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Digital School Hallway:

A Combined Space for Creative Sharing and

Communicating Between Children In Distant

Schools

Graduate School of Media Design,
Keio University

Alexander Taylor

A Master's Thesis
submitted to Graduate School of Media Design, Keio University
in partial fulfillment of the requirements for the degree of
MASTER of Media Design

Alexander Taylor

Thesis Committee:
        Professor Keiko Okawa        (Supervisor)
        Professor Masa Inakage       (Co-supervisor)
        Associate Professor Kai Kunze   (Member)

# Digital School Hallway:
# A Combined Space for Creative Sharing and Communicating Between Children In Distant Schools

Category: Design

## Summary

This research proposes the design of a combined physical/virtual space that extends the concept of a normal elementary school hallway, in which creative works by students are posted. In this space, children in different schools will be able to share their creative works and experience communicating with one another across a geographic or cultural divide, with the objective of fostering their ability to relate to one another in spite of such distances.

It is hoped that giving children an easy way to make tangible connections through their creative works will develop both their awareness of others, and their motivation to communicate globally, from a young age. This in turn can help foster mutual understanding, and encourage the growth of a society built on empathy and respect.

Various physical, virtual, and hybrid approaches to creative sharing and communicating exist, but are generally lacking in some essential features relative to the concept presented here. Consequently, this thesis describes the background, justification, and design of the "Digital School Hallway" environment, and evaluates it with respect to the objectives just described.

Keywords:

Graduate School of Media Design, Keio University

Alexander Taylor

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\* \* \*

From 2007 to 2012, I had the pleasure and the privilege of living in Kawamata Town, Fukushima Prefecture, in north-eastern Japan. For five years, I helped teach English to the many wonderful children living there. The students of the mountain village of Yamakiya, in particular, were among the brightest, sweetest, and friendliest children I have ever met. I always looked forward to my days there, and every class I taught there was an absolute joy. Yamakiya was, and still is, one of my favourite places on Earth.

Following the 2011 earthquake and nuclear crisis, Yamakiya was ordered evacuated. As I write this, the buildings there are dark and empty, the fields are overgrown, and the people (save for the occasional day visitor) are all gone. The children of Yamakiya are now growing up in other neighbourhoods and other communities, not knowing when they may be able to return to the homes they still remember.

This thesis is dedicated above all to the children of Yamakiya, and to all the other children in Fukushima who have been affected by this crisis. I profoundly hope they will be able to return home soon... wherever home may be.

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# Chapter 1
# Introduction

Visit an elementary school in virtually any developed country, and you are likely to find many examples of children's creative output displayed in the school hallways. These may include drawings and paintings, sculptures, creative writing and poetry, calligraphy, or objects made in industrial arts class. The general term 'creative works' may be used to describe these items, much of which represents output from the creative subjects which children study. Indeed, the arts play a significant role in children's primary education in many countries.

There is broad agreement among teachers, administrators, and academics that art education is beneficial to children (Bresler 1992). Besides general benefits such as the development of creative skill and thought, individual acts of expression may themselves have a positive impact on students. This principle is not limited to an educational context – for example, the potential benefits of visual art are well recognized in the field of art therapy (Waller 2006).

However, creative expression does not normally occur in isolation. "Creativity can be considered to be an interaction between people and communities, processes, domains and the wider social and cultural context." (Loveless 2003, 8) People are motivated to create art as well as to view it. Motivation implies some benefit, real or imagined – presumably, the artist benefits in some way from the act of creation, while the viewer benefits in some way by experiencing the created work.

Art may also be seen as a form of communication – it has been used as a medium for both rhetoric and emotion since ancient times (Rampley 2005). Although interpretations of a given piece of art may vary depending on culture or context, common emotional reactions may often be found, especially toward the relatively uncomplicated artwork of young children.

To take one example, the disaster triggered by the massive March 2011 earthquake in eastern Japan had a traumatic impact on many children in the affected areas. Since then, there have been a number of initiatives to exhibit artwork from and about Fukushima, including works by its children, all around the world. Such exhibits have been offered by organizations like The Japan Society,[1] embassies to Japan such as that of Romania,[2] as well as by individuals such as English artist Geoff Read.[3]

Given all of the trauma and tragedy associated with the 2011 disaster,[4] it is perhaps unsurprising that the art emerging from it has been emotionally evocative. The ability to cause an emotional response in the viewer is often cited as an intrinsic quality of art in general (Bresler 1992); in any event, projects such as these demonstrate its potential for doing so.

## 1.1 Context

If someone viewing a work of art shares in or understands the feelings of the artist, they can be said to experience *empathy*. Empathy has been described as "the ability to imagine yourself in someone else's position and to intuit what that person is feeling" (Pink 2005, 153). Furthermore, as noted by Kathleen Cotton, "definitions sometimes also include the ABILITY TO COMMUNICATE one's empathetic feelings and understanding to another by verbal and/or nonverbal means." (Cotton 1992, 10). If a work of art is intended to convey the artist's emotions, then it may be said to have an implicit objective of creating empathy.

Those seeking to foster empathy between people generally do so as part of some broader context. This can be seen, for example, in coverage of humanitarian crises by journalists and non-governmental organizations (NGOs). It is common for such groups to provide 'on the ground' reporting which includes stories about particular affected individuals. By providing a human perspective which encourages empathy, viewers are able to see the affected people as real individuals, with real stories. In other words, the audience are given an opportunity to *relate* to those being featured. This in turn may move them to take action (for example, through charitable donations, volunteer work, or political activism).

Going back to the example of children's artwork from Fukushima, the same principle applies. Even though what the audience sees is artwork by children, rather than the children themselves, the capacity to empathize and relate remains. From a privacy perspective, this has certain advantages, as the children themselves can remain anonymous even while their creative output is shared.

The ability to relate to other people is an important life skill. Daniel Pink observes that "empathy builds self-awareness, bonds parent to child, allows us to work together, and provides the scaffolding for our morality." (Pink 2005, 154) It is also seen as an important aspect of general learning ability: a successful learner has not only knowledge, motivation, and a capacity for evaluation, but also "insight into the motives, feelings, and behaviour of others" (Cotton 1992, 1).

There is, however, a challenge in acquiring such a feeling of connection for people in far-off places, or from radically different backgrounds and cultures, because shared experiences with such people are fewer. But as global trade, travel,

cooperation, and communication increase, mutual understanding between peoples is growing more and more important. And, as with any life skills, developing the capacity to empathize with others, the desire to understand them, and the ease of relating to them emotionally can be done more effectively if started from a young age; Cotton (1992) in particular states that empathy training produces more pronounced results in younger children.

Together, these points suggest that allowing and encouraging children from different regions or cultures to share their creativity with one another has the potential to build positive emotional connections between them. This in turn can develop both their capacity and their willingness to relate to other people, in particular those whom they would not normally have any chance to meet in person. Developing these attributes in children may help to foster mutual understanding, and encourage the growth of a global society built on respect, compassion, and empathy.

## 1.2   Current Approaches

This idea has two aspects. The first may be described as *creative sharing*: that is, giving children the opportunity to experience one another's creative works. The second is *communicating*: the notion of allowing children to make contact with other people across potentially large geographic or cultural distances.

The simplest approach to both of these aspects is the physical one: viewing the original works in person, and communicating face-to-face. However, modern information and communications technology (ICT) now allows for the sharing of digital images, which removes the requirement for physical access to a creative work in order to see it. These technologies also raise the possibility of being able to share creative works across large distances. The experience of sharing and communicating can be removed from the physical realm and taken into a 'virtualized' social environment.

Physical and virtual experiences each have their own characteristics. Another possibility, however, is the idea of combining the two into a hybrid experience featuring characteristics of both. Consequently, existing approaches to both of the essential aspects (creative sharing and communicating) with respect to children will be discussed in the three general areas outlined below.

### 1. Physical approaches through mainly non-technological means

The most basic example of a physical approach would be that of two children showing each other their own works while playing or creating together. Communication is direct and immediate, as the children can interact face-to-face.

The typical school hallway exhibit mentioned earlier is a logical extension of this approach within an educational setting. Any student (or other member of the school community) can see each other's creative works by exploring the hallway. The scope for direct communication remains, as the participants inhabit the same school and can easily interact.

Kist (2010) also describes a number of communicative activities for use within a classroom or school which do not require face-to-face conversation, but which take advantage of students' close physical proximity in other ways. The passing of notes and letters, or the use of a shared bulletin board are possible examples.

In the wider community, exhibits of children's creative works may sometimes be found in shared spaces such as libraries, community centres, hospitals, and so on. In this case, viewers may communicate with one another; but the potential for communication between the viewers and the children who created the works logically diminishes as the likelihood of personal contact decreases.

The approaches just described are all fundamentally local, with little or no capacity for including people outside the community. There have been various endeavours to overcome this basic shortcoming while remaining strictly within the realm of physical sharing. The previously-mentioned efforts to share artwork by children from Fukushima is one such example. On a smaller scale, art exchanges between schools may be arranged, even across considerable distances. However, these approaches are subject to various limitations (such as distance, time, and cost) which are associated with moving physical artwork from one place to another. Without the use of ICT, potential channels of communication are also limited.

## 2. Virtual approaches using socially-oriented ICT

Digital technologies "can present media which can support and enhance the processes of creativity by providing opportunities for interactions between people, ideas, space and time" (Loveless 2003, 18). This interaction can be accomplished in many different ways, ranging from simple to highly sophisticated.

ICT-based approaches to sharing and communicating vary widely, and may include on-line discussion boards, wikis, blogs, media-sharing sites, messaging systems, or complex applications which include all of these features. Many of these services are accessible by virtually anyone over the Internet, allowing for a community of effectively unlimited size and potentially global scope.

There is ample potential for using such services both to share creative works on-line, and to communicate across arbitrary distances. However, there are also a number of concerns with respect to doing so. Privacy and safety are prominent among these, even with adult users, and this is all the more true when children are involved. In addition, parents or teachers may feel compelled to supervise the

use of social media by children in their care; this, however, often requires a certain amount of time and expertise, which busy adults may lack.

It is in fact possible to set up private on-line social platforms, accessible only to authorized users. Schools sometimes create such closed systems, either for their own students alone, or in collaboration with partner schools (Kist 2010). Doing so can provide children with experience using social media and related technologies without compromising their privacy and security. This approach does not, however, eliminate the need for supervision by teachers or other responsible adults.

### 3. Hybrid approaches combining physical and virtual elements

The idea of tying children's virtual interactions to their physical environment has been explored in various contexts. Price and Rogers (2004), for example, describe the creation of 'digitally augmented physical spaces' which bring physical engagement into digital activities in order to promote effective learning. There is ample scope within their framework for incorporating both creative sharing and on-line social communication, although none of their particular case studies did so. However, this approach addresses neither the issue of safeguards for children in the on-line context, nor the question of how easily children can use such a system with minimal supervision.

Another approach is that of an on-line social networking service (SNS) which integrates a physical component with its on-line interactions. An example would be to require some real-world interaction such as direct physical contact in order to establish a relationship within the system. Ma (2010) describes how such a system can help maintain the safety of children, while providing them with a comfortable and enjoyable on-line social experience. Her design as described does not specifically include a feature for sharing creative works, but the concept could in principle be extended to do so. Its main limitation is the prerequisite for direct physical interaction, which fundamentally restricts the potential communications range. Nevertheless, this concept does usefully illustrate how a hybrid approach can be used to place constraints on socially-oriented ICT in order to promote the safety and comfort of child users.

## 1.3   Research Objective

ICT can easily provide children with the opportunity to share their creative works over arbitrary distances. As noted, however, a purely ICT-based approach raises issues such as safety, privacy, and the corresponding need for close supervision and guidance. Such an approach is also largely limited to cognitive, rather than physical, stimulation. Physical interactivity has a number of potential benefits

within the context of children's activities and learning. "Physical engagement with something creates an involvement and activeness in learning that passive listening or watching does not. This, in part, increases levels of motivation and an interest in the activity or learning context" (Price and Rogers 2004, 138).

This research therefore proposes a hybrid approach: creating a combined physical/virtual space which allows primary-school-aged children to share each other's creative works across large physical or cultural distances, in a manner which is closely integrated with the environment within their own schools. This system will use pre-arranged partnerships between schools, rather than an open on-line network, for its remote connectivity; this is intended to protect the children's privacy and security, as well as provide peace of mind to parents and teachers.

The fact that the system will be tied to the physical school property should make supervision by teachers relatively easy; however, the system will also be designed in such a way as to minimize the need for constant supervision. The system must obviously be easy for the children to use; but it should also be easy for school staff to manage (to the extent that management is necessary) without requiring a large amount of time or expertise.

Elementary school is the targeted institutional level for three specific reasons. First, as noted by Cotton (1992), activities designed to teach empathetic skills show the most pronounced results in young children. Second, primary school age (approximately 6–12 years) closely matches the range identified by the Piaget theory of cognitive development as the *concrete operational period*, in which children develop the capacity to see other points of view and take multiple perspectives into account (Siegler 1998). Third, children in elementary school typically have a constant creative output through the educational curriculum, potentially making a high volume of creative works available; this level of output tends to decline in higher levels of education as academics become more prominent.

The key aspects previously described – creative sharing and communicating – are refined into three core components of the user experience:

- *Meeting*: passively encountering the creative works of others.
- *Interacting*: actively exploring the creative works of others.
- *Communicating*: sending feedback on the creative works of others across arbitrary distances.

It is hoped that a system such as this can develop both the capacity of children to relate to people in far-off places or unfamiliar cultures, and as their willingness to communicate with such people, through the emotionally rich medium of creative works. By giving them these experiences at the impressionable primary school age, such development may have a lasting effect throughout their lives.

## 1.4   Design Overview & Questions

The proposed design, called *Digital School Hallway,* is based around the concept of the elementary school hallway – in which children's creative works are displayed – transformed into a space which bridges the distance between two or more schools. This space will allow children in one school to see the creative works of other children in far-away places, and communicate with them by exchanging simple feedback on each other's works.

Combining the physical space inside the school with a virtual connection to other schools is intended to allow children to interact with the system as part of their normal daily play at school, without requiring them to go out of their way to seek out such a system on-line. It may also provide an extra dimension of comfort and familiarity, not only for students, but for the teachers and parents responsible for them as well.

Another important objective is to make it possible for children to have a safe connected experience with minimal supervision. Unlike an open-access SNS, Digital School Hallway will support only a highly limited set of well-defined social interactions, which will minimize the risk of negative experiences while allowing children to use the system with relative autonomy.

The following research questions are posed with respect to this design:

1. Can it motivate elementary school students to experience the creative works of others across large geographic and/or cultural distances?

2. Does it help them experience an increased feeling that they can relate to one another in spite of such distances?

3. Does it increase their motivation to communicate across such distances?

## 1.5   Significance

As noted, encouraging children from different places to share their creative expressions can help foster mutual empathy and understanding, to the benefit of global society.

Compared to other approaches designed for creative sharing and/or communicating between children, Digital School Hallway contributes a number of features. First, it allows a non-verbal, emotionally-based means of long-distance social communication which uses content that elementary school students already create as a matter of course. It combines this with a physically engaging environment that encourages group socialization. Finally, it provides these in a system which children can use, easily and safely, in a spontaneous, unstructured fashion with minimal instruction or supervision.

## 1.6 Terminology

A summary of various terms and abbreviations used in this thesis is provided here.

*Communicating*  One of the three core components of the Digital School Hallway user experience, focusing on allowing children to feel a tangible sense of connection to one another.

*community*  Term used to describe an instance of Digital School Hallway which has been set up for sharing creative works between two or more participating schools.

*creative work*  General term for a work of creative output such as a painting, drawing, sculpture, calligraphy sample, piece of creative writing, etc. Used as an approximate equivalent for the Japanese term *sakuhin* (作品).

*DHD*  Digital Hallway Display, a digital display inside the school hallway, used for accessing and viewing creative works within the virtual community.

*Digital School Hallway*  The name of the system whose design is the focus of this research. Rendered in Japanese as *dejitaru rōka* (デジタル廊下) for the in-school experiments. (The word 'school' is treated as redundant when the system is set up within an actual school hallway.)

*gallery*  Term used to describe a virtual exhibit inside a Digital School Hallway community; it may correspond to a single class in one school, although different arrangements are also possible.

*ICT*  Common abbreviation for Information and Communications Technology.

*Interacting*  One of the three core components of the Digital School Hallway user experience, focusing on allowing children to explore the community.

*Meeting*  One of the three core components of the Digital School Hallway user experience, focusing on catching children's attention and drawing them in to engage with the DHD.

*SNS*  Common abbreviation for Social Networking Service, an on-line service for social interaction. Facebook, Twitter and LINE are all popular examples.

*sticker*  In the context of Digital School Hallway, an image icon, representing an emotional reaction or opinion, which can be 'attached' to a creative work as a form of non-verbal feedback.

*TFS*  Tablet for Submission, one or more tablets (or similar devices) available in each participating school, used for photographing and submitting students' creative works.

*virtual*   Used here to refer to something which exists in the digital realm (i.e. as data) rather than in the physical world.

## 1.7   Organization of Thesis

This thesis is organized into five chapters, plus appendices.

Chapter 1 (this chapter) introduces the context, rationale and objectives of this research, and provides a brief overview of the design concept.

Chapter 2 reviews the literature and examines related works.

Chapter 3 describes the design of Digital School Hallway, including the preliminary investigations and fieldwork, the evolution of the design concept, and the implementation of the functional prototypes.

Chapter 4 details the evaluation of Digital School Hallway through experiments that were conducted within the target demographics.

Chapter 5 discusses the conclusions from the evaluation, and explores potential future development of the Digital School Hallway environment.

Appendix A contains transcripts of all the questionnaires and responses from the initial fieldwork.

Appendix B contains the survey data from the final experiment.

Appendix C contains the source code used for the final prototype.

## Notes

1    The Japan Society: Children's Artwork from Tohoku (2012 exhibit):
     `http://www.japansociety.org/event/childrens-artwork-from-tohoku`

2    Fukushima Children Drawing Exhibit (2014), Embassy of Romania to Japan:
     `http://tokyo.mae.ro/en/local-news/1161`

3    Strong Children Japan: `http://strongchildrenjapan.blogspot.jp/`

4    11 March 2011 saw a series of cascading disasters: a magnitude 9.0 earthquake was followed by a massive tsunami causing a large loss of life along the coast of north-eastern Japan. These events triggered a meltdown at the Fukushima Daiichi Nuclear Power Station, forcing the evacuation of significant areas in eastern Fukushima Prefecture. As of 2015, the majority of residents from the latter areas were still unable to return to their homes.

# Chapter 2
# Related Research

As discussed in Chapter 1, the objective of this research is to give children the opportunity to share their creative expressions with one another across large geographic or cultural distances, in the hopes of developing both their willingness to communicate with, and their capacity to emotionally relate to, other people across such distances.

Conceptually, this idea is broken down into the essential aspects of *creative sharing* and *communicating*. In this chapter, relevant literature and existing works related to these two aspects are examined with respect to three areas: fundamentally physical approaches, 'virtual' approaches based on ICT, and hybrid approaches combining physical and virtual elements.

## 2.1 Review of Literature

This section examines relevant literature within the context of the target demographic: primary-school-aged children.

### Physical Approaches

One of the principal ways in which schools seek to develop children's creativity is through the visual arts. Rinker (2000) sets out a number of principles for effective arts education. Most importantly, it should promote experimentation and thinking 'outside the box'. Children should be encouraged to share their ideas, encouragement is preferable to criticism, and emphasis should be on the creative process rather than on the finished product. Rinker also cites the value of exhibiting the children's artwork: hanging their pictures up on the wall allows them to feel that they are really *artists* – as of course they are. This can instill a sense of their own works' worth, and reinforce their confidence and creative instincts.

Prince (2008) outlines four main purposes in displaying children's art within the school. First, parents have a chance to see their children's creative progress, even if artworks are not normally taken home before year's end. Second, it can serve an educational purpose by demonstrating artistic techniques in practice.

Third, it creates a positive impression on visitors to the school, especially if the art display is one of the first things they see on arriving. And, as mentioned, the children themselves are often proud to see their works exhibited.

Szekely (1988) has organized a number of programs in Kentucky, USA in order to give children experience in managing exhibits of their own work and that of others. Such programs, he argues, demonstrate that exhibits can not only be used as effective teaching tools for art, but can enhance students' confidence and enthusiasm in their own creativity. Creative works, he states, "are not finished in the artist's mind until they are presented to an audience. Displaying makes the art a communication and therefore complete" (Szekely 1988, 11).

But how can children share their work as artists with a wider audience? Naturally, visitors to the school may see the students' artwork hanging in the hallways. 'Open house' events or school festivals may give some of the broader public such opportunities; however, this approach is still generally limited to people in the local community. Exhibitions of art in communal spaces, such as libraries, community centres and the like may broaden this potential audience to some extent; however, these are still fundamentally local approaches.

OneWorld Classrooms is a United States-based non-profit organization dedicated to building bridges between classrooms around the world through arts and technology.[1] One of their projects, the *K-12 Global Art Exchange*, provides an opportunity to share children's artwork between participating schools around the world. Exchanges are arranged so as to match the grade level of the respective students; the actual exchange of artwork takes place through postal mail. Depending on the participation level chosen, additional communications between the participating schools are possible.[2]

Such an approach is one way around the challenges presented by large distances. However, it introduces a number of issues. Cost may be significant, as not only must items be shipped by mail, but the organization hosting the exchange is liable to add administrative charges as well. Another issue is the turnaround required: mailing artwork around the world unavoidably takes time. Finally, sending the artwork physically elsewhere entails a certain risk of loss or damage.

As can be seen, there are various physical approaches to creative sharing between elementary school students. With respect to the second key aspect, communicating, the capability is largely implicit when children are in close physical proximity to one another. *Effective* communicating, however, requires not only contact, but some means of comprehending as well.

Prior to the widespread availability of modern ICT, children generally had few opportunities to communicate and/or socialize with counterparts from far-off places. One non-technological way in which schools can facilitate such socialization is through student exchange programmes. Melin and Wagner (2015) describe

how one such programme, between elementary school students from France and Germany, reveals how communication and socialization can take place across cultural and linguistic divides. As might be expected, movement, body language, expression, and tone of voice can all be used to communicate in spite of such divides – but other factors were also found to be significant. In particular, being able to share in a common point of view was deemed one of the crucial factors in communicating.

Student exchanges, however, are beyond the reach of many children to experience, as they require considerable coordination, organization, and cost. They are also fundamentally limited to specific people at particular times, and thus cannot be seen as a practical approach to casual or spontaneous interaction across great distances. When such distances are involved, the ability to communicate becomes a significant challenge unless ICT are used.

## Virtual Approaches

The use of ICT in education is not an end unto itself, but rather a collection of resources which can be used to develop both expressive abilities and creative experiences (Loveless 2003).

Introducing ICT into coursework may lead challenges in the event that teachers are unfamiliar with the technologies being proposed. Loveless (2000) argues that teachers need to carefully plan their use of technology in the arts, in particular how to use the technology to facilitate learning. It is not necessarily enough to understand the technology; teachers should understand how the technology may be used effectively. Through case studies, she describes how teachers can work to develop both their skills and their lessons in visual arts education by collaborating with artists experienced in the use of ICT.

One of these case studies, *The Bristol Internet Project*, is particularly relevant in how it demonstrates the innovative use of sharing and communicating for creative collaboration. This project involved two schools in different local areas, and was designed to establish communications between primary school students using ICT and creative works. The children at each school, guided by an experienced artist, worked in pairs to create images using digital cameras and computer graphics software. The resulting works were then sent by electronic mail to children in the other school, who were asked to complete the images using graphics software and send the results back. The use of ICT made this collaboration possible, both through the communications capability it provided, and by supporting the creation of digital artworks which both groups of children could easily modify (Loveless 2000).

This type of activity illustrates how ICT can facilitate both creative sharing and

communicating between children, in ways and at a distance which is difficult with purely physical approaches. However, it does call for a relatively high investment in preparation and coordination between both schools. It also requires the teachers and students to be familiar with the software and communication tools used. Additionally, while it is capable of bridging physical distances, it is unclear how effective it would be in the event of significant differences in culture or language. Finally, the project as described was fundamentally a single-occasion activity; this type of collaboration does not seem well-suited to ongoing, long-term sharing or communicating, as each exchange must be carefully planned and coordinated.

Turning to an example of how a virtual approach may be integrated into students' creative activities on an ongoing basis, *Keio Bunbougu Project* (KBP) (Nishiyama 2014) is a long-term project to develop both ICT skills and creative thinking among students at a private elementary school, through the use of tablets in the classroom.[3] Beginning in the first grade of elementary school (age six years), each student in the target class was provided with a digital tablet. Only minimal usage instructions were given initially, as the objective is for students to develop their ICT skills through daily use of the tablets in school. Keio Bunbougu Project is expected to continue until the students complete their sixth grade.[4]

The KBP tablets have been used in a variety of ways throughout the students' coursework. The general principle is to use the devices as 'digital stationery', in place of such traditional items as paper, pens, crayons, paint, scissors and glue. Besides drawing, writing, and painting, however, the tablets provide means for children to experiment creatively in ways that ordinary stationery cannot. For example, they are able to use a web-based 'flip' animation tool to create their own animated cartoon. In addition, before the end of second grade, they had begun learning how to take pictures with the tablets and share them via SNS (Nishiyama 2014).

Evaluation of the KBP class is carried out through in-class observation, supplemented by periodic questionnaire surveys of the students. The children have, over time, grown increasingly familiar with using their tablets, to the point where they can find innovative uses for the tablets on their own initiative. This study indicates that the learning curve for children using ITC devices like tablets is relatively fast, and that children can quickly become comfortable with such tools (Nishiyama 2014).

This approach may work well in schools which can invest in the requisite technology, infrastructure, teacher training, and curriculum design; however, this may not always be the case, especially in public schools. That said, there is a general trend towards integrating ICT into the educational environment in most developed countries.

This integration is not without controversy. Both parents and teachers some-

times express reservations about certain uses of ICT, in particular the Internet and social media, in the classroom. One concern is that responsible adults, who may lack either time or technical skills, may find it difficult to effectively monitor children's activities on-line. Another is how teachers can find time within their busy curricula to incorporate such new topics. Questions may also be raised as to whether Internet-based media blur the line too much between entertainment and education, possibly distracting students from the intended learning (Kist 2010).

Through examining a number of studies related to the effectiveness of ICT in education, Livingstone (2012) argues that it has not yet been conclusively demonstrated to substantially improve the overall effectiveness of teaching. However, she does note how ITC are transforming the educational context. Modern communication technologies are opening up new possibilities for sharing resources, accessing expertise, fostering childrens' creativity, and supporting collaborative learning.

This idea is not new. Valentine and Holloway (2001) carried out a study of Internet use among UK children, aged eleven to sixteen, through a combination of questionnaires, observation, group discussions and interviews. The authors found that children primarily take advantage of ICT to communicate, socialize, and access information relevant to their own interests, rather than to pursue more abstract objectives such as academic improvement or global citizenship and awareness. Children, they conclude, tend adopt a frame of reference for their activities, even on-line, which is based on their peer groups and their local, real-world environment. "Their on-line spaces and relationships are encountered and made sense of within the specific context of their off-line spaces and relationships" (Valentine and Holloway 2001, 392).

This connection between on-line and off-line spaces suggests that combining both physical and virtual elements could be an effective approach to children's creative sharing and communicating.

## Hybrid Approaches

Avril Loveless claims that ICT can lend itself to "'creating spaces' in the primary curriculum, in which it can be seen as both a tool and a medium for children's higher order engagement with creative processes" (Loveless 2003, 6). Such spaces can be defined in many different ways, depending on both the environment and the nature of the technology being used.

*CarettaKids* (Deguchi et al. 2006) is a system for collaborative classroom learning which defines distinct 'personal' and 'shared' spaces. Both of these spaces are technologically augmented; neither one is predominately virtual or predominately physical. The shared space is a collaborative work area in which children simulate the design of a city. This space uses Radio Frequency Identification (RFID) sensors

to transmit its state to a server via wireless LAN. The personal space consists of a child working with a personal digital assistant (PDA), on which he or she can work with a digital version of the shared space in its current state, as transmitted to it by the server. Each student can thus freely experiment with the city simulation individually, then confer with the other students in order to decide the best course of action to apply in the shared space.

So far as the city simulation can be considered a creative work, it is one which is designed collaboratively. While the students can experiment with their own designs on their PDAs, and discuss them with the group, there is no real scope for sharing their individual creative expressions as they are. Furthermore, the social aspect of CarettaKids is entirely local, despite its use of ICT. While the technology is used to transmit information between the personal and shared spaces, all social communication takes place in the physical realm, face-to-face.

The CarettaKids study used interaction analysis through video-recording to evaluate the system. It was found that ICT successfully facilitated the integration of personal and shared spaces, allowing children to both collaborate and reflect in innovative ways (Deguchi et al. 2006).

Price and Rogers (2004) also describe the potential of 'digitally augmented physical spaces' to support new ways of learning. In this context, the physical component is categorized as one of three broad types: interaction with physical tools, physical movements, or combining physical artifacts with each other. These are illustrated through three specific case studies.

*Chromarium* provided young children with several different means of mixing colours together through various physical-digital couplings. These activities were all based on interaction with tools, but involved differing levels of physicality. It was found that the children tended to socialize and collaborate more in activities which involved greater physical interaction, whereas in the more heavily digital activities they were both less communicative and less collaborative (Price and Rogers 2004).

The next case study, called *The Hunting of the Snark*, was a game in which children had to 'interact' with a virtual creature called the 'Snark'. This game emphasized exploration and experimentation through physical movements, augmented using various digitally-enhanced artifacts including spaces, objects, and clothing. The physical actions of the children determined how the game, and in particular the virtual Snark, responded, which in turn allowed them to gather clues about it. Price and Rogers (2004) found that this type of environment encouraged the children to explore, experiment, and collaborate in creative and innovative ways.

Price and Rogers's (2004) third case study, *Ambient Wood*, made use of all three categories of physicality. The activity was a field trip for upper-level elementary

school students which involved physically exploring a wood with the aid of various forms of digital augmentation. Physical movements were incorporated through exploration of the space, augmented by sensors which triggered digital events when approached. Interaction with tools involved measuring devices attached to PDAs which the children carried. The combining of artifacts consisted of RFID-tagged objects which the children placed in the environment, both singly and in combination, and then analyzed through a special simulation device. Overall, the activity was designed to encourage a spontaneous, 'physically-led' approach rather than a task-based one. It proved highly engaging for the children; and, like the other studies, more conducive to collaboration, communication, and creative thinking than more strictly digital approaches.

Price and Rogers conclude by outlining six essential aspects of active learning: awareness, experience, anticipation, exploration, authenticity, and collaboration. They recommend that "the repertoire of computer-based learning activities be extended to encourage children to engage in a range of familiar and pervasive physical actions and interactions, where digital information is triggered, obtained or made present as part of the ongoing learning or playing activity" – with the objective of making children more engaged and creative (Price and Rogers 2004, 149).

Besides enhancing the learning or playing experience, there may be other advantages to combining physical and digital approaches. The use of social media, also known as SNS, has grown tremendously in popularity over the past several years, including among children. However, the use of such media by children raises a number of concerns, including excessive passivity, on-line safety, and possible access to inappropriate material (Markopoulos et al. 2008).

*Petimo* (Ma 2010) is a special social platform designed for children which combines physical and on-line interactions. This platform consists of two main components: "Petimo World", an on-line social environment in the form of a 3-D virtual world; and "Petimo Robot", a soft robotic toy which provides an interactive interface within the physical world. Certain communicative SNS functions such as sending 'emoticons' and gifts are possible using the robot. In addition, the robot is essential to the expansion of a child's social network: in order to add someone else as a 'friend' in Petimo, the child must physically touch his or her robot to the other person's. This feature effectively prevents children from making 'friends' with strangers or arbitrary individuals through Petimo, and thereby provides a level of security which is absent from purely online platforms. Furthermore, making friends through touch is a natural gesture for children, which means that Petimo's functionality maps readily onto their physical behaviour patterns.

User studies were used to analyze Petimo both with and without use of the physical component (Petimo Robot). Children using the system reported greater

enjoyment and satisfaction when they were able to use the robot together with the on-line component (Petimo World), than with the on-line component alone. They also indicated a preference to using physical touch to interact with the system over using a computer mouse and keyboard. The studies also found that the children's understanding of the system was enhanced when the physical component was incorporated. In addition, parents who participated in the studies indicated that Petimo alleviated some of their concerns about the safety of their children while using social media (Ma 2010).

All of these studies indicate considerable potential in the use of combined physical/virtual environments to provide children with fun and stimulating spaces for learning or play. If implemented in a way that engages children and encourages them to explore, they can have more exciting, creative, and communicative experiences than they could with physical or digital environments alone.

ICT should be seen as a way of enhancing experiences, not replacing them. To return to the words of Avril Loveless: "it is not the access to digital resources which 'delivers' creativity, but the opportunities such access affords for interaction, participation and the active demonstration of imagination, production, purpose, originality and value."(Loveless 2003, 8)

## 2.2   Other Related Works

This section briefly looks at some other works which, while not directly connected to the research objective, still provide some relevant interest toward various aspects.

### Empathy Development Environments

Daily (2010) describes four basic characteristics of learning environments, termed 'Empathy Development Environments' (EDEs), which use technology to support the development of empathy. Specifically, these environments:

1. Provide opportunities to practice the skills of empathy.
2. Use technology and narrative to allow participants to explore identity and emotion.
3. Create opportunities to engage in 'transformative dialog'.
4. Support the formation of a group with its own identity.

To develop empathy-cultivating activities within such environments, Daily proposes an approach based on exploring identity and emotion – first within oneself, and then with regard to others. She then describes the design of an environment called *Beyond the Looking* which employs this framework. Beyond the Looking

uses interactions in both the physical and virtual domains to encourage learners to explore identity and emotion in themselves and others. It was developed and implemented through three programmes undertaken with elementary and middle school students in the US (Daily 2010).

Daily's approach is oriented towards relatively self-contained learning environments in which all participants are able to converse and interact with ease. It might be instructive, however, to see whether her four general characteristics of EDEs can successfully be adapted to more diverse settings, such as those where participants are separated by distance, culture, or language.

### Communities of Practice for Asians' Creativity Sharing

Yao (2010) examines the critical success factors in cultivating a 'Community of Practice' – a group formed around common interests or expertise – with particular focus on how Asians living overseas can share their creative works. These factors were evaluated through an experimental social web site, *Overseas Asian Creative Contents*, in conjunction with participant observation, questionnaires, and interviews.

From this evaluation, Yao (2010) finds that three of the success factors tested for – mutual engagement, shared repertoire, and technical support – play an effective role in cultivating this Community of Practice. However, a fourth tested factor – personal relationships – was found to be less relevant. Existing relationships, according to Yao, do not play a strong role in attracting the target group to a community, relative to the other three factors. The study also concluded that these three success factors can enhance on-line access to overseas Asians' creative works, and that this in turn can help motivate overseas Asians to greater creative sharing.

Whether the success factors identified by Yao can be applied to other demographics such as young children has not been determined. However, it is interesting to note her finding that existing relationships do not appear to be a strong factor in the development of an on-line social environment geared towards creative sharing and communicating. This suggests that further research of this phenomenon, particularly with respect to children, might be worthwhile.

## 2.3   Summary

From examining the three approaches – physical, virtual, and hybrid – it would seem that two of them are inherently limited with respect to the research objective. Purely physical approaches are effectively restricted when it comes to

communicating with far-off groups, and also face significant barriers in terms of
time and cost. Purely virtual approaches show more promise, but largely sacrifice
consideration of the children's real-world environment. A physical aspect which
helps keep children active provides for a more complete and engaging experience
– and also helps alleviate concerns that use of ICT may cause children to be overly
sedentary.

Another potential concern for parents and educators is that children may need
to be closely supervised in their on-line activity in order to prevent negative expe-
riences, as well as keep them from behaving inappropriately. When all interactions
take place virtually, however, such supervision may be difficult to manage effec-
tively without training or experience.

The hybrid approach would therefore seem to hold the most promise in the
present context. Creating a 'digitally augmented physical space', which can en-
gage children within their environment while connecting them virtually to others,
should be an effective way of achieving the research objective. Tying the system
to a specific location, and extending the interactions into the physical space, may
also address some of the concerns related to the difficulties of supervision.

# Notes

1   OneWorld Classrooms, on-line mission statement (accessed 22 May 2015):
    `http://www.oneworldclassrooms.org/about-us/mission-values/`

2   K-12 Global Art Exchange: `http://www.oneworldclassrooms.org/programs/k12art/`

3   As discussed in Chapter 3, the researcher had the opportunity to observe two KBP classes
    in person during the students' second grade.

4   KBP was launched in the students' first grade. The students had entered the third grade
    as of this writing (2015).

# Chapter 3
# Design

The concept of Digital School Hallway is to transform the physical school hallway into a space bridging the distance between two or more widely-separated elementary schools, thereby allowing their students to share their creative works and exchange feedback, with minimal turnaround time. The aim is to develop the children's capacity to relate to each other, their desire to communicate with others, and their awareness of others, across the cultural and physical divide.

## 3.1   Background Research

### Primary Education Experience

The researcher gained considerable first-hand experience of Japanese elementary schools through work as an Assistant Language Teacher in Fukushima Prefecture from 2007 to 2012. This included watching children making creative works in a variety of subjects, observing how various works are typically exhibited in the school hallways, and personally participating in some creative classes such as calligraphy.

This experience enabled a solid understanding of the nature and place of creative works within Japanese primary education. It also allowed for a reflective comparison with other countries' school systems, such as those of Canada and the United Kingdom, both of which the researcher had attended.

### Keio Bunbougu Project

The Keio Bunbougu Project (KBP) at Keio Yochisha Primary School in Tokyo, Japan aims to explore how students can use digital tablets as a substitute for traditional stationery (Nishiyama 2014).

This process was directly observed at two KBP classes[1] when the students in question were in the second grade (seven to eight years old). The children were, by this time, able to use their tablets to draw, create stories, and upload photographs

of their own creative works to a SNS for sharing with others.[2] It was clear from this observation that primary school children can quickly and easily achieve a solid level of comfort in using digital devices for both creative sharing and social communication.



Figure 3.1: Digital tablets in the classroom (Keio Bunbougu Project)

### LessonMe!

LessonMe! is a project to promote remedial learning among disadvantaged children, particularly those in developing countries. Part of its approach is to design an inexpensive digital 'e-kiosk', which can be placed in a shared space, through which children can play simple educational games using a touch-screen interface.

As part of the LessonMe! development team, the researcher assisted in implementing a prototype e-kiosk along with its digital contents. Various aspects of this prototype's physical design were subsequently repurposed, with modifications, for use in Digital School Hallway.

## 3.2   Fieldwork

In order to evaluate the feasibility of the research objective, three groups of stakeholders were identified: the children themselves, their teachers, and their parents or guardians.

Figure 3.2: LessonMe! prototype e-kiosk

An extensive survey of these three groups was conducted from October to November 2014, at two elementary schools in Kawamata Town, north-eastern Fukushima Prefecture: Kawamata Minami Elementary School (also called simply Minami Elementary School), and Yamakiya Elementary School.[3]

This survey had two purposes. The first was to gain a basic understanding of how these children's creative works are shared in general: what types of works, how many, and with which audiences. The second was to gauge the stakeholders' attitudes in the following areas:

- Motivations for and reactions to the sharing of children's creative works, and the exchange of feedback on it.

- Whether more opportunities to share children's creative works is desirable, and with what audiences.

- Whether more opportunities for children to communicate with others is desirable.

- The use of social media, particularly by children and/or in school.

The survey was carried out using a separate questionnaire (in Japanese) for each of the three groups. For the students, it was decided to focus on the ten- to twelve-year age range (grades five and six), for two reasons: first, to keep the sample size within a manageable limit; and second, because of concerns that younger children might find the survey difficult or tedious. The parents' survey was conducted among the families of these same students. The teachers' survey included home-room teachers of all grade levels at each school.

Within these designated groups, 151 responses were received, with the break-

Table 3.1: Overview of survey respondents

|          |              | Yamakiya | Minami | Total |
|----------|--------------|----------|--------|-------|
| Students | (grade 5)    | 10       | 23     | 33    |
|          | (grade 6)    | 11       | 31     | 42    |
| Parents  | (grades 5–6) | 22       | 78     | 65    |
| Teachers | (all grades) | 4        | 7      | 11    |
| Total respondents |     |          |        | 151   |

down shown in Table 3.1.

Complete survey details, including full transcripts of the questionnaires and the collected responses, may be found in Appendix A.

## Analysis of Results

What follows is a look at the survey results according to the areas of interest just described.[4]

**Children's creative works and how they are shared**

Teachers (all grades) were asked how many creative works their students made every month, on average, according to several categories. The overall average indicated approximately five to seven works per month in each of the following categories: 'pictures', 'writing', 'calligraphy' and 'sculptures/models'.

An 'other' category was also included in the survey, but only three teachers provided responses for it:

- A Yamakiya teacher reported a monthly average of ten for works created in home economics class.

- A Minami teacher reported a yearly average of 20–30 environmental science report cards.

- A Minami teacher reported making two greeting cards (for summer and New Year); the interval was not specified but yearly seemed to be implied.

With respect to how these works are shared, all teachers indicated that they exhibit their students' creative works in the school hallway. However, only two teachers indicated that their students' works were ever exhibited outside the school: in one case, at a local art museum as part of a contest; in the other, in local public facilities, generally by request. The other teachers all gave similar reasons for not doing so: not lack of interest, but rather lack of time or opportunity to arrange it.

When asked what factors should be kept in mind when displaying the students' work outside school, the main responses were: permission of parents/guardians, children's privacy, protection of the children's property, and whether the work has a significance that could be communicated by exhibiting it.

**Attitudes towards children's creative sharing and feedback**

When asked to whom they liked showing their own creative works (Figure 3.3), the greatest number of students indicated their parents, and a large proportion also indicated other relatives and classmates. Teachers were indicated by considerably fewer children, and students in other grades had the lowest indication rate of all.
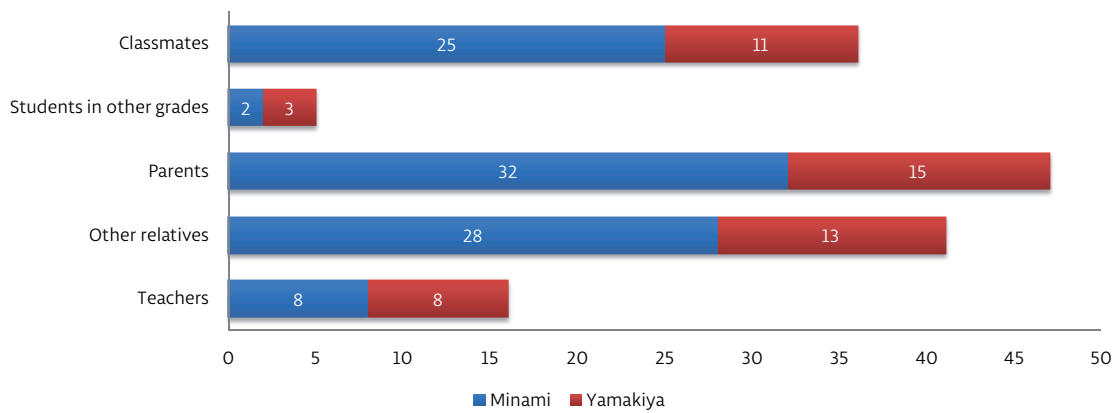


Figure 3.3: Groups to whom children like showing their works

Most children indicated receiving some sort of feedback on their works. When asked from whom they liked receiving feedback, again, classmates and parents received the highest scores; whereas students in other grades, students or teachers from other schools, and other (miscellaneous) people received the lowest. In addition, an overwhelming majority indicated that they liked seeing their friends' creative works.

Teachers reported that students generally enjoyed seeing their works (and those of their friends) exhibited in the school hallways, as well as exchanging their opinions on them. They also indicated that, although students only sometimes had the opportunity to see works by children from outside the school, they generally found such works interesting.

Parents generally indicated that they enjoyed seeing creative works by children, in spite of limited opportunities to do so. There was also a general opinion that being able to see children's creative works was beneficial.

**Attitudes towards more sharing of children's works**
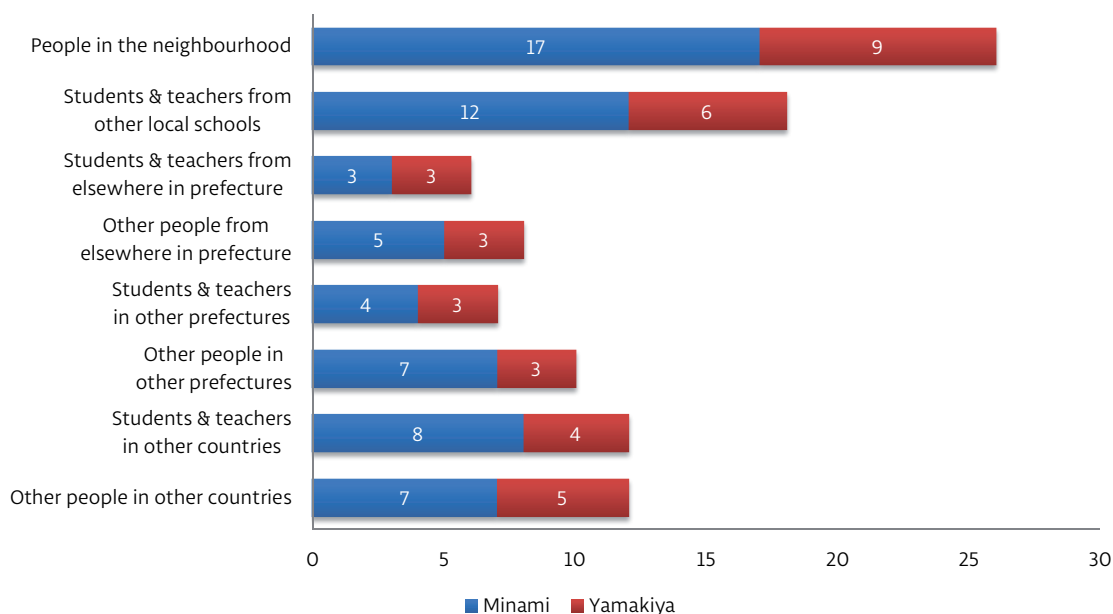


Figure 3.4: Others with whom students would like to share their works

When the students were asked about other potential groups of people with whom they would like to be able to share their creative works (in other words, to allow such groups to view them), the results were interesting. Figure 3.4 summarizes their responses, with groups categorized (top to bottom) from socially and geographically closest to most distant. The largest number of students indicated an interest in sharing their works with people from the local neighbourhood. Their expressed interest then progressively decreased as the distance of such groups increased, down to "students and teachers in other prefectures". However, from that point on, the stated interest began to trend back upwards with increased distance.

Students from Yamakiya (only)[5] also responded to a survey question asking what other groups of children they would be interested in seeing creative works by. In spite of the smaller numbers of both categories and respondents, a similar trend appeared to exist (Figure 3.5).

When teachers were asked to rate the potential benefits of the same groups from Figure 3.4 being able to see their students' creative works, they answered positively (on average) for each one. Parents were also positive when asked their opinion of outside groups being able to see their children's works. In addition, both teachers and parents answered positively across the board when asked to rate the potential benefits of students being able to see creative works by the same groups
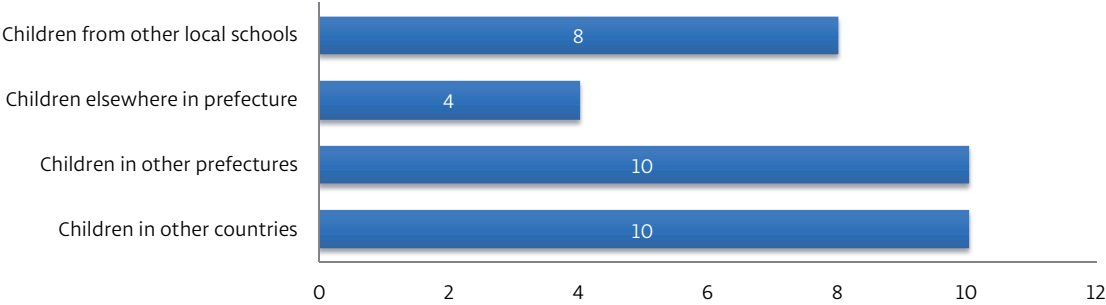
Figure 3.5: Others whose works students would like to see

as listed in Figure 3.5.

**Attitudes towards more communication with other groups**

Asked whether they would like the chance to communicate with various other groups of children, the 21 students from Yamakiya showed similar levels of willingness towards each group (see Figure 3.6).
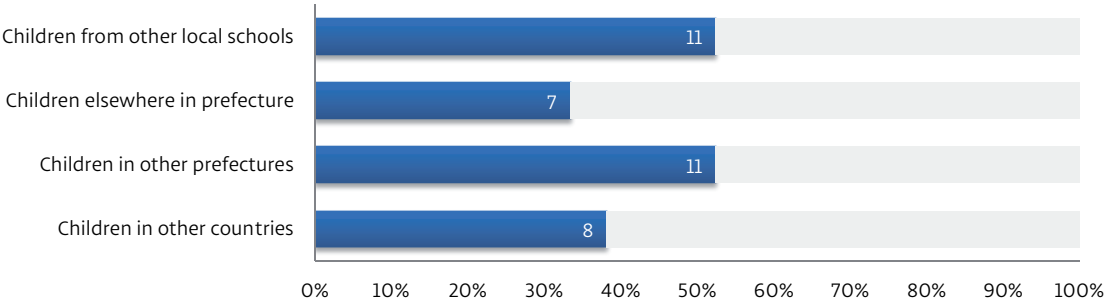


Figure 3.6: Others with whom students would like to communicate

Teachers and parents were also surveyed on attitudes towards their students or children having the chance to communicate with the various demographics previously listed in Figure 3.4. In both cases, their attitudes were positive, responding that for all groups they would be interested in giving the children such an opportunity.

**Attitudes towards social media**

To gauge their attitudes towards social media, teachers and parents were first asked whether they used SNS themselves. The teachers were almost evenly split between those who used it (6) and those who did not (5). Out of the parents,

there were considerably more who used SNS (26) than not (16). Given the small sample sizes, caution should be taken in trying to extrapolate from these results; however, it does seem that there was a reasonable penetration of knowledge about SNS among these groups.

On the other hand, when asked their opinion of children using SNS, the responses from both parents and teachers were decidedly negative, with very few exceptions. Typical comments from both groups included concerns that students were too young to use social media safely and/or responsibly, as well as the repeated opinion that such things were 'not necessary' for children. A few views were more nuanced, saying that it might be acceptable under certain circumstances, or with careful restrictions, but these were still very much in the minority.

Table 3.2: Parents' & teachers' views on the use of SNS in education

|                                      | Teachers | Parents |
|--------------------------------------|----------|---------|
| Positive responses                   | 2        | 13      |
| Negative responses                   | 6        | 15      |
| Ambivalent or uncertain responses    | 2        | 13      |

On the related question of whether SNS could play a useful role in education, the responses were more mixed (see Table 3.2). Among parents, there was a fairly even distribution between respondents with more or less positive views, those who had negative views, and those whose answers were ambivalent or uncertain. Among the teachers, slightly more than half had negative views, with the remainder split between tentatively positive, and ambivalent or uncertain. Several respondents said that it depended on how and when the SNS were used. Others appeared to see SNS as emergency contact tools rather than as teaching or socialization resources. And, as before, a number of respondents felt that such tools were simply not necessary for elementary school students.

## 3.3   Design Concept

### Principles

As discussed previously, Digital School Hallway is a combined physical-virtual space, integrating a digital system for sharing children's creative works across large distances into their everyday physical school environment. Two or more schools, located in different places, mutually cooperate to establish a shared virtual environment.

Given the reservations about SNS expressed by parents and teachers, it was

decided not to use a free-form socialization platform. The system as designed has no built-in facility for locating remote partners; rather, the shared environment is intended to be established between schools which are able to reach the necessary agreements through separate channels. This restriction is intended to give the schools a very strong level of control over who can access their students' creative works and communicate with them; and, by doing so, alleviate the concerns of parents and teachers.

For similar reasons, there are no chat or personal-message features, and no ability to add or remove 'friends'. This is also intended to prevent negative experiences that may come about through insults, bullying, or criticism.

Once the participating schools jointly establish their shared community, a shared (cloud) storage area is set up to host its contents. Digital photos of individual creative works from all the schools are taken, and uploaded to the shared storage. All members of this shared community may then view any or all of the creative works that have been uploaded, using the special environment which is set up in their respective school hallways (described below). As students frequently create new works (in class or in free time), they should be encouraged regularly to add them to the Digital School Hallway; they will be provided with a simple and easy method for doing so.

Digital School Hallway is designed to be easy for children to use without significant training. It is also intended to be appealing enough, both visually and intellectually, to motivate elementary school students to 'explore' through using it, during their free time at school, without compulsion from teachers.

## User Experience

The primary interactive component of Digital School Hallway is a digital display which is set up in the elementary school hallway. This display, called the Digital Hallway Display (DHD), is intended to integrate seamlessly with the typical displays of children's art in this environment (see Figure 3.7).

The DHD is the focus of the three key components of the user experience, known as *Meeting*, *Interacting*, and *Communicating*. These are described below.

### Meeting

The school hallway is a place for meeting and exploration during children's playtime. It is more than a combination of architecture, furnishings and decorations – it is an environment with its own unique atmosphere.

When an object is added to an environment, it becomes part of that environment. It is no longer defined solely by its own characteristics, but by those
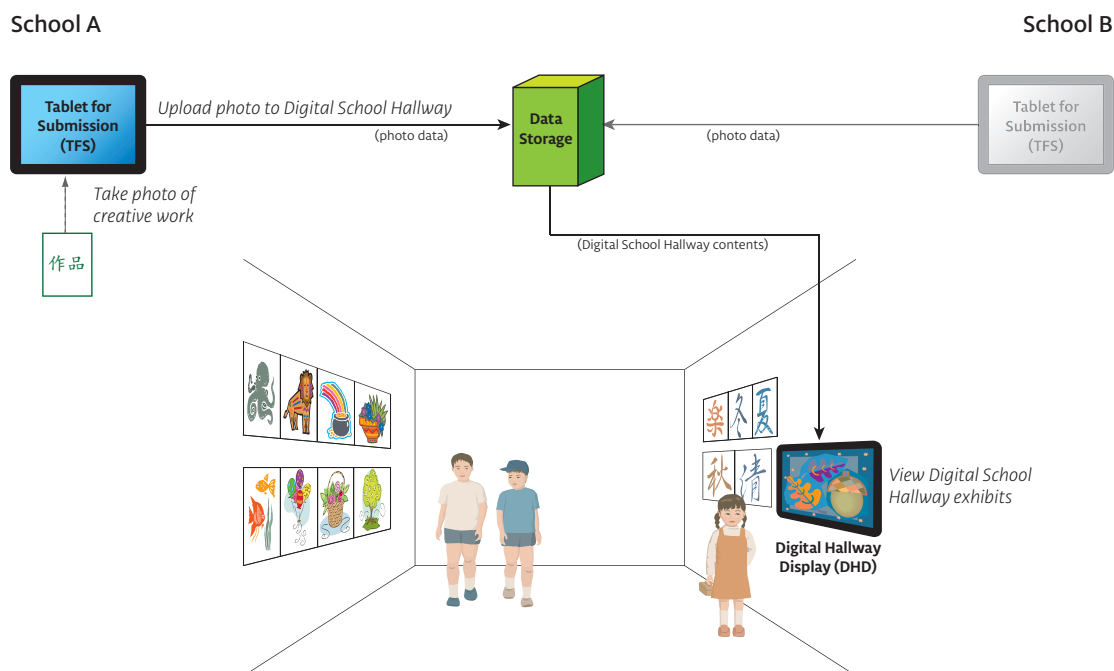
Figure 3.7: Digital School Hallway, conceptual overview

of the environment as well. Artwork posted in a school hallway becomes more than individual pictures, but part of a larger, shared space, contributing to the surrounding atmosphere.

People frame photographs and display them in their homes or workplaces for a similar reason. Even without constantly watching them, the photographs are part of their environment, capable of giving a moment of pleasure even when they only catch the eye in passing.

In modern times, digital photo frames have added an extra dimension to this phenomenon. Instead of one picture, the display can cycle through many different pictures. The person passing by may not know what picture they will see at any given instant. Furthermore, as some photo frames can be updated by other people (such as friends and family) remotely over the Internet, viewers may find themselves looking at a picture which they have never seen before. This kind of display can catch the attention and interest of passers-by, drawing them in and motivating them to take a closer look.

Within Digital School Hallway, this phenomenon is referred to as 'meeting', in the sense of a serendipitous encounter that draws someone in, ready to interact. Through becoming part of the school hallway environment, the DHD is positioned to catch the attention of the children passing through or playing there.

In its default state, the DHD displays a simple 'slideshow' of all the creative

works in the shared community. As new works are periodically added by all participating schools, students may notice pictures which they have never before seen appearing as they pass by. This feature is intended to catch their attention and curiosity, drawing them in to explore the system by interacting with it.

**Interacting**

When children are drawn in to engage with the DHD, the user experience shifts to 'interacting'. In this state, children may touch the screen; and, if the DHD is in its default slideshow mode, it will change to displaying an overview of all exhibits (galleries) that are defined in the current community.

In Digital School Hallway, a 'gallery' is an exhibit of some particular group of creative works. Normally, a gallery is expected to correspond to a class in one of the schools, but in principle any logical division which suits the community is possible. Each gallery may have certain attributes displayed, such as the name of the exhibit, the number of pictures, and so on.

A child interacting with the DHD may select any gallery by touching it. This will cause the display to change to showing a 'thumbnail' view of all creative works in that gallery. Each thumbnail may have certain attributes displayed, such as the date that the corresponding photo was added to the Digital School Hallway.

In the gallery view, the child may select any image by touching its thumbnail. This action will bring up a full-screen, single-image view of the corresponding picture. From here, simple touch actions may be used to zoom in or out, go to the next or previous picture in the gallery, return to the gallery view, or enter 'feedback' mode (described in the next section). The single-image view may also display certain attributes associated with the picture, such as information about the creator.

On all of the screens described here, there is an inactivity timeout: if no input is received within a certain period of time, the DHD will return to its default 'slideshow' display mode.

A visual summary of the interaction flow may be seen in Figure 3.8.

**Communicating**

Viewing a creative work is not a purely solitary experience – it can be seen as a form of communication between the creator and the viewer.

When people look at pictures in a digital photo frame, they experience a kind of connection to the moment depicted therein. Photographs, it could be said, have the power to create shared moments, even between people who are far apart, and build up bonds.
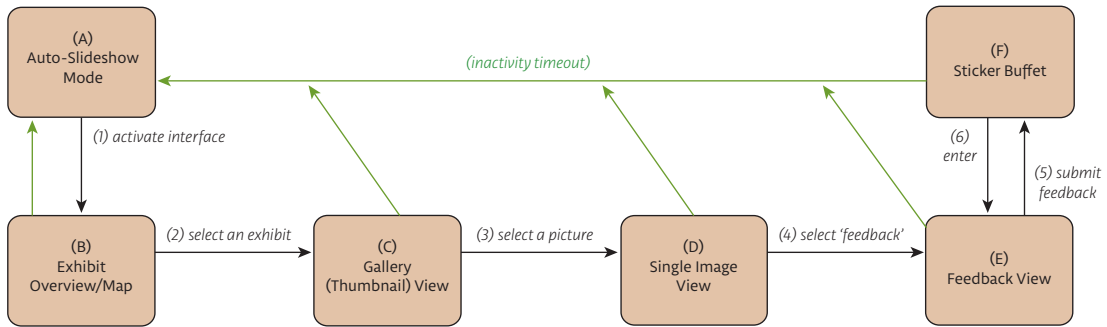
Figure 3.8: Interaction flow of DHD

This is one of the principles behind the 'communicating' component of Digital School Hallway. However, it is essentially one-way communication. The started objective of *sharing* creative works implies a mutual exchange.

Students will therefore be encouraged to regularly share their own creative works by adding them to the community. Mobile devices such as smartphones or tablets should make this process simple: a student uses the device take a photo of their creative work, and then selects to share the photo to the Digital School Hallway cloud service. This device is referred to as the Tablet for Submission (TFS), although in any given implemention it could be a tablet, a smartphone, or some other type of hardware with similar features. Students in each participating school should have access to a designated TFS, perhaps one in each class. Figure 3.9 shows the logical flow associated with the TFS.
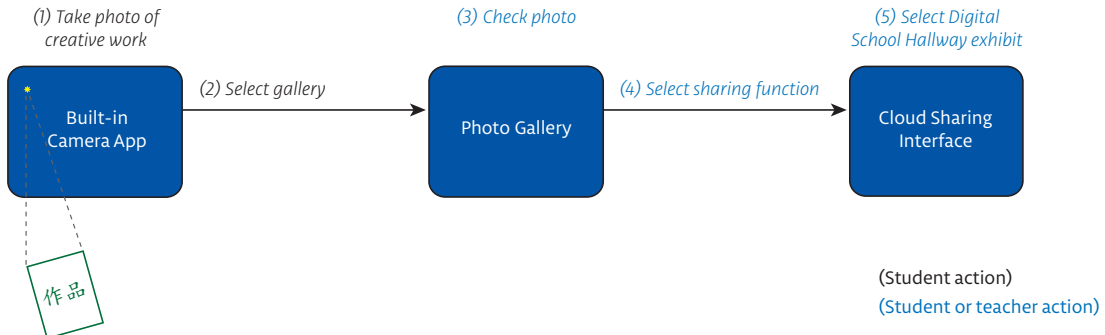


Figure 3.9: Interaction flow of TFS

If students in all participating schools are continually adding new works, the virtual community becomes a dynamic, growing thing. The students can see new works from their faraway counterparts, helping to build a feeling of shared connections. They can also gain satisfaction from seeing their own works appear in

the Digital School Hallway, reinforcing their sense of accomplishment and pride in their own creations (Rinker 2000, Szekely 1988).

This kind of sharing can be seen as a form of communication, but a largely undirected one. Digital School Hallway also provides a more directed communications mechanism through a simple feedback system. While, as noted above, written comments are not supported, students may leave feedback on a particular picture through representative icons (or 'stickers'). This approach has a number of advantages:

- It allows the feedback system to be non-verbal and thus language-agnostic.
- It provides the opportunity for added visual appeal (the 'cute factor').
- By using a well-defined set of pictographs, the system can be limited to allowing positive feedback only.

By being able to send and receive feedback to specific children regarding their creative works, students can experience tangible contact with their counterparts – reinforcing the sense that they are bridging the distance between them.

## 3.4    Prototype



Figure 3.10: Digital School Hallway prototype

## Environment

The Digital School Hallway system is set up inside an elementary school hallway, sharing the space with conventional displays of children's creative works. The DHD is mounted on the hallway wall like physical artwork (see Figure 3.10), and includes the following components:

Sign
> A sheet of A4 paper with "デジタル廊下" (*dejitaru rōka*, the Japanese name for Digital School Hallway) in colourful text.

Background poster
> An A1 sized poster which surrounds the display enclosure. An area of the corresponding size is cut out where the enclosure will be mounted.
>
> This poster is intended to expand the perceptual area of the DHD beyond the display enclosure, thus increasing its presence in the environment and drawing people's attention. The image is of a starry night sky,[6] intended to convey a sense of 'limitless distance', as well as provide an attractive aesthetic. On this background, four white lines converge at an imaginary point outside the poster, drawing the eye towards the display screen; they also form the abstract outline of a hallway receding into the distance.

Display enclosure
> A frame used to hold the display tablet, along with hook-type push pins which allow it to be attached to the wall, described below. The square cut from the poster is attached as a decorative cover on the enclosure, with another square for the screen cut out from it.

Display tablet
> A digital tablet which forms the interactive component, described below.

These items are mounted at a height which allows children to interact with the screen. The mounting surface is a standard display board which forms part of the school hallway wall, into which push pins can be placed.

## Hardware

As seen in Figure 3.11, the display enclosure is made from a simple plastic storage tray with a grille surface and folding metal legs. A cover made of foam board is cut to fit the top of the tray, with a square cut out for the screen of the display tablet.
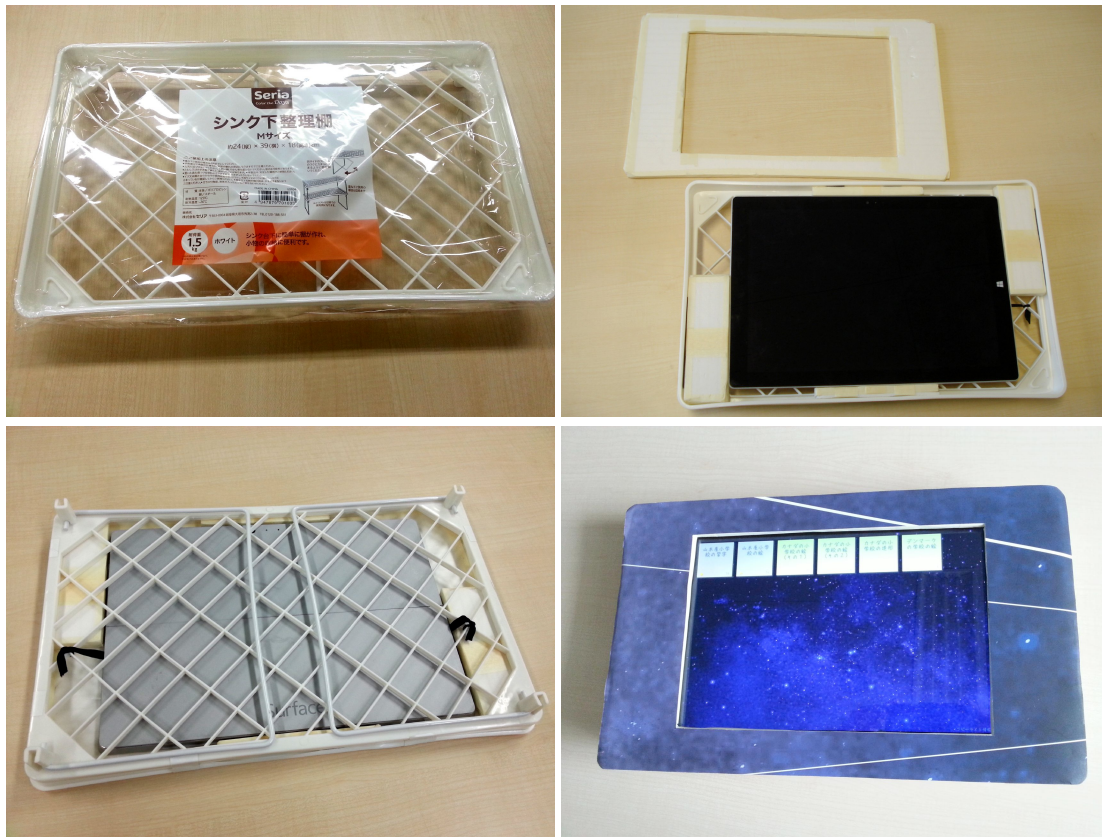
Figure 3.11: Display enclosure prototype assembly

The tablet itself is placed inside the tray, with the cover on top. Through the grille, the tablet's power button and charging socket are accessible from the rear. The legs are kept folded in, and act as mounting rails for attaching the enclosure to the wall by means of push pin hooks.[7]

The display tablet is placed inside the enclosure, and secured to the grille by an elastic strap. Bracing pieces made of foam board are placed on the sides to hold the tablet in the centre of the enclosure. The enclosure cover is placed over the tablet, with a gap cut out for the screen. The tablet's 'home' button is covered, such that when the web browser is in full-screen mode, users cannot switch to other applications, nor manually navigate to arbitrary web sites.

In addition to the DHD, the design concept describes the TFS, a digital tablet used to take photos of creative works and upload them to Digital School Hallway storage. Any Android tablet may be used for this purpose, with no special hardware or software modifications required.

Figure 3.12: Mounting of DHD prototype on wall

## Software

The DHD software is implemented as a web application, with components written in HTML, CSS, JavaScript, PHP and SQL (see Appendix C for the source code). The display tablet is set up with this application pre-loaded in its web browser when the DHD is placed in the school hallway.



(a)          (b)
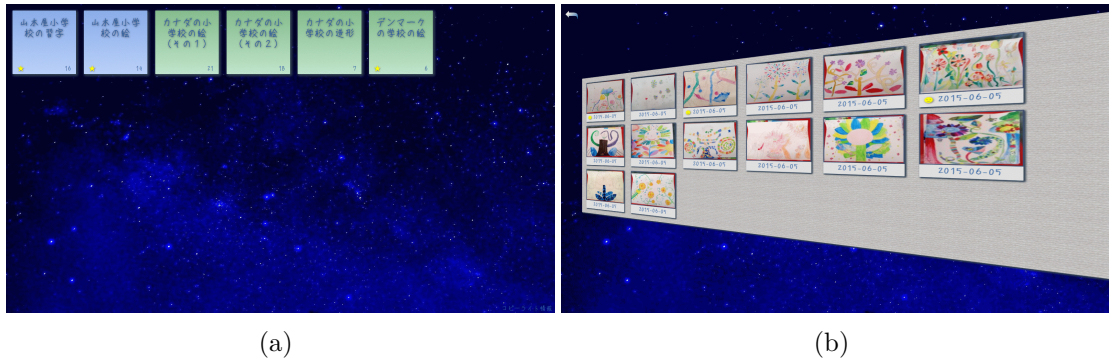
Figure 3.13: (a) Overview and (b) gallery screens of DHD prototype

The user interface principles have been designed with the aim of appealing to elementary school children (see Hanna 2008, Gaffney and Hunter 2011). These include:

- Using a clean, simple and uncluttered interface with large target areas.
- Avoiding overly 'juvenile' styling and images (so as to avoid putting off children in older grades).

- Preferring concrete over abstract metaphors.
- Minimal use of text; where text is necessary, use of fonts similar to the style of children's writing, in relatively large characters.

A star-field background image is used for the overview and gallery pages; this is the same image used for the poster (minus the white lines), and for the same reasons. A Japanese-capable font in a 'cute' hand-written style is used for page text.[8]

**Overview screen**

The overview screen shows the available galleries as gradient-coloured tiles: light blue for galleries containing works from the local school, and light green for galleries containing works from remote (partner) schools. Each gallery tile also displays certain other attributes:

- A descriptive title, including the name of the school and other identifying information (such as grade and/or class).
- The number of pictures currently in the gallery.
- An indicator (star) which is shown if any pictures have recently been added to the gallery.

Touching a gallery tile causes that gallery's screen view to be displayed.

A small link in the lower right-hand corner leads to a page containing all copyright notices that are legally necessary. It is designed to be as unobtrusive as possible while still being accessible.

**Gallery screen**

The gallery screen shows a grid of tiles representing each image in that gallery. Each image tile displays the following information:

- A thumbnail of the image (adjusted to fit the grid proportions, if necessary).
- The date the image was added to the gallery.
- An indicator (happy face) which is shown if the has received feedback.

The image tiles are placed on a textured background resembling a wall, in a perspective view evocative of a three-dimensional hallway. A large arrow indicating 'back' at the top left of the screen allows the user to return to the overview page. Touching an image tile causes the image viewer to open with the corresponding image displayed.

**Individual image view**

The image viewer used is an open source JavaScript application, *PhotoSwipe.*[9]
It supports swipe-based navigation, zooming, image captions, sharing links, and
custom controls.

For Digital School Hallway, the default PhotoSwipe style was modified to re-
place the sharing control with a button for opening the feedback view. A few
other adjustments to the default style were made in order to accomodate the
characteristics of the tablet's web browser. (Program modifications are described
in Appendix C.)

The optional image caption displays selected information about the student
who created the work shown, if known: country and/or school, gender, and age or
grade.

Images larger than the screen are automatically scaled to fit, in which case a
zoom feature is available (via control or gestures). Swiping right or left will cause
the next or previous image, respectively, to be displayed. Touching the close icon
in the top right corner will return to the gallery view, as will making a 'pinch'
gesture.



(a)                                                              (b)
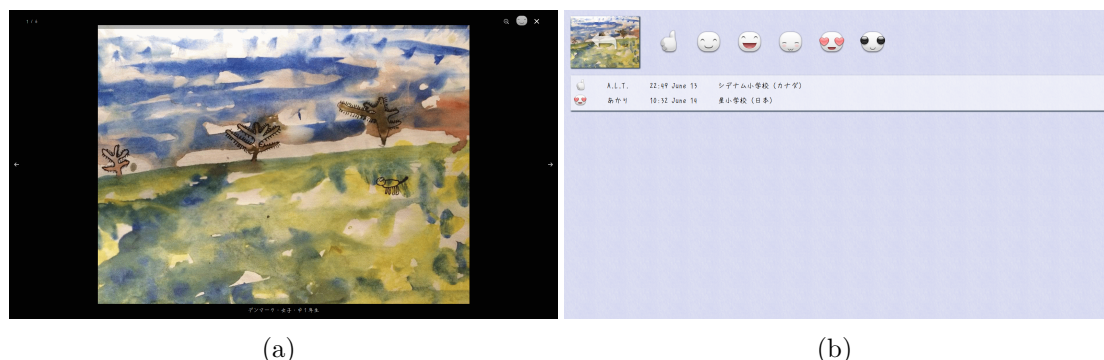
Figure 3.14: (a) Image viewer and (b) feedback screens of DHD prototype

**Feedback screen**

The feedback screen (see Figure 3.14(b)) is a dynamically-generated page imple-
mented using server-side PHP. When opened, it queries a SQL database[10] on the
web server (via SQL SELECT) for all feedback that has been submitted for the
current picture.

A single feedback item takes the form of a graphical icon or 'sticker' repre-
senting a particular mood or opinion, together with the name of the person who

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posted it, the name of their school, and the date and time when it was posted. These are displayed as a list. The page background is a pale texture resembling paper.

At the top of the page a thumbnail image of the current picture is shown, with a translucent 'back' arrow superimposed on it; clicking on the image will return to the full-screen image view. Next to this is a selectable 'buffet' of available sticker icons,[11] through which the user can add feedback of his or her own.

Upon touching a sticker, a small dialog box pops up prompting for a name. The user must enter an identifying string (up to 15 characters), such as a first name or nickname. The submit button on this box cannot be used until some value has been entered.

The purpose of the name is to provide some measure of personalization to the feedback, making it easier for the recipient to feel that it was posted by a real person. (The relatively small maximum length of this field is intended to discourage the use of full names, use of which might cause privacy concerns.) In addition, by requiring a value to be entered before submitting, children playing with the interface should be less likely to accidentally post feedback, or to arbitrarily post repeated feedback.

When the feedback is submitted, the name, selected sticker, picture identifier, and the current date and time are added to the database on the web server (via SQL UPDATE). The dialog box is then closed, and the feedback page is refreshed; the newly-posted feedback should appear immediately.

The dialog box also includes a cancel button which returns the user to the feedback page without submitting. This button is provided for visual clarity; however, to facilitate easy touch operation, touching any part of the screen outside the dialog box will have the same effect.

**Slideshow mode**

Slideshow mode is the DHD's default state. If five minutes elapses with no input on any of the other screens, the slideshow will be loaded, in a manner similar to a screen saver. This mode simply displays each image in the Digital School Hallway community, centred and scaled to fit the screen, one at a time for several seconds each.

Touching the screen anywhere during the slideshow will cause the overview screen to be displayed.

**Tablet for submission**

For the TFS software, the standard Android camera application allows photos to be taken, and the built-in gallery application allows them to be reviewed and

uploaded to various cloud storage services.

The TFS does not interact directly with other components of the Digital School Hallway prototype. For this reason, and because the same concept was successfully demonstrated as part of the Keio Bunbougu Project observations (see §3.1), it will not be included in the subsequent evaluations.

## Notes

1    The observed KBP classes took place on 29 October 2014 and 30 January 2015.

2    The SNS used for KBP was 'Edmodo', an educationally oriented collaboration system with an authorized membership model: `https://www.edmodo.com/`

3    At the time the fieldwork and experiments were conducted, Yamakiya Elementary School was temporarily housed inside the same school building as Minami Elementary School; however, the two schools were operated independently.

4    Based on the sample sizes, the margin of error is 12% (or 9 respondents) in Figures 3.3 and 3.4; and 22% (5 respondents) in Figures 3.5 and 3.6.

5    Students from Minami Elementary School did not provide responses to questions on the second page of the survey.

6    The image used is a cropped and contrast-adjusted modification of *Starry sky at Mount Rinjani, Lombok Island, Indonesia* by 'skyseeker'. The original image source is `http://commons.wikimedia.org/wiki/File:Starry_sky_at_Mount_Rinjani,_Lombok_island.jpg` (downloaded 13 May 2015). Licensed under the Creative Commons Attribution 2.0 Generic license.

7    This enclosure design was adapted from that of a prototype 'e-kiosk' originally created with Mieharu Suzuki (Keio University Graduate School of Media Design) and others for the LessonMe! project – see §3.1.

8    "P-Moon Font" by Studio twoG; source: `http://s2g.jp/font/index.htm` (downloaded 4 May 2015). It is licensed as free for personal use (including in published works).

9    `http://photoswipe.com/` (free for use under a modified MIT open source license).

10   The database is implemented in MySQL (`http://dev.mysql.com/`); the table structure is described in Appendix C.

11   The icons used are from the set 'Riceball Emoticons' by David Lanham: `http://dlanham.com/ui/riceballs/`; they are licensed as free for personal and commercial use. Reproduced in Figure 3.14(b) with permission.

# Chapter 4
# Evaluation

For testing of the design concept with respect to the research objectives, a three-part experiment plan was developed:

1. *Engagement,* focusing on Meeting and Interacting, at a school in Japan.
2. *Application,* focusing on Interacting and Communicating, at a school in Denmark.
3. *Full System* testing of all components, at a school in Japan.

During the first and second experiments, the usability of the prototype was also evaluated in order to make improvements for the final version.

## 4.1  First Experiment: Engagement (Japan)

The first experiment took place in Yamakiya Elementary School, Fukushima Prefecture, Japan, on 5 June 2015. This school had a total of 28 students from grades three to six (eight to twelve years old).

The focus of this experiment was the Meeting and Interacting components. The objectives were defined as follows:

A)  To evaluate the system's usability for students.

B)  To evaluate the motivation of students to explore the system.

C)  To analyze factors impacting students' enjoyment of the system.

D)  To analyze factors impacting students' feeling that they can relate to far-away children, and whether they become more motivated to do so.

To this end, a prototype of the DHD was set up in the school hallway, displaying art by children from two other countries (Canada and Denmark)[1] in order to observe how the students reacted to and interacted with it.

Figure 4.1: Engagement (Japan) – DHD prototype

## Prototype

The prototype used for this experiment was as described in §3.4, with the following differences:

- The feedback screen and database were not implemented.
- The individual gallery screen did not include an indicator showing recently-added works.
- Touching the screen during slideshow mode caused the browser to return to the previous (most recently displayed) screen, rather than to the overview screen.
- The display enclosure and tablet were smaller, and mounted somewhat higher on the wall than in the final prototype.

The digital tablet used was an Apple iPad Air (WiFi model) with a 25cm Retina display, running the iOS Safari web browser. It was placed in a clear shell

case, secured inside the enclosure using a plastic cable tie instead of an elastic strap (see Figure 4.1).

The pictures were divided into four galleries: three showing works from Canada, and one showing works from Denmark. Individual pictures in two of the Canada galleries did not include any specific data about the artist. Both the third Canada gallery and the one for Denmark had simple captions below each picture describing the nationality and approximate age of the student who created it; the Denmark works also included the artist's gender. The purpose of this varying information was to try and evaluate whether having more specific knowledge about the artist impacted the Japanese students' interest or motivation.

## Method



Figure 4.2: Engagement – students interacting with DHD

Testing was carried out in two phases: morning and afternoon. During the morning phase, students were observed in the normal environment of their school hallway. For the afternoon phase, the DHD prototype was set up in the hallway, near (but somewhat apart from) existing displays of students' calligraphy. The behaviour and interactions of the students were then observed with this prototype in place.

The purpose of this two-phase approach was to gather 'baseline' data regarding the children's normal behaviour without the DHD in place. This was then compared

with their behaviour after the DHD was added to the environment, and differences observed.

In both phases, observation was concentrated on the break time between classes and after lunch, periods corresponding to the free time students had for play inside the school.

A naturalistic observation method was used,[2] with the researcher present but passively observing students' behaviour.[3] Video-recording was also used in order to analyze the data in more depth afterwards. Students engaging with the DHD were observed for their actions, reactions, comments, and other behaviour.

The check points used during the observation are shown in Figure 4.1.

Table 4.1: Engagement experiment – evaluation methodology

| Question | Observation points |
|---|---|
| Does the design draw students in to use it? | ☐ Do children come to explore the system of their own volition? <br> ☐ Do they exhibit curiosity about the system? |
| Are students able to use the system without significant difficulty or frustration? | ☐ Do they show signs of impatience such as dismissive or annoyed comments/actions? <br> ☐ Do they have trouble understanding the touch gestures needed for navigation? <br> ☐ Do they discover how to use the gallery pages and view individual images? How quickly? |
| Do they enjoy using the system? What factors affect their enjoyment? | ☐ For how long do they maintain their interest? <br> ☐ Which features engage them longest? <br> ☐ Do they appear excited, happy or fascinated? With which features or content in particular? |
| Do any factors cause students to become more motivated to experience creative works from other children in faraway places or different cultures? | ☐ Do they appear more interested in works which show information about place/age/gender and so on? |

The students were not given any specific directions on how (or whether) to interact with the DHD, as part of the objective was to see how they reacted to it on their own initiative. The only prompting given was an affirmative response when students asked whether they were allowed to touch the display.

Following the test, a brief post-mortem discussion was held in which school staff were asked to contribute their own observations and opinions.

Figure 4.3: Engagement – group interaction

## Results

### Usability

Of the four objectives defined for this experiment, the first was specific to the usability and ergonomics of the system.

Students as young as grade three (eight to nine years old) were able to use the DHD interface with very little trouble. A few who appeared uncertain were quickly shown how to navigate using tap, swipe and pinch gestures by other students. The children seemed to have little or no hesitation in interpreting the visual metaphors used (such as the tiles, arrows, and image buttons). In fact, the few teachers who attempted to use the DHD took considerably longer to become familiar with the interface than did the children.

The only significant confusion observed among student users was when the tablet was particularly slow in changing screens. This only occurred on rare occasions, apparently due to latency in the wireless Internet connection. For the purposes of the experiment, the tablet was obliged to make use of a consumer-grade cellular data connection, rather than the regular school WiFi; therefore, this limitation can likely be deemed specific to the testing environment.

Regarding ergonomics, while all students who tried using the DHD were able to do so, some of the younger ones had to reach up in order to access the screen (as can be seen in Figure 4.2). Such a position is prone to causing both eye strain and muscular discomfort, especially over time (Fostervold and Ankrum 2008).

Students tended to engage with the DHD in groups; however, the limited size of the screen made it difficult for more than two at a time to do so effectively (see Figure 4.3). In the post-mortem discussion, several teachers felt that a larger screen would be better.

Another potential problem was revealed by the presence of large windows on the opposite side of the school hallway in which the DHD was placed. This caused significant reflections on the display (which had a glossy screen), and also resulted in a high level of ambient light. Both of these factors impacted the legibility of the screen.

Based on these observations, the prototype was concluded to be generally usable for elementary school students; with some areas for ergonomic improvement identified.

**Concept**

The remaining three objectives evaluate the extent to which the design concept is met, with the aim of answering the research questions posed in Chapter 1 (§1.4).

Without the DHD installed, students routinely passed through the hallway on a variety of errands. While some creative works (samples of students' Japanese-style calligraphy) were posted on the walls, the students paid them little attention as, presumably, they were already familiar with them.

New or unfamiliar items did, however, catch their attention. After the Digital School Hallway sign and background poster were placed on the wall (without the display enclosure and tablet), the students noticed them the next time they passed through the environment. Several students spent some moments examining them curiously; some even touched them a few times while verbalizing playful sounds.

Once the display enclosure was mounted on the wall, the students' behaviour immediately shifted. At first, they reacted to it as a new and potentially exciting device in their environment, clustering around it and exploring its characteristics.

Once the immediate novelty of its presence subsided, they returned to their normal errands, but continued to show interest in the DHD whenever they passed by. Frequently, students would try exploring the virtual community on the DHD, sometimes singly but more commonly in small groups.

During these interactions, the students seemed genuinely interested in the pictures from Canada and Denmark, repeatedly browsing through them and verbalizing occasional comments to one another like "it's cute!" or "that's [supposed to be] a mouse, right?"

Their interest in this art appeared to come from more than simple appreciation of the pictures by themselves. Judging from both verbal and physical signs, the mere fact that they were able to see works from overseas children through Digital

School Hallway seemed interesting and exciting to them. They were observed to make animated comments such as: "A girl from Denmark made this!"; "This page [has works from] from Canada!"; and so on.

In some cases, the age of the student (where shown) was also of interest: "A seventh grader drew this? Wow!" There was not, however, any observable difference regarding whether or not the availability of such information about the artist made them more or less likely to find a particular picture compelling. All of the works, with or without information about the artist, seemed more or less equally interesting to them, at least as far as could be seen within the limited scope of this experiment.

From these observations, it appeared that the students were more than just interested in the technology of the tablet itself. This impression was reinforced in the post-mortem discussion, during which some teachers noted that the students who spent the most time interacting with the DHD were those who had access to tablets and similar devices at home. If tablets were not novel to these students, some other factor may have contributed to drawing them in to engage with the DHD.

It was notable that students engaged with the DHD in groups, even though only one or two were able to use the tablet interface at a time. Within these groups, they interacted socially – chatting, exchanging remarks, helping, prompting, or making suggestions to each other – at the same time as they were interacting with the display.

The students were attracted to the DHD within their environment and moved to engage with it. They also seemed to enjoy interacting with it, showing interest and enthusiasm while doing so. The particular factors impacting this enjoyment appeared to include:

- The tablet itself, as an interesting technological device. The novelty of having this device mounted on the wall of their school hallway was intriguing to them.

- The way in which the user interface allowed them to explore and interact using tactile gestures. Some students spent time playing by experimenting with touching and swiping.

- The fact that they could view children's art from other countries. They appeared highly interested in looking at pictures by students in Denmark and Canada.

**Questions raised**

While the students demonstrated motivation to use the DHD, whether they would continue to display such motivation over time (once the novelty wore off) could not be determined in this experiment.

It was observed that the students interacted socially with each other while using the DHD. As the combined physical/virtual space is an integral part of the design concept, it is important to determine whether use of the virtual environment by itself, on a normal tablet without the physical component, reveals any differences in this social behaviour or other activity. Evaluation of this issue became one of the objectives of the second experiment.

Another important question is whether students would show different levels of interest in creative works from faraway children than they would with those from their own school. This question is addressed in both the second and third experiments, which include creative works by local children as well as those from different countries.

## 4.2   Second Experiment: Application (Denmark)

The second experiment took place on 22 June 2015 at a school in Copenhagen, Denmark, with a class of approximately 22 children, twelve to thirteen years in age.

The focus of for this test was the Interacting and Communicating components. The objectives were defined as follows:

A) To evaluate the system's usability for students.

B) To analyze factors impacting students' enjoyment of the system.

C) To analyze factors impacting students' feeling that they can relate to faraway children, and whether they become more motivated to do so.

D) To analyze factors impacting students' motivation to try and communicate with faraway children.

For this experiment, the full Digital School Hallway environment was not set up. Children were provided with a standard digital tablet and asked to use the DHD software by itself. The artwork used was the same as that for the first experiment, with the addition of new creative works from Yamakiya Elementary School in Japan.
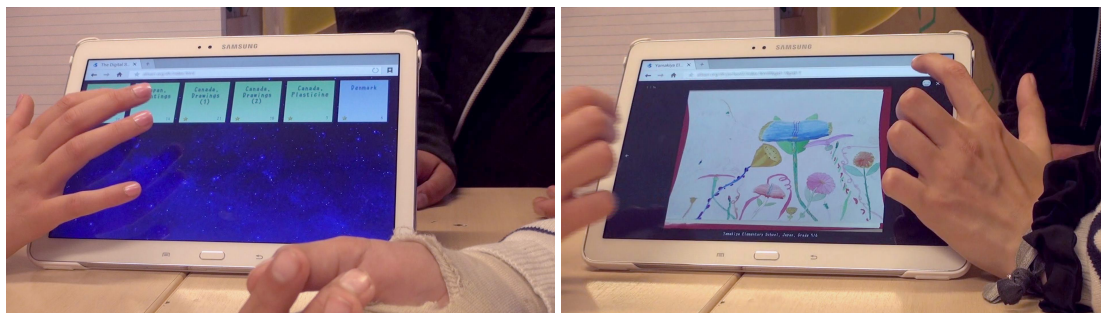
Figure 4.4: Application (Denmark) – students using DHD software

## Prototype

This experiment was focused on evaluating the various interactions when students use the software portion of the DHD on a normal tablet. Consequently, the environmental and hardware portions of the prototype were not used.

The software portion of the prototype was as described in §3.4, with the following differences:

- The Feedback screen did not show the name of each poster's school.
- Screen text (where used) was presented in English rather than Japanese.

To interface with the software, students were provided with a Samsung Galaxy Note 2014 tablet running Google Android and the Chrome web browser.

The pictures were divided among six galleries: two showing works from Japan, three showing works from Canada, and one showing works from Denmark. The galleries for Canada and Denmark were the same as described for the first experiment ('Engagement').

One of the Japanese galleries contained calligraphy (*shūji*) samples by the fifth and sixth grade students from Yamakiya Elementary School (taken at the time of the first experiment). The other displayed in-progress watercolour paintings of flowers from the sixth graders. The painting gallery displayed the country, school, and grade of the artist along with each picture; the calligraphy gallery did not.

## Method

Students were briefly informed of the general concept of the system, and asked to use the DHD software on a tablet provided for them. There was a short pre-test group discussion, in which the students were asked the following questions:

1. How interested are you in seeing creative works by children from other countries?

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2. How much do you feel you have in common with children from other countries?

3. How interested are you in communicating with children from other countries?

Video-recording was used to observe the students interacting with the DHD web application software. The facilitator encouraged them to explore the system and to verbalize their reactions, but they were not given specific prompting or instructions for using the application.

Following this observation there was another in-class discussion, which returned to the previous three questions and posed two additional ones:

1. Was there anything in the system that made you feel as if you have something in common with children from other countries?

2. Was there anything in the system that made you want to communicate more with children from other countries?

The evaluation methodology is summarized in Table 4.2.

## Results

### Pre-test discussion

In the group discussion, all students expressed interest in seeing creative works by children from other countries. One student commented that it would be interesting to see how they show influences from their own culture in their drawings. At least one student, who claimed to enjoy doing art herself, expressed interest in visiting museums and galleries with her parents.

Asked how much they felt they had in common with children from other countries, the students generally agreed that it depended on the person, as well as on where they came from, and the circumstances of any encounter. One student thought that she would likely have more in common with countries that were close geographically; she "didn't know" about faraway countries like Japan. There was a general feeling that cultural differences would be a factor.

Interest in communicating with children from other countries was present, but expressed only tentatively. Some students said that they communicated with friends in other European countries, but there seemed to be little awareness of children in more distant parts of the world.

Table 4.2: Application experiment – evaluation methodology

| Question | Method | Observation points |
|---|---|---|
| Are students able to use the system without significant difficulty or frustration? | Observation | ☐ Do they show signs of impatience such as dismissive or annoyed comments/actions? <br> ☐ Do they have trouble understanding the touch gestures needed for navigation? <br> ☐ Do they discover how to use the gallery pages and view individual images? How quickly? |
| Do they enjoy using the system? What factors affect their enjoyment? | Observation | ☐ For how long do they maintain their interest? <br> ☐ Which features engage them longest? |
| Do any factors cause students to become more motivated to experience creative works from other children in faraway places or different cultures? | Discussion | |
| Do any factors cause students to feel more strongly that they can relate to such children in spite of the distances between them? | Discussion | |
| Do students become more motivated to try communicating with such children? | Discussion | |

## Observation

The students had no hesitation or difficulties in using the software interface; they quickly discovered how to use all the features without any signs of frustration. The only noted area for improvement was that the entry pop-up for submitting a sticker was rather small, making it somewhat awkward to select the input field.

Exploring the Digital School Hallway contents, the students felt the artwork from Canada looked too juvenile to be very interesting.[4] However, they showed great interest in the creative works of the Japanese students, exclaiming as a group when they were first displayed.

The Danish students were greatly impressed by the Japanese children's paintings of flowers (some of which are shown in Figure 4.5). However, they were also fascinated by the Japanese calligraphy, and were provoked to think about how and why they were created. They quickly noticed the names of the creators written in small characters at the side, and also correctly inferred that the works were drawn as part of ongoing training for children in Japanese writing. There were

Figure 4.5: Application – flower paintings by Japanese students

various comments expressing a desire to know the meaning of the characters.

The students quickly discovered the sticker feature, and found it to be an interesting, easy-to-understand means of posting feedback on pictures. The concept seemed familiar to them, and they also liked the actual sticker icons available. Some of them said that they would have liked the ability to send and receive actual comments with the other country's children.

It was seen that the students were able to use the system together in a socially-interactive group. However, their group interactions were much less pronounced than those of the students using the combined space in the first experiment. In addition, there was significantly less physical engagement, such as leaning in, changing positions, or physical reactions to stimuli like jumping up and down.
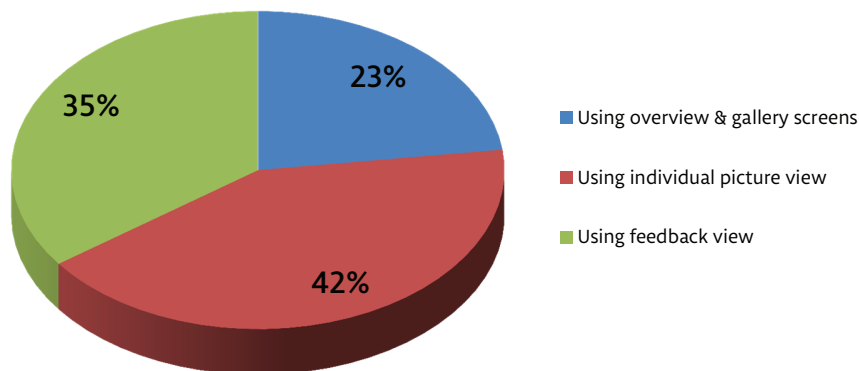


Figure 4.6: Application – breakdown of interaction time

The relative amount of time which the students spent engaged with the different parts of the software is shown in Figure 4.6. Of the total interaction period, they spent the greatest single amount of time looking at individual pictures, al-

though they also spent nearly as much time in the feedback screen. They spent the least amount of time looking through the overview and gallery screens; the overview screen was not measured separately, as the amount of time they spent in it was very small.

**Post-test discussion**

In the post-test discussion, there was some talk about the stylistic differences in the Japanese art compared to the others. In addition to the material characteristics, such as the use of colour (in the Japanese paintings) or lack thereof (in the calligraphy), the students spent some time discussing the emotions conveyed by the works. Several of them described the flower paintings in particular as 'happy' and 'sunny' – and they noted that this kind of picture was very different from what they, as Danish children, would typically create.

They also agreed that they would like to know more about the thinking behind the pictures. Interest in the idea of communicating with Japanese children was considerably more in evidence than it had been during the pre-test discussion. Among the students' comments were a number of the form "I would like to…":

  … see differences in other schools and countries, as it seems interesting.
  … experience the daily routine at schools in other countries.
  … talk to Japanese children about their calligraphy – how they make it, and the meaning behind it.
  … have a Japanese friend, because they seem nice.[5]

One girl also remarked that she thought as if Japanese girls would be similar to her. In general, there was a widespread feeling that it would be fun and interesting to talk to the Japanese children.

**Inferences**

Interest among the Danish students in getting to know the Japanese children, as well as curiosity about both their creative works and the meanings behind them, was evident. These feelings were expressed much more enthusiastically after they used the system. It was clear, both implicitly through the students' attitudes, and explicitly in their comments, that the experience of seeing Japanese children's creative works through Digital School Hallway succeeded in stimulating these feelings.

Using the software on a tablet by itself, without the combined space aspect, did not prevent them from using the system socially. However, the lack of physical interactivity limited the scope for inter-personal interaction, as the students remained in largely static positions relative to one another throughout.

The addition of the feedback feature gave the students an additional focus of interaction with the system, and they found it both appealing and interesting. This observation could not determine whether the feedback feature increased their interest specifically in the creative works and in the children who created them; this was set as one of the evaluation targets for the third experiment.

## 4.3    Third Experiment: Full System (Japan)



Figure 4.7: Full System (Japan) – students using Digital School Hallway

The third experiment took place on 1–2 July 2015 in Yamakiya Elementary School, Fukushima Prefecture, Japan (the same school as the first experiment).

This test was designed to evaluate the entire system as a whole, in its intended environment, with respect to the research questions posed in chapter 1 (§1.4).

### Prototype

The prototype was as described in §3.4. The digital tablet used for the DHD was a Microsoft Surface Pro 3 with a 30cm (2160×1440 pixel) display, running the Google Chrome web browser. It was secured inside the enclosure by running the elastic strap underneath the (folded-down) kickstand. The screen was set to maximum contrast in order to compensate somewhat for the high level of ambient light in the hallway.

The pictures used in the second experiment were retained; all picture captions were displayed in Japanese. Feedback (stickers) posted on pictures during by the Danish children were kept for the Japanese students to see.

## Method

Before the start of testing on the first day, the students were given a brief survey by questionnaire. The DHD prototype was then set up in the school hallway. The behaviour and interactions of the students in the hallway were observed with this prototype in place over two school days, concentrating on the break time between classes and after lunch.

As before, a naturalistic observation method with video-recording was used. Students engaging with the DHD were observed for their actions, reactions, comments, and other behaviour. In addition, usage statistics were gathered from the web server log and the feedback database.

At the end of the second day, a post-test survey was administered, again by questionnaire.

The evaluation methodology is summarized in Table 4.3 (where 'survey' refers to the pre-test and post-test questionnaires).

Both questionnaires and their collected responses are provided in Appendix B.

Table 4.3: Full System experiment – evaluation methodology

| Question | Method | Observation points |
|---|---|---|
| Do they enjoy using the system? What factors affect their enjoyment? | Observation + Statistics | ☐ For how long do they maintain their interest? <br> ☐ Which features engage them longest? <br> ☐ Do they appear excited or happy when engaged with any particular features or content? |
| Do any factors cause students to become more motivated to experience creative works from other children in faraway places or different cultures? | Observation + Statistics + Survey | ☐ Do they appear more interested in works which show information about place/age/gender and so on? <br> ☐ Do they spend a significant amount of time using the feedback feature? |
| Do any factors cause students to feel more strongly that they can relate to such children in spite of the distances between them? | Survey | |
| Do students become more motivated to try communicating with such children? | Survey | |

## Results

**Pre-test survey**

The purpose of the pre-test survey was to establish a base-line measurement of the children's attitudes. They were asked to indicate their strength of feeling for each of the three survey questions, rated from 1 (negligible) to 5 (strong). The averaged responses for each question[6] are shown in Table 4.4.

Table 4.4: Averaged responses to pre-test survey questions

| Question | Average |
|---|---|
| Interest in seeing creative works by overseas children | 4.44 |
| Feeling of having things in common with overseas children | 3.75 |
| Interest in communicating with overseas children | 3.81 |

**Observation**

As in the first experiment, students reacted quickly and excitedly when the DHD was first installed, clustering around to use and explore the Digital School Hallway. Even after this initial burst of enthusiasm subsided, they continued to spontaneously engage with it from time to time as they passed by throughout the first day.



(a) Group interaction                    (b) Placement & ergonomics

Figure 4.8: Full System – students interacting with DHD

As before, the children often used it in groups, chatting with each other as

they did so, and making comments or suggestions. Both boys and girls did this, in both separate and mixed groups, as well as individually. Girls, however, showed a somewhat stronger tendency to use the DHD in groups, as a social activity, compared to boys (see Figure 4.8(a)).

On the second day, the students' eagerness to use the DHD subsided somewhat, as though it had become a more established part of their environment. However, they continued to engage with it from time to time. Notably, their interactions were shorter, involving more rapid browsing through pictures and galleries, and less time spent using the feedback system.

With respect to the Digital School Hallway contents, the students seemed quite happy looking through the same pictures repeatedly, especially ones which they appeared to like. Even on the second day, students were observed spending time looking at pictures which they had already viewed on the first day.

New content in this experiment consisted of the students' own work (calligraphy and paintings) which had been added following the first experiment. They found it quite entertaining to look at their and their classmates' own creative works in this unaccustomed medium, and they particularly enjoyed being able to leave feedback on them in the form of stickers.

The students spent a significant portion of time (especially on the first day) using the feedback feature, which they clearly found interesting. Out of all the features of the DHD, this was probably the one which they engaged with the most, at least once they discovered it. They quite enthusiastically posted stickers on many pictures: not only the Danish and Canadian students', but their own friends' works as well. That said, they also spent a lot of time browsing through the galleries and looking at the various pictures. They tended to look through the pictures rapidly until they found one which was particularly interesting, spend a few moments looking at it, and then continue their browsing.

They noticed that some pictures displayed information about the school, gender, and age or grade of the artist. Although they appeared to find this information somewhat interesting, it did not play a noticeable factor in how much time they spent looking at these pictures.

During this interaction, the students manifested their interest in various ways. They exchanged excited comments with one another, jostled around, even jumped up and down on occasion. At other times, they focused quietly but attentively on the screen as they looked through the contents and features.

Even after their immediate interest subsided and they moved away, individual students often glanced at the screen as they passed by. In some cases, this appeared to be mere idle curiosity; but at other times, their attention was caught by the images being shown in the DHD's slideshow mode.

From an ergonomic perspective, the DHD design showed marked improvement

over the earlier experiment. The lower height made using it much easier for students, and the larger screen size also allowed for more effective group use (see Figure 4.8(b)).

**Post-test survey**

The purpose of the post-test survey was to determine whether the students' attitudes had shifted, and if any factors within Digital School Hallway could be identified as responsible.

The students were asked to rate their feelings on the same three subjects from the pre-test survey, again on a 5-point scale. The averaged responses are shown in Table 4.5; however, the differences relative to the pre-test survey fall within the margin of error, and are therefore statistically insignificant.[7]

Table 4.5: Averaged responses to rated questions on post-test survey

| Subject | Average |
| --- | --- |
| Interest in seeing creative works by overseas children | 4.27 |
| Feeling of having things in common with overseas children | 3.60 |
| Interest in communicating with overseas children | 4.07 |

The responses to the other (comment-based) survey questions were more informative. The majority of students indicated that they found looking at the overseas children's art interesting; many of them also said that they wanted to see more such works.

When asked about their desire to communicate with children in other countries, 12 out of 15 students indicated interest in doing so; six of these specifically cited looking at the creative works in Digital School Hallway as a factor in making them feel this way. Of the three students who did not report such interest, two of them cited their concern about the language barrier as a reason.

With respect to the feedback feature, nine students reported that they posted stickers on pictures. The most common reasons they gave for doing so was that they thought the picture was cute or well-drawn. Of the students who did not post stickers, their reasons were evenly split between not having enough time, not being sure how to do it, or feeling that there was no need for them to do so.

In the final comments section, three students said that they would like to see more creative works by students from other countries. Another nine described looking at such creative works through Digital School Hallway as a positive experience. The remaining three students gave various positive remarks but did not specifically cite Digital School Hallway as having affected their views.

**Statistics**

Table 4.6: Access statistics from web server log

| Gallery | Times opened | Pictures | Picture views |
|---|---|---|---|
| Canada, Drawings 1 | 4 | 21 | 66 |
| Canada, Drawings 2 | 5 | 18 | 57 |
| Canada, Models | 6 | 7 | 24 |
| Denmark, Paintings | 7 | 6 | 21 |
| Japan, Calligraphy | 10 | 16 | 62 |
| Japan, Paintings | 9 | 14 | 54 |
| Totals | 41 | 82 | 284 |

Statistics regarding access to pages and images in the DHD software were gathered from the web server log. These are shown in Table 4.6.

These numbers correspond to GET commands received by the HTTP server, which may not take local browser caching into account. However, since the cache should expire at approximately the same rate for every gallery, these numbers should provide a reasonably close measure of the relative frequency of access.
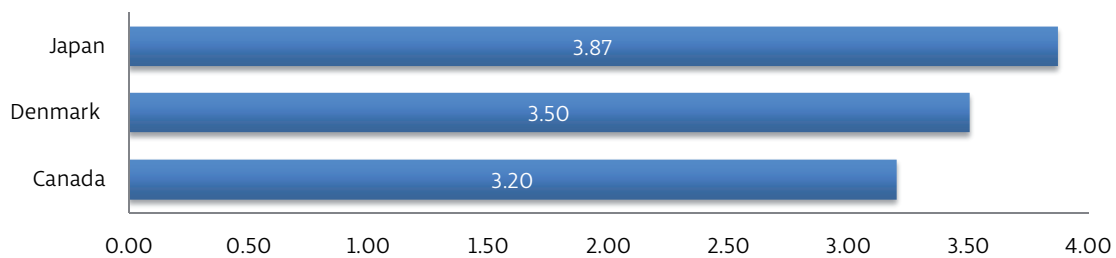


Figure 4.9: Full System – average views per picture

Based on these numbers, Figure 4.9 shows the average number of views per picture, broken down by country.

Table 4.7: Statistics of feedback posted

| Country | Stickers posted | Pictures with stickers | Total pictures |
|---|---|---|---|
| Canada | 5 | 4 | 46 |
| Denmark | 9 | 3 | 6 |
| Japan | 37 | 19 | 30 |
| Totals | 51 | 26 | 82 |

Statistics regarding the feedback system were also analyzed with reference to the SQL database containing sticker data. These are summarized in Table 4.7.

Figure 4.10 shows the percentage of pictures from each country that had stickers posted on them by students over the two days of the experiment. Japan had the highest proportion of pictures receiving feedback, and Canada had the least.
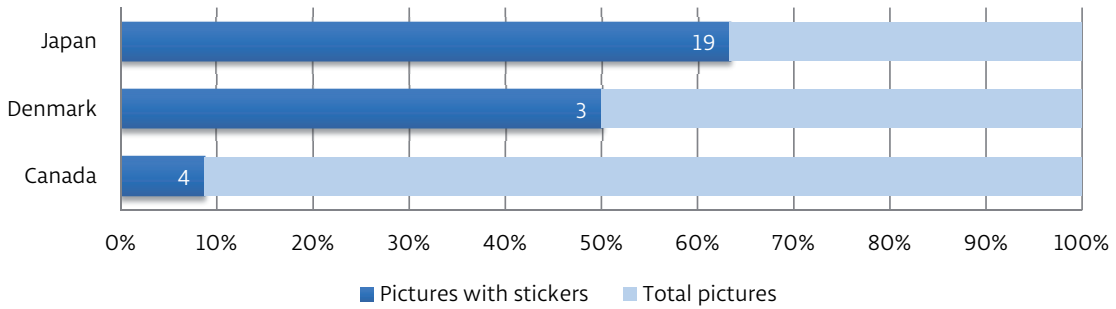


Figure 4.10: Full System – proportion of all pictures receiving feedback

By contrast, Figure 4.11 breaks down the statistics in a different way, by showing the average number of stickers per picture from each country. As can be seen, the works from Denmark scored highest. In other words, while more Japanese pictures received at least one sticker, the Danish pictures which received stickers had (on average) more of them.
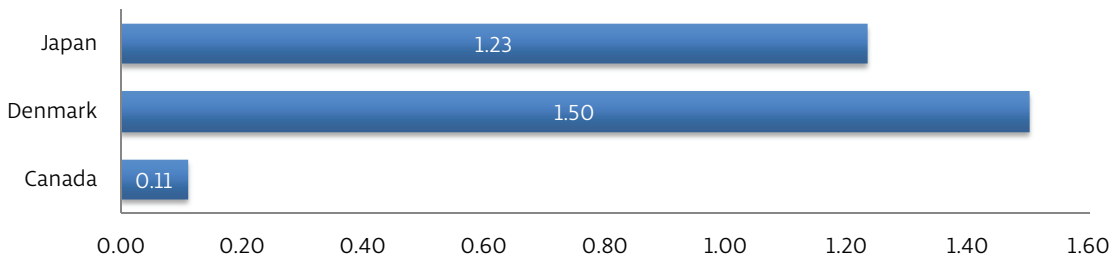


Figure 4.11: Full System – average number of stickers per picture

Analyzing the statistics by day, more viewing of pictures was recorded on the second day. Since, from the observation, the students spent less time using the DHD on the second day, this increased activity evidently took place during a smaller number of interactions. Conversely, significantly fewer stickers were posted on the second day than on the first. These statistics support the findings from the observation, noted previously.

Table 4.8: Breakdown of statistical activity by day

|       | Opening galleries | Viewing pictures | Posting stickers |
|-------|-------------------|------------------|------------------|
| Day 1 | 17                | 93               | 42               |
| Day 2 | 24                | 191              | 9                |

**Remarks**

The feedback feature noticeably increased the appeal of Digital School Hallway compared to the Engagement experiment. As noted, the students were quite enthusiastic about posting stickers on their classmates' pictures. Nonetheless, they were perfectly willing to do so for overseas students' pictures as well. It would seem, therefore, that this means of communicating across distances is a viable approach for elementary school students.

With Digital School Hallway in the school for a longer interval, the students became accustomed to it, appearing to accept it as part of their environment. As this happened, their interest in engaging with it subsided somewhat, and came to more closely resemble the way in which they interacted with other things in the same environment – such as physical pictures, books, toys, and so on.

Overall conclusions will be discussed in Chapter 5. However, based on their comments, the students in this experiment gained an increased interest in viewing the creative works of children from other countries, as well as in communicating with them or getting to know them more.

# Notes

1    The children's artworks from Canada were made available by St Jerome Elementary School in Ottawa, Ontario; those from Denmark were provided by Isabel Fróes of the University of Copenhagen.

2    Per Markopoulos et al. (2008).

3    The students appeared comfortable with the presence of the researcher, who had previously worked as a teacher at the same school.

4    The creative works from Canada were mostly from children in grades 4 and below.

5    The comments were originally given in Danish; they have been paraphrased in English.

6    Given the sample size (16 students), the margin of error is 25%; this implies that a difference in rating of 1.25 or less is statistically insignificant.

7    The margin of error in the post-test survey (15 respondents) is 26%, or 1.3 points.

# Chapter 5
# Discussion

The objective of this research has been to provide elementary school students with an opportunity to share their creative works with one another across large distances, with the aim of developing both their capacity to relate to one another, and their motivation to communicate, across those distances. To this end, the Digital School Hallway concept was designed and tested with children in Japan and Denmark.

## 5.1  Conclusions

Three research questions were posed (§1.4) with respect to the design concept; these will now be discussed in terms of the observed results.

**Can it motivate elementary school students to experience the creative works of others across large geographic and/or cultural distances?**

The presence of the DHD in the school hallway was found to attract students and encourage them to interact with it. Its presence as part of the physical space also enabled them to conceptually include it in their 'play environment', leading to unstructured and spontaneous use.

The students showed a noticeable interest in looking at the creative works of their counterparts in other countries. Digital School Hallway gave them an opportunity to experience such works which they would not otherwise have had without leaving their own school. Significantly, the knowledge that creative works were from faraway places and cultures was an observable factor in their interest in viewing those works. The students themselves indicated as such in their comments.

Whether such interest can be sustained over the long term remains to be seen. It is possible, once the novelty of such a system (and its technology) wears off, that students' motivation to explore it may decrease. This would not, however, necessarily be detrimental to the overall objective – so long as interest remains for long enough to have a lasting empathetic effect, and to foster a desire to learn about, and communicate with, people in far-off places. As children are more

responsive than adults to empathetic skills development, the time required to instill such a lasting interest may be relatively short.

Furthermore, students do engage with normal objects (novel or not) in their environment during their daily play, depending on their own whims; it is reasonable to suppose that Digital School Hallway would be the same in this regard, once they start to see it as 'normal'. The comparatively intermittent interest that the students showed during the second day of the final experiment appears to bear this theory out. Rather than constantly engaging with it during their free time, they started to use the DHD casually and spontaneously, similarly to how they engaged with other matter-of-fact items (such as books and toys) in the same area. Such habits of use remain consistent with the overall objectives of Digital School Hallway.

**Does it help them experience an increased feeling that they can relate to one another in spite of such distances?**

The students in both Denmark and Japan indicated in comments that viewing the other students' creative works through Digital School Hallway had caused them to think more about the similarities and differences between them.

Some of these were relatively superficial, such as noting differences in the drawing tools and techniques used. However, several students did express curiosity about the meanings, thoughts, or contexts behind the various works. Others noticed how certain themes were common in the art of both countries' children. "Everyone likes animals and characters...", as one Japanese child put it.

Perhaps more tellingly, there were students in both countries who, after using Digital School Hallway, said that they would like to make friends with children in the other country.

It therefore seems reasonable to conclude that Digital School Hallway can indeed contribute to developing feelings of commonality between children across distances.

**Does it increase their motivation to communicate across such distances?**

Comments by students in both countries also indicated a desire to communicate with children overseas. A number of them specifically credited Digital School Hallway with increasing their motivation to do so. Among the reasons cited was the feeling, based on looking at their artwork, that the other country's children must be nice or interesting people. In other cases, students said that they would like the opportunity to ask their counterparts about their creative works – for example, why they drew or painted what they did.

Among the Japanese students who showed reluctance in this area, two out of three cited the language barrier as a reason – which suggests that they might not lack willingness to communicate so much as lack confidence in their ability to do so. The non-verbal means of communication used in Digital School Hallway may therefore have the potential to improve these children's motivation as well, at least if developed sufficiently.

In general, it would seem that all three research questions can be answered in the affirmative. The results are sufficiently encouraging to justify further development of Digital School Hallway, as research and as a system for use in schools.

**Other conclusions**

The evaluation of Digital School Hallway involved children in two very different countries, Japan and Denmark. Despite the large cultural divide, the reactions and impressions of these two groups of children exhibited more commonalities than differences.

Perhaps the most significant difference between the two groups was in their tentative attitudes towards cross-cultural contact in general. Some of the Danish children mentioned having friends in other (nearby) countries, whereas to the Japanese children, all foreign children appeared equally unfamiliar. Since Japan is an island nation lacking strong economic integration with its neighbours, this is perhaps understandable.

Interestingly, when asked about the prospect of communicating with children from other countries, the Danish students seemed more concerned about cultural differences than the Japanese students. The latter, on the other hand, expressed a few reservations about language barriers which the Danish students did not.

Asked about what they saw as differences, both groups of children described being struck by the ways in which the other country's students made use of colour in their paintings. However, the very fact of their shared reaction to this purported difference only served to underline the fundamental similarities between them.

## 5.2   Limitations

The research as carried out had a number of limitations. Based on the sample size, the margin of error made it challenging to reliably quantify some of the numerical statistics – particularly those designed to measure changes in attitude. In addition, an observation conducted over a longer period of time (such as weeks instead of days) might have been better able to judge the effect of Digital School Hallway's long-term presence in the school environment.

The selection of creative works, especially from Denmark, was limited, and only basic information about the artists was available. This, combined with the relatively short observation time, made it difficult to judge whether including such information with each picture would have a noticeable effect on the research objectives.

With respect to the experimental prototype, certain aspects left room for improvement. For one, the digital tablet's battery life, while sufficient for the experiments, was a concern. If a DHD is to be installed on a long-term basis, constant power should be available.

Another issue with the DHD hardware was the size of the screen. Even though this was improved for the Full System experiment, it remained something of a limiting factor. A TV-sized (or larger) touch panel screen would allow for more extensive group use; however, this could significantly increase the equipment costs.

In principle, a fully-realized Digital School Hallway community would have its contents dynamically updated in real time as all participating schools add creative works. This was not done with the prototype: instead, contents were manually added between sessions using static HTML. Dynamic updating would allow simultaneous use by multiple schools, and enable more thorough, longer-term testing.

## 5.3   Future Work

There is ample scope for future research into the Digital School Hallway concept. As noted above, the effects of the system in various other contexts are worth evaluating: over a longer period of time, with the involvement of a larger number of schools and countries, or with various features added.

Conceptually, a Digital School Hallway community is a permanent or at least long-term installation in each school. More investigation into how the system functions, and whether it continues to fulfill the objectives, in such a context is therefore highly desirable. Whether and how it becomes mundane over time in the perceptions of its target users should be of particular interest.

Digital School Hallway has considerable room to grow as a design. Technologically, one major gap in its functionality is the lack of a built-in facility for bringing participating schools together at the outset. At present, schools who wish to jointly create a community must have some separate channel of communication. Some way of allowing interested schools to contact each other and discuss the necessary arrangements might make a useful addition to the system's functionality. In designing such a facility, however, care should be taken to ensure that trust, safety, and security can be preserved to the satisfaction of all parties.

There is naturally also scope for improvement within the existing features. For example, there is currently provision for only a limited set of data about the artists who created each work: country/school, approximate age, and (in some cases) gender. Adding an artist's name is an obvious possible enhancement; indeed, early versions of the concept considered including this information. This idea was ultimately dropped for the sake of maximizing assurances to the schools participating in experiments that their students' privacy would be safe. However, once schools, teachers and parents become more familiar, and comfortable, with the Digital School Hallway concept, the idea of including the artist's name could perhaps be revisited. (The feedback system does allow for names to be entered; however, these are freely-chosen identifiers, possibly nicknames, and children are under no obligation to even use the same identifier twice.)

If more data can be associated with each picture, the gallery view could also benefit from various possible improvements; for example, support of searching, sorting, filtering, and other such enhancements. As well, the feedback system could support a more tangible experience of making connections, as students would be able to seek out works by those who have left them feedback, and thus leave their own feedback in return.

On the educational side, there is considerable appeal to the idea of encouraging teachers to incorporate Digital School Hallway into their classes. There is an obvious fit for this in the arts curriculum, beginning with something as simple as using the Digital School Hallway community as a motivational tool to encourage students' creative output. However, the direct access to art from other countries may provide opportunities for other subjects, such as geography or civics: examining art from another culture and encouraging students to think about the people and the contexts behind that art could provide them with a more tangible and immediate experience than simply looking at works in museums or textbooks.

A more ambitious approach, if reliable and on-going channels of communication exist, would be to coordinate educational activities between the participating schools. Examples might include running joint art projects, or synchronizing lesson plans and curricula. Again, this idea has potential beyond the artistic subjects – Digital School Hallway is designed to foster understanding and empathy between cultures, and any subject which encourages students to think about the outside world could benefit from such an approach.

Teachers themselves are well-positioned to come up with innovative ways of expanding the concept of Digital School Hallway – as long as they are encouraged to see it not as an additional burden on an already-crowded curriculum, but as a tool for enhancing the school experience. Seen in this light, every school should be able to invent ways of using Digital School Hallway which even the researcher cannot presently anticipate.

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# Appendices

## A    Fieldwork Survey

This survey was carried out at two elementary schools in Kawamata Town, Fukushima Prefecture: Yamakiya Elementary School, and Kawamata Minami Elementary School. Different questionnaires were completed by each of three survey groups: students, teachers, and parents/guardians.

All questionnaires were given in Japanese. The contents of each are reproduced below, with some formatting changes for clarity.[1] An English translation is also provided for each questionnaire.

### Students

This questionnaire was completed by fifth and sixth grade students at each school.

**Contents of Questionnaire (Japanese)**

学校名：
学年：
男子／女子：

お絵かきや作文などの「作品」について、以下の質問にお答えください。

(Q1)　次の４つのうち、どれをするのが好きですか？当てはまるものすべてに〇をつけてください。
　　a.　絵
　　b.　作文、詩
　　c.　習字
　　d.　工作、造形

(Q2)　あなたの作品を誰に見てもらいたいですか？当てはまるものすべてに〇をつけてください。
　　a.　同級生
　　b.　他の学年の子供たち
　　c.　お父さんやお母さん

    d. 兄弟、姉妹、おじいちゃん、おばあちゃん、親戚
    e. 先生
それはなぜですか？

(Q3) あなたは他のどんな人たちに作品を見てもらいたいですか？当てはまるものすべてに〇をつけてください。
    a. 近所の人たち
    b. 川俣町の他の学校の生徒や先生
    c. 福島県の他の地域の学校の生徒や先生
    d. 福島県の他の地域の人たち
    e. 他の県の学校の生徒や先生
    f. 他の県の人たち
    g. 外国の学校の生徒や先生
    h. 外国の人たち
それはなぜですか？

(Q4) あなたの作品を見てもらうとき、感想を言ってもらいたいですか？１つ〇をつけてください。（はい／いいえ／どちらでもない）

(Q5) あなたは誰に作品の感想を言ってもらいたいですか？当てはまるものすべてに〇をつけてください。
    a. 同級生
    b. 他の学年の子供たち
    c. お父さんやお母さん
    d. 兄弟、姉妹、おじいちゃん、おばあちゃん、親戚
    e. 先生
    f. 他の学校の人たち
    g. その他だれでも
それはなぜですか？

(Q6) あなたは友達の作品を見ることは好きですか？（はい／いいえ／どちらとも言えない）
それはなぜですか？

(Q7) あなたはどんな人の作品を見てみたいと思いますか？当てはまるものすべてに〇をつけてください。
    a. 川俣町の他の学校の子どもたちの作品
    b. 福島県の他の学校の子どもたちの作品
    c. 他の県の子どもたちの作品
    d. 他の国の子どもたちの作品
それはなぜですか？

(Q8) あなたはどんな友達と会ったり話したりしてみたいですか？当てはまるものす

べてに〇をつけてください。
   a. 川俣町の他の学校の子どもたち
   b. 福島県の他の学校の子どもたち
   c. 他の県の子どもたち
   d. 他の国の子どもたち
それはなぜですか？

## Contents of Questionnaire (English Translation)

School name:
Grade:
Gender (M/F):

Please answer the questions below regarding 'creative works'.

(Q1) Out of these four types of creative works, which one(s) do you enjoy making? Circle all that apply.
   a. drawings/paintings
   b. writing/poems
   c. calligraphy
   d. sculptures/models

(Q2) Whom do you like having see your creative works? Circle all that apply.
   a. classmates
   b. students in other grades
   c. parents
   d. siblings/grandparents/other relatives
   e. teachers
Why?

(Q3) What other people would you like to be able to see your creative works? Circle all that apply.
   a. members of the public in your neighbourhood
   b. students and teachers from other schools in Kawamata
   c. students and teachers from parts of Fukushima Prefecture
   d. members of the public in other parts of Fukushima Prefecture
   e. students and teachers from schools in other prefectures
   f. members of the public in other prefectures
   g. students and teachers from schools in other countries
   h. members of the public in other countries
Why?

(Q4) When other people see your creative works, do they offer you their opinions on it? (Yes / No / Can't say)

(Q5) From whom do you like getting opinions or feedback on your creative works? Circle all that apply.
  a.  classmates
  b.  students in other grades
  c.  parents
  d.  siblings/grandparents/other relatives
  e.  teachers
  f.  people from other schools
  g.  other people
Why?

(Q6) Do you like seeing creative works by your friends? (Yes / No / Can't say)
Why?

(Q7) What other peoples' creative works would you like the chance to see? Circle all that apply.
  a.  children from other schools in Kawamata
  b.  children from other schools in Fukushima Prefecture
  c.  children in other prefectures
  d.  children in other countries
Why?

(Q8) What other children would you like the chance to communicate with? Circle all that apply.
  a.  children from other schools in Kawamata
  b.  children from other schools in Fukushima Prefecture
  c.  children in other prefectures
  d.  children in other countries
Why?

## Survey Responses

The survey responses are summarized in Tables A.1 through A.19. Respondents' comments are reproduced, verbatim, in the original Japanese. A blank cell indicates that no answer was given for the corresponding question.

Each student respondent is assigned a unique identifier of the form "Y$g$-$x$" or "M$g$-$x$", where Y indicates a student from Yamakiya Elementary School, M indicates a student from Kawamata Minami Elementary School, $g$ is the student's grade, and $x$ is an arbitrarily-assigned student number within that grade. For example, the identifier "Y6-4" indicates Yamakiya Elementary School, grade six, student #4.

Because the school name and grade are represented in the identifier, these values are not shown in separate table rows.

Students from Kawamata Minami Elementary school (respondent identifiers M5-1 through M6-31) did not provide responses to questions Q5–Q8. Accordingly, the corresponding rows have been omitted for these respondents.

Table A.1: Student responses (Y5-1 – Y5-4)

|  | **Student Y5-1** | **Student Y5-2** | **Student Y5-3** | **Student Y5-4** |
|---|---|---|---|---|
| Gender: | M | F | F | M |
| (Q1) | d | b | a | a,d |
| (Q2) | a,c,d,e | a,d | d | c,d |
| – Why? | 工作のひみつなどをしってほしいから |  | おばあちゃんやおじいちゃんに自分はこんなふうに書いたよと見てもらいたい | 家族はしょちゅう学校にこないのでみんなに見せて「じょうずだよ」などの声をききたいから |
| (Q3) | g,h | a | a | g |
| – Why? | どう思うかしりたい 日本人とどう意見かちがうのか |  | 近所の人に自分のこういう作品を見てもらいたいから | 日本の絵の書き方などを見てもらいたい |
| (Q4) | Yes | Yes | Can't say | Yes |
| (Q5) | a,c,d,e,g | a | a | c,d |
| – Why? | みんなどう思うかしりたい | いっしょに作ったりしたから | 同級生はいつもいっしょにいるから、言ってもらいやすい | 心がうれしくなるから |
| (Q6) | Yes | Yes | Yes | Yes |
| – Why? | 自分とどうちがうかしりたい | みんながどんなものをつくったかみてさんこうにするから | 友達はどのように書けたかを見れるから |  |
| (Q7) | d | c | a | d |
| – Why? | 他の国ではどういった工作をしているのかしりたいから | たくさんのさくひんをみたいから | 川俣町の人はどのような作品を書いたか、興味がある | ぼくとはちがうどんな書きかたをしているのかをしりたいから |
| (Q8) | d | a,c | c | c |
| – Why? | 言葉はと通じないかもしれたいけど、できればしたいから | みんなとともだちになりたいから | 他の県の人達だと、会ってことがないから、話しやすい | どんなことをおもっているか |

Table A.2: Student responses (Y5-5 – Y5-8)

|  | **Student Y5-5** | **Student Y5-6** | **Student Y5-7** | **Student Y5-8** |
|---|---|---|---|---|
| Gender: | F | M | M | M |
| (Q1) | c | d | d | d |

Table A.2 (continued)

| | Student Y5-5 | Student Y5-6 | Student Y5-7 | Student Y5-8 |
|---|---|---|---|---|
| (Q2) | c | c | a,b,c,d,e | a |
| – Why? | ほめてくれたり、アドバイスをしてくれるから | 自分ががんばってやったから | みんなおせわになっているから | ほかの人のもみたいから |
| (Q3) | d | a | a,b,c,d,e,f,g,h | b |
| – Why? | 知らない人にも自分の作品を見てもらって感想を聞いてみたいから | あまり見てもらいたくないから | いろいろ支援してくれたりしたから | |
| (Q4) | Yes | Yes | Yes | Yes |
| (Q5) | c | a | a,b,c,d,e,f,g | b |
| – Why? | くわしく話してくれるから | 友だちもつくるから自分のを見てもらったり見たりしてみたいから | | |
| (Q6) | Yes | Yes | Yes | Yes |
| – Why? | 友達の作品は自分の考と違うものがたくさんあるから | 自分とどうちがうかみたいから | いろいろおもしろいものがあっていいから | どんなのかみてみたいから |
| (Q7) | d | c | d | a |
| – Why? | 他の国の作品は見たことがないから | いろいろな人のを見たいから | 外国の人の作品をあまりみたことかいから | |
| (Q8) | d | c | b,c,d | a |
| – Why? | 言葉を聞いてみたいし、他の国の子どもたちと会ってみたい | いろいろな人と話をしてみたいから | しゃべったことがないから | 川俣町にいるから |

Table A.3: Student responses (Y5-9 – Y6-2)

| | Student Y5-9 | Student Y5-10 | Student Y6-1 | Student Y6-2 |
|---|---|---|---|---|
| Gender: | F | F | F | M |
| (Q1) | d | a,d | b | d |
| (Q2) | c | a,c,d | a,c,d,e | c |
| – Why? | 材料などをあつめてくれたりおせわになってるから | | 見てもらいたいから | ほめてもらうため |
| (Q3) | | b | a,b,g | h |

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Table A.3 (continued)

|  | **Student Y5-9** | **Student Y5-10** | **Student Y6-1** | **Student Y6-2** |
|---|---|---|---|---|
| – Why? |  | わたしはこのように つくっているとしって ほしいから | 見てもらいたいか ら。 | みんなに元気になっ てもらうため |
| (Q4) | Yes | Yes | Yes | Yes |
| (Q5) | c | a,c | a,c,d,e | a |
| – Why? |  | おややともだちに言 われるとうれしいか ら | 言ってくれるとうれ しいから | アドバイスしてくれ るから |
| (Q6) | Yes | Yes | Yes | Yes |
| – Why? | 友達がどんな物を 作ったかしりたいか ら | みんなどんなふうに つくっているかわか るから | 見てもらいたいから | さんこうになるから |
| (Q7) | a | b | a,b,c,d | c,d |
| – Why? | 他の小学校の友達 の作品を見てみた いから | いろいろな作り方が 分かるから | 他のところは、どん な作品をくっている のかが知りたいから | どんな物をつかって いるのか |
| (Q8) | a | a | a,b,c | d |
| – Why? | 他の学校の友達か ら、学校にはどんな 子がいるかきいてい るから | やさしい友達をたく さんつくりたいから | 話すのが好きだか ら。ほかの国は、外 国語がしゃべれない から | 生活をどのように考 えているのか |

Table A.4: Student responses (Y6-3 – Y6-6)

|  | **Student Y6-3** | **Student Y6-4** | **Student Y6-5** | **Student Y6-6** |
|---|---|---|---|---|
| Gender: | F | F | M | M |
| (Q1) | a,d | a,b,d | a | d |
| (Q2) | c,d | a,c,d | e | a,c,d,e |
| – Why? | がんばって描いたか ら | 自分の作文を見て 楽しんでもらいたい から | 先生に見したいから | 見せてもはずかしく ないから |
| (Q3) | g | a,f,h | e | a,b,h |
| – Why? | 日本のことをもっと 知ってもらいたいか ら | 悲しい事とかあった ら、元気になってほ しいから | いろいろな先生に見 てもらいたいから | いろんな人に見てほ しいから |
| (Q4) | Can't say | Yes | Yes | Yes |
| (Q5) | a,c,d | a,c,d,f | a | a |
| – Why? | 身近だから | うれしいから | 友達に選べられるの はうれしいから | 友達にいってもらえ るとうれしいから |

Table A.4 (continued)

|        | **Student Y6-3** | **Student Y6-4** | **Student Y6-5** | **Student Y6-6** |
|--------|------------------|------------------|------------------|------------------|
| (Q6) | Yes | Yes | No | Can't say |
| – Why? | 友達が、どういうふうに絵を描いたり、作っているのかをしりたいから | とてもさんこうになるし、見てておもしろいから | あまりきようみないから | 見せたくない人や見てもらいたい人もいるから |
| (Q7) | a,c,d | c,d | c | d |
| – Why? | 自分の小学校のしかあまり見てないから | 自分の県や国の人たちのを見て楽しみたい | 他の県はどのような作品か知りたいから | 外国は、どのような作品があるのかしりたいから |
| (Q8) | a,b,c,d | a,b,c,d | c | a,b |
| – Why? | あまり、まわりの人と話さないから（ちがう小学校） | たくさんの人と友達になりたいから | 楽しくしゃべられるかも知れないから | いろいろな人と話してみたいから |

Table A.5: Student responses (Y6-7 – Y6-10)

|        | **Student Y6-7** | **Student Y6-8** | **Student Y6-9** | **Student Y6-10** |
|--------|------------------|------------------|------------------|-------------------|
| Gender: | M | M | M | M |
| (Q1) | a | a,c,d | d | d |
| (Q2) | d | a,c,e | a,c,d,e | a,b,c,d,e |
| – Why? | | | 見る目があるから | |
| (Q3) | e | a,b,c | a | c,d |
| – Why? | | | うまいねーとしまめてくれるから | みんなに見てもらえるとうれしいから |
| (Q4) | Yes | Can't say | Yes | Yes |
| (Q5) | a,c,e | a,c,e | a,c,d,e | |
| – Why? | 知っている人に見せるとはずかしくないから | | いみが分かるから | |
| (Q6) | Yes | Yes | Yes | |
| – Why? | おもしろいから | ほかの人の作品をさんこうにできるから | どんなのをつくっているのか分かるから | |
| (Q7) | a,b,c,d | b,c | a | |
| – Why? | ちがう学校に見てもらうと、楽しいから | 他の県のもみたいから | 同じ川俣だけどというゆうのをつくっているのか | |
| (Q8) | a,b,c | b,c,d | a,d | |

Table A.5 (continued)

|  | **Student Y6-7** | **Student Y6-8** | **Student Y6-9** | **Student Y6-10** |
|---|---|---|---|---|
| – Why? | 楽しいから | しゃべり会ってみたいから | 口げんかにならないから | |

Table A.6: Student responses (Y6-11 – M5-3)

|  | **Student Y6-11** | **Student M5-1** | **Student M5-2** | **Student M5-3** |
|---|---|---|---|---|
| Gender: | M | F | F | F |
| (Q1) | a,d | a,d | a,d | a,d |
| (Q2) | a,b,c,d,e | a | c,d | a,c,d |
| – Why? | みんなに見てもらった方がいいから | 友達に見せたり見たりするのが楽しいから | | お父さんやお母さん姉妹おじいちゃんおばあちゃんはかぞくだからみせたいと思ったから友だちのみせたい人だけ(同級生) |
| (Q3) | f,h | b | a | f,g,h |
| – Why? | 外国や他の人にも知ってほしいから | いろんな人に見てもらいたいから | | 他の県にはいとこがいるから |
| (Q4) | Yes | Can't say | Yes | Yes |
| (Q5) | a,c,d,e | | | |
| – Why? | 知っている人の方がいいから | | | |
| (Q6) | Yes | | | |
| – Why? | いいことをまねしたいから | | | |
| (Q7) | a,c,d | | | |
| – Why? | 外国や知らない人のが見たいから | | | |
| (Q8) | a,d | | | |
| – Why? | 知っていたりする、他の国の人にも会ってみたいから | | | |

Table A.7: Student responses (M5-4 – M5-7)

|  | **Student M5-4** | **Student M5-5** | **Student M5-6** | **Student M5-7** |
|---|---|---|---|---|
| Gender: | F | M | M | F |
| (Q1) | a,d | a,d | a | a,d |

Table A.7 (continued)

| | Student M5-4 | Student M5-5 | Student M5-6 | Student M5-7 |
|---|---|---|---|---|
| (Q2) <br> – Why? | c,d <br> 自分のせいちょうをみてほしい | a <br> いっしょのかだいで書いたり作ったりした人だからです | a <br> 絵を、みせ合って友達のよさをしりたい | a,c,d,e <br> 見てもらって感想を聞きたいから |
| (Q3) <br> – Why? | g | <br> 同級生で同じ学校の人にしかみせちくないからです | g,h <br> 日本で、かく絵を、知ってもらいたい | a <br> 近所の人にも見てもらって感想を聞きたいから |
| (Q4) | Yes | No | Yes | Yes |

Table A.8: Student responses (M5-8 – M5-11)

| | Student M5-8 | Student M5-9 | Student M5-10 | Student M5-11 |
|---|---|---|---|---|
| Gender: | M | F | F | F |
| (Q1) | a,d | a,d | a,b,d | a,b |
| (Q2) <br> – Why? | a,c,d,e <br> 見てもらいたいから | a,c <br> どんなのを作ったか見せたいから（見せ合いたい） | c,d <br> 家族に見せてもあまりはずかしくないから | c,d <br> みてもらいたいから |
| (Q3) <br> – Why? | <br> 自分の身内と先生と親友にしか見てもらいたくないから | a <br> 見せる人の人数が少ないから | | <br> はずかしいからみてもらいたくない |
| (Q4) | No | Yes | Can't say | Can't say |

Table A.9: Student responses (M5-12 – M5-15)

| | Student M5-12 | Student M5-13 | Student M5-14 | Student M5-15 |
|---|---|---|---|---|
| Gender: | M | F | F | M |
| (Q1) | a,d | a,d | a | b,c,d |
| (Q2) <br> – Why? | c,d <br> ほめられるから | c,d <br> 特にない | d <br> あまり見せたことがないから | a,c,d <br> 家族や、友だちに、みてもらいたいから |
| (Q3) <br> – Why? | g,h | <br> はずかしいから | d <br> 福島県の他の地いきの人に見せたことがないから | h <br> なにをつくっているのか、他の国は、たぶんみたことがないとおもうから |

(continued on next page)

Table A.9 (continued)

|       | **Student M5-12** | **Student M5-13** | **Student M5-14** | **Student M5-15** |
|-------|-------------------|-------------------|-------------------|-------------------|
| (Q4)  | No                | Yes               | Yes               | Can't say         |

Table A.10: Student responses (M5-16 – M5-19)

|            | **Student M5-16** | **Student M5-17** | **Student M5-18** | **Student M5-19**                    |
|------------|-------------------|-------------------|-------------------|--------------------------------------|
| Gender:    | F                 | M                 | M                 | M                                    |
| (Q1)       | a,c,d             | c                 | a,d               | a,d                                  |
| (Q2)       | c,d               | c,d               | a,c               | a                                    |
| – Why?     |                   | 特になし          |                   | 同級生いがいにみせるのが、はずかしいから |
| (Q3)       | b,e               | a                 | a                 | h                                    |
| – Why?     |                   | 特になし          |                   |                                      |
| (Q4)       | Yes               | Yes               | Yes               | No                                   |

Table A.11: Student responses (M5-20 – M5-23)

|            | **Student M5-20**                      | **Student M5-21**            | **Student M5-22** | **Student M5-23**                  |
|------------|----------------------------------------|------------------------------|-------------------|------------------------------------|
| Gender:    | M                                      | M                            | F                 | M                                  |
| (Q1)       | b,d                                    | b,c,d                        | a,d               | a,d                                |
| (Q2)       | a,c,d,e                                | c                            | a,c               | c,d                                |
| – Why?     | 見られて上手だねと言われるとうれしいから | まだあまり見ていないから      |                   | いいものができたらじまんできるから  |
| (Q3)       | a,d,f                                  | a                            |                   | a                                  |
| – Why?     | 他の地域や県の人たちに見てほしいから    | 他の所の人には見せたくないから |                   |                                    |
| (Q4)       | Yes                                    | Can't say                    | Can't say         | Can't say                          |

Table A.12: Student responses (M6-1 – M6-4)

|  | **Student M6-1** | **Student M6-2** | **Student M6-3** | **Student M6-4** |
|---|---|---|---|---|
| Gender: | M | F | M | F |
| (Q1) | a,b | a,b | a,d | b |
| (Q2) | a | a | d,e | c |
| – Why? | じまんしたいから!! | 色々な角度からみた感想を教えてほしいから | くろうしてつくるから | 学校での勉強の内容を知ってほしい |
| (Q3) | d,h | f | b | b |
| – Why? | 同じく | 様々な人に見てもらいたいから |  | Q2と同じ |
| (Q4) | No | Yes | Can't say | Can't say |

Table A.13: Student responses (M6-5 – M6-8)

|  | **Student M6-5** | **Student M6-6** | **Student M6-7** | **Student M6-8** |
|---|---|---|---|---|
| Gender: | M | F | M | F |
| (Q1) | d | d | d | c |
| (Q2) | c,d | a,b,c,d,e | c | c |
| – Why? | ほめてほしい | みんなにみてもらいたいから | 自分の成長を見てもらいたいから | 自分の作品がどういうのか見てもらいたい |
| (Q3) | a | a,c,d,e,f,g,h | e | f |
| – Why? | どんな作品か見せたいから | 広い地域か外国の方にもみせてもらいたいから | 他の県ではどのような評価なのか知りたい | 県によって作品がどういうのかは分からないから |
| (Q4) | Can't say | Yes | Can't say | Can't say |

Table A.14: Student responses (M6-9 – M6-12)

|  | **Student M6-9** | **Student M6-10** | **Student M6-11** | **Student M6-12** |
|---|---|---|---|---|
| Gender: | F | F | M | F |
| (Q1) | d | c | d | c |
| (Q2) | a,c,d,e | d | b | a |
| – Why? | お父さんやお母さんには、がんばったころを見せたいから | がんばって作ったこと見てもらいたいから | ぼくは、工作や造形がうまいのでじまんしたい | 同級生に見てもらったらうれしいから |
| (Q3) | d | g | a | a |

Table A.14 (continued)

| | Student M6-9 | Student M6-10 | Student M6-11 | Student M6-12 |
|---|---|---|---|---|
| – Why? | いとこに作品を見せたいから。おばあちゃんたちに見せたいから。大くの人に見せたいから。 | 外国とかにも自分の作った作品を見てもらいたいから | 近所の人は、だいたいみんな知っているから | 近所の人たちに見てほしい |
| (Q4) | Yes | Yes | Yes | Can't say |

Table A.15: Student responses (M6-13 – M6-16)

| | Student M6-13 | Student M6-14 | Student M6-15 | Student M6-16 |
|---|---|---|---|---|
| Gender: | F | F | M | M |
| (Q1) | a,d | d | d | c |
| (Q2)<br>– Why? | a<br>友達だと、同じ目線から見てくれるから | c<br>いつもなんでもしてくれるからそのえをみて「すごいね〜」とかを言ってほしいし自分の成長にをかんけいしているから | a<br>うまくできたから | a<br>家族に見せるのはちょっとイヤだから |
| (Q3)<br>– Why? | b<br>他校にも友達いて、評価をしてもらいたいから | h<br>みんなしらない人だけどそのえのことを知ってほしいから | a<br>あまり、広めたくないから | b<br>一応知ってる人見てもらいたいから |
| (Q4) | Can't say | Yes | Can't say | No |

Table A.16: Student responses (M6-17 – M6-20)

| | Student M6-17 | Student M6-18 | Student M6-19 | Student M6-20 |
|---|---|---|---|---|
| Gender: | M | F | F | M |
| (Q1) | a | a,c | a,d | d |
| (Q2)<br>– Why? | d<br>あまり人にみせたくないから | c<br>上手にかけたところを見せてもらいたい | c,d<br>ひごろ、お世話になっているからがんばったことを見せたいから | d<br>ほめてほしい |
| (Q3)<br>– Why? | a<br>あまり見せたくないから | a<br>おじいさん、おばあさんに、紙などを見て元気になってほしいから | c,e<br>南小のがんばりを他の人にも見せたいから | b<br>ほかの人にもみてほしい |

Table A.16 (continued)

|  | **Student M6-17** | **Student M6-18** | **Student M6-19** | **Student M6-20** |
|---|---|---|---|---|
| (Q4) | No | Yes | Yes | Yes |

Table A.17: Student responses (M6-21 – M6-24)

|  | **Student M6-21** | **Student M6-22** | **Student M6-23** | **Student M6-24** |
|---|---|---|---|---|
| Gender: | F | M | M | F |
| (Q1) | a,b | d | a,c,d | a,b |
| (Q2)<br>– Why? | a,d<br>アドバイスがほしい | c | a,c,d,e<br>ほめてほしい | c<br>学校で作った作品は、見てもらいたいから |
| (Q3)<br>– Why? | b,c<br>その絵で何かを伝えられるから。(コンクール等) | a | b<br>おおくの人にみてもらいたいから | f<br>たくさんの人たちに見てほしい |
| (Q4) | Yes | Yes | Yes | Yes |

Table A.18: Student responses (M6-25 – M6-28)

|  | **Student M6-25** | **Student M6-26** | **Student M6-27** | **Student M6-28** |
|---|---|---|---|---|
| Gender: | M | F | F | M |
| (Q1) | a,d | a,c,d | c,d | b |
| (Q2)<br>– Why? | a<br>自分が、がんばった作品を見てほしいから | a,d<br>がんばったのを見せたいから | a,c,e<br>じょうずに出きたから | d<br>学校でがんばっているすがたを見てもらいたいから |
| (Q3)<br>– Why? | c<br>多くの人に見てほしいと思うから | b,g<br>他の人たちや外国の人たちにも見せたいし、知ってもらいたいから | g<br>外国の人たちに自分がつくったのを見てもらいたいから | b<br>しっている人がいるから |
| (Q4) | Yes | Yes | Yes | Can't say |

Table A.19: Student responses (M6-29 – M6-31)

|  | **Student M6-29** | **Student M6-30** | **Student M6-31** |
|---|---|---|---|
| Gender: | F | F | M |
| (Q1) | b | b | d |

Table A.19 (continued)

|  | Student M6-29 | Student M6-30 | Student M6-31 |
|---|---|---|---|
| (Q2) | d | c | c |
| – Why? | 家で学校の作品を見てもらうことがすくないから | 自分のがんばったものを大切な人に見せたい | そだててくれた人だから |
| (Q3) | b | a | f |
| – Why? | いろいろな人に見てもらいたいから | 知っている人にできたもの、すごいものを見せたい | 多くの人に見てほしい |
| (Q4) | Can't say | Yes | Can't say |

## Teachers

This questionnaire was completed by home-room teachers at each school.

### Contents of Questionnaire (Japanese)

学校名：
担当している学年：
年齢：
性別：

児童が学校で制作し、学校の廊下等に展示されている様々な作品についてお伺いします。

(Q1) あなたが担当している学年の児童は、年間いくつぐらいの作品を制作していますか？それぞれに、だいたいの数を教えてください。
  a. 絵画
  b. 作文
  c. 習字
  d. 工作・造形
  e. その他

(Q2) 児童の作品を積極的に（廊下など）学内に展示していますか？ （はい／いいえ／どちらともいえない）
それは何故ですか？

(Q3) 学内で展示していることについて、児童の反応はどうですか？

(Q4) 児童の作品を積極的に学外に展示していますか？ （はい／いいえ／どちらともいえない）
それは何故ですか？

＊ Q4 を「はい」で答えた場合、下記の三つの質問を答えてください。

    A) 学外ではどのような場所で展示をしていますか？
    B) 学外での提示について、児童の反応はどうですか？
    C) 学外での展示について、展示をご覧になっている人たちの反応はどうですか？

(Q5) 学外での展示について、留意点が何かありますか？

(Q6) 児童の作品を見せることについてのお考えを、5 段階でお答え下さい。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
    a. 同地区の他校の児童・先生
    b. 地域の一般市民
    c. 福島県内の他地区の学校
    d. 福島県内の他地区の一般市民
    e. 他県の学校
    f. 他県の一般市民
    g. 海外の学校
    h. 海外国の一般市民
それは何故ですか？

(Q7) 生徒達は、他校の児童の作品を見る機会はありますか？
【 1＝まったくない　　　2＝ほとんどない　　　3＝たまにある　　　4＝よくある 】

(Q8) 他校の児童徒の作品に対して児童の反応はどうですか？

(Q9) 他校の児童の作品を見る機会を増やすことについてのお考えを、5 段階でお答え下さい。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
    a. 同地区の他校の児童の作品
    b. 福島県内の他地区の児童の作品
    c. 他県の児童の作品
    d. 海外の児童の作品
それは何故ですか？

(Q10) 自分の生徒たちが下記の人と交流する機会があれば、参加させたいですか？
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
    a. 地域の人たち
    b. 川俣町の他の学校の生徒や先生
    c. 福島県の他の学校の生徒や先生
    d. 福島県の他の地域の人たち
    e. 他の県の学校の生徒や先生
    f. 他の県の人たち
    g. 他の国の学校の生徒や先生

　h．他の国の人たち
それは何故ですか？

(Q11)　あなたはツイッター、ライン、フェイスブックに代表される SNS を使っていますか？

(Q12)　あなたは子供が SNS を使うことをどう思いますか？

(Q13)　あなたは SNS は学校でも役立つと思いますか？

## Contents of Questionnaire (English Translation)

School name:
Grade(s) taught:
Age:
Gender:

The following questions are regarding creative works which children make in school, of a kind which could for example be exhibited in the school hallway.

(Q1) How many of the following kinds of creative works do your students make in a year?
  a.  pictures/paintings
  b.  writing
  c.  calligraphy
  d.  sculptures/models
  e.  other

(Q2) Do you display your students' creative works within the school (e.g. in the hallway)? (Yes / No / Can't say)
Why?

(Q3) When displayed inside the school, how do your students react to having their creative works displayed?

(Q4) Are your students' creative works exhibited outside school? (Yes/No/Can't say)
Why?

＊ If you answered 'yes' to Q4, please answer the following 3 questions.

  A) In what kinds of places outside school are they displayed?
  B) When they are displayed outside school, how do your students react?
  C) When they are displayed outside school, how do people seeing them react?

(Q5) Is there anything you think it is important to be aware of with regards to displaying them outside school?

(Q6) How beneficial do you think it would be for each of the following groups to be able to see your students' creative works? Please choose from 1 (not at all beneficial) to 5 (highly beneficial).
   a. students and teachers from other schools in the local area
   b. local members of the public
   c. schools elsewhere in Fukushima Prefecture
   d. members of the public from elsewhere in Fukushima Prefecture
   e. schools in other prefectures
   f. members of the public in other prefectures
   g. schools in other countries
   h. members of the public in other countries
Why?

(Q7) Are your students able to see creative works by children from outside their school?
( 1 = Never              2 = Rarely              3 = Fairly often              4 = Often )

(Q8) How do they react to seeing such works?

(Q9) How beneficial do you think it would be for your students to see creative works by each of the following groups? Please choose from 1 (not at all beneficial) to 5 (highly beneficial).
   a. students from other local schools
   b. students from other parts of Fukushima Prefecture
   c. students from other prefectures
   d. students from other countries
Why?

(Q10) If your students had the chance to communicate with any of the following groups, would you want to let them? Please choose from 1 (not interested) to 5 (highly interested).
   a. members of the public in the local area
   b. students and teachers from other schools in Kawamata
   c. students and teachers from other schools in Fukushima Prefecture
   d. members of the public in other parts of Fukushima Prefecture
   e. students and teachers from schools in other prefectures
   f. members of the public in other prefectures
   g. students and teachers from schools in other countries
   h. members of the public in other countries
Why?

(Q11) Do you use social networking services (SNS) like Twitter, LINE, or Facebook? Why or why not?

(Q12) How do you feel about children using SNS?

(Q13) Do you think that SNS have a useful role in education? Why or why not?

**Survey Responses**

The survey responses are summarized in Tables A.20 through A.21. Respondents' comments are reproduced, verbatim, in the original Japanese. A blank cell indicates that no answer was given for the corresponding question.

Each teacher respondent is assigned a unique identifier of the form "YT-$x$" or "MT-$x$", where YT indicates a teacher from Yamakiya Elementary School, MT indicates a teacher from Kawamata Minami Elementary School, and $x$ is an arbitrarily assigned individual teacher number. For example, the identifier "MT-2" indicates Kawamata Minami Elementary School, teacher #2.

Because the school name is represented in the identifier, this value is not shown in a separate table row.

Table A.20: Teacher responses (YT-1 – YT-4)

|  | **Teacher YT-1** | **Teacher YT-2** | **Teacher YT-3** | **Teacher YT-4** |
|---|---|---|---|---|
| Grade(s): | 2-3 | 4 | 5 | 6 |
| Age: | 49 | 29 | 51 | 38 |
| Gender: | F | F | F | M |
| (Q1) | — | — | — | — |
| a. | 4-5 | 4 | 4 | 5 |
| b. | 8 | 0 | 10 | 10 |
| c. | 10 | 7 | 9 | 10 |
| d. | 4-5 | 7 | 7 | 4 |
| e. | 0 | 0 | 10（家庭科・エプロン・小物・新聞） |  |
| (Q2) | Yes | Yes | Yes | Yes |
| – Why? | 展示することにより他の児童のよいところを学んでほしい／個人のよさを再認識させたいから |  | お互いに鑑賞し合えるように | 子供たちの成長を見てもらえるように |
| (Q3) | 必ずに見て一言感想を言いたがる。展示してもらい喜んでいる。 |  | お互いに意見を見たり。まねしたいところ詳しくて聞いたりしている。 | 特に気にしている様子もなく。友達の作品を見て楽しんでいる。 |
| (Q4) | Can't say | No | No | No |

Table A.20 (continued)

|  | **Teacher YT-1** | **Teacher YT-2** | **Teacher YT-3** | **Teacher YT-4** |
|---|---|---|---|---|
| – Why? | コンクールに参加させることは挑戦することもなり喜びもある。学外のコンクールの主旨に会うような学習内容がない場合特別に時間を見つけないといけない。 |  | 場・機会がない | そのようなスペースがない |
| A) | 羽山の森。羽山の森美術館。 |  |  |  |
| B) | なかなか見に行かない |  |  |  |
| C) | 展示を見る機会がないため分かりません |  |  |  |
| (Q5) |  |  |  | 個人のプライバシー人権に注意する |
| (Q6) | — | — | — | — |
| a. | 4 |  | 4 | 4 |
| b. | 3 |  | 4 | 3 |
| c. | 3 |  | 4 | 3 |
| d. | 3 |  | 4 | 3 |
| e. | 3 |  | 4 | 3 |
| f. | 3 |  | 4 | 3 |
| g. | 3 |  | 4 | 3 |
| h. | 3 |  | 4 | 3 |
| – Why? |  |  | 見せたい気持ちは大いにあるが、そのために積極的に動く時間はない | 機会があれば参加したい |
| (Q7) | Rarely | Rarely | Rarely | Rarely |
| (Q8) |  |  | どんな子が作ったかなとその作品を通じて想像している | よい刺激になるとおもう |
| (Q9) | — | — | — | — |
| a. | 4 | 4 | 4 | 5 |
| b. | 4 | 4 | 4 | 5 |
| c. | 4 | 4 | 4 | 5 |
| d. | 4 | 4 | 4 | 5 |

(continued on next page)

Table A.20 (continued)

| | Teacher YT-1 | Teacher YT-2 | Teacher YT-3 | Teacher YT-4 |
|---|---|---|---|---|
| – Why? | | | Q6と同様 | 子供の成長につながるから |
| (Q10) | — | — | — | — |
| a. | 4 | 4 | 4 | 5 |
| b. | 4 | 5 | 4 | 5 |
| c. | 4 | 5 | 4 | 5 |
| d. | 4 | 4 | 4 | 5 |
| e. | 4 | 5 | 4 | 5 |
| f. | 4 | 4 | 4 | 5 |
| g. | 4 | 5 | 4 | 5 |
| h. | 4 | 4 | 4 | 5 |
| – Why? | | | 交流はすすめたいものであるが、自分自身でそういう気持ちを持たなければ活動が実りあるものにならないと思うので | 子供たちの成長につながるから |
| (Q11) | ラインは国外でも無料で話したり連絡できるから | 使っていますが、閲覧程度です。他の方々との連絡を取り合うことや近況確認のためです。 | 便利だから | 使っている。知人との連絡 |
| (Q12) | 小中はほとんど必要なことはないと思う | あまり賛成はできません（いろいろな問題が起こる可能性を考えると...） | 小中学生であれば、自分の体を使って交流をまずするべきあると思う | 必要ない |
| (Q13) | 今のところ役立つと思えません | | 思うが、学校では別の学習方法を進めるべきと思う | 思わない |

Table A.21: Teacher responses (MT-1 – MT-4)

| | Teacher MT-1 | Teacher MT-2 | Teacher MT-3 | Teacher MT-4 |
|---|---|---|---|---|
| Grade(s): | 1 | 2 | 3 | 4 |
| Age: | 44 | 53 | 47 | 39 |
| Gender: | F | F | F | M |
| (Q1) | — | — | — | — |
| a. | 8 | 8 | 4 | 3 |
| b. | 4 | 6 | 6 | 3 |
| c. | 1 | | 6 | 6 |

Table A.21 (continued)

| | **Teacher MT-1** | **Teacher MT-2** | **Teacher MT-3** | **Teacher MT-4** |
|---|---|---|---|---|
| d. | 4 | 7 | 4 | 4 |
| e. | 生活科見つけたよカード（年間 20−30枚） | | | |
| (Q2) | Yes | | Yes | Yes |
| – Why? | 掲示することにより、自己存在感を認めてあげる機会となるため。お互いの作品のよさを見る機会とあなるため。 | 展示依頼があれば積極的に取り組むようにしている | 学習内容の発表の場としてとらえている | 児童に互いに作品を見合う機会をもうけたいことと、達成感を味わわせたいから |
| (Q3) | 提示されることでよろこんでいる。友達のものを見てほめあっている。 | | 色々な人の作品を見ることは好きであるようだ | 友達と作品を見て意見を楽しそうに話し合っている姿が見られる |
| (Q4) | No | Can't say | No | No |
| – Why? | その機会がない | 展示依頼があれば積極的に取り組むようにしている | | 学外に展示する機会、場所があまりないため |
| A) | | | | |
| B) | | | | |
| C) | | | | |
| (Q5) | 作品として展示する意義がかんじられるものかどうか。 | | | 作品の保護 |
| (Q6) | — | — | — | — |
| a. | 5 | 2 | 5 | 4 |
| b. | 5 | 2 | 5 | 4 |
| c. | 5 | 2 | 5 | 4 |
| d. | 5 | 3 | 5 | 4 |
| e. | 5 | 3 | 5 | 4 |
| f. | 5 | 3 | 5 | 4 |
| g. | 5 | 3 | 5 | 4 |
| h. | 5 | 3 | 5 | 4 |
| – Why? | 様々な機会があることはよい | 地域で展示すれば児童の家族など見るので励みになると思う | 色々な人に見てもらうことは励みになるであろう | 多くの人に見てもらうことで児童も「やってよかった」と感じることができるのではないかと思うため |

Table A.21 (continued)

| | Teacher MT-1 | Teacher MT-2 | Teacher MT-3 | Teacher MT-4 |
|---|---|---|---|---|
| (Q7) | Rarely | Rarely | Fairly often | Rarely |
| (Q8) | 校内他校の意識はないのではないかと思われる | 自分が知っている他校の友だちの作品をうれしそうに見ている | よい | あまり機会がないのでなんでも言えない |
| (Q9) | — | — | — | — |
| a. | 5 | 4 | 5 | 5 |
| b. | 5 | 4 | 5 | 5 |
| c. | 5 | 4 | 5 | 5 |
| d. | 5 | 4 | 5 | 5 |
| – Why? | 刺激になってよい | 同年代の児童のすばらしい作品を見ることは参考になると考える | | 色々な作品を見ることで新しい「気付き」があると考えるから |
| (Q10) | — | — | — | — |
| a. | 3 | 4 | 5 | 3 |
| b. | 3 | 4 | 5 | 3 |
| c. | 3 | 3 | 5 | 3 |
| d. | 3 | 3 | 5 | 3 |
| e. | 3 | 3 | 5 | 3 |
| f. | 3 | 3 | 5 | 3 |
| g. | 3 | 3 | 5 | 3 |
| h. | 3 | 3 | 5 | 3 |
| – Why? | 交流の機会や意義はあったほうがよいと思うが、その準備のために学習活動にしわよせが来るのはよくない | 地域と人と触れ合う機会が減っていると思うから | 色々なひととの交流の場があれば、積極的に人とかかわれる自分を表現できると思われる | 交流したい思いがないわけではないが現状として難しいと思う |
| (Q11) | 使ってない。めんどうだから | ライン... 娘との連絡手段として使っている | 使っていない | 個人で連絡を取り合う際に便利な道具であると思うので使っている |
| (Q12) | あまり望ましくない。トラブルに巻き込まれるし、はた判断が責任とともに伴っていない。 | 小学生は使うべきないと思う | あまり好きではない | 保護者のかんとくの下であればいいとは思うが、望ましいでは思わない |
| (Q13) | 心配 | 思わない | 小学校では必要ないと思う | 現段階では役立つとは思わない |

Table A.22: Teacher responses (MT-5 – MT-7)

| | **Teacher MT-5** | **Teacher MT-6** | **Teacher MT-7** |
|---|---|---|---|
| Grade(s): | 5 | 6 | 南学級1・2・5年 |
| Age: | 48 | 48 | 57 |
| Gender: | M | F | F |
| (Q1) | — | — | — |
| a. | 3 | 4-5 | 8 |
| b. | 5 | 7-8 | 10（絵の紹介文や生活文） |
| c. | 10 | 6-7 | 1 |
| d. | 3 | 4-5 | 5 |
| e. | | | 2（暑中見舞い・年賀状） |
| (Q2) | Yes | Yes | Yes |
| – Why? | | 他の児童にみてもらい。よさを感じたり、みとめたりしてもらいたい。お互いの表現のよさを自分の中に取り入れ。さらにたかめさせたい。 | 児童のよさを他の児童に知ってもらうため。児童奨励の意をこめて展示している。 |
| (Q3) | | お互いによく見て、声をかけたりほめたりしている | 友達の作品をよく見ている。自分の作品が展示してあると満足そうであるとともに次回への意欲がわいている。 |
| (Q4) | Can't say | No | Yes |
| – Why? | | 機会がない（あるものには参加している） | 機会があればできるだけ学外に展示するようにしている |
| A) | | | 羽山美術館、絹蔵（町の公共施設）アオウゼ、こむこむ（福島市の公共施設） |
| B) | | | 展示場所へ出向いて鑑賞している |
| C) | | | 子供ががんばっていることを認めてくださっている |
| (Q5) | | | 特別支援学級担任なので、特別支援学級として作品を出品する際は必ず保護者の許可を得るようにしている |
| (Q6) | — | — | — |
| a. | 3 | 5 | 5 |
| b. | 4 | 4 | 5 |

Table A.22 (continued)

| | Teacher MT-5 | Teacher MT-6 | Teacher MT-7 |
|---|---|---|---|
| c. | 3 | 4 | 5 |
| d. | 3 | 3 | 5 |
| e. | 3 | 3 | 5 |
| f. | 3 | 3 | 5 |
| g. | 3 | 3 | 5 |
| h. | 3 | 3 | 5 |
| – Why? | | 作品の扱いや準備やよさなどの子供への伝わり方等は様々考えると日常の学校の業務量等から困難な点が多いと思われる | 児童の作品をたくさんの人に見ていただくとともに児童の絵画意欲を高めるためには有効な手段であるから |
| (Q7) | Rarely | Fairly often | Fairly often |
| (Q8) | | | 自分もあんなことをしてみたいというような関心を持つことが多い |
| (Q9) | — | — | — |
| a. | 3 | 5 | 4 |
| b. | 3 | 5 | 4 |
| c. | 3 | 4 | 4 |
| d. | 3 | 4 | 4 |
| – Why? | | 多くの作品にふれることで得られるものは多いと思うから | たくさんの作品をみることによって児童の感性はより豊かになるとおもいますが、どのような方法で児童の作品を見させるかが課題である |
| (Q10) | — | — | — |
| a. | 4 | 5 | 5 |
| b. | 4 | 5 | 5 |
| c. | 4 | 4 | 5 |
| d. | 4 | 4 | 5 |
| e. | 4 | 4 | 5 |
| f. | 4 | 4 | 5 |
| g. | 4 | 4 | 5 |
| h. | 4 | 4 | 5 |

Table A.22 (continued)

|  | **Teacher MT-5** | **Teacher MT-6** | **Teacher MT-7** |
|---|---|---|---|
| – Why? |  | メリットはたくさんあると思うからが、トータルして考えると現実の学校生活、業務においては困難もおおいのではないかと思う。「推進したい」と積極的に考えきれない部分がある。 | たくさんんの人々とふれあってコミュニケーション能力を高めたい |
| (Q11) | 使っていません | いいえ。必要性を今のところ感じていない。 | 使っていない。必要性を感じないから。 |
| (Q12) | 不安があります | 適切な使い方ができればいいと思うが、適切な使い方ができないように感じるので賛成できない | 必要性があればデメリットをふまえたうえで使ってほしい |
| (Q13) | わかりません | 役立つように思うが、偏りすぎないことが大切 | 使い方によっては役立つと思う |

# Parents

This questionnaire was completed by the parents of fifth and sixth grade students at each school. (The questionnaire was designed to be accessible to any adult, other than teachers, associated with the schools; but in the event was limited to the parents of students.)

## Contents of Questionnaire (Japanese)

年齢：
性別：

児童が学校で制作し、学校の廊下等に展示されている様々な作品についてお伺いします。

**パート1**

(Q1) 以下のうち、あなたに当てはまるもの〇をつけてください。
  a. この学校の生徒の保護者
  b. この学校の生徒の親戚や友達
  c. 学校の職員
  d. 町役場の職員
  e. この地域の方
  f. その他：

＊「この学校の生徒の保護者」の場合、下記の「Q2」から「Q4」までの質問へすすんでください。その他の方は、「パート2」（次のページ）へ進んでください。

(Q2)　自分の子供の作品を先生・生徒以外の人が鑑賞することについてどう思いますか？下記の1から5を〇してください。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
それは何故ですか？

(Q3)　自分の子供が下記の人と交流する機会があれば、参加させたいですか？5段階でお答え下さい。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
　　　a．地域の人たち
　　　b．川俣町の他の学校の生徒や先生
　　　c．福島県の他の学校の生徒や先生
　　　d．福島県の他の地域の人たち
　　　e．他の県の学校の生徒や先生
　　　f．他の県の人たち
　　　g．他の国の学校の生徒や先生
　　　h．他の国の人たち
それは何故ですか？

(Q4)　自分の子供が下記の人の作品を鑑賞する機会があったとしたら、どの人の作品を見せたいと思いますか？5階でお答え下さい。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
　　　a．川俣町の他の学校の生徒
　　　b．福島県の他の学校の生徒
　　　c．他の県の学校の生徒
　　　d．他の国の学校の生徒

**パート2**

(Q5)　あなたはツイッター、ライン、フェイスブックに代表される SNS を使っていますか？それは何故ですか？

(Q6)　あなたは子供が SNS を使うことをどう思いますか？

(Q7)　あなたは SNS は学校でも役立つと思いますか？

(Q8)　子供の作品を見るのは楽しいですか？下記の1から5に〇をつけてください。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】
それは何故ですか？

(Q9)　子供の作品を見る機会は一年間に何回ほどありますか？

（Q10）　あなたは子供たちの作品を見る機会をもっと増やしてほしいと思いますか？下記の1から5を〇してください。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】

（Q11）　あなたは子供たちの作品を鑑賞することは良いことだと思いますか？下記の1から5を〇してください。
【 1＝否定的　2＝やや否定的　3＝どちらでもない　4＝やや推進　5＝推進したい 】

## Contents of Questionnaire (English Translation)

Age:
Gender:

The following questions are regarding creative works which children make in school, of a kind which could for example be exhibited in the school hallway.

**Part 1**

(Q1) Please circle the category which best describes you.
   a.  Parent or guardian of student at this school
   b.  Other relative or friend of student at this school
   c.  School teacher or staff member
   d.  Member of municipal staff
   e.  Member of public in this area
   f.  Other:

＊ If you answered "parent or guardian of student at this school", please answer questions 2 – 4; otherwise, proceed to Part 2.

(Q2) What do you think about people other than students and teachers being able to view your childrens' creative works? Please choose from 1 (do not like the idea) to 5 (like the idea a lot).
Why?

(Q3) If your children to had the chance to communicate with any of the following people, would you like them to take it? Please rate each category from 1 (would not like it) to 5 (would like it a lot).
   a.  members of the public in the local area
   b.  students and teachers from other schools in Kawamata
   c.  students and teachers from other schools in Fukushima Prefecture
   d.  members of the public in other parts of Fukushima Prefecture
   e.  students and teachers from schools in other prefectures
   f.  members of the public in other prefectures
   g.  students and teachers from schools in other countries

    h.  members of the public in other countries
Why?

(Q4) If your children had the chance to to see more creative works by any of the following groups, would you like them to take it? Please rate each category from 1 (would not like it) to 5 (would like it a lot).
    a.  students from other local schools
    b.  students from other parts of Fukushima Prefecture
    c.  students from other prefectures
    d.  students from other countries

**Part 2**

(Q5) Do you use social networking systems (SNS) like Twitter, LINE or Facebook? Why or why not?

(Q6) How do you feel about children using SNS?

(Q7) Do you think that social networking systems (SNS) have a useful role in education?

(Q8) Do you enjoy seeing creative works by children? Please choose from 1 (do not enjoy it) to 5 (enjoy it a lot).
Why?

(Q9) How many times in a year do you have a chance to view creative works by children?

(Q10) Would you like more opportunities to view creative works by children? Please choose from 1 (no interest) to 5 (strong interest).

(Q11) Do you think it is beneficial for people to be able to see childrens' creative works? Please choose from 1 (not at all beneficial) to 5 (highly beneficial).

**Survey Responses**

The survey responses are summarized in Tables A.23 through A.38. Respondents' comments are reproduced, verbatim, in the original Japanese. A blank cell indicates that no answer was given for the corresponding question.

    Each parent respondent from Yamakiya Elementary School has been assigned a unique identifier of the form "YP-$x$", where $x$ is an arbitrarily-assigned individual respondent number. For example, the identifier "YP-16" indicates Yamakiya Elementary School, parent #16.

    In the case of Kawamata Minami Elementary School, parents' responses were provided by grade. Consequently, each parent respondent from Kawamata Minami

Elementary School has been assigned a unique alphanumeric identifier of the form "MP$g$-$x$", where $g$ indicates the school grade of the child or children for which the parent is responding, and $x$ is the individual parent number.[2] (The parent numbers were arbitrarily assigned, and are not entirely contiguous.[3]) For example, the identifier "MP5-10" indicates Kawamata Minami Elementary School, parent #10 whose child is in grade five.

Because the school name is represented in the identifier, this value is not shown in a separate table row.

It should be noted that a number of respondents from Kawamata Minami Elementary School reported their child's age rather than their own age; these answers are marked with an asterisk (*). In addition, several respondents from both schools did not provide answers for Part 2 of the questionnaire.

Table A.23: Parent responses (YP-1 – YP-4)

| | **Parent YP-1** | **Parent YP-2** | **Parent YP-3** | **Parent YP-4** |
|---|---|---|---|---|
| Age: | 40 | 41 | 37 | 33 |
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 5 | 4 | 5 | 5 |
| – Why? | 子供達の作品をいろいろな方に見てもらえることは、子供達にとっても良い刺激になるし、見た方にも何か感じてもらえるのでは?と思うから。 | | 自分の良い所は見てもらい声をかけてもらえるとうれしい。また、直した方がいい所はコメントをもらい次に生かす。 | 多くの人に観てもらうことで、子どもの創作意欲がわくと思うので。 |
| (Q3) | — | — | — | — |
| a. | 5 | | 4 | 5 |
| b. | 5 | 5 | 3 | 5 |
| c. | 5 | | 2 | 5 |
| d. | 4 | | 2 | 5 |
| e. | 5 | | 2 | 5 |
| f. | 4 | | 2 | 5 |
| g. | 5 | | 3 | 5 |
| h. | 4 | | 3 | 5 |
| – Why? | どのような方々でも子供にとって触れ合える経験はとても大切だと考えるから | 同じ県内の同年代との話はきょうみがある | | 多くの人と交流することで、多くの可能性がみいだせると思うので。沢山の意見があることを学んで欲しい。 |

Table A.23 (continued)

| | **Parent YP-1** | **Parent YP-2** | **Parent YP-3** | **Parent YP-4** |
|---|---|---|---|---|
| (Q4) | — | — | — | — |
| a. | 5 | | 4 | 5 |
| b. | 5 | 5 | 4 | 5 |
| c. | 5 | | 4 | 5 |
| d. | 5 | | 4 | 5 |
| (Q5) | あまり使っていません。自分がめんどうくさがりなタイプだからかしら... | 使っていない | 友達とのコミュニケーション。楽しいから。 | ツイッター ⟶ 情報交換や同じ趣味の人とつながれる。ライン ⟶ メールの変わりに。相手が読んだことがわかるので。 |
| (Q6) | あまり早くからは使ってほしくないです | 小学生・中学生は理解度がないので反対 | わからない | 事件にまきこまれそうでこわい。いじめにつながりそう。 |
| (Q7) | クラスの中で使うのは、大丈夫、役に立つと思います | 大人の目の届く所では、役立つと思う | わからない | 連絡網などで使えるとは思う |
| (Q8) | 5 | 5 | 5 | 5 |
| – Why? | 子供たちの考え、様子、感覚を見ることができるため | びっくりする発想が楽しい | | 色々な作品におどろかされたり、ビックリさせられたりするので |
| (Q9) | 3〜4回 | 1〜2回 | 3〜5回 | 学校に行くたび |
| (Q10) | 4 | 5 | 4 | 5 |
| (Q11) | 5 | 5 | 5 | 5 |

Table A.24: Parent responses (YP-5 – YP-8)

| | **Parent YP-5** | **Parent YP-6** | **Parent YP-7** | **Parent YP-8** |
|---|---|---|---|---|
| Age: | 35 | 40 | 36 | 35 |
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 5 | 3 | 5 | 3 |
| – Why? | | | がんばった成果をみせたい。色々な人の感想を聞いて、次の作品のはげみにしてほしい。 | |
| (Q3) | — | — | — | — |

Table A.24 (continued)

| | Parent YP-5 | Parent YP-6 | Parent YP-7 | Parent YP-8 |
|---|---|---|---|---|
| a. | 5 | 4 | 5 | 4 |
| b. | 5 | 4 | 5 | 4 |
| c. | 5 | 4 | 5 | 4 |
| d. | 5 | 4 | 5 | 4 |
| e. | 5 | 4 | 5 | 4 |
| f. | 5 | 4 | 5 | 4 |
| g. | 5 | 3 | 5 | 4 |
| h. | 5 | 3 | 5 | 4 |
| – Why? | いろいろな経験をすることで、人間性が豊かになると思います。 | | 世界をひろげてほしい。たくさん色々な事を体験してほしい。 | |
| (Q4) | ― | ― | ― | ― |
| a. | 5 | 5 | 5 | 4 |
| b. | 5 | 5 | 5 | 4 |
| c. | 5 | 5 | 5 | 4 |
| d. | 5 | 5 | 5 | 4 |
| (Q5) | 使用しています。主にメールのやりとりのみですが、便利だからです。 | | 簡単に連絡が取れたりするから | 連絡をとるのが楽なので使っています |
| (Q6) | あまり好ましくないと思います | | ニュースや新聞などを見て、いじめなどを聞くと、あぶないのかと思ったりもします | |
| (Q7) | あまり役立たないと思います | | 学校の中で先生達がみていてくれれば色々な事が知れて、いいと思います | |
| (Q8) | 5 | | 5 | 4 |
| – Why? | いろいろな表現方法があって楽しいです | | 成長していく姿がみれるから | |
| (Q9) | 3〜4回 | | 5〜6回 | 3〜4回 |
| (Q10) | 5 | | 5 | 3 |
| (Q11) | 5 | | 5 | 4 |

Table A.25: Parent responses (YP-9 – YP-12)

| | **Parent YP-9** | **Parent YP-10** | **Parent YP-11** | **Parent YP-12** |
|---|---|---|---|---|
| Age: | 35 | 43 | 43 | 33 |
| Gender: | F | M | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 4 | 3 | 3 | 5 |
| – Why? | | | | |
| (Q3) | — | — | — | — |
| a. | 4 | 3 | 4 | 5 |
| b. | 4 | 5 | 4 | 5 |
| c. | 4 | 3 | 4 | 5 |
| d. | 4 | 3 | 4 | 5 |
| e. | 4 | 3 | 4 | 5 |
| f. | 4 | 3 | 4 | 5 |
| g. | 4 | 4 | 4 | 5 |
| h. | 4 | 4 | 4 | 5 |
| – Why? | | | たくさんの人と出逢うことにより成長できるのでは... | 機会があれば色々な人と交流して欲しい |
| (Q4) | — | — | — | — |
| a. | 4 | 5 | 4 | 5 |
| b. | 4 | 4 | 4 | 5 |
| c. | 4 | 4 | 4 | 5 |
| d. | 4 | 4 | 4 | 5 |
| (Q5) | | 使ってる | 使ってません | 便利だから |
| (Q6) | | 大丈夫だと思う | 使わなくても生活できると思う | 今は必要ないと思う |
| (Q7) | | 学校ではダメ | わからない | わからない |
| (Q8) | 5 | 5 | 4 | 5 |
| – Why? | | | いろんな発想が見れるから楽しい | 発想が豊かで見ていて楽しい |
| (Q9) | 5〜6回 | 2回 | 5回位 | 数回 |
| (Q10) | 4 | 5 | 3 | 5 |
| (Q11) | 4 | 5 | 4 | 5 |

Table A.26: Parent responses (YP-13 – YP-16)

| | **Parent YP-13** | **Parent YP-14** | **Parent YP-15** | **Parent YP-16** |
|---|---|---|---|---|
| Age: | 39 | 41 | 36 | 38 |

Table A.26 (continued)

|        | **Parent YP-13** | **Parent YP-14** | **Parent YP-15** | **Parent YP-16** |
|--------|--------|--------|--------|--------|
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 4 | 3 | 5 | 4 |
| – Why? | いい意見も悪い意見も受け入れるように | | 頑張った成果をみせたい。色々な人の感想を聞いて、次の作品の励みにしてほしい。 | |
| (Q3) | — | — | — | — |
| a. | 5 | 5 | 5 | 3 |
| b. | 5 | 5 | 5 | 3 |
| c. | 4 | 5 | 5 | 3 |
| d. | 4 | 3 | 5 | 3 |
| e. | 5 | 3 | 5 | 3 |
| f. | 4 | 3 | 5 | 3 |
| g. | 4 | 3 | 5 | 3 |
| h. | 4 | 4 | 5 | 3 |
| – Why? | | | 世界を広げてほしい。たくさん色々なkとを体験してほしい。 | |
| (Q4) | — | — | — | — |
| a. | 4 | 4 | 5 | |
| b. | 4 | 4 | 5 | 3 |
| c. | 5 | 4 | 5 | |
| d. | 5 | 4 | 5 | |
| (Q5) | | | 簡単に連絡が取れたいするから | |
| (Q6) | | | ニュース・新聞などを見ていじめなどを聞くとあぶないのかとおもったりもします。 | |
| (Q7) | | | 学校の中で先生たちが見ていてくれている中では色々なことがくれていいと思います。 | |
| (Q8) | | | 5 | |

Table A.26 (continued)

|  | **Parent YP-13** | **Parent YP-14** | **Parent YP-15** | **Parent YP-16** |
|---|---|---|---|---|
| – Why? |  |  | 成長していく姿がみれるから |  |
| (Q9) |  | 5–6回 |  |  |
| (Q10) |  | 4 | 5 |  |
| (Q11) |  | 4 | 5 |  |

Table A.27: Parent responses (YP-17 – YP-20)

|  | **Parent YP-17** | **Parent YP-18** | **Parent YP-19** | **Parent YP-20** |
|---|---|---|---|---|
| Age: | 32 | 37 | 40 | 40 |
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 5 | 5 | 5 | 5 |
| – Why? |  | 人に見てもらうことで子供の自身がつくから | たくさんの人の意見を聞けるから |  |
| (Q3) | — | — | — | — |
| a. | 5 | 5 | 5 | 4 |
| b. | 5 | 5 | 5 | 3 |
| c. | 5 | 5 | 5 | 5 |
| d. | 5 | 5 | 5 | 3 |
| e. | 5 | 5 | 5 | 4 |
| f. | 5 | 5 | 5 | 3 |
| g. | 5 | 5 | 5 | 5 |
| h. | 5 | 5 | 5 | 5 |
| – Why? |  | 色々な人たちにお会いして交流するのは子供のためになると思います。色々な人や物にもっともっと接する機会があれば良いのに... と思っています。 | いろいろな人と接する事で成長できるから。 |  |
| (Q4) | — | — | — | — |
| a. | 5 | 5 | 5 | 4 |
| b. | 5 | 5 | 5 | 5 |
| c. | 5 | 5 | 5 | 5 |
| d. | 5 | 5 | 5 | 5 |

Table A.27 (continued)

|  | **Parent YP-17** | **Parent YP-18** | **Parent YP-19** | **Parent YP-20** |
|---|---|---|---|---|
| (Q5) |  | 私は SNS はあまり好きではありませんが、友達がラインを利用しているのでラインのみ利用しています。友達と連絡やTEL が無料のが利用している理由です。 |  |  |
| (Q6) |  | 反対です。インターネットの社会は便利な反面、こわい面もあります。犯罪に巻き込まれたりするとイヤなので、SNS を子供にはりようさせたくないです。 |  |  |
| (Q7) |  | 学校の連絡網などでは役に立つのではないでしょうか？ただ、今学校でのいじめがライン（インターネット）を通じて行われていた... とかのニュースをみているとふくざつな気分です。 |  |  |
| (Q8) – Why? |  | 5 楽しいです。子供の発想や成長を感じられるので見ていて楽しいです。 |  |  |
| (Q9) |  |  |  |  |
| (Q10) |  | 5 |  |  |
| (Q11) |  | 5 |  |  |

Table A.28: Parent responses (YP-21 – MP5-2)

|  | **Parent YP-21** | **Parent YP-22** | **Parent MP5-1** | **Parent MP5-2** |
|---|---|---|---|---|
| Age: | 40 | 51 | 49 | 43 |
| Gender: | M | M | M | F |
| (Q1) | a | a | a | a |

Table A.28 (continued)

| | **Parent YP-21** | **Parent YP-22** | **Parent MP5-1** | **Parent MP5-2** |
|---|---|---|---|---|
| (Q2) | 4 | 4 | 5 | 5 |
| – Why? | | | 他の生徒と比べられる | |
| (Q3) | — | — | — | — |
| a. | 3 | 4 | 5 | 5 |
| b. | 3 | 4 | 5 | 5 |
| c. | 3 | 4 | 5 | 5 |
| d. | 3 | 4 | 5 | 4 |
| e. | 2 | 4 | 5 | 4 |
| f. | 2 | 4 | 5 | 4 |
| g. | 2 | 4 | 5 | 4 |
| h. | 2 | 4 | 5 | 4 |
| – Why? | 機会があれば交流できるが実際は難しいと思う | 交流すれば色々な体験をすることができて、子供が自分でどのようなことをすればよいかと考えることができると思うから。 | | |
| (Q4) | — | — | — | — |
| a. | 3 | 4 | 5 | 5 |
| b. | 3 | 4 | 5 | 5 |
| c. | 4 | 4 | 5 | 5 |
| d. | 4 | 4 | 5 | 5 |
| (Q5) | | 使用していない | 使っていない | ライン：便利だから |
| (Q6) | | いらないと思う | よく分からない | 子どものうちは使わないほうが良い |
| (Q7) | | 思わない | よく分からない | 思わない |
| (Q8) | | 4 | 5 | 5 |
| – Why? | | 自分では考えられない作品を作ったりするから | | 成長が見られるから |
| (Q9) | | 一回 | 3〜4回 | 2〜3回 |
| (Q10) | | 3 | 3 | 5 |
| (Q11) | | 4 | 5 | 5 |

Table A.29: Parent responses (MP5-3 – MP5-6)

| | **Parent MP5-3** | **Parent MP5-4** | **Parent MP5-5** | **Parent MP5-6** |
|---|---|---|---|---|
| Age: | 32 | 11* | 35 | 11* |
| Gender: | F | F | F | M |
| (Q1) | a | a | a | a |
| (Q2) | 5 | 5 | 3 | 5 |
| – Why? | | | | がんばって作った作品は、いろいろな人に見てほしいから |
| (Q3) | — | — | — | — |
| a. | 5 | 5 | 5 | 4 |
| b. | 5 | 5 | 5 | 4 |
| c. | 5 | 5 | 5 | 4 |
| d. | 5 | 5 | 4 | 4 |
| e. | 4 | 5 | 4 | 4 |
| f. | 5 | 5 | 4 | 4 |
| g. | 5 | 5 | 4 | 4 |
| h. | 5 | 5 | 4 | 4 |
| – Why? | | いろいろな方と交流してほしい | | いろいろな人と交流することで、学ぶことはたくさんあると思うから |
| (Q4) | — | — | — | — |
| a. | 5 | 5 | 5 | 4 |
| b. | 5 | 5 | 5 | 4 |
| c. | 5 | 5 | 5 | 4 |
| d. | 5 | 5 | 5 | 4 |
| (Q5) | 使っています | 手軽に情報交換が出来る | メールのかわり | ラインを使っています。自分には必要ないですが、将来自分の子どもが使う時にどんなものか親が理解しておかなければいけないと思い使ってます。 |
| (Q6) | あまりやらせたくない。友達家族は別です。 | 小学生にはまだ早いと思う。 | 使ってもいいが、悪い様に使わないでほしい。 | もう少し大人になって、自分で判断でき、責任がもてるようになれば問題ないと思います。今は必要ないです。 |

Table A.29 (continued)

| | Parent MP5-3 | Parent MP5-4 | Parent MP5-5 | Parent MP5-6 |
|---|---|---|---|---|
| (Q7) | 思わない | あまり思わない | 役立つと思う | 今の時代、SNS など便利なことなので、使い方くらいは子どもは分かってる方がいいと思います。役立つと思います。 |
| (Q8)<br>– Why? | 5 | 4 | 5<br>家にかざるのを楽しみにしています | 5 |
| (Q9) | 3〜4回 | 1,2回　あまりない | 3〜4回 | |
| (Q10) | 5 | 3 | 4 | 4 |
| (Q11) | 5 | 4 | 4 | 5 |

Table A.30: Parent responses (MP5-7 – MP5-10)

| | Parent MP5-7 | Parent MP5-8 | Parent MP5-9 | Parent MP5-10 |
|---|---|---|---|---|
| Age: | 31 | 41 | 45 | 37 |
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2)<br>– Why? | 3<br>見てもらいたい（見たい）反面、他の子と比べてしまう | 3<br>目的や方法によると思うから | 5<br>他の子どもの作品を見て参考になることもあるから | 3 |
| (Q3)<br>a.<br>b.<br>c.<br>d.<br>e.<br>f.<br>g.<br>h.<br>– Why? | —<br>4<br>4<br>4<br>4<br>3<br>3<br>3<br>3<br>まずは身近な所から知ってもらいたいから。 | —<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>4<br>交流することで多くの経験をすることができると思うから。また、他の国の人たちから様々な文化を学べると思うから。 | —<br>4<br>5<br>3<br>3<br>3<br>1<br>3<br>1<br>学校の生徒や先生なら安心出来ますが、不安があるため。 | —<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br> | 
| (Q4) | — | — | — | — |

Table A.30 (continued)

| | **Parent MP5-7** | **Parent MP5-8** | **Parent MP5-9** | **Parent MP5-10** |
|---|---|---|---|---|
| a. | 4 | 4 | 4 | 3 |
| b. | 4 | 4 | 4 | 3 |
| c. | 4 | 4 | 4 | 3 |
| d. | 4 | 4 | 4 | 3 |
| (Q5) | | 使っていません。やり方が分からないから。また、やりたいと思わないから。使い始めると、時間的にも精神的にもプライバシーが保てなくなるから。 | いろいろな情報を得られる。 | |
| (Q6) | | 良くないと思う | 小学校に通っている間は必要ないと思います | |
| (Q7) | | 役立つと思わない。役立つ使い方があるならば知りたい。 | 思います。緊急連絡事項などはそういうものを通じて連絡してほしいです。 | |
| (Q8) – Why? | | 4 成長が見れるから | 4 子の成長が確認できる | 4 |
| (Q9) | | 3〜4回（授業参観や学習発表会などで） | 2回ぐらい | 5〜6回 |
| (Q10) | | 3 | 3 | 4 |
| (Q11) | | 5 | 4 | 5 |

Table A.31: Parent responses (MP5-11 – MP5-14)

| | **Parent MP5-11** | **Parent MP5-12** | **Parent MP5-13** | **Parent MP5-14** |
|---|---|---|---|---|
| Age: | 40 | | | 45 |
| Gender: | M | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) – Why? | 3 特にどちらでもないから | 5 子ども達が自分の作品を製作するとき、人に見られるということは、はげみになると思います。 | 4 | 4 子どもが一生懸命作ったので、興味がある人は見てもらってもかまいません。 |
| (Q3) | — | — | — | — |

Table A.31 (continued)

|  | **Parent MP5-11** | **Parent MP5-12** | **Parent MP5-13** | **Parent MP5-14** |
|---|---|---|---|---|
| a. | 4 | 3 | 5 | 3 |
| b. | 4 | 3 | 5 | 4 |
| c. | 4 | 5 | 5 | 4 |
| d. | 3 | 3 | 3 | 3 |
| e. | 3 | 5 | 5 | 3 |
| f. | 3 | 4 | 3 | 3 |
| g. | 3 | 5 | 5 | 4 |
| h. | 3 | 4 | 3 | 3 |
| – Why? |  | 川俣町は狭い中で、少ない人数でずっと過ごしています。他県や他国の人々とのふれあいは、よいしげきになると思います。 |  | 何となく |
| (Q4) | — | — | — | — |
| a. | 3 | 3 | 5 | 5 |
| b. | 3 | 4 | 5 | 5 |
| c. | 3 | 5 | 5 | 5 |
| d. | 3 | 5 | 5 | 5 |
| (Q5) | 使っていない。必要ないから。 | つかっていません | 使っていない | ラインだけは家族の中で使っています。（仕事で家族と離れた時など） |
| (Q6) | 使う必要はないと思う | あまり好きではありません。多感な時期には直接ふれて、さわって、見て、聞いて、ドキドキしながら体験してほしいです。 | まだ使わなくてもいいと思う。 | 家族同士なら、良いと思います。 |
| (Q7) | まだ必要ではないと思うので、何とも言えない。 | 世界を広げるという方法の一つ。出来れば違う方法があればと思います。 | 思う。 | わかりません。 |
| (Q8) | 3 | 5 | 5 | 3 |

Table A.31 (continued)

| | Parent MP5-11 | Parent MP5-12 | Parent MP5-13 | Parent MP5-14 |
|---|---|---|---|---|
| – Why? | | ものにもよるかもしれませんが、子どもの作品には、こうあるべきという思い込みやわくがなく、メチャメチャでも楽しいと思います。 | | 何となく |
| (Q9) | 2〜3回 | 4回〜5回 | | 参観日の時、2〜3回 |
| (Q10) | 3 | 5 | 4 | 3 |
| (Q11) | 3 | 5 | 5 | 5 |

Table A.32: Parent responses (MP5-15 – MP6-2)

| | Parent MP5-15 | Parent MP5-16 | Parent MP6-1 | Parent MP6-2 |
|---|---|---|---|---|
| Age: | 10* | 11* | 42 | 36 |
| Gender: | F | F | F | F |
| (Q1) | a | a | a | a |
| (Q2) | 3 | 4 | 3 | 5 |
| – Why? | | 頑張って作った作品なので、いろんな人に見てもらいたい | | いろんな人にみていただくのはいいことだから |
| (Q3) | — | — | — | — |
| a. | 4 | 5 | 4 | 4 |
| b. | 5 | 5 | 4 | 4 |
| c. | 4 | 4 | 4 | 4 |
| d. | 4 | 4 | 4 | 4 |
| e. | 5 | 5 | 4 | 4 |
| f. | 4 | 3 | 4 | 4 |
| g. | 3 | 5 | 4 | 5 |
| h. | 3 | 4 | 4 | 5 |
| – Why? | | 広い視野を身につけてほしい | | 他の国の人たちと交流する機会は全くなく、これからの国際化社会の勉強になるため |
| (Q4) | — | — | — | — |
| a. | 5 | 4 | 4 | 4 |
| b. | 5 | 4 | | 4 |
| c. | 4 | 5 | | 4 |

Table A.32 (continued)

| | **Parent MP5-15** | **Parent MP5-16** | **Parent MP6-1** | **Parent MP6-2** |
|---|---|---|---|---|
| d. | 4 | 5 | | 4 |
| (Q5) | | 使っていない・必要ない為 | | 便利だから |
| (Q6) | | 反対 | | 利用制限をかければ問題ないと思う。今の時代には必要不可欠だから。 |
| (Q7) | | 思いません | | はい |
| (Q8)<br>– Why? | | 5<br>成長や気持ちが伝わる為 | | 5<br>子供がどんな気持ちで作ったり書いたのかがわかるから子供ががんばった証だから |
| (Q9) | | 2, 3回 | | 2ー3回 |
| (Q10) | | 5 | | 3 |
| (Q11) | | 5 | | 5 |

Table A.33: Parent responses (MP6-3 – MP6-6)

| | **Parent MP6-3** | **Parent MP6-4** | **Parent MP6-5** | **Parent MP6-6** |
|---|---|---|---|---|
| Age: | 32 | 37 | 40 | 34 |
| Gender: | F | F | F | M |
| (Q1) | a | a | a | a |
| (Q2)<br>– Why? | 5 | 5 | 5 | 3 |
| (Q3) | — | — | — | — |
| a. | 5 | 5 | 4 | 5 |
| b. | 5 | 5 | 5 | 3 |
| c. | 5 | 5 | 4 | 3 |
| d. | 3 | 5 | 4 | 3 |
| e. | 3 | 5 | 5 | 3 |
| f. | 3 | 5 | 4 | 3 |
| g. | 5 | 5 | 5 | 3 |
| h. | 3 | 5 | 4 | 3 |
| – Why? | | たくさんの人と出会って、他の人の考えや思いなど知ってほしいから | 同世代の人たちと交流することで何か得るものがあるのではないかと思うから | |

Table A.33 (continued)

|        | Parent MP6-3 | Parent MP6-4 | Parent MP6-5 | Parent MP6-6 |
|--------|--------------|--------------|--------------|--------------|
| (Q4)   | —            | —            | —            | —            |
| a.     | 3            | 5            | 4            | 5            |
| b.     | 5            | 5            | 4            | 5            |
| c.     | 5            | 5            | 4            | 5            |
| d.     | 5            | 5            | 4            | 5            |
| (Q5)   |              | 便利だし安上がりだから | LINE　高校生の子供との連絡を取るため（帰宅時間など） | 使用している |
| (Q6)   |              | 子供にはまだ早い | 高校生くらいなら自分である程度判断できるので使うことは悪くないと思う。（たまにチェックはします）小学生には早すぎると思う。 | いいと思う |
| (Q7)   |              | いいえ        | 時と場合にもあるが正しく使えば役に立つこともあるかも | 連絡の方法の一つとしては役立つと思う |
| (Q8)   |              | 5            | 4            | 5            |
| – Why? |              | 自分の子供がどの位できているのかわかるから | 成長が見られるから |              |
| (Q9)   |              | 4・5回        | 3—5          | 1—2          |
| (Q10)  |              | 4            | 4            | 3            |
| (Q11)  |              | 5            | 5            | 5            |

Table A.34: Parent responses (MP6-7 – MP6-10)

|         | Parent MP6-7 | Parent MP6-8 | Parent MP6-9 | Parent MP6-10 |
|---------|--------------|--------------|--------------|---------------|
| Age:    | 40           | 42           | 40           |               |
| Gender: | F            | F            | F            | F             |
| (Q1)    | a            | a            | a            | a             |
| (Q2)    | 3            | 5            | 5            | 3             |
| – Why?  |              | 他の人にも評価してもらうことはいいことだと思います。 | 子供たちがせっかく作ったのだからいろんな人に見てもらい認めてもらうほうが制作する意欲もわくと思うから。 |               |

Table A.34 (continued)

| | **Parent MP6-7** | **Parent MP6-8** | **Parent MP6-9** | **Parent MP6-10** |
|---|---|---|---|---|
| (Q3) | — | — | — | — |
| a. | 3 a. | 5 | 5 | 3 |
| b. | 3 b. | 5 | 5 | 4 |
| c. | 3 c. | 5 | 5 | 4 |
| d. | 3 d. | 5 | 5 | 2 |
| e. | 3 e. | 5 | 5 | 3 |
| f. | 3 f. | 5 | 5 | 3 |
| g. | 3 g. | 5 | 5 | 3 |
| h. | 3 h. | 5 | 5 | 3 |
| – Why? | | いろんな人と交流することは子供のためになると思います。 | この小さな町だけではなくいろんな人がいていろんな考えかた生活の違いなどたくさんのことを学べると思うから。 | |
| (Q4) | — | — | — | — |
| a. | 3 | 5 | 5 | 4 |
| b. | 3 | 5 | 5 | 4 |
| c. | 3 | 5 | 5 | 3 |
| d. | 3 | 5 | 5 | 3 |
| (Q5) | 使っていません。特に使う必要がないから | 使っていない | | |
| (Q6) | 社会に入って使う必要があれば使えばよいと思う | あまり使わせたくないと思います | | |
| (Q7) | 特には必要ないと思う | 役立たない | | |
| (Q8) | 5 | 4 | | |
| – Why? | | 自分の子供の作品を見るのも楽しいですが、他の子供の作品を見るのも楽しみです。 | | |
| (Q9) | 2−3 | 4回ぐらい | | |
| (Q10) | 3 | 3 | | |
| (Q11) | 5 | 5 | | |

Table A.35: Parent responses (MP6-11 – MP6-14)

| | **Parent MP6-11** | **Parent MP6-12** | **Parent MP6-13** | **Parent MP6-14** |
|---|---|---|---|---|
| Age: | | | 61 | 46 |
| Gender: | F | F | M | F |
| (Q1) | a | a | a | a |
| (Q2) | 3 | 5 | 4 | 3 |
| – Why? | | 色んな発想の子がいるので、十人十色の作品を鑑賞してもらうのはよいことだと思います。 | | |
| (Q3) | — | — | — | — |
| a. | 3 | 5 | 4 | 4 |
| b. | 3 | 5 | 4 | 4 |
| c. | 3 | 5 | 3 | 4 |
| d. | 3 | 5 | 3 | 4 |
| e. | 3 | 5 | 4 | 4 |
| f. | 3 | 5 | 4 | 4 |
| g. | 3 | 5 | 4 | 4 |
| h. | 3 | 5 | 5 | 4 |
| – Why? | | 何でもいろんな体験、経験をすることは大人になっても自分に身につきとても良いことだと思います。色んな人と接することはぜひ推進したいです。 | これからは世界を見るべきである。 | |
| (Q4) | — | — | — | — |
| a. | 4 | 5 | 4 | 4 |
| b. | 4 | 5 | 3 | 4 |
| c. | 4 | 5 | 4 | 4 |
| d. | 4 | 5 | 5 | 4 |
| (Q5) | | 使っています。現代では悪用する人も中にはいますが、悪いことばかりでなく、自分の知らないことがアップされていると社会勉強にもなるからです。 | | 使っていません |

Table A.35 (continued)

| | **Parent MP6-11** | **Parent MP6-12** | **Parent MP6-13** | **Parent MP6-14** |
|---|---|---|---|---|
| (Q6) | | ほどよくならいいと思います。ごはんを食べながら布団に入ってからもずっと... などいきすぎない程度なら... | | 反対です |
| (Q7) | | 使い方によると思います。やはりラインでの会話はちょっとした内容でもいじめにもつながるともうので... | | 必要ないと思います |
| (Q8)<br>– Why? | | 5<br>自分の子供がどんな発想を持っているのか、親にはわからない家では見せない姿が見れるということはよいと思います。 | 4 | 5 |
| (Q9) | | 授業参観の際見るくらいなので、年に3－4回くらいですかね! | 1回 | 3－4回 |
| (Q10) | | 3:仕事もあるので、なかなか作品だけを見に行くという余裕が取れない。 | 4 | 4 |
| (Q11) | | 5 | 4 | 4 |

Table A.36: Parent responses (MP6-15 – MP6-20)

| | **Parent MP6-15** | **Parent MP6-16** | **Parent MP6-18** | **Parent MP6-20** |
|---|---|---|---|---|
| Age: | 39 | 40 | 40 | |
| Gender: | F | F | M | F |
| (Q1) | a | a | a | a |
| (Q2) | 4 | 3 | 3 | 5 |

Table A.36 (continued)

| | Parent MP6-15 | Parent MP6-16 | Parent MP6-18 | Parent MP6-20 |
|---|---|---|---|---|
| – Why? | | 子供が一生懸命に作ったものだから、たくさんの子供たちの個性豊かな作品を鑑賞するにはいいと思う。 | 先生・生徒以外の人が鑑賞することのぜひを考えたことがない。これを問題視することが理解できます。 | たくさんの人の意見が聞けるので |
| (Q3) | — | — | — | — |
| a. | 3 | 4 | 3 | 5 |
| b. | 4 | 3 | 5 | 5 |
| c. | 4 | 3 | 5 | 5 |
| d. | 3 | 3 | 3 | 5 |
| e. | 4 | 4 | 5 | 5 |
| f. | 3 | 4 | 3 | 5 |
| g. | 5 | 4 | 5 | 5 |
| h. | 4 | 4 | 3 | 5 |
| – Why? | | 勉強にもなるし何か新しい発見ができるかも | 同年代の生徒たちと交流することは刺激になる。(刺激になってほしい) | 交流することで本人の成長を感じられると思うので |
| (Q4) | — | — | — | — |
| a. | 5 | 3 | 5 | 5 |
| b. | 5 | 3 | 5 | 5 |
| c. | 5 | 4 | 5 | 5 |
| d. | 5 | 4 | 5 | 5 |
| (Q5) | | 使用してない | 電話に代わる手軽に連絡手段として使用している | SNS は知らない |
| (Q6) | | あまりすすめたくはない。色々な問題が生じると思う。 | 家族間で使用する以外は反対している。トラブルの元となる。 | SNS は知らない |
| (Q7) | | 役には立つと思いますが、今の世の中いろいろあって正直あまり進めたくはない。 | 使い方しだい | SNS は知らない |
| (Q8) | | 4 | 5 | 5 |
| – Why? | | 家とは違って学校で皆で作品を作っているのでまた違った。個性が見えるから。 | 上手い、へたではなく、感情や感性を見たい | 学校ではどう感情を持っているのか知れるので |

Table A.36 (continued)

|       | Parent MP6-15 | Parent MP6-16 | Parent MP6-18 | Parent MP6-20 |
|-------|---------------|---------------|---------------|---------------|
| (Q9)  | 4回ぐらい      | 3回           | 1−2回授業参観や奉仕作業などのとき | 3回 |
| (Q10) | 5             | 3             | 3             | 5             |
| (Q11) | 5             | 4             | 5             | 5             |

Table A.37: Parent responses (MP6-21 – MP6-24)

|        | Parent MP6-21 | Parent MP6-22 | Parent MP6-23 | Parent MP6-24 |
|--------|---------------|---------------|---------------|---------------|
| Age:   | 30            | 11*           | 36            | 41            |
| Gender: | M            | F             | F             | M             |
| (Q1)   | a             | a             | a             | a             |
| (Q2)   | 3             | 4             | 5             | 4             |
| – Why? |               | 自由な発想を広められる |         |               |
| (Q3)   | —             | —             | —             | —             |
| a.     | 5             | 3             | 5             | 5             |
| b.     | 5             | 3             | 5             | 5             |
| c.     | 5             | 3             | 5             | 4             |
| d.     | 5             | 3             | 5             | 4             |
| e.     | 5             | 3             | 5             | 3             |
| f.     | 5             | 3             | 5             | 3             |
| g.     | 5             | 2             | 5             | 3             |
| h.     | 5             | 3             | 5             | 3             |
| – Why? | 社会性が身に付くかなと思う | 色んなことを学んでほしい | 人との交流はとても良い事だと思うので | |
| (Q4)   | —             | —             | —             | —             |
| a.     | 5             | 5             | 5             |               |
| b.     | 5             | 3             | 5             |               |
| c.     | 5             | 3             | 5             |               |
| d.     | 5             | 3             | 5             |               |
| (Q5)   | 疎遠だった友達とつながるため |      | ラインだけは友人との連絡などに使っています | |
| (Q6)   | 仕事や事故に巻き込まれると思う |  | 子どもにはあまりいいとは思わないので使わせていません | |
| (Q7)   | いいえ         |               | つかい方によると思います | |

(continued on next page)

Table A.37 (continued)

| | Parent MP6-21 | Parent MP6-22 | Parent MP6-23 | Parent MP6-24 |
|---|---|---|---|---|
| (Q8)<br>– Why? | 5<br>子供の成長を感じることができる | | 5<br>子どもの成長を感じたり、一生懸命に作った作品はとても素晴らしいと思うから。 | |
| (Q9) | | | | |
| (Q10) | 3 | | 5 | |
| (Q11) | 5 | | 5 | |

Table A.38: Parent responses (MP6-27 – MP6-31)

| | Parent MP6-27 | Parent MP6-29 | Parent MP6-30 | Parent MP6-31 |
|---|---|---|---|---|
| Age: | 31 | 40 | 11 | |
| Gender: | F | M | M | F |
| (Q1) | a | a | a | a |
| (Q2)<br>– Why? | 4<br>子どもの制作意欲の向上につながると考えるため。 | 5 | 5 | 5<br>子供達が作製した作品など、第三者的な方々に鑑賞してもらう事ではげみになったり、意欲がわいたりするのではと思うので、賛成です。 |
| (Q3) | — | — | — | — |
| a. | 5 | 3 | 5 | 5 |
| b. | 5 | 5 | 5 | 5 |
| c. | 5 | 5 | 5 | 5 |
| d. | 5 | 3 | 5 | 5 |
| e. | 5 | 5 | 5 | 5 |
| f. | 5 | 3 | 5 | 5 |
| g. | 4 | 5 | 5 | 5 |
| h. | 4 | 3 | 5 | 5 |
| – Why? | 交流を機会に、新たな発見や知識を増やしていける。 | いろいろな人たちと交流し、人との接し方、たくさんの考え方を学んでもらいたい。 | | 子供の時から身近な人以外にも交流が持てた方が見聞が広くなるのではと思います。 |
| (Q4) | — | — | — | — |
| a. | 5 | 5 | 5 | 5 |
| b. | 5 | 5 | 5 | 5 |

Table A.38 (continued)

| | Parent MP6-27 | Parent MP6-29 | Parent MP6-30 | Parent MP6-31 |
|---|---|---|---|---|
| c. | 5 | 5 | 5 | 5 |
| d. | 5 | 5 | 5 | 5 |
| (Q5) | 使っていない | 使っている | 便利だから | |
| (Q6) | SNS を利用する事に否定はしないが、ある程度の制限は必要だと思う。 | 否定的 | 自分の子どもは使っていないが、使う事は進めない。 | 時間を決めて危険がない程度に使用するのは良いと思いますが、必ず保護者がチェックする事も必要な事だと思います。 |
| (Q7) | 使用用途次第 | 役立つと思う | 学校では必要ないと思う | 何とも言えません |
| (Q8) – Why? | 5<br>子どもらしい発想や、成長がみられ楽しい。 | 5 | | 5<br>子供の自由な発想で作製されたものを見るのは、子供の成長を見る様でとても楽しいです。 |
| (Q9) | 1〜2回 | 3〜4回 | 6〜7回 | 授業参観の時なので、年に4〜5回です |
| (Q10) | 3 | 4 | 5 | 5 |
| (Q11) | 5 | 5 | 5 | 5 |

## Notes

1    The use of *a, b, c* (etc.) for multiple choice responses has been adopted throughout this appendix in order to simplify the presentation of results. The distributed questionnaires used checkable boxes instead.

2    There is no particular relationship between the parent numbers and the student numbers assigned within each class.

3    Parent numbers MP6-17, MP6-19, MP6-25, MP6-26 and MP6-28 are not used. Respondents were assigned numbers by the school at the time of the survey, and certain numbers were evidently either skipped over or missing from the collected questionnaires. For simplicity, these school-assigned numbers were retained when tabulating the survey results.

# B   Experiment Survey

The questionnaires completed by students in the Full System experiment (§4.3) are reproduced below, followed by translations in English.

## Pre-Test Questionnaire

以下の設問に５段階評価でお答えください

(1) 海外にいる生徒たちが作った作品に興味がありますか？
【 ない →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← とてもある 】

(2) 海外にいる生徒たちと、共通点があると思いますか？
【 ない →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← とてもある 】

(3) 海外にいる生徒たちとコミニケーションすることに興味がありますか？
【 ない →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← とてもある 】

### English Translation

For the following questions, please answer using a 5-point scale.

(1) How interested are you in seeing creative works by children in other countries?
( Not at all →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← Very much )

(2) Do you feel you have things in common with children in other countries?
( Not at all →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← Very much )

(3) How interested are you in communicating with children in other countries?
( Not at all →　　1　　　　　　2　　　　　　3　　　　　　4　　　　　　5　　← Very much )

### Responses

16 students completed this questionnaire; for reference, they have been given the designations S1 through S16. Their responses are summarized in Table B.1.

Table B.1: Pre-test responses (16 students)

|     | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | S13 | S14 | S15 | S16 |
|-----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| (1) | 5  | 4  | 5  | 4  | 5  | 4  | 5  | 5  | 4  | 5   | 3   | 3   | 5   | 5   | 4   | 5   |
| (2) | 4  | 3  | 4  | 3  | 4  | 3  | 4  | 4  | 3  | 5   | 4   | 2   | 4   | 4   | 5   | 4   |
| (3) | 5  | 3  | 5  | 5  | 4  | 3  | 5  | 4  | 3  | 3   | 2   | 4   | 3   | 5   | 4   | 3   |

## Post-Test Questionnaire

(1)「デジタル廊下」を利用してみて、海外にいる生徒たちが作った作品に興味がわきましたか？
【 まったく思わない →　　1　　　　2　　　　3　　　　4　　　　5　　←　　強くそうおもう 】

(2)「デジタル廊下」を利用してみて、海外にいる生徒たちと、共通点があると思いますか？
【 まったく思わない →　　1　　　　2　　　　3　　　　4　　　　5　　←　　強くそうおもう 】

(3) (a) 特に感じた共通点は何ですか？　どんな時に感じましたか？（自由記述）

　　 (b) 特に感じた相違点は何ですか？　どんな時に感じましたか？（自由記述）

(4)「デジタル廊下」を利用してみて、海外にいる生徒たちとコミニケーションしたいと思うようになりましたか？
【 まったく思わない →　　1　　　　2　　　　3　　　　4　　　　5　　←　　強くそうおもう 】
どんな時にそう思いましたか？（自由記述）

(5) 他の生徒の作品にステッカーをつけましたか？（はい／いいえ）
それはなぜですか？（自由記述）

(6) 他の生徒がつけたステッカーをみて、どんなことを感じましたか？（自由記述）

(7)「デジタル廊下」を使ってみて思ったことを自由にお書きください。（自由記述）

## English Translation

(1) After using "Digital Hallway", have you gained an interest in seeing creative works by children in other countries?
( Not at all →　　1　　　　2　　　　3　　　　4　　　　5　　← Very much )

(2) After using "Digital Hallway", do you feel you have things in common with children from other countries?
( Not at all →　　1　　　　2　　　　3　　　　4　　　　5　　← Very much )

(3) (a) Did anything in particular make you feel you have something in common?

　　 (b) Did anything in particular make you feel there were differences between you?

(4) After using "Digital Hallway", how interested are you in communicating with children from other countries?
( Not at all →　　1　　　　2　　　　3　　　　4　　　　5　　← Very much )
What, if anything, made you feel this way?

(5) Did you put stickers on other students' creative works? (Yes/No)
Why?

(6) How did you feel about seeing stickers posted by other students?

(7) Do you have any other comments about using "Digital Hallway"?

## Responses

15 students completed this questionnaire (one student was absent). They are designated S1 through S15; these do not correlate to the designations used for the pre-test questionnaire. The responses are summarized in Tables B.2 to B.5.

Table B.2: Post-test responses (students 1 – 4)

| | | S1 | S2 | S3 | S4 |
|---|---|---|---|---|---|
| (1) | | 5 | 3 | 5 | 3 |
| (2) | | 4 | 4 | 5 | 3 |
| (3) | (a) | 笑顔になる絵を書いている | 馬の絵など書いていたころ | 花の形が私達と同じだった | 絵をかいていること |
| | (b) | 相手は、人は動物が多かった | 海外らしい絵 | 色のぬり方が全然違う作品もあった | 絵のかき方というか絵じたいが少しちがう。(はっそうが) |
| (4) What ...? | | 5 海外にいる生徒達の絵を見た時 | 4 海外の人たちも日本のことを知ってもらいたい | 4 作品にたくさん共通点があったから。他の国の人と話してみたいから。 | 2 英語書けないし、しゃべれない。話し合うかどうか分からない。(英語話せたらかっこい。) |
| (5) Why? | | Y 自分とちがって、元気になる絵やいろいろな絵があって、おもしろかったから | N 日本の絵といっしょだから | Y かわいい作品があったから | Y 上手だったから |
| (6) | | 相手は、この絵を見て、自分とちがう気持ちで、絵を見ているんだなと思った | 日本の絵をみてくれてよかった | 自分と同じ考えの人や違う人がいて、感じ方がみんな違うんだなと思った | いろんなステッカーがあるなーと思った |
| (7) | | 海外の生徒の絵を見れて、興味を持った。もっと他の絵を見てみたい | 海外の人の絵が上手だった | 他の国の人達の作品を見ることができて、おもしろかった | きかいが　すごかった |

Table B.3: Post-test responses (students 5 – 8)

| | | S5 | S6 | S7 | S8 |
|---|---|---|---|---|---|
| (1) | | 5 | 5 | 5 | 3 |
| (2) | | 5 | 5 | 3 | 2 |
| (3) | (a) | 絵を見たときに私達と同じような絵だった | 色のつかいかたがはででおなじ | しぜんの物をかいている | わかりません |
| | (b) | 絵を見たとき。私がリアルに表現されている | ぼくたちはそうぞうでかいていたけど、海外の人たちは本当に、ある物を書いていた。 | キャラクターをかいていた | ぬるのがこまかくなちゃった |
| (4) | | 5 | 3 | 4 | 4 |
| | What ...? | 私たちの絵をどう思っているかがきになるから | あまりえいごが分からないから、ちょっとむずかしい | 友だちになりたい | あいてのことをよくしりたいから |
| (5) | | Y | N | N | N |
| | Why? | 上手だったから | やり方がいまいち分からなかった | はやくあそびたかったから | つけられるとしらなかった |
| (6) | | 海外の人はどのような絵が好きなのかが分かった | みんなのえがうまいからつけたんだと思います | うれしい | みていない |
| (7) | | 海外に行ってみたいと思った | 海外の人のえ見れていいきかいだと思いました | ほかのひとのさくひんをみれてよかった | 学校ではあまり使ったのないものをつかえてよかった |

Table B.4: Post-test responses (students 9 – 12)

| | | S9 | S10 | S11 | S12 |
|---|---|---|---|---|---|
| (1) | | 4 | 4 | 5 | 5 |
| (2) | | 3 | 3 | 2 | 5 |
| (3) | (a) | 花などの自然なものをかく | みんな動物やキャラクターが好きなんだな〜 | みていて楽しいような絵を書いている | 紙などをつかったりして作るところ |
| | (b) | 動物などをかいていた | 色のぬりかたなど（ペンキぬりだった） | こまかい所まで書いている | 色をぬるのが、すこしざつ |
| (4) | | 4 | 5 | 5 | 4 |
| | What ...? | 絵を見たときどんなんがかいたのかしりたいと思ったから | 自分の考えがうかんだ時、海外の生徒の気持ちや考えはどうなるんだろうと思う | あまりふれあったりしないから | いろんなはっそうをもっているから |

Table B.4 (continued)

|  |  | S9 | S10 | S11 | S12 |
|---|---|---|---|---|---|
| (5) | Why? | N<br><br>他の人も同じのにつけていたから | Y<br><br>よいと思ったから（いろいろなくふうがあっておもしろいから） | N<br><br>時間がなかったから | Y<br><br>かわいいと思ったから |
| (6) |  | 人によっていろいろな考えがあると思った | ぼくとちがう考えなのかなと思う | すごいいいと思った | みんなの思いかたがちがうと思った |
| (7) |  | 他の人の絵が見れておもしろい | おもしろい。（もっと他の絵や作品を見たい） | 海外の人とはあまりふれあわないので絵だけでもふれあえたのでよかった | たくさんの国のえを見れて楽しかった |

Table B.5: Post-test responses (students 13 – 15)

|  |  | S13 | S14 | S15 |
|---|---|---|---|---|
| (1) |  | 4 | 5 | 3 |
| (2) |  | 4 | 4 | 2 |
| (3) | (a) | どうぐのつかい方やかきたいと思うもの | 海外の生徒の人たちも、いっぱい色をつかっていた | 分からなかった |
|  | (b) | 色のつかい方・絵の工夫のし方などが私たちとぜんぜんちがかった | そんなになかった | 分からなかった |
| (4) | What ...? | 3<br><br>自分とぜんぜんちがう絵のとき | 5<br><br>海外の人たちとぼくたちはちがう意見をもっていると思ったとき | 4<br><br>絵を見ているときにどうしてこうゆう絵を書いているかしりたいから |
| (5) | Why? | Y<br><br>じょうずだなと思ったから | Y<br><br>大好きな馬が猫いてあったから | Y<br><br>いいなと思ったから |
| (6) |  | うれしいな | そんなになかった | その人はこれを見てすてきだと思ったのかな |
| (7) |  | 海外の人の絵や作品が自分たちとちがうこと分かってよかった | 海外の生徒たちの絵を簡たんに見れるとおもしろいなと思った | 他の人が書いた絵を見れてよかった |

# C Source Code

The source code for the Digital School Hallway DHD prototype web application is provided here, in the form of a (statically coded) sample community.

Listing 1: HTML source of overview screen (`index.html`)

```
<!DOCTYPE html>
<html style="background: url(starry_bg.jpg) no-repeat fixed; background-size: cover
    ; -webkit-background-size: cover;">
  <head>
    <meta charset="utf-8" application-name="Digital Hallway">
    <link rel="stylesheet" media="screen" type="text/css" href="dh.css">
    <title>The Digital School Hallway</title>
    <script src="saver.js"></script>
    <script>
        /* Enable 'active' event on touch under iOS, source:
         * https://developers.google.com/web/fundamentals/input/touch/activestates/
             index?hl=en
         */
        window.onload = function() {
          if(/iP(hone|ad)/.test(window.navigator.userAgent)) {
            document.body.addEventListener('touchstart', function() {}, false);
          }
        };
    </script>
  </head>
  <body>
    <!-- Each gallery is defined as a div of class dhtile -->
    <div class="dhtile">
        <a href="jschool1/index.html">
        <div class="exbremote">
          <span class="tiletext">Japan, Calligraphy</span>
          <span class="tileflag_left">&#x2605;</span>
          <span class="tileflag_right">16</span>
        </div></a>
    </div><div class="dhtile">
        <a href="jschool2/index.html">
        <div class="exbremote">
          <span class="tiletext">Japan, Paintings</span>
          <span class="tileflag_left">&#x2605;</span>
          <span class="tileflag_right">14</span>
        </div></a>
    </div><div class="dhtile">
        <a href="wschool1/index.html">
        <div class="exbremote">
          <span class="tiletext">Canada, Drawings (1)</span>
          <span class="tileflag_left">&#x2605;</span>
          <span class="tileflag_right">21</span>
        </div></a>
    </div>
    <!-- ...etc... -->
    <div style="position: fixed; right: 2mm; bottom: 1mm; text-decoration: none;"><
        a href="copyright.html">Copyright Notices</a></div>
  </body>
</html>
```

Listing 2: HTML source of one gallery screen (`wschool4/index.html`)

```
<!DOCTYPE html>
<html style="background: url(../starry_bg.jpg) no-repeat fixed #e0ffe0; background-
    size: cover; -webkit-background-size: cover;">
<head>
  <meta charset="utf-8" application-name="Digital Hallway">
  <link rel="stylesheet" media="screen" type="text/css" href="../dh.css">
  <link rel="stylesheet" href="../photoswipe.css">
  <link rel="stylesheet" href="../default-skin/default-skin.css">
  <script src="../photoswipe.min.js"></script>
  <script src="../photoswipe-ui-default.js"></script>
  <title>Denmark: Drawings</title>
```

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```
</head>

<body>
  <div class="exhibit-controls">
    <a href="../index.html"><span class="icon-left"><img alt="&lt;" src="../return.
      png"></span></a>
  </div>
  <div class="plane">
    <div class="exhibit-gallery" id="gallery">
      <!-- Each image in the gallery is defined as a <figure> element -->
      <figure class="dhthumb">
        <a href="dkimage001.jpg" data-size="1280x960">
          <img class="dhthumbimg" src="t_dkimage001.jpg" alt="Denmark, Grade 7 (F)"
            width="100%">
          <figcaption class="thumbdate">2015-05-28</figcaption>
          <span class="thumbflag"></span>
        </a>
      </figure>
      <figure class="dhthumb">
        <a href="dkimage002.jpg" data-size="1280x960">
          <img class="dhthumbimg" src="t_dkimage002.jpg" alt="Denmark, Grade 7 (F)"
            width="100%">
          <figcaption class="thumbdate">2015-05-28</figcaption>
          <span class="thumbflag"></span>
        </a>
      </figure>
      <!-- ...etc... -->
    </div>
  </div>

  <!-- Root element of PhotoSwipe. Must have class pswp. -->
  <div class="pswp" tabindex="-1" role="dialog" aria-hidden="true">
    <!-- Background of PhotoSwipe.
        It's a separate element as animating opacity is faster than rgba(). -->
    <div class="pswp__bg"></div>

    <!-- Slides wrapper with overflow:hidden. -->
    <div class="pswp__scroll-wrap">
        <!-- Container that holds slides.
            PhotoSwipe keeps only 3 of them in the DOM to save memory.
            Don't modify these 3 pswp__item elements, data is added later on. -->
        <div class="pswp__container">
            <div class="pswp__item"></div>
            <div class="pswp__item"></div>
            <div class="pswp__item"></div>
        </div>
        <!-- Default (PhotoSwipeUI_Default) interface on top of sliding area. Can
            be changed. -->
        <div class="pswp__ui pswp__ui--hidden">
            <div class="pswp__top-bar">
                <!--  Controls are self-explanatory. Order can be changed. -->
                <div class="pswp__counter"></div>
                <button class="pswp__button pswp__button--close" title="Close (Esc)
                    "></button>
                <button class="pswp__button pswp__button--share" title=""></button>
                <button class="pswp__button pswp__button--zoom" title="Zoom in/out
                    "></button>
                <!-- Preloader demo http://codepen.io/dimsemenov/pen/yyBWoR -->
                <!-- element will get class pswp__preloader--active when preloader
                    is running -->
                <div class="pswp__preloader">
                    <div class="pswp__preloader__icn">
                      <div class="pswp__preloader__cut">
                        <div class="pswp__preloader__donut"></div>
                      </div>
                    </div>
                </div>
            </div>
            <div class="pswp__share-modal pswp__share-modal--hidden pswp__single-
                tap">
                <div class="pswp__share-tooltip"></div>
            </div>
            <button class="pswp__button pswp__button--arrow--left" title="Previous
                (arrow left)">
            </button>
```

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```
            <button class="pswp__button pswp__button−−arrow−−right" title="Next (
                arrow right)">
            </button>
            <div class="pswp__caption">
                <div class="pswp__caption__center"></div>
            </div>
        </div>
    </div>
  </div>

  <script src="../exhibit−viewer.js"></script>
</body>
</html>
```

Listing 3: HTML source of slideshow screen (`slideshow.html`)

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf−8" title="Digital Hallway">
    <link rel="stylesheet" media="screen" type="text/css" href="dh.css">
    <title>Digital Hallway</title>
  </head>
  <body>
    <div class="slideShowArea">
      <div id="slideShowImages" class="slideShowImages">
        <!−− All images used by the slideshow are defined here −−>
        <img src="wschool1/DSC01440.JPG" alt="Slide 1" />
        <img src="wschool1/DSC01444.JPG" alt="Slide 2" />
        <img src="wschool1/DSC01445.JPG" alt="Slide 3" />
        <!−− ...etc... −−>
        <img src="wschool4/dkimage004.jpg" alt="Slide 50" />
        <img src="wschool4/dkimage005.jpg" alt="Slide 51" />
        <img src="wschool4/dkimage006.jpg" alt="Slide 52" />
      </div>
    </div>
    <script src="slideShow.js?v=1.0"></script>
  </body>
</html>
```

Listing 4: HTML source of copyright screen (`copyright.html`)

```
<!DOCTYPE html>
<html style="background: url(starry_bg.jpg) no−repeat fixed; background−size: cover
    ; −webkit−background−size: cover;">
  <head>
    <meta charset="utf−8" application−name="Digital Hallway">
    <link rel="stylesheet" media="screen" type="text/css" href="dh.css">
    <title>Copyright Notices</title>
    <script src="saver.js"></script>
  </head>

  <body>
    <div class="exhibit−controls">
      <a href="index.html"><span class="icon−left"><img alt="&lt;" src="return.png
          "></span></a>
    </div>
    <div class="text−block">
      <h2>Copyright Notices</h2>
      <p>All school artwork pictures are the properties of their respective owners.
          Published with permission.</p>
      <p>The font used on this site is <em>P−Moon Font</em> by Studio twoG, and is
          licensed as free for personal use, including in published works.</p>
      <p>The page background image is modified from <em>Starry sky at Mount Rinjani
          , Lombok Island, Indonesia</em> by "skyseeker" (downloaded from Wikimedia
           Commons).  Licensed under the Creative Commons Attribution 2.0 Generic
          license.</p>
      <p>Feedback icons are from "Riceball Emoticons" by David Lanham (copyright
          2013). Licensed as free for personal and commercial use.</p>
      <p>Other images and content are copyright Alexander Taylor; all rights
          reserved.</a>
```

```
    </div>
  </body>
</html>
```

Listing 5: CSS source (for all pages)

```css
@font-face {
    /* P-Moon Font by Studio twoG: http://s2g.jp/font/index.htm
     * (Font is free for personal use, including published works.)
     */
    font-family:        "S2G Moon font";
    font-weight:        normal;             font-style:         normal;
    src:                local("./moon.ttf"), url("./moon.ttf");
}
body {
    margin:             0;                  padding:            0;
    font-family:        "S2G Moon font";    font-size:          14pt;
    color:              #f0f8ff;
}
a           { color:      #3060a0;          text-decoration:    none; }
a:visited { color:        #3060a0;          text-decoration:    none; }
input     { font-family:"S2G Moon font";    font-size:          18pt; }
select    { font-family:"S2G Moon font";    font-size:          18pt; }

.dhtile {
    display:            inline-block;       position:           relative;
    vertical-align:     top;                margin:             5mm;
    width:              4.5cm;              height:             4.5cm;
}
.exblocal {
    background:         url(grad_blue.png) no-repeat center #b0b0ff;
    box-shadow:         3px 3px 6px 3px #304050; border-radius: 1px;
    position:           relative;           padding:            2mm;
    width:              100%;               height:             100%;
}
.exblocal:active {
    box-shadow:         0px 0px 3px 1px #304050; border-radius: 1px;
    transform:          translate(3px,3px);  -webkit-transform: translate(3px,3px);
}
.exbremote {
    background:         url(grad_green.png) no-repeat center #b0ffb0;
    box-shadow:         3px 3px 6px 3px #304050; border-radius: 1px;
    position:           relative;           padding:            2mm;
    width:              100%;               height:             100%;
}
.exbremote:active {
    box-shadow:         0px 0px 3px 1px #304050; border-radius: 1px;
    transform:          translate(3px, 3px);    -webkit-transform: translate(3px,
        3px);
}
.tiletext {
    position:           absolute;           font-size:          22pt;
    text-align:         center;             text-shadow:        1px 1px 5px
        #505050;
    top:                5mm;                width:              4.5cm;
}
.tileflag_left {
    position:           absolute;
    bottom:             2mm;                left:               4mm;
    margin:             0;                  padding:            0;
    color:              yellow;             text-shadow:        1px 1px 3px
        #505050;
}
.tileflag_right {
    position:           absolute;
    bottom:             2mm;                right:              4mm;
    margin:             0;                  padding:            0;
}
.tips_area {
    background-color:   rgba(255,255,255,0.5);
    display:            inline-block;       position:           fixed;
    bottom:             2mm;                left:               0;
    width:              100%;               text-align:         center;
```

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```
}
.tip_icon {
    margin:             3mm;
}
.text-block {
    background-color:   rgba(32,64,128,0.7);
    margin:             2cm;                    padding:            4mm;
    max-width:          40em;                   font-size:          16pt;
    box-shadow:         2px 2px 2px 1px black; border-radius:   1px;
}

.plane {
    perspective:        1100px;      -webkit-perspective:       1100px;
    perspective-origin: -10% 50%;    -webkit-perspective-origin: -10% 50%;
    margin:             4em auto;
}
.exhibit-gallery {
    background-image:   url(texture1.png);  background-color:    #c0d0e8;
    margin:             4cm 0 0 0;           padding:            3mm;
    min-height:         9cm;                 width:              72%;
    box-shadow:         2px 2px 2px 1px #304050; border-radius: 1px;
    transform:          rotateY(-40deg); -webkit-transform:  rotateY(-40deg);
    transition:         1s ease-in-out;  -webkit-transition: 1s ease-in-out;
}
.dhthumb {
    background-color:   #e0e0e0;
    display:            inline-block;       position:           relative;
    width:              4cm;                height:             4cm;
    margin:             2mm;                padding:            0;
    box-shadow:         2px 2px 2px 1px #304050; border-radius: 1px;
}
img.dhthumbimg {
    border:             0.75mm solid #405070;   position:       relative;
    width:              3.9cm;                   height:         77%;
}
.thumbdate {
    display:            inline-block;       position:           relative;
    text-align:         center;             width:              100%;
}
.thumbflag {
    position:           absolute;           vertical-align:     top;
    font-family:        sans-serif;         font-size:          16pt;
    bottom:             1.5mm;              left:               1mm;
    margin:             0;                  padding:            0;
    color:              yellow;             text-shadow:        1px 1px 3px
        #505050;
}
.exhibit-controls {
    position:           absolute;           display:            inline-block;
    top:                0;                  width:              98%;
    margin-top:         1mm;                margin-left:        1mm;
    margin-right:       auto;
}
.icon-left {
    left:               1mm;
}
.slideShowArea {
    background-color:   black;              text-align:         center;
    display:            flex;               position:           absolute;
    top:                0;                  bottom:             0;
    left:               0;                  right:              0;
}
.slideShowImages {
    margin:             auto;
}
/* lightbox and dimmer classes adapted from:
    http://stackoverflow.com/questions/6265574/popup-form-using-html-javascript-css
        */
#lightbox {
    visibility:         hidden;                 position:       absolute;
    background:         white;                   color:          black;
    box-shadow:         2px 2px 2px 2px #304050; border-radius:  6px;
    width:              14cm;                    height:         3cm;
    padding:            2mm;                     text-align:     center;
    transform:          translate(-50%,-50%);  -webkit-transform:  translate
        (-50%,-50%);
```

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```
        z−index:           100;                    font−size:          18pt;
}
.dimmer {
    position:          absolute;               top:               0;
    background:        #000;                   opacity:           .5;
    z−index:           99;
}
.feedback_page {
    background:        url(texture2.png) #d0e0ff;
}
.feedback_top {
    margin:            5mm;
}
.fbthumb {
    box−shadow:        2px 2px 2px 1px #304050; border−radius: 1px;
}
.fbreturn {
    position:          absolute;         opacity:           0.7;
    z−index:           10;
}
.sticker {
    vertical−align:    200%;                    margin−left:       1cm;
}
.feedback_history {
    margin−left:       5mm;                     margin−right:  5mm;
    padding:           2mm;                     font−size:     16pt;
    background−color:  rgba(255,255,255,0.5);   color:         black;
    box−shadow:        2px 2px 2px 1px #304050; border−radius: 1px;
}
.sticker_small {
    padding:           0;
}
.feedback_item {
    vertical−align:    middle;
}
.feedback_cell {
    padding−right:     1.5cm;
}
```

The slideshow mode is controlled by a script, `slideShow.js`, downloaded from the Microsoft Developer Network at `https://msdn.microsoft.com/en-us/library/hh920769(v=vs.85).aspx`, with the following modifications:

- The `slideDelay` global (line 13) was changed to 8000.
- Line 40:

  ```
  globals.wrapperObject.addEventListener('click', toggleSlideShow, false);
  ```

  was removed and replaced with:

  ```
  window.addEventListener('click', endSlideShow, false);
  ```

- In order to rescale and centre all pictures on-screen, the function *initialize-SlideShowMarkup* (lines 92∽) was rewritten as follows:

  ```
  function initializeSlideShowMarkup() {
    var slideWidthMax = window.innerWidth;
    var slideHeightMax = window.innerHeight;

    globals.wrapperObject.style.position = "relative";
    globals.wrapperObject.style.overflow = "hidden";
    globals.wrapperObject.style.width = slideWidthMax + "px";
    globals.wrapperObject.style.height = slideHeightMax + "px";

    var slideCount = globals.slideImages.length;
    for (var i = 0; i < slideCount; i++) {
      globals.slideImages[i].style.opacity = 0;
  ```

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```
        globals.slideImages[i].style.position = "absolute";
        if (globals.slideImages[i].width > slideWidthMax) {
            globals.slideImages[i].style.width = slideWidthMax + "px";
            globals.slideImages[i].style.left = "0px";
            globals.slideImages[i].style.top = (slideHeightMax − globals.
                slideImages[i].getBoundingClientRect().height) / 2 + "px";
        }
        else if (globals.slideImages[i].height > slideHeightMax) {
            globals.slideImages[i].style.height = slideHeightMax + "px";
            globals.slideImages[i].style.top = "0px";
            globals.slideImages[i].style.left = (slideWidthMax − globals.
                slideImages[i].getBoundingClientRect().width) / 2 + "px";
        }
        else {
          globals.slideImages[i].style.top = (slideHeightMax − globals.
              slideImages[i].getBoundingClientRect().height) / 2 + "px";
          globals.slideImages[i].style.left = (slideWidthMax − globals.
              slideImages[i].getBoundingClientRect().width) / 2 + "px";
        }
    }
    globals.slideImages[0].style.opacity = 1; // Make the first slide visible.

    if (globals.buttonObject) {
      globals.buttonObject.textContent = globals.buttonStopText;
    }
} // initializeSlideShowMarkup
```

- The following routine was added:

```
function endSlideShow() {
  window.location.href = "index.html";
} // endSlideShow
```

The slideshow is triggered by a timeout controlled on each page by another script, `saver.js`:

Listing 6: Javascript source controlling slideshow activation (`saver.js`)

```
/* saver.js
 * Set an inactivity timeout on the current page, and load the
 * slideshow page once it expires.
 */
var delay = 300000;
timer = window.setTimeout(startSaver, delay);

function startSaver() {
    window.location.assign("./slideshow.html");
}
function resetTimeout() {
    window.clearTimeout(timer);
    timer = window.setTimeout(startSaver, delay);
}
document.onmousemove = resetTimeout;
document.onmousedown = resetTimeout;
document.onkeydown = resetTimeout;
document.click = resetTimeout;
```

The image viewer is an open source JavaScript application, Photoswipe. A few modifications were made to the distribution files, as follows.

- In `photoswipe-ui-default.js`:

  – The contents of the `shareButtons` list were replaced with the following

single item:

```
{id:'feedback', label:'Feedback', url:'../feedback.php?pic={{
    raw_image_url}}&url={{url}}'}
```

In the `_openWindowPopup` function, the call to `window.open` was removed, and the following added before the final return:

```
window.location.href = target.href;
```

- In `default-skin.css`:

  – In the first `@media` section, the line:

  ```
  background-image: url(default-skin.svg); }
  ```

  was replaced with

  ```
  background-image: url(default-skin1.png); }
  ```

  – The section labelled "`/* no arrows on touch screens */`" was removed.
  – In the `.pswp__caption__center` section, `text-align` was changed to 'center', and both `font-size` and `line-height` were changed to '12pt'.
  – In the `.pswp__caption--empty` section, `left` was changed to '2.5%', `top` was changed to '3mm', and `width` was changed to '95%'.

- The image file `default-skin.png` was copied to `default-skin1.png`; the latter was modified to replace the 'sharing' button with an icon for feedback (the same image as `./stickers/Smile@02x.png`).

Listing 7: JavaScript used to interface with image viewer (`exhibit-viewer.js`)

```
/* Adapted from sample code in Photoswipe documentation: http://photoswipe.com/
    documentation/getting-started.html */
var initPhotoSwipeFromDOM = function(gallerySelector) {
    // parse slide data (url, title, size ...) from DOM elements
    // (children of gallerySelector)
    var parseThumbnailElements = function(el) {
        var thumbElements = el.childNodes,
            numNodes = thumbElements.length,
            items = [],
            figureEl,
            linkEl,
            size,
            item;

        for(var i = 0; i < numNodes; i++) {
            figureEl = thumbElements[i]; // <figure> element
            // include only element nodes
            if(figureEl.nodeType !== 1) {
                continue;
            }
            linkEl = figureEl.children[0]; // <a> element
            size = linkEl.getAttribute('data-size').split('x');

            // create slide object
            item = {
                src: linkEl.getAttribute('href'),
                w: parseInt(size[0], 10),
                h: parseInt(size[1], 10)
```

```
            };
            if(linkEl.children.length > 0) {
                // <img> thumbnail element, retrieving thumbnail url
                item.msrc = linkEl.children[0].getAttribute('src');
                item.title = linkEl.children[0].getAttribute('alt');
            }
            item.el = figureEl; // save link to element for getThumbBoundsFn
            items.push(item);
        }
        return items;
    };

    // find nearest parent element
    var closest = function closest(el, fn) {
        return el && ( fn(el) ? el : closest(el.parentNode, fn) );
    };

    // triggers when user clicks on thumbnail
    var onThumbnailsClick = function(e) {
        e = e || window.event;
        e.preventDefault ? e.preventDefault() : e.returnValue = false;
        var eTarget = e.target || e.srcElement;

        // find root element of slide
        var clickedListItem = closest(eTarget, function(el) {
            return (el.tagName && el.tagName.toUpperCase() === 'FIGURE');
        });
        if(!clickedListItem) {
            return;
        }
        // find index of clicked item by looping through all child nodes
        // alternatively, you may define index via data— attribute
        var clickedGallery = clickedListItem.parentNode,
            childNodes = clickedListItem.parentNode.childNodes,
            numChildNodes = childNodes.length,
            nodeIndex = 0,
            index;

        for (var i = 0; i < numChildNodes; i++) {
            if(childNodes[i].nodeType !== 1) {
                continue;
            }
            if(childNodes[i] === clickedListItem) {
                index = nodeIndex;
                break;
            }
            nodeIndex++;
        }
        if(index >= 0) {
            // open PhotoSwipe if valid index found
            openPhotoSwipe( index, clickedGallery );
        }
        else {
            alert("Index not found.");
        }
        return false;
    };

    // parse picture index and gallery index from URL (#&pid=1&gid=2)
    var photoswipeParseHash = function() {
        var hash = window.location.hash.substring(1),
        params = {};

        if(hash.length < 5) {
            return params;
        }
        var vars = hash.split('&');
        for (var i = 0; i < vars.length; i++) {
            if(!vars[i]) {
                continue;
            }
            var pair = vars[i].split('=');
            if(pair.length < 2) {
                continue;
            }
            params[pair[0]] = pair[1];
```

```
                }
                if(params.gid) {
                    params.gid = parseInt(params.gid, 10);
                }
                if(!params.hasOwnProperty('pid')) {
                    return params;
                }
                params.pid = parseInt(params.pid, 10);
                return params;
        };

    var openPhotoSwipe = function(index, galleryElement, disableAnimation) {
            var pswpElement = document.querySelectorAll('.pswp')[0],
                gallery,
                options,
                items;

            items = parseThumbnailElements(galleryElement);

            // define options (if needed)
            options = {
                index: index,
                showHideOpacity: true,
                mouseUsed: true,
                tapToClose: true,
                tapToToggleControls: false,
                // define gallery index (for URL)
                galleryUID: galleryElement.getAttribute('data-pswp-uid'),
                getThumbBoundsFn: function(index) {
                    // See Options -> getThumbBoundsFn section of documentation for
                        more info
                    var thumbnail = items[index].el.getElementsByTagName('img')[0], //
                        find thumbnail
                        pageYScroll = window.pageYOffset || document.documentElement.
                            scrollTop,
                        rect = thumbnail.getBoundingClientRect();
                    return {x:rect.left, y:rect.top + pageYScroll, w:rect.width};
                }
            };
            if(disableAnimation) {
                options.showAnimationDuration = 0;
            }
            // Pass data to PhotoSwipe and initialize it
            gallery = new PhotoSwipe( pswpElement, PhotoSwipeUI_Default, items, options
                );
            gallery.init();
            document.getElementById("button-feedback").onclick = function() {
                alert(pswp.currItem.src);
            }
    };

    // loop through all gallery elements and bind events
    var galleryElements = document.querySelectorAll( gallerySelector );
    for(var i = 0, l = galleryElements.length; i < l; i++) {
        galleryElements[i].setAttribute('data-pswp-uid', i+1);
        galleryElements[i].onclick = onThumbnailsClick;
    }
    // Parse URL and open gallery if it contains #&pid=x&gid=y
    var hashData = photoswipeParseHash();
    if(hashData.pid > 0 && hashData.gid > 0) {
        openPhotoSwipe( hashData.pid - 1 , galleryElements[ hashData.gid - 1 ],
                true );
    }
};
// Execute above function
initPhotoSwipeFromDOM('.exhibit-gallery');
```

Listing 8: PHP source of feedback page (`feedback.php`)

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8" application-name="Digital Hallway">
```

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```
      <link rel="stylesheet" media="screen" type="text/css" href="dh.css">
      <title>Digital School Hallway</title>
      <script src="feedback.js"></script>
</head>

<body class="feedback_page">
   <?php
      $hostname = "REDACTED";
      $username = "REDACTED";
      $password = "REDACTED";
      $pic = $_REQUEST['pic'];
      $refurl = $_REQUEST['url'];
      $imgpath = dirname(parse_url($refurl, PHP_URL_PATH));
   ?>

   <div class="feedback_top">
      <a href=<?php echo "\"".$refurl."\"" ?> ><img class="fbthumb" id="thumbnail"
         src=<?php echo "\"".$imgpath."/t_".$pic."\"" ?> alt=""><img class="
         fbreturn" id="return" src="return-large.png"></a>
      <a href="#" class="sticker" onclick="clickSticker('like')" ><img src="./
         stickers/ThumbsUp@4x.png" alt="d=(^^)"></a>
      <a href="#" class="sticker" onclick="clickSticker('smile')"><img src="./
         stickers/Smile@4x.png" alt="(^_^)"></a>
      <a href="#" class="sticker" onclick="clickSticker('laugh')"><img src="./
         stickers/Laugh@4x.png" alt="(^ ^)"></a>
      <a href="#" class="sticker" onclick="clickSticker('blush')"><img src="./
         stickers/Blush@4x.png" alt="(#^^#)"></a>
      <a href="#" class="sticker" onclick="clickSticker('heart')"><img src="./
         stickers/Heart@4x.png" alt="( _ )"></a>
      <a href="#" class="sticker" onclick="clickSticker('halo')" ><img src="./
         stickers/Halo@4x.png" alt="(*v*)"></a>
   </div>

   <?php
      $db = mysqli_connect($hostname, $username, $password)  or die("Unable to
         connect to database");
      mysqli_select_db($db, "dhdata")                        or die("Unable to open
         database");
      mysqli_set_charset($db, "utf8");

      if (isset($_POST['insert'])) {
         $sticker   = $_POST['sticker'];
         $name      = $_POST['user_name'];
         $school    = 'Keio University';   // changed for each experiment
         $timestamp = date("Y-m-d H:i:s");
         $query = "INSERT INTO feedback VALUES('$pic','$sticker','$name','$school','
            $timestamp','');";
         $result = mysqli_query($db, $query);
      }

      $query  = "SELECT * FROM feedback WHERE picture='$pic'";
      $result = mysqli_query($db, $query);
      if ($result and (mysqli_num_rows($result) > 0)) {
         echo "<div class=\"feedback_history\"><table class=\"feedback_table\"
            border=\"0\">\n";
         while ($row = mysqli_fetch_array($result)) {
            echo "      <tr class=\"feedback_item\">";
            switch($row{'sticker'}) {
               default:
               case 'like': echo "<td class=\"feedback_cell\"><img class=\"
                  sticker_small\" src=\"./stickers/ThumbsUp@2x.png\" alt=\"d(^^)\"></
                  td> ";
                  break;
               case 'smile': echo "<td class=\"feedback_cell\"><img class=\"
                  sticker_small\" src=\"./stickers/Smile@2x.png\" alt=\"(^_^)\"></td>
                  ";
                  break;
               case 'laugh': echo "<td class=\"feedback_cell\"><img class=\"
                  sticker_small\" src=\"./stickers/Laugh@2x.png\" alt=\"(^ ^)\"></td>
                  ";
                  break;
               case 'blush': echo "<td class=\"feedback_cell\"><img class=\"
                  sticker_small\" src=\"./stickers/Blush@2x.png\" alt=\"(#^^#)\"></td
                  > ";
                  break;
```

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```
                case 'heart': echo "<td class=\"feedback_cell\"><img class=\"
                    sticker_small\" src=\"./stickers/Heart@2x.png\" alt=\"( _ )\"></td>
                    ";
                    break;
                case 'halo': echo "<td class=\"feedback_cell\"><img class=\"
                    sticker_small\" src=\"./stickers/Halo@2x.png\" alt=\"(*v*)\"></td>
                    ";
                    break;
                }
                $nicedate = date("H:i F d" ,strtotime($row{'time'})); // . " UTC"
                echo "<td class=\"feedback_cell\">". $row{'name'} ."</td> ";
                echo "<td class=\"feedback_cell\">". $nicedate ."</td> ";
                echo "<td class=\"feedback_cell\">". $row{'school'} ."</td> ";
                echo "</tr>\n";
            }
            echo "     </table></div>\n";
        }
        mysqli_close($db);
    ?>

    <div id="lightbox">
      <form action="<?php $_PHP_SELF ?>" onsubmit="return validate()" method="post"
          id="form" name="form">
        Your name:
        <input name="user_name" id="user_name" type="text"    maxlength="15"><br><br
            >
        <input name="sticker"   id="sticker"   type="text"    style="display:none;">
        <input name="insert"    id="insert"    type="submit" value="OK">
        <input name="cancel"    id="cancel"    type="button" value="Cancel">
      </form>
    </div>

  </body>
</html>
```

Listing 9: JavaScript used by feedback page (`feedback.js`)

```
/* Adapted from: http://stackoverflow.com/questions/6265574/popup-form-using-html-
    javascript-css */

function validate() {
    var username = document.getElementById("user_name"),
        form     = document.getElementById("form");
    if (username.value == "") {
        username.style.border = '2px solid red';
        return false;
    }
    else {
        document.body.removeChild(this);
        lightbox.style.visibility = 'hidden';
        return true;
    }
}
function clickSticker(which,imgname){
        var lightbox = document.getElementById("lightbox"),
            sticker = document.getElementById("sticker"),
            cancel = document.getElementById("cancel"),
            dimmer = document.createElement("div");

        sticker.value = which;
        dimmer.style.width =  window.innerWidth + 'px';
        dimmer.style.height = window.innerHeight + 'px';
        dimmer.className = 'dimmer';
        dimmer.onclick = function(){
            document.body.removeChild(this);
            lightbox.style.visibility = 'hidden';
        }
        document.body.appendChild(dimmer);
        cancel.onclick = function() {
            document.body.removeChild(dimmer);
            lightbox.style.visibility = 'hidden';
        }
```

```
        lightbox.style.top = window.innerHeight/2 + 'px';
        lightbox.style.left = window.innerWidth/2 + 'px';
        lightbox.style.visibility = 'visible';

        return false;
    }
window.onload = function() {
    var topdiv = document.getElementById("feedback_top"),
    thumb = document.getElementById("thumbnail"),
        backbtn = document.getElementById("return");

    backbtn.style.left += thumb.width/2 − backbtn.width/3 + 'px';
    backbtn.style.top += thumb.height/2 − backbtn.height/3 + 'px';

}
```

Feedback items are stored in a MySQL database. This database, 'dhdata', has a single table, 'feedback', containing every feedback item. The structure of this table is shown in Figure C.1. The first four fields are of type VARCHAR; the fifth is TIMESTAMP, and the last is an auto-incremented INT.

Table C.1: SQL table 'feedback'

| picture | sticker | name | school | time | num |
|---|---|---|---|---|---|
| *image file* | *sticker ID* | *name of user* | *name of school* | *time posted* | *unique index* |
| *image file* | *sticker ID* | *name of user* | *name of school* | *time posted* | *unique index* |
| ... | ... | ... | ... | ... | ... |

The main page background, font, and sticker icons are based on freely-available resources downloaded from various locations; see the notes to Chapter 3 for details.