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Addressing and Mitigating Educational Inequalities in Rural and Remote Areas of Japan Through Online Learning

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Abstract: This paper explores the current status of rural education within Japan, with a particular emphasis on the integration of online learning technologies and the challenges that arise as a result. Through an analysis of pertinent literature on both rural education and online learning within Japan, this study uncovers the existing disparities between rural and urban education. The research puts forward a set of suggestions influenced by thriving global models, supporting the establishment of peer learning networks and external support systems, cooperative initiatives between urban and rural schools, and the extension of online educational resources. Additionally, the study highlights the significance of cultural awareness in online education design and stresses the need for bespoke learning approaches, incentives to boost students' motivation, and provisions for professional development opportunities for teachers. These recommendations provide insights for policymakers, educators, and stakeholders, aiming to enhance educational opportunities and outcomes for students in rural and remote areas of Japan.

Keywords: rural education, online education, Japan, educational disparities, critical literature review

1. Introduction

The disparity between rural and urban areas has posed a significant educational predicament for Japan in recent years. Despite Japanese government have implement the Law for the Revitalization of Education in Remote Areas and the Remote Area Education Promotion Law since 1954, the existence of substandard schools in remote areas has raised questions about educational opportunities and quality[1][2]. The situation is further exacerbated by the massive migration trend from rural to urban areas, causing rural schools to shut down and amalgamate[3]. Government initiatives to narrow the educational divide between urban and rural students have been impeded by a lack of efficient and proper online education solutions.

Closing the educational gap is an essential step for achieving equal opportunities for all Japanese citizens. As the country's educational landscape undergoes significant changes due to technological advancements and sociological shifts, it is crucial to comprehend the nuances of rural education in the context of online learning. Additionally, closing this gap contributes to the overall growth and sustainability of rural areas, while ensuring a fair and long-lasting educational system.

To enhance academic achievements in rural regions of Japan, how can online learning technologies be efficiently incorporated? This investigation aims to examine the challenges that rural education in

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Japan encounters, with specific emphasis on online learning. Drawing on extensive research and analysis, the study examines the initiatives taken by the Japanese government, the challenges encountered in implementing online education, and the potential solutions proposed by scholars and experts.

The research aims to produce effective recommendations to enhance rural education in Japan by integrating online learning technologies. The study will consolidate existing knowledge to generate actionable strategies that could be utilized to address the educational inequalities between rural and urban areas in Japan.

2. The Current Status of Rural Education in Japan

Although Japan's education system is generally well-balanced and developed, weak schools in remote regions exist [1], leading to long-standing concerns about educational quality[4]. Between metropolitan and rural locations, the availability and accessibility of schools and local educational facilities vary greatly[5]. A significant challenge is rural-to-urban migration. For instance, according to Masahiro's Sixth Population Migration Survey in 2014, around 70% of people who migrated to Tokyo did not return to their hometowns[3]. Or, in a different region, looking at regional migration patterns from 1975 to 2021, Kamiyama in 2013 found that many recent high school graduates moved to the Kanto region, which has a higher student capacity, from outlying places[6]. As Japanese society ages and student enrollment is deregulated, schools in rural areas are closing and merging at an accelerated rate[7]. Consequently, students residing in rural areas will have fewer options for building knowledge [5], and educational disparities between rural and urban regions in Japan are widening.

3. Remedies from the Japanese Government

Cognizant of these disparities, the Japanese government has attempted to remedy the situation through both legislation and strategic initiatives. In 1954, the government implemented the Law for the Revitalization of Education in Remote Areas [へき地教育振興法], which aims to provide equal educational opportunities to all citizens by promoting teacher mobility, support the treatment of teachers, and providing funds for teaching materials and teacher residences in rural areas [2]. In the same year, the Japanese government implemented the Remote Area Education Promotion Law [離島振興法], which requires prefectures to offer extra allowances to faculty and staff teaching in remote areas [1]. More recently, the Japanese government has also looked to digital technologies as a way to close these educational gaps and improve rural education. Specifically, in 2019, the Ministry of Economy, Trade and Industry (METI) launched the "GIGA (Global and Innovation Gateway for All) School" project, with each student provided with a laptop/tablet terminal that could be used in the classroom and home study, rendering technology-based education imperative.

Although high-speed internet has been deployed in schools in 96% of Japanese regions, there is a lack of trained professionals who can coach kids and teachers on device usage. As a result, even though every school has electronic gadgets, pupils are unable to use them effectively [8]. Toda in 2023 reports that according to the PISA 2018 survey on Reading Comprehension, Japanese students had a low percentage of correct responses on computer-based survey questions[8]. This survey reveals that 75-90% of students do not use the internet to complete homework or study. Rather, they only utilize it for socializing and recreational purposes. Comparatively, in 2018, the percentage of teachers using the Internet had doubled since 2013, yet it remained significantly lower than the average of the participating countries[8].

Thus, while the government has taken steps to promote rural education and online education, and while online education represents a promising solution to educational disparities, obstacles still

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remain. The following section will present recommendations for closing educational gaps through the design and implementation of online-based education.

4. Recommendations

In rural Japan, schools face constant closures, resulting in inadequate educational resources and institutions. Open educational resources and peer learning networks are two crucial measures that can help alleviate this situation. China provides a good model when it comes to sharing educational resources for online education, having promoted the "One Teacher, One Excellent Course; One Lesson, One Excellent Teacher" activity carried out on the National Education platform “国家教育平台” in 2018. This activity has attracted more than 2.28 million teachers to participate in the collection of 3.14 million online course and awards outstanding teachers with National Honor Certificate[9]. Technology and educational companies have also helped in these endeavors. Chinese Mass Open Online Course (MOOC) was founded by Alibaba and Peking University in collaboration; NetEase and Higher Education Press founded China University MOOC; TopU, the first MOOC platform run entirely by a business, was introduced by Guolairen; and Kaikeba, the first pan-IT online education platform in Chinese, was developed by Uniquedu [10]. Due to the government's strong backing and the business community's active involvement, MOOCs promote extensive online learning and provide learning support services [10].

In contrast, the Japanese MOOCs don’t have enough content and resources, with only 340 courses available [11]. “NHK for Schools” is the educational video service offered by NHK (Japan Broadcasting Corporation) [12]. Although the curriculum in NHK for schools is refined and specially designed for students, it does not target the characteristics of each student. It lacks interaction between students and teachers, leading to the passive learning of students [13]. Therefore, to mediate the education inequality problem in Japan's rural areas, it is essential to increase and diversify online educational resources and promote a variety of content with the regular participation of local companies and consistent support from the government.

Furthermore, Peer Learning Networks and external support are essential for the progress of online education in rural areas of Japan. Resources can be shared between schools in urban and rural areas. For instance, adding urban school libraries with an online library system will not only improve library utilization for students at their local schools but also enable students in rural areas to access a wider range of academic resources. Schools may develop long-term partnerships, short-term exchange programs, and volunteer programs by sharing online resources. Participating in these types of programs, students from urban areas will be exposed to the natural environment. People from dense metropolitan backgrounds will become aware of stress when they see the environment with traffic and pedestrians [14]. However, the lake and forest settings in rural locations will elicit a relaxed state and well-formed cognitive processes after prolonged exposure to metropolitan environments, thereby alleviating accumulated stress. Although Japan is one of the most prosperous and technologically advanced countries in the world, it still lacks natural resources regarding environmental issues [15]. Some Japanese migrate to rural areas in favor of the high quality of the natural environment in the countryside, and some parents say that they migrate to the countryside to provide a suitable environment for their children [16]. This shows that the countryside's natural environment benefits urban students in Japan. Thus, by establishing partnership programs, urban students will have the opportunity to experience nature; rural students will have more opportunities to access various educational resources.

In addition, peer learning will help rural students acquire motivation and learning techniques when engaging in online learning. Research has found that studying with peers positively impacts self-directed or online learning [17]. Similar findings were made by King Mongkut's Institute of

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Technology Ladkrabang (KMITL) in 2021, which discovered that peer learning is highly effective in raising students' commitment, motivation, and knowledge and that peer influence on self-directed learning is beneficial mainly [17]. Precisely, students can pinpoint their learning needs and strategies in collaborative learning and offer advice on how to best accomplish their academic goals [18]. As a result, rural Japanese students might reap advantages from peer guidance and support and motivation from cooperative learning experiences by implementing the peer learning system.

In this context, to motivate students in remote areas, we must take active measures to provide more role models and diversified career options. Schools can regularly invite prosperous urbanites and professionals to remote locations to share their success stories and career development through lectures and exchange programs. In Lockwood's 2002 research it shows that both fictional and real-life role models chronically promote students to possess their motivation and persistence[19]. Similarly, another study demonstrates the significant impacts of role models and other psychological interventions on women's academic performance [20]. Thus, it is clear that such sharing of experiences can not only provide students with practical career guidance but also set positive examples for them and inspire their enthusiasm and perseverance in learning.

To encourage students to strive for academic excellence, cultural relevance should not be neglected in teaching [21]. In Japan, for instance, certain students expressed aversion towards appearing on camera during live lessons, while others experienced pressure during synchronous classes [11]. Thus, when developing online courses for Japanese students, education institutions must compromise with their requests and adopt either on-demand or hybrid courses. Although this approach may result in delayed feedback and limited engagement, Japanese instructors and students prefer email interaction over social media groups due to privacy concerns [11]. Therefore, the approach to conducting online education should be culturally respectful for designers who aim to advance online education in Japan while acquiring efficient methods to impart knowledge.

Furthermore, the implementation of Japan-made live instruction tools enables customized service, produces income, and provides Japanese language support. Nowadays, the majority of Japanese educational institutions use live instruction tools such as Zoom, Microsoft Teams, and WebEx, which are not local to Japan[11]. However, localization tools could assist the Japanese student in their learning process. At the Tencent Global Digital Ecosystem Conference in 2022, Yin Yu emphasized that traditional classroom learning has been surpassed through localized real-time teaching tools[22]. In one notable example from June 2022, students from Tianjin, Ruozhi, Sichuan, and Pingdingshan, Henan participated in an art class led by a professor from Renmin University of China[22]. Utilizing interactive whiteboard features, the students collaborated with peers from distant places to explore unfamiliar local customs[22]. In addition, Yin Yu emphasized the adaptability of Chinese-made educational tools that can be customized to meet the specific needs of the Chinese education system[22]. Using artificial intelligence technologies such as speech recognition, natural language processing, and deep learning, Tencent English Jun provided 23 middle schools and more than 6,000 students in Sichuan's Tianfu New Area with a unified assessment of spoken English tests to meet the unique needs and preferences of local Chinese students[22]. If Japan could manufacture its own live instruction tools it would bring three benefits. First, customizing content and teaching methods for students based on Japan's unique cultural differences would make learning more relevant for Japanese students. Second, if Japanese-made software can be successfully implemented domestically, it can generate revenue through domestic and international sales. These revenues can then be invested in education, research, and development to further improve the quality of education in Japan. Third, Japanese-made software can provide strong Japanese language support, including translation, language processing functions, and recognition functions. Therefore, the utilization of instruction tools locally from Japan is essential for promoting the further development of online education in Japan.

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Additionally, professional development for teachers is a critical factor in the process of improving rural education. For example, a study in the American context found that, compared to alternative ways to spend money on education, investments in teachers' knowledge and abilities result in a greater improvement in student accomplishment[23]. In this light, ensuring the effectiveness of professional development and finding out teachers' motivation towards learning is related to the success of advancing online education in rural areas. To ensure the effectiveness of professional development, it should prioritize student learning and subject-matter content, active participation over passive lectures, and alignment of activities, objectives, and content with curriculum goals, teacher expertise, student needs, and educational policies [24]. Teachers of the same grade or subject participate in PD activities together in order to promote an engaging learning community. Meaningful teacher development requires sustained professional development that lasts at least 20 hours per week throughout the academic year [24]. On the other hand, emphasizing the motivational factor for teacher learning is also important. The most significant motivating element for revealing teacher learning and teaching practice proved to be teachers' perceptions of self-efficacy [25], meaning teachers' beliefs about their ability to fulfill a task [26]. When implementing a different form of teaching approach, the precedented example of online education in Japan and overseas should be mentioned and demonstrated beforehand. For example, Waseda University has established Japan's first complete undergraduate correspondence courses in 2003 [27]; Moscow e-school was established to offer a pedagogical environment with instructional materials in 2016 [28], etc. With a higher sense of self-efficacy, teachers will be more receptive to new ideas and willing to learn new approaches [25]. Besides, Thoonen in 2011 analyzed that in several research studies, teacher involvement in decision-making might help instructors internalize organizational goals as personal goals, which will motivate teachers to participate in professional development [25]. As a result, decision-makers should consider how to enhance the effectiveness of the program and how to motivate teachers to participate actively.

5. Conclusion

This paper analyzes the present state of online learning in rural Japan and provides suggestions for promoting online learning in remote areas. Although the Japanese government has implemented policies to address this ongoing issue, students residing in rural locations still lack access to academic resources and conditions.

Online education is an effective mode of learning that is presently being integrated in Japan. If the Japanese government provides remote students with lectures and exercises from urban schools, uploads them to a public internet platform, and sends examination teams and proctors to remote areas to administer regular aptitude tests and national college entrance exams, this action will enhance the quality and diversity of education in remote areas. Fostering equal access to online resources is pivotal for bridging the education gap. As a result, Online education, integrated with government-backed support initiatives, will empower rural students, instilling in them a sense of confidence and commitment towards their education.

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