

# A Comparison of CART Captioning Systems for Hearing-impaired Students in Higher Education in Japan and Taiwan

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## 0. Background

Communication Access Realtime Translation (CART), or real-time captioning, provides spoken information as visual text in daily life, education, and academic settings. It is an essential tool for the social participation of people with hearing impairments.

In Japan, CART is provided under the Comprehensive Support Law for Persons with Disabilities as a community service (“Note-taking Service”). However, it is limited to daily life (e.g., medical visits, ceremonies, community meetings) and not available in education. Therefore, universities must arrange CART individually through contracts or train student supporters. This creates a systemic gap: municipal CART providers and higher education supporters share similar skills but rarely collaborate, preventing cross-utilization.

## 1. Objective

This study compares CART systems in Japan and Taiwan, clarifies challenges in the Japanese framework, and explores directions for improvement and possibilities for international collaboration.

## Comparison of Systems

Item	Japan	Taiwan
Start year	1985 (community); ~2000 (universities)	2001 (universities); 2014(Taipei City)
Name	Summarized Writing (hand/PC:要約筆記) Live captioning/ character interpretation (文字通訳)	Communication Access Realtime Translation (同步聽打服務)
Legal basis	Comprehensive Support Act for Persons with Disabilities障害者総合支援法	The Special Education Act (特殊教育法) Job Redesign Service Implementation Plan (身心障礙者職務再設計服務實施計畫) People with Disabilities Rights Protection Act (身心障礙者權益保障法)
Responsible ministry	Ministry of Health, Labor and Welfare; Ministry of Education (for higher education)	Ministry of Health and Welfare (for social policy) ; Ministry of Education (for education policy); Foreign and Disabled Labor Office (for labor policy)
Use in education	Limited (individual university arrangements)	Limited (Arrange services according to needs)
Captioner qualification	National/local governments' certification; finishing each university's training	NGOs Undertaking the Project /university training (no national license)
Training duration	~80 hours (community); 3–10 hours (universities), optional exam	~10 hours academic subjects and ~10 hours practical subjects, must pass an exam
Training content	Disability awareness, captioning skills, teamwork, ethics, practicum	Disability awareness, ethics, case studies, user experience
Networks	National CART research groups; PEPNet-Japan	Hearing Impaired NGOs such as Sound Home, Chinese Association of the Deaf (聲暉, 聽障人協會) ...etc.
ICT use	LAN based software; remote captioning spreading after COVID19	Cloud tools (e.g., Google Docs); remote captioning start at COVID19
AI speech recognition	Piloted, but with issues (homophones, dialects)	Students use it spontaneously (via smartphone), and the proportion of users is gradually increasing.
Funding	National/local budgets; university subsidies, no personal payments	Government budgets, foundation, private donations, no personal payments

## Distinctive Features

**Japan:** Developed from handwriting-based systems; dedicated CART applications; specialized higher education support networks (e.g., PEPNet-Japan).

**Taiwan:** Developed nearly 20 years after sign language interpreting, they are now jointly advocated services. These services are provided through collaboration between universities' special education resource centers and NGOs, without a dedicated independent unit. CART service in education has progressed more slowly than in social welfare, so most regulations are based on or adapted from those in the social welfare sector.

## Common challenges:

Limited budgets, insufficient staff, and inappropriate use of AI or speech recognition create barriers to access.

## Conclusion

Both Japan and Taiwan share similar needs for text-based communication and social participation of people with hearing impairments. Japan benefits from specialized higher education networks, but the separation between community and university systems forces retraining across fields. Bridging this divide—for example, by sharing curricula—would strengthen support.

In Taiwan, establishing a higher-education-focused CART network, similar to Japan's PEPNet-Japan (modeled on the U.S. PEPNet), could provide valuable support in the future.

Though each side developed its own CART systems and training curriculum, there are certain similarities on both sides. Therefore, sharing and exchanging information and their experiences can bring good impacts to both sides by learning advanced points from each other.

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