slow in embracing the oral and visual elements of literacy, perhaps because the technologies of written language (pens and pencils, typewriters and printing presses) have been so well established. The current enthusiasm for the oral and visual communication forms associated with the multimedia revolution was unexpected by some educators. Video cameras, audio recorders, multimedia and telecommunications extend the possibilities for literacy beyond our current imaginings.

## Developing partnerships with institutions of higher education

Most Pacific entities have neither the technology infrastructure nor the human resources to propel themselves into the digital age without partnerships and supports from the West. Perhaps because we are professors, we look to our own institutions of higher education (IHE's) in the Pacific (including the University of Hawaii, the University of Guam, the College of Micronesia–FSM, the College of the Northern Marianas, and Palau Community College, and the American Samoa Community College), to provide leadership to the island entities of the Pacific that are in association with the United States.

We believe that IHE's should make extraordinary efforts to recruit, support, mentor and recognize Micronesian and Polynesian college students (both undergraduate and graduate students) – profiling them as "role models" for the young people of the Pacific. We have the role models of the Pacific enrolled in our college classes today, but all too often we ignore the opportunity to take advantage of it.

Many of these outstanding young people intend to return to their home islands to become teachers and social servants. Every effort should be made, therefore, to support such students to develop culturally appropriate digital curricula while they are in college — materials that can be disseminated via the internet. Large communities of Pacific islanders reside both in Hawaii and Guam, providing many opportunities for authentic curriculum development, including multimedia projects honoring traditional knowledge and ways of knowing (taking caution to respect the rights of indigenous peoples to copyright and "own" their knowledge).

We imagine Pacific region universities as springboards for digital story telling, fostering a synergy between Western and traditional paths of knowledge.

## Conclusion

The United States and Japan are at the forefront of technological innovation, telecommunications and information management in the Pacific. This new era of "information" and "communication" raises disturbing questions: Whose information will be disseminated and heard? Can diversity be respected in a world driven by CNN World News and MTV world music? We do not have answers to these questions, but those of us who disseminate innovation and technology into the Pacific must engage in these dialogues with indigenous peoples.

Pacific Island cultures must be taken into account as educators and others move toward international dialogue about educational technology, learning and "voice." We hope this essay stimulates further thought and discussion in this area, as well as an impetus for developing partnerships between Pacific Island communities and institutions of higher education.

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**Websites identified in this article**
(Name of Web Site, followed by the URL, followed by a brief description)

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*Coming Home to Banaba*; http://www.olio.demon.co.uk/banaba/; Describes a television documentary of people returning home, many for the first time

*Nuclear Testing in the Marshall Islands: A Brief History*; http:www.rmiembassyus.org/nuclear/chronology.html; Describes US nuclear testing & impact on Marshallese

*Universal Declaration of Human Rights: Chuukese Version*; http://www.unhchr.ch/udhr/lang/tru1.htm; A declaration of human rights written in the Chuukese language

*Pacific Voices: Integrating Multimedia Technology and Culture Into Education*; http://www.prel.org/media/rtec_/voices.asp; A curriculum resource for Pacific Island teachers, including authentic hands-on activities

*Pacific Voices: Pacific Regional Technology in Education Consortium*; www.prtec.hawaii.edu/; A network of Pacific island schools and communities integrating technology into education

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