

Staff Qualification and Competency Improvement Programs at Comprehensive Education Center  
Example of Curriculum Management Training toward the Fourth Industrial Revolution Era  
In the case of Okinawa Prefecture

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## **Introduction**

In Japan, there are public institutions dedicated to the improvement of the education quality. These include the National Institute for Educational Policy Research (NIER), the National Institute for School Teachers and Staff Development (NITS), prefectural education centers of 47 prefectures which mean states or provinces in Japan, and city education centers of twenty mega cities. These institutions organize uniform teacher trainings in order to achieve the national curricular standards, as well as teacher trainings responding to the local issues of each area. 30% of the employment of teaching staff at Japanese public schools is financed by the national budget, while the remaining 70% is financed by the prefectural budget. Their hiring is conducted locally at each prefecture or mega city. The staffs are transferred between the schools within the local area where they were initially hired. One teacher is assigned at the same school for five years or so. The training conducted at each center is provided for the teaching staff employed within the local area. This paper will explain the role of prefectural education centers, using the case of Comprehensive Education Center of Okinawa Prefecture as an example, and will discuss the contents of teacher trainings through the case of a curriculum management training.

## **1. Teacher Training and Lesson study in Japan**

Firstly, the teacher training system in Japan must be explained (Isoda, M et al, 2007). Public school teachers are obliged to undergo trainings. These trainings are broadly divided between the professional trainings with costs such as travel expenses are paid, and the other trainings without such an allowance. The trainings without allowance are divided between the trainings with professional duty exemption where the principle allows a staff member to take a training during the working hours, and the voluntary trainings where a staff takes outside the working hours at his/her own cost. The professional trainings include the in-school training organized by individual schools, trainings organized by the local school districts (city/county) or by the prefecture, and the trainings organized nationally. The voluntary trainings include participation in lesson study groups, cooperation with university professors, and participation in seminars or conferences. Among the professional trainings, the in-school trainings are organized either by the principle of each school or the research department of the school, and the

school district/prefectural trainings are organized by the institution where the educational supervisor of the seminar belongs to. At times, external specialists such as a university professor is invited to the professional training as an external lecturer. The teacher's license must be renewed every ten years. A teacher has to participate in the license renewal seminar organized by universities or academic societies as a voluntary training. Most of the trainings organized by the center are professional duty trainings.

Lesson study is broadly divided between those organized internally by each school and those organized by study groups. Schools affiliated to a university hold an open class every year, and national or prefectural designated research schools hold an open class once every few years. Elementary and junior high schools have the visiting days for parents of children. Especially at elementary schools, a visiting day is organized once or twice each year in minimum and open classes are regularly organized for parents (guardians). This custom, which allows people to observe classes, makes it easier for the teachers to actively engage in lesson study.

Revisions of national curricular standards are conducted separately for each subject, based on achievement surveys, results of lesson study at schools affiliated to universities and designated research schools, and the national themes for educational improvement. Each textbook is written by teachers currently in service, supervised by university professors, prepared by each textbook publisher, and examined to check if it satisfies the national curricular standards. Only the certified textbooks are selected by each school district, and distributed for free through the subsidy of the national budget. The curriculum is organized by each school based on the national standards. Its flexibility toward the national standards is allowed at 10% for elementary and junior high schools, and 20% for high schools. Every year, a national achievement survey is conducted among the all 6<sup>th</sup> grade elementary school students and the all 3<sup>rd</sup> grade junior high school students in mathematics and language. Prefectural survey is conducted among all the students from the 4<sup>th</sup> grade elementary school to the 3<sup>rd</sup> grade junior high school. The purpose of these surveys do not examine the achievements of individual student, but to know the local and national reform issues for education. The survey results are used, especially by the every education board, for knowing the achievement of each school and each teacher. Such precise information is only noticed within supervisors. It is useful for both the planning of trainings and improvement of curriculum by the national and prefectural governments.

The trainings organized on the occasion of the revisions of the national curricular standards are conducted in the following cascade: National centers, prefectural centers, school districts and in-school. There are diversities in the research themes of lesson study such as the research to propose innovative educational method and teaching contents, the research for implementing new curriculums, and the research for simply improving the qualification and competency of individual teachers.

The fact that the mathematic competency of Japanese students has high standards, top ranking among the members of OECD countries on the OECD PISA survey (2015) in mathematics, is due to the comprehensive improvement of the pedagogical content knowledge of Japanese teachers through

these lesson studies conducted under these systems. The superiority of Japanese style lesson study is acknowledged by other countries and recognized to be the problem-solving approach to nurture students who learn and think by and for themselves. On the other hand, it has been pointed out that a simple imitation of the approach does not lead to any improvement in students' achievement. The foundation for such competency improvement depends on the high quality implementation based on teachers' comprehensive levels of the teaching material research achieved through lesson studies and the advanced extent of sharing such knowledge. This foundation cannot be achieved in a short period of time. The further deepening of these teaching material researches and lesson studies is the permanent objective of every education centers and the instruction supervisor of each municipality.

## **2. Role of Comprehensive Education Center of Okinawa Prefecture**

The center of each prefecture started as an education research institute after the Second World War. Later, their training function was strengthened and they became teacher training center, and finally their general education improvement function was strengthened to become comprehensive education centers. Here, the case of Okinawa Prefecture is discussed as for explaining functions. As it is a prefectural education center, its roles differs from those of national centers due to the regional characteristics of Okinawa Prefecture and the local issues it must solve.

Before explaining the functions, the regional characteristics of Okinawa Prefecture must be discussed. Japan is an island country whose total length is 3,000km. Okinawa Prefecture is located on its southern limit, and consists of islands with beautiful coral reefs. It was an independent country until it became a part of Japan in the 17<sup>th</sup> century. It continues to influence its own unique history and culture to the world. For instance, 'karate' was developed in Okinawa based on Chinese martial arts. It started to spread through Japan in the 1910s, and became 'taekwondo' in Korea after the 1940s. On the other hand, Okinawa was heavy battlefields during the Second World War, and was under American control until 1972 when it was returned to Japan. Due to this history, it has been an under-developed area of Japan. It faced many challenges also in the field of education. For instance for many years, it was at the bottom of the national achievement surveys (ranked at 47<sup>th</sup>) for mathematics. However, the achievements of its students had improved in last four years and ranked as 6<sup>th</sup> in Japan. This center has been playing the central role in this improvement of achievements.

The functions of this center consist of investigative research, workshops for students, educational consultation that involves parents, providing information and trainings. The *investigative research* function includes researches for improving the ability of schools, teaching skill of teachers and "living force (the slogan of the national curricular standards)" of students. For instance, there is a research to investigate and plan the training contents necessary for realizing the way to conduct classes in order to achieve school goals in cooperation with the school. For such a research, the instruction supervisor belonging to the center regularly visits the school for inspection and offer advices. The *workshop for students* function include ICT training and food processing training for high school students in

vocational training. For instance, it includes programming or presentation preparation workshop that involves collaborative inquiry. The *educational consultation* function includes consultation for students failing to fit into their schools, for university and/or career choices, and for bringing up handicapped children and for them to attending school. The function for *providing information* include publication of the research results, providing teaching materials such as books, and support for educational and cultural activities by the center staff, providing digital contents and operation of prefectural network system. The *training* function includes in addition to legally required training for newly employed teacher and the training after 10 years of employment, and additional training for two, three and five years of employment, training for 15 years of employment, training for managerial positions, training for a head teacher of each grade, long term training to stay at the center for 6 months, short-term training course during a summer break, and delivery trainings conducted at schools on requested. Especially during summer breaks, teachers are required either to work at their schools or to take trainings at the center and other institutions. The center organizes 80 courses as for the short-term trainings during a summer break.

### **3. Teacher's Standards: Career Path for Teachers**

As for the consistent development of teachers are required after their hiring, teacher's standards have been established in countries around the world. The report by the Teacher's Training Subcommittee of the Central Council for Education, Ministry of Education, Culture, Sports, Science and Technology (MEXT, 2016), demanded the professional development of teachers and the clarification of their career path, and each prefecture documented the career path for teachers. Okinawa Prefecture set the model competency of teachers and career developmental stages for teachers in 2017. These model competency and stages become the goals indispensable for planning and implementing the teacher trainings at the center. The model competency are described under the principles of three factors that act as the forces to support a teacher.

- Ethics, sense of mission, and responsibility: As a public servant in education who act with higher ethics, stronger sense of mission and responsibility through this awareness, one must be aware that the citizens of the prefecture trust you with the noble mission of looking after the development of their children.
- Educational affection and awareness for human right: As a teacher who work with children daily and greatly influence their growth, one must be able to interact with children with true educational affection and high awareness for human right.
- Rich humanity and ability to continue learning: As an educator who will open up children's future, one must be able to continue learning as a highly specialized profession through mature oneself and nurture rich humanity.

With the principles as a teacher, the following model career stages are defined according to the teaching experience.

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<p>Give energy to the school! Hiring stage (The 1<sup>st</sup> year)</p>	<ul style="list-style-type: none"> <li>• One can implement teaching activities based on the current status of his/her students using the foundational knowledge and skills for educational activities.</li> <li>• One is aware of his/her position as a teacher in Okinawa Prefecture, and is able to engage with duties at school as a member of the school team under the cooperative system of the school while actively seeking instructions and advices from other teaching staffs.</li> </ul>
<p>Be thorough with one's responsibilities at school! Basic Stage (Around the 3<sup>rd</sup> year)</p>	<ul style="list-style-type: none"> <li>• One can implement teaching activities based on the current status of his/her students using the foundational knowledge and skills for educational activities.</li> <li>• One can engage with duties at school as a member of the school team while coordinating/cooperating with other teaching staffs.</li> </ul>
<p>Lead educational activities! Fulfillment Stage (Around the 8<sup>th</sup> year)</p>	<ul style="list-style-type: none"> <li>• One enriches one's knowledge and skills for educational activities, and is able to use them to implement and promote creative teaching activities.</li> <li>• One can promote the structuring of coordination and cooperation system through improvement of camaraderie among staffs and enrichment of coordination and cooperation, for instance through actively engaging with other, less experienced, teaching staffs.</li> </ul>
<p>Play central roles! Development Stage (Around the 13<sup>th</sup> year)</p>	<ul style="list-style-type: none"> <li>• One can effectively promote educational activities that takes the current status of an entire school and its local area by utilizing one's experience and strengths.</li> <li>• One is able to play central roles in the coordination and cooperation system of the school and between divisions, and is able to instruct and advice other teaching staffs.</li> </ul>
<p>Support the school with comprehensive perspective! Instructor Stage (After the 18<sup>th</sup> year)</p>	<ul style="list-style-type: none"> <li>• One can promote educational activities effectively and efficiently with a comprehensive perspective of an entire school based on one's rich knowledge, skills and experience.</li> <li>• One is able to support the coordination and cooperation system of the school team and appropriately support and nurture other teachers with a comprehensive perspective.</li> </ul>

These are the career stages defined by Okinawa Prefecture. Each stage listed here has the required competency and their development stages regarding the *student guidance* (understanding students and skills for individual and group teaching), the *school management* (coordination and cooperation, safety and risk management, problem solving ability, administrative skill and information utilization and management skill) and *practical skills for implementation* (curriculum planning, teaching practice and

assessment, lesson study and improvement) described in detail which has five pages more.

The every goal for the training programs conducted by the center is clarified by referring some aspect of these principles and competency.

#### 4. Case Study: Curriculum Management Training for Nurturing Children Who Will Build the Society 5.0 beyond the 4<sup>th</sup> industrial revolution

Here, we will discuss the curriculum management training conducted by Tomori, one of the authors of this paper, which was one of the 80 courses held as summer training. The case of this training course was 3 days workshop in mathematics, and it was held for teachers for management positions, research chiefs and ordinary teachers. The purpose of this training to learn the curriculum management was to enable teachers to imagine the unique schools and planning the implementation by themselves. In the national curricular standards (2016), curriculum management is defined as follows:

“Every school organizationally and systematically ensures the improvement of the quality of their educational activities based on its own curriculum through: knowing the current status of students, school and the area, preparing the necessary educational goals and the teaching contents with cross-cutting perspective across curriculum subjects, improving implementation process of own curriculum by assessing the current status of implementation, and securing the human and material resources systematically which is necessary for the implementation of the curriculum.”

It's summarized by the following three aspects: (1) Horizontal perspective across curriculum subjects, (2) PDCA cycle and (3) Utilization of educational resources.

The first questions asked for the workshop were: How is our society changing? What are competencies required in this changing society? And how shall you set the educational goals/aims of your school for this current situation? The participant held free discussions and conducted group works while the seminar introduced Society 5.0, which is the alternative society image required by the societal changes under the fourth industrial revolution involving AI and robots. The report for Society 5.0 was published by the Cabinet Office and the Ministry of International Trade and Industry in 2017, and it was adapted by the National Education Council in 2018.

The main theme for the 2016 curriculum reform necessary for nurturing the children who will be building Society 5.0 were: Nurturing competencies for humanity toward learning (engaging in the society and world for conducting better life), Utilizing what one understands and what one is capable

でいご 小学校			
昨年度(H30年)の実態分析 (マトリクス法)			
	① 教科横断的な視点	② PDCAサイクル	③ 教育資源の活用
長所・成果	音楽リハラス (水色)	フロンティア学習の 全学年学習の活性化 全学年学習の活性化 実施している (水色)	教育関係者との 連携 聖十景、事例の 共有 地域との連携、活用 推進活動も充実 (水色)
課題等	教科横断的な視点 の活用 (黄色)	各課(アソビ、 アソビ)の活用 (黄色)	連携の活用、活用 の活用 聖十景、事例の 共有 (黄色)
改善策	教科横断的な 視点の活用 (桃色)	教科横断的な 視点の活用 (桃色)	連携の活用、活用 の活用 (桃色)

Fig.1 Curriculum Management Aspects (1) to (3) and Strengths, Issues and Aspects to be improved

of (competency for thinking, judging and expressiveness), and what one can understand and what one is capable of (knowledge and skills).

With the referring of the abovementioned goals and discussion in the group, the sense for challenges were matured. The Part 1 of the workshop started with each group discussing the local issues and asked to set the school name by themselves based on their images for societal innovation. Analyzing the current status of the named school in relation to their experience of the last year from the points for strengths, problematics and challenges for improvement situation, in regard to the every aspect of (1), (2) and (3) on the curriculum management. Finally, they were organized it in a matrix (Fig.1).

Departing from this matrix, Part 2 involved the discussion of the grand design of school management for the next academic year among each group. This grand design is organized as a table (Fig.2). The components are setting their school goals, the image of the ideal children, and the themes of in-school training. In Japan, these are usually planned by a small group including the principle and the research chief or the committee members, and then approved at the staff meeting. Indeed in reality, teachers are usually too busy and their schools cannot easily provide the opportunity or time for such planning as a whole school. It is possible in a summer training course because it allows time to be spent on such an experience and it is necessary experience for their career development.

Part 3 involved a planning of a class based on the prepared grand design by each group. Each group prepared the lesson study proposal with their lesson plan, and discussed how the content of their lesson plan corresponds with the grand design they prepared. Fig.3 is the lesson plan format prepared by the trainer as exemplar on “addition or subtraction” in Grade 2 mathematics.

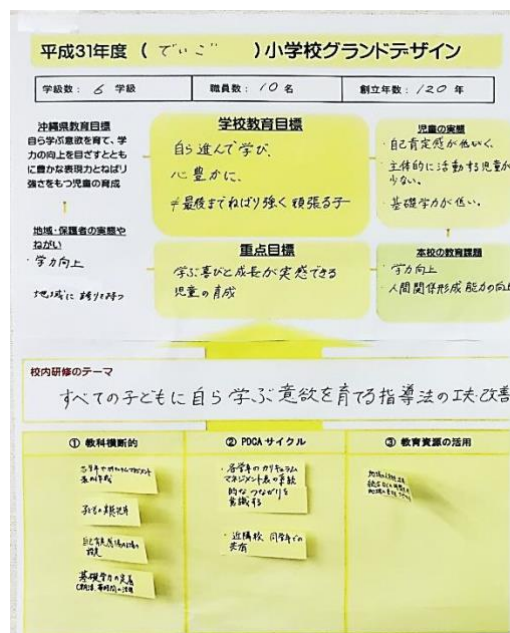


Fig.2 Grand Design for Educational Goals of School and Their Implementation





promotion. As discussed above, there are diverse people, methods and trainings for teaching quality improvement in Japan, and they function in mutual coordination. What were discussed in this paper are only the teacher trainings at the center, and there are many other trainings held by diverse organizations.

#### Reference