

that to develop further expressions, and that “expression tools” also facilitate those experiences. Moreover, the children in the activities performed expressions that far surpassed those the designers planned for the activity programs and tools. The composition work “Sheet work 4: Faces” (Figure 5), which was the final work this group created, is an example of this.

During their presentation, they explained there was an “order to collaboratively build ideas” in the roles of themselves—the ones who were conducting expression activities—and they visualized this not with a sketch card of “the stroke order of the kanji character for ‘end,’” but rather by placing cards of the authors’ faces (card displays could be changed between sketches and author’s portrait).

This indicates that by reflecting upon their own activities, they were lead to the expression world that draws the “authors” as a new expression motif. Moreover, it can be remarked that the “practice” that set up the program and tools that implemented the designs showed an important and new expression activity. Here can be seen the co-evolution of the practice phase and the design phase. Activity program and tool designs are causing here the deepening of “expression activities” which are produced by practices in which people participate, and by mutually influencing each other.



Figure 5. A composition work by a set of four sheet works entitled: “Human immigration”

A part of this research is supported by Japan Science and Technology Agency (JST)’s Core Research for Evolutional Science and Technology (CREST) project.

References

- [1] Beyer, Hugh and Holtzblatt, Karen, *Contextual Design: Defining Customer-Centered Systems*, Academic Press, 1998
- [2] Carroll, John, *Making Use: Scenario-Based Design of Human-Computer Interactions*, MIT Press, 2000
- [3] Nakakoji, Kumiyo and Yamaoto, Yasuhiro, *Knowledge Interaction Design for Creative Knowledge Work*, Journal of Japanese Society for Artificial Intelligence, Vol.19, No.2, pp. 154-165 in Japanese, JSAI, 2004
- [4] Sunaga, Takeshi, *Activity-based Design Development for Interactive Systems: Through Project on Design for Traveling*, Journal of the Institute of Systems, Control and Information Engineers, Vol.50, No.1, pp.28-32 in Japanese, ISCIE, 2006
- [5] Winograd, Terry and Flores, Fernando, *Understanding Computers and Cognition: A New Foundation for Design*, Addison-Wesley, 1987
- [6] Nishimura, Yoshiki and Sato, Keiichi, *Dynamic Information Display*, Visible Language, Vol.19, No.2, pp. 251-277, Visible Language, 1985