

Advancing Social Equity: Contributions to and Issues Relating to the Realization of Social Equity through the GIGA School Concept

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This study aims to examine the impact of technology on education and the associated challenges, particularly in the context of the Global and Innovation Gateway for All (GIGA) school concept and the COVID-19 pandemic, with a focus on social equity. It amplifies the perspectives of educators, parents, children, local school boards, schools, and initiatives aimed at educating teachers and identifies the following four points. 1) The initial implementation of the GIGA school concept contributed in identifying tangible strategies to advance social equity, with the development of a foundational environment as the starting point. 2) An essential aspect is the consensus-building procedure to determine priorities for implementation toward the elimination of social inequities, ensuring a delicate balance between educational and economic considerations to address the concerns of those perceiving this inequity. 3) The GIGA school concept, through the proactive efforts of schools, has facilitated equal participation in learning for students considered socially disadvantaged. However, the concept is at risk of losing recognition for its support of the socially disadvantaged and consequently neglecting more crucial issues. The importance of evolving perspectives and raising questions regarding social equity has become increasingly apparent. 4) For the GIGA school concept to contribute to the actualization of social equity in the movement to revise the teacher preparation curriculum related to information and communication technology, it is important for teacher educators to understand the contextual knowledge of Technological Pedagogical Content Knowledge and guide their students accordingly.

Keywords: Social equity, social justice, the GIGA school concept, ICT in education, teacher education

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1. Introduction

Improvements in learning environments through the Global and Innovation Gateway for All (GIGA) school concept began in Japan in December 2019. This initiative aligns with educational activities aimed at the national curriculum guidelines (Courses of Study) published as revised versions in 2017 and 2018. The information and communication technology (ICT) environment in Japanese schools is both tenuous and crucial for guaranteeing the effective implementation of the national curriculum, revealing significant disparities in maintenance across regions. In response, the government made the decision to equip each student with a terminal (e.g., a tablet PC) and establish a high-speed, high-capacity communication network. Additionally, measures were taken to promote the utilization of cloud computing, build a procurement system for the maintenance of ICT equipment, disseminate best practices in cloud computing usage, and implement a Plan-Do-Check-Action cycle for its application. The overarching goal is to ensure that no child is left behind, fostering fair, personalized, and self-regulated learning across all schools nationwide.¹

Shortly after the introduction of the GIGA school concept, the world grappled with the onset of the COVID-19 pandemic. As a result, face-to-face teaching in Japanese schools became impractical for several months starting from March 2020. In response to the education crises brought about by COVID-19, the government hastened to develop a learning environment based on the GIGA school concept earlier than initially planned, prompting swift responses from local governments. Municipalities and schools that had long been developing ICT-based learning environments and implementing related practices sought to employ the Internet to address the crisis.² However, as of March 2020, numerous schools were ill-prepared to leverage the ICT environment. Consequently, their initial practices focused on supporting student learning by distributing handouts for self-study at home.

Prior to 2020, schools predominantly relied on phones for communication with students and their families. However, with teachers unable to physically attend schools, they resorted to utilizing their personal phones and alternative means to engage with families and students from their homes. This unique circumstance prompted schools to reflect on the necessary environment and new protocols essential for ensuring their students' safety and security, including psychological well-being. It underscored the need for local governments to seize the opportunity and provide support to families and students facing difficulty accessing the Internet and other resources from home. The implicit rules and practices of schools, typically less conspicuous during normal times, became a focal point for consideration across the country during the crisis.

The challenges brought to light by the GIGA school concept and the COVID-19 pandemic underscore issues related to educational equity concerning equal opportunities and the accompanying environment, as outlined in the national curriculum guide. However, a more complex problem has emerged, extending beyond the scope of these measures, prompting the government to tackle broader issues of social equity. This situation highlights the need for careful deliberation, including the consideration and review of systems that can guarantee results through reflective scrutiny of what has, until recently, been taken for granted.

This study aims to illustrate the impact of technology on education—and the issues surrounding it—from key perspectives such as social equity, examining educational events within the GIGA school concept and against the backdrop of the COVID-19 pandemic. Based on

what has already been clarified, the study proposes matters that require further consideration to actualize social equity through the GIGA school concept. This study is unique in that it is the first to analyze Japan's GIGA school concept from a social equity perspective in English, both in Japan and internationally.

In the context of this study, the term "social equity" is specifically employed in relation to certain associated terms. Social equity encompasses qualitative matters such as "fairness" and "justice," aiming to promote fairness and justice within the community through social policy (Ankomah 2020). It acknowledges individual differences and accurately allocates resources and opportunities necessary for achieving equitable outcomes based on principles of fairness and justice. Conversely, social equality, a similar concept, pertains to the process of allocating same resources and opportunities regardless of their circumstances, representing a state of equality where everyone receives identical resources and opportunities. Social equality often relates to quantifiable aspects.^{3 4}

This study examines the relationship between the two aforementioned concepts as follows: The notions of "fairness" and "justice," foundational to social equity, embody a normative element grounded in moral values and considerations. These values, intertwined with factors like age, gender, race, and socioeconomic status, can be influenced by the standards set by those contemplating equity in their society. In essence, social inequity signifies the absence of "equity," meaning "justice" or "fairness" within a society. It is perceived as the result of unfairness, injustice, and prevailing prejudices in a community. Addressing social inequities involves the incremental removal of avoidable barriers, thereby working towards ensuring various forms of social equality.⁵

It is important to note that the term "social" is utilized broadly in this study. Specifically, it encompasses the social dynamics observed in settings from a school classroom to a municipality. Consequently, when employing the term "social equity," it is essential to recognize that the "social" aspect under scrutiny varies, depending on the case under consideration.

The discussion proceeds as follows. First, the paper investigates the perceptions of the GIGA school concept held by children and adults, drawing insights from a government-conducted survey in July 2021. Second, it examines the application of the GIGA school concept within a specific prefecture in Japan, analyzing the strategies employed by a local school board. The contributions and challenges become apparent when scrutinizing these endeavors from the perspective of social equity. Third, the paper discusses the utilization of GIGA terminals in schools with regard the GIGA school concept, assessing their integration into lessons and schoolwork. Fourth, it analyzes the teacher education approaches taken in relation to the GIGA school concept. Through an examination of school approaches and the impact on teacher education from the perspective of social equity, the paper visually represents the contributions and challenges inherent in these endeavors. Finally, based on what information from the local school board, schools, and teacher education initiatives, the paper proposes specific issues that need further consideration to actualize social equity through the GIGA school concept.

2. Voices of Children, Educators, and Parents on the GIGA School Concept

As previously mentioned, the implementation of the GIGA school concept was expedited

ahead of schedule in response to the impact of the COVID-19 pandemic in 2020. This acceleration was prompted by the realization that digitalization in certain regions of the education sector lagged behind, resulting in gaps in ensuring continuous learning activities. By March 2021, the installation of educational terminals for the majority of elementary and junior high school students had been completed (96.1%). According to a report issued by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in July 2023, 1,810 (99.9%) municipalities had completed installation by the end of FY2022. Consequently, the GIGA school concept has significantly enhanced the compulsory education environment across numerous municipalities.⁶ How did the children, educators, and parents who utilized these environments from 2020 to July 2021—when the impact of COVID-19 was at its most significant—respond to this initiative?

For example, the “Results of a Questionnaire Survey of Educators on the GIGA School Concept and Future Directions” (September 3, 2021, updated January 31, 2022) by the Digital Agency, Ministry of Internal Affairs and Communications, MEXT, and Ministry of Economy, Trade and Industry presents pertinent findings. The survey itself, analyzing the results, was based on the Digital Agency’s “Questionnaire for Educators on the GIGA School Concept” and “Questionnaire on Tablets” for children, conducted July 1 to 31, 2021. The educator survey on GIGA in schools comprised nine questions, garnering 42,333 responses (faculty, staff, parents, etc.). The survey on tablets for schoolchildren featured three questions, with 217,077 responses received.⁷

With regard to children’s perspectives on challenges encountered while utilizing devices like tablets, many highlighted issues related to slow and complex school networks, along with challenges influenced by usage. As children advanced from elementary school to junior and senior high school, their concerns became more specific, particularly regarding their communication environments. Elementary school students often emphasized adherence to rules and listening to teachers’ opinions when discussing the importance of utilizing tablets. In contrast, junior and senior high school students tended to focus on increasing opportunities for use, enhancing information literacy, and improving the communication environment. Notably, some respondents expressed a preference against utilizing tablets, revealing diverse and sometimes opposing views on restrictions regarding tablet use.

From the perspective of adults, including teachers and staff, concerns related to learners (students) were also noted. Teachers and staff reported challenges tied to the network environment and teaching methods, while parents expressed concerns about the utilization of tablets for purposes other than learning. Addressing the challenges faced by teachers and staff, approximately 60% felt that the workload was unevenly distributed, particularly among those with high information literacy levels. Approximately 50% reported a lack of knowledge on effectively integrating ICT in their subject areas, and around 40% expressed concerns about the inadequately maintained ICT environment for teachers and staff. In the free-response section of the survey, many respondents reported the need for ICT training. Regarding concerns about schools and other related institutions, the most frequently reported concern pertained to the digitization of documents and surveys. Teachers and staff reported concerns about the lack of networking and other on-site systems to promote tablet use. Additionally, many parents reported that the school’s overall educational policy and communication methods were not digitized and relied heavily on phone calls and paperwork.

In response to the above statements, a summary of these results reiterated the GIGA ini-

tiative's overarching objective: to leverage digital means for unleashing the potential of children as contributors to an ever-evolving society and delivering education tailored to the diverse needs of children. Given the prevailing circumstances, particularly the widespread impact of COVID-19, the summary emphasizes the critical role of distance/online education facilitated by ICT, ensuring the ability to "keep children learning, even in times of emergency." It acknowledges the complexity of the challenges, recognizing that not all issues can be promptly resolved. Areas necessitating further study include the improvement of school network environments, as well as the maintenance and updates of teacher and staff terminals. Additionally, considerations surround aspects with both pros and cons, such as filtering restrictions. The ministries and agencies concerned continued to study these issues, incorporating matters requiring further emphasis into the "New Priority Plan," to be approved by the Cabinet by the end of FY2021. The collaborative efforts of government ministries and agencies, functioning as a "cohesive unit", involved ongoing monitoring of these challenges, while actively listening to the perspectives of those involved in the field of education.

In light of the above, the government stated that, to actualize the GIGA school concept and contribute to social equity, the perspectives of all involved parties must be taken into account and listened to carefully, considering their respective unique circumstances. This can be interpreted as adopting a comprehensive approach to the issue, prioritizing responses according to the nature of the problem, and cooperating within the government as well as with society at large. Furthermore, the government's perspective, as manifested through the GIGA school concept, highlights the significance of striving for equality in the outcomes of educational activities conducted in both schools and homes. However, reports such as the "Results of Various Surveys on the GIGA School Concept" (August 2021) and others from MEXT point out numerous environmental improvement issues and seem to be more concerned with the improvement of conditions (infrastructure).⁸ This may be a step-by-step process of setting up the base environment and moving toward the equality of outcomes. In fact, MEXT is promoting the "StuDX Style" information dissemination approach as well as support activities for boards of education and schools nationwide that are starting to utilize one terminal per student.⁹ The information is disseminated and shared as needed, including best practices and examples of how to utilize one-to-one terminals to ensure that they can be utilized "right away," "in any subject," and "by anyone," as well as of how to respond to the full-scale launch of one-to-one terminals.

3. GIGA School Concept in Local School Boards

What roles do local school boards involved in the GIGA school concept play in the pursuit of social equity? To explore this, we consider a single prefecture case study – Prefecture A. This focus is driven by the fact that local governments are fundamentally responsible for implementing the GIGA school concept. Prefecture A has demonstrated longstanding enthusiasm for the informatization of schools. However, the prefecture encompasses numerous cities, towns, and villages., each with distinct approaches. Some municipalities within Prefecture A are exploring alternative strategies, diverging from the overarching approach of the rest of the prefecture. The challenge of how the prefectural government navigates school informatization, while building consensus among municipalities, is a prevalent issue in Japan. Conse-

quently, we discuss the Prefecture A case as a representative example.

The Board of Education in Prefecture A has established a “School Education Informatization Promotion Plan Examination Committee” with the specific aim of promoting the informatization of school education. Since 2022, the committee has been closely mentoring the implementation and response to the GIGA school concept. Additionally, in response to the COVID-19 emergency, efforts were made to create an environment in which students had equal access to terminals. Given this, it is necessary to redeliberate and clarify the direction in which this environment can be optimally utilized for this purpose, depending on the situation and conditions. In FY2022, the School Education Informatization Promotion Plan Examination Committee met three times. The committee comprised representatives from municipal boards of education, presidents of various school principal associations, parent representatives, community representatives, relevant prefectural administrative agencies representatives outside the board of education, departmental representatives within the board of education, and external experts. The author has actively participated in this committee as an external expert, providing insights and observing the progression of the deliberations.

The prefectural office categorized the measures to be utilized by the committee into four distinct groups, aligning with the national plan: 1) Developing the qualities and abilities of students through ICT; 2) Improving the ICT utilization skills of teachers and securing human resources; 3) Developing an environment conducive to ICT utilization; and 4) Developing an ICT promotion system and improving school work. They also aimed to prepare a promotion plan within a limited timeframe, outlining the direction and specifics of the proposed measures. While the prefectural office successfully formulated a school education informatization promotion plan, the items listed therein did not seem to be aimed at uniformly improving the environment as a foundational gateway. The results of related national and prefectural surveys were utilized to analyze the situation, deliberate on where and what kind of measures were needed, carefully consider the perspectives of those involved, flexibly operate the learning environment according to the situation, and take responsibility for the results of students’ learning activities and teachers’ teaching activities.

During the meetings, the prefectural office clearly stated the direction of Prefecture A. They set target values for the direction to be pursued, rather than concrete target values to be reached. The formulation policy was determined and implemented so that flexible measures could be adopted by the actual operators. Targets were also limited in time; therefore, new issues could be addressed once targets were reached within a set time. This was based on the idea that if the plan was too detailed, it would become a binding document that might not be in line with the actual conditions and goals of the local governments in Prefecture A. This is also why the goals differ, as they depend on the type of school. The prefectural office then explained the course for preparing a more detailed guide, separate from this plan, to build consensus.

Through this planning process, it has become evident that the goal is to establish a comprehensive framework through consensus building that is sufficiently broad to accommodate the circumstances of all parties involved. The process also shows that school boards implementing the GIGA school concept are attempting to create an equitable learning environment for the children. However, when it comes to creating plans or other content to advance this, specific arguments against guaranteeing social equity arise, depending on what is included in the text. For example, concerns regarding the utilization of GIGA terminals were raised by

various parties as the treatment of students with special needs was not as well positioned in the text as the treatment of other students. Nevertheless, committee discussions clarified that those with disadvantaged experiences sought more than just written or explicit rules, but also the assurance that implicit operational rules could be applied to situations that were not made explicit. It is evident that school boards implementing the GIGA school concept are not only required to listen to a wide range of voices, but also to be more specific than the national government in determining criteria prioritization and decision-making processes. In setting priorities, diverse opinions are likely to emerge on how to address those who feel socially disadvantaged, whether through educational or economic logic, among other considerations. It is therefore important to disclose and clarify the decision-making process.

4. GIGA School Concept in Schools

What role do schools involved in the GIGA school concept play in actualizing social equity? Furthermore, how have educational practices in schools evolved since 2020, influenced by the changes brought about by COVID-19? These practices are introduced in the “StuDX Style” information and various project reports by MEXT.¹⁰ The following initiatives were observed during visits to participating schools.

First, GIGA terminals have facilitated the participation of students facing challenges in actively participating in class discussions or group work. Students who may find it challenging to speak up or engage in conversations during traditional learning scenarios have discovered a more accessible avenue through GIGA terminals. By independently navigating various materials, including questions and videos, at their own pace, these students can participate more comfortably. They can read their peers’ contribution, listen to their thoughts, and express their own opinions through the terminal. This visual representation and sharing of ideas serve to motivate students, providing a foundation for them to initiate conversations and explore new concepts collectively. Additionally, the use of GIGA terminals enables teachers to identify students struggling with comprehension or facing difficulties expressing their ideas. Armed with this information, teachers gain insights into how to enhance language usage in their classes and tailor their approach to each student’s learning process, ultimately contributing to class improvement. GIGA creates opportunities for increased participation, especially benefiting students with communication difficulties or those facing challenges in time-consuming tasks like speaking, writing, listening, and reading, as well as for those who may struggle to participate in traditional classroom learning activities.

Second, schools in rural or remote areas were able to utilize the high-speed communication-based online conference system to listen to guest lecturers in class-like learning situations; the system was also able to promote collaborative learning between classes from different schools. The presence of a learning partner different from the one with whom the students are normally in contact with has been reported to be effective in learning activities, as it deepens mutual understanding in terms of communication and the content being investigated or learned. For students with special needs, efforts have been made to ensure that students in environments and situations that make it difficult for them to attend school have opportunities to participate in learning activities through distance learning—for example, from home or from a care institution—as a supplement to their physical and sensory functions.

These are examples of how the system can be utilized to expand learning opportunities for students who do not have equal access to learning opportunities because of a lack of specialized teachers in their schools, a lack of friends to talk to, difficulty moving from place to place, difficulty viewing, and/or the need for time flexibility.

Third, cases have been reported wherein teachers provided personalized responses to address the unique learning challenges of individual students, aiming to foster equality in learning outcomes. Through the utilization of digital content or classroom drill-like applications, students can advance at their own pace and attempt to solve problems repeatedly. Some students express that this allows them to reflect on their own learning, applying acquired knowledge to subsequent steps of their educational journey. Additionally, there are reports of efforts to integrate automatic translation applications into GIGA terminals, aiding foreign students studying in Japan and enhancing convenience for their parents.

Lastly, as an example of an indirect contribution to the actualization of social equity through involvement in school affairs, the recording and communication functionalities of GIGA terminals empower teachers to access diverse educational information about students. This information proves valuable in guiding students facing challenges or disadvantages either at school or in their home environment. With this data, teachers can gain a more comprehensive understanding of their students' circumstances, enabling them to make more accurate and appropriate instructional decisions. In certain schools, there are initiatives to share these individual student learning records, health information, and other relevant details within the school community, utilizing them for medium- and long-term instructional planning and future improvement.¹¹

These practices serve as examples of the GIGA concept's endeavors to contribute to the objectives of school educational activities, guaranteeing learning activities aligned with students' individual circumstances, and taking responsibility for learning results. However, according to a survey on understanding information use skills (March 2023)¹², there were differences among schools regarding how GIGA terminals were being utilized. Clearly, achieving social equity through the utilization of GIGA terminals in schools presents challenges. For instance, employing translation tools to instruct students who do not speak Japanese may at first glance contribute to ensuring equality in learning activities. However, in reality, accommodations for these students extend beyond language issues. When aiming to realize social equity, disparities emerge among countries in their approaches to content and instructional methodologies. Therefore, it is necessary to comprehend the learning culture before embarking on the teaching process.

The introduction of GIGA terminals has highlighted the problem of losing awareness regarding the need for meticulous guidance. It has been observed that when GIGA terminals are perceived as effective tools in line with their implicit value related to educational objectives, certain aspects go unquestioned, allowing the less visible struggles of students experiencing social disadvantage to persist. An illustrative case is the instruction of students who do not speak Japanese, as mentioned earlier. Another example, discussed in section three, is the utilization of GIGA terminals for students with special needs. While convenient and effective efforts are underway to utilize GIGA terminals to for social equality, efforts to consider what will no longer be asked—or remain unasked—of them are still considered necessary. Employing GIGA terminals to support socially disadvantaged students is likely to guarantee their active participation in learning. However, it is necessary to position all stu-

dents as “co-producers” contributing to society collectively. This entails listening to the perspectives of those involved, and collectively contemplating the use of GIGA terminals within this broader context. Adopting an approach that values the concepts of “fairness” and “justice” inherent in social equity may enable us to challenge the realization of social equity from a different perspective.

5. GIGA School Concept in Teacher Education

What role does the training of teachers utilizing the GIGA school concept play in achieving social equity? One of the concerns addressed by the GIGA school concept in schools is that teachers must be significantly involved with understanding and utilizing GIGA terminals to promote social equity in education. Subsequently, we consider the treatment of the GIGA school concept in teacher education and examine whether any factors related to the actualization of social equity can be discerned, based on recent administrative texts.

In October 2020, the Teacher Training Subcommittee of the Elementary and Secondary Education Sectional Committee of the Central Council for Education addressed the issue of “Measures to enhance teachers’ knowledge and skills in utilizing ICT for teaching courses.” They recommended that each university develop a checklist for pre-service student teachers, referring to the “ICT Use Instructional Skills Checklist” utilized by in-service teachers (first published in February 2007 and revised in June 2018).¹³ The objective was to assist pre-service student teachers to develop more practical and reliable teaching skills concerning the utilization of ICT, for example in the context of how to teach each subject. It was emphasized that the checklist’s content should be coordinated and guided by the boards of education responsible for hiring teachers.

Subsequently, teacher preparation education started augmenting content related to the utilization of ICT in teaching courses. This initiative gained momentum when the Teacher Training Subcommittee (during its 118th meeting; November 30, 2020)¹⁴ identified “measures to promote the acquisition of content related to the utilization of ICT in teaching courses” as an agenda item and outlined its direction in the accompanying materials.

First, the mandatory course “Operation of Information Equipment” underwent transformation, allowing students to choose between “Courses on Mathematics, Data Application, and Artificial Intelligence” and the traditional “Operation of Information Equipment.” This change reflects the evolving educational landscape, with the subject “Information I” becoming compulsory in high schools and the growing interest in AI and data science. Consequently, there has been a significant shift in the “Operation of Information Equipment” subject, now accommodating the selecting of “Courses on Mathematics, Data Application, and Artificial Intelligence” (any two credits). Second, the new regulation mandated the separation of “Theory and Methods of Education Using Information and Communication Technology” from “Educational Methods and Techniques (including the use of information equipment and teaching materials).” Additional requirements were introduced for “Theory and Methods of Education Using Information and Communication Technology” and students were mandated to acquire at least one credit from 2022 on. Third, concerning “Teaching Methods for Each Subject (including the use of information equipment and teaching materials),” there was an emphasis on enhancing the content of teaching methods through the incorporation of videos

summarizing ICT-enhanced lessons for each subject. Fourth, a recommendation was made to conduct ICT-based exercises (e.g., mock classes) in the “Practical Teaching Seminar.”

MEXT has asked teacher training universities to systematically promote these initiatives. This directive is also aligned with the GIGA school concept and can be interpreted as an effort to emphasize the “use of ICT, information, and educational data.” These measures hold significant merit, as they clearly demonstrate the importance of exposing students to ICT experiences before they become teachers, as well as the need for careful guidance in reflecting on these experiences. This approach is logical in establishing a systematic trajectory within the teacher training curriculum. For this approach to be effectively implemented, universities overseeing teacher training curricula must systematically support the curriculum’s execution by providing the necessary training and environmental enrichment, while respecting the importance of teacher educators responsible for each subject.

However, discerning the role of GIGA terminals in actualizing social equity proves challenging when examining the “ICT Use Instructional Skills Checklist” and the push to promote ICT-related teacher preparation curricula.

Mishra and Koehler (2006) are renowned for expanding Pedagogical Content Knowledge to include technological knowledge, giving rise to Technological Pedagogical Content Knowledge (TPACK). TPACK emphasizes the need for teachers to seamlessly integrate content, pedagogy, and technology within a given context. From the beginning, TPACK has stressed the importance of considering factors such as subject matter, grade level, available technology, and student backgrounds. Elements like classroom and organizational conditions for learning, contextual teaching activities, and teachers’ epistemological beliefs have also been cited as important elements of context. However, in 2019, Mishra proposed an additional construct termed “Contextual Knowledge” (XK), describing context as a knowledge domain akin to pedagogy, content, and technology (Mishra 2019). XK is envisioned as an expertise that considers the specific situation, culture, diversity, and social equity among students. Consequently, teacher preparation initiatives incorporating the GIGA school concept in relation to XK may be required in Japan. However, as mentioned earlier, the emphasis in teacher preparation curricula on leveraging the GIGA school concept does not clearly address concepts such as social equity. The ability to integrate the GIGA school concept with the realization of social equity, depends on the interest and competence of teacher educators.

International discussions on the potential of technology in educational activities take a slightly different perspective, including a debate that examines the teacher education system and focuses on redesigning culture. This is explored through the concept of “technology infusion” beyond the idea of “technology integration” (Borthwick, Foulger, & Graziano, 2020). This proves valuable in supporting teachers’ professional learning in future schools and identifying directions for improving in-service teacher education programs. The discussions and approaches stemming from the technology infusion perspective require Japanese teacher preparation institutions not only to augment the teacher preparation curriculum with “mastery of instructional content and methods related to the use of ICT” but to also to demonstrate readiness to advance administrative organizational philosophy and curriculum management (Warr, Mishra, & Scragg, 2019).

6. Conclusion

The purpose of this study was to illustrate the impact of technology, specifically the GIGA concept, on education and address associated issues surrounding it from key perspectives, such as social equity. The focus was on examining the educational events identified in the GIGA school concept and the challenges presented by the COVID-19 pandemic. To achieve this, the study delved into the perspectives of educators, parents, children, local school boards, schools, and teacher education efforts. The intention was to uncover issues that require further attention, contributing to the realization of social equity through the GIGA school concept.

As national and local governments collaborated to prepare GIGA terminals for nearly all students in compulsory school education, prioritizing social equality, users experienced operational challenges. In this context, the early implementation of the GIGA school concept contributed to the identification of concrete clues for moving toward social equity, with the development of the foundational environment serving as the initial step.

In the requests submitted from various perspectives, it became evident that individuals facing social disadvantages not only desired their perspectives to be heard, but also sought a response aligned with explicit rules, such as clarification, to facilitate concrete actions. Engaging with the school board in Prefecture A during meetings shed light on specific areas and ways in which individuals perceived social disadvantage. This insight allows us to contemplate concrete responses, the second contribution of the GIGA school concept to the realization of social equity. It became apparent that a consensus-building procedure, determining priorities for implementation to eliminate social inequities while balancing educational and economic considerations, is important to satisfy those perceiving such disadvantages.

Furthermore, through schools' initiatives, the GIGA school concept has contributed to giving students who are perceived as socially disadvantaged the opportunity to participate equally in learning. However, at some point the GIGA school concept may risk ceasing to be acknowledged for its support of the socially disadvantaged, leading to a shift away from addressing more fundamental issues. The significance of evolving perspectives and raising questions about social equity has become increasingly evident.

Finally, the movement to revise the teacher preparation curriculum concerning ICT did not explicitly consider the contribution of the GIGA school concept to the realization of social equity. To ensure that the GIGA school concept actively contributes to social equity within this movement, it will be imperative for teacher educators to comprehend the XK part of TPACK and guide their students accordingly. Additionally, it is important that they not only instruct students with a technology-integrated conception of how to effectively utilize ICT in the classroom, but also with a technology-infused conception that situates the meaning of technology as a principle of the entire teacher preparation curriculum. It was confirmed that teacher training and professional learning initiatives, key approaches that can contribute to the realization of social equity, must be addressed in the future.

Above, this paper has discussed and considered the theme of contributions to and issues relating to the realization of social equity through the GIGA school concept. Social equity embodies the concept that all members of a community should have access to the same opportunities and outcomes, based on shared principles in that society, such as fairness and justice. However, social policy, and social equity within it, encompass a variety of public con-

texts, giving rise to inequities perpetuated by institutions in that society. This study underscores our acknowledgment of existing inequities and the commitment to collaborate with diverse voices in progress towards ensuring fairness and equality.

In order to link the utilization of technology in education to the realization of social equity, a heightened focus is required on leveraging technology to listen to diverse perspectives, employ data-driven insights, and foster consensus. In doing so, as previously mentioned, the challenge lies in providing opportunities for contemplating social equity from the teacher preparation stage, enabling critical evaluation of information, and nurturing expertise.

Notes

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Acknowledgement

This article was supported in part by JSPS Grant-in-Aid for Scientific Research No. JP22K02901.

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