



The Effectiveness of Movement Education in Supporting Children with Developmental Disorders

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journal or publication title	Bulletin of the Faculty of Human Studies
volume	7
page range	157-176
year	2014-03-05
URL	http://id.nii.ac.jp/1073/00003712/

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【Summary】 The purpose of this study is to clarify the effectiveness of “Kobayashi-Frostig’s Movement Education” in supporting children with developmental disorders in Japan. First, literature on prior research was reviewed for an analysis of research trend to confirm that movement education is highly applicable to supporting children with developmental disorders. Furthermore, current problems in supporting children with developmental disorders were compared with principles of Movement Education from the following 5 perspectives, physical, developmental, environmental, relational, and playfulness. The result suggests that Movement Education can offer effective theory and method for supporting children with developmental disorders.

1 — Background and Purpose

In Japan, the institutional setup and educational environment surrounding the children with disorders have changed dramatically within the last decade or so, and such, what I would call, “crustal movements” have impacted the medical, educational, and welfare practices. While the practice and research for supporting children with developmental disorders have become very popular and attracted attentions, the actual support practices is still remain disorganized, due to continuous changes in concept definitions and the evolution in the educational system.

Movement Education by Marianne Frostig (1906-1985) of the U.S.A. is a developmental support method based on motor play, which has been confirmed to be effective in supporting children with disorders after being introduced to Japan in the late 70s by Yoshifumi Kobayashi (1944-) et al.. There have been successful research results on Movement Education that have spearheaded the direction of the current special needs education, and Movement Education has been utilized in

a variety of settings including rehabilitation, education, welfare, medical care, and child care. However, analysis on most recent researches and their applicability specific to developmental disorders is inadequate.

Therefore, this study aims to discuss the effectiveness of Movement Education for supporting children with developmental disorders in Japan.

2 — Method and Subject

This study aims to review prior literature for investigation.

The concept of Movement Education varies in the field of physical education in the United States and Europe; however, this study limits the use of this term to mean “Kobayashi-Frostig’s Movement Education” proposed by Frostig (1970) and disseminated in Japan by Yoshifumi Kobayashi et al. focusing on the series of activities developed from its methodology.

3 — Results and Discussion

3.1 Research trend in Movement Education in support for children with developmental disorders

In the past when the mainstream in Japanese special needs education focused on training based on the theory of the guaranteed development, many criticized Movement Education which promoted “playing as the foundation, not training”, claiming that “Too much play does not guarantee a child’s development”. However, triggered by the 1999 revision in the Education Ministry Guidelines in which “special needs care/training” was changed to “independence activities”, the methodology of Movement Education was proposed to help educators who were under pressure to shift their perceptions. This methodology was meant to be an activity to expand every child’s individuality to their best and try to nurture quality and ability that shall become the foundation of being a member of the society (Kobayashi, Touda et al., 2001). Furthermore, in the Education Ministry Guidelines revision announced in 2008, in addition to the existing items “maintaining health”, “psychological stability”, “understanding the environment”, “body movement”, and “communication”, “forming interpersonal relationships” was added to include new aspects with a view of proactively trying to be involved while having an interest in other people’s existence and behaving appropriately in a group. In order to incorporate these new items into practice, Movement Education attracted more attention for its effectiveness because it valued “discovering one’s body through movement and discovering others’ body through involvement” and it promoted an approach to “value individuality while participating in a group.” Kanagawa (2008) reports that, in practice at special needs schools, Movement Education includes all aspects of independence activi-

ties and supports child development, while discussing its possibility of being applied to “exchange and collaborative learning” as well.

The introduction of special needs education in 2007 repositioned training for children with developmental disorders requiring an approach that is intended to care for children with LD, ADHD, and High-Functioning Autism; however, Movement Education had proposed a new form of support for children with developmental disorders much prior to it. Through an investigation of motor coordination, Kobayashi et al. indicated the “clumsiness” of children with developmental disorders, and emphasized the need for full physical exercise in particular to stimulate the central nerves. In addition, they pointed out that fun experience from exercise activated brain function, and that continual practice in family and educational settings were made possible by elements of play, and discussed the effectiveness of Movement Education in supporting the physical movement development of children with developmental disorders (Kobayashi, 2001; Kobayashi & Koreeda, 2005).

In addition, the 2008 revision of the teaching guidelines mandated implementation of “Individual Education Support Plan”, which called for an effective assessment as a tool to encourage coordination between local organizations and families; however, Movement Education had already developed its original assessment 「MEPA (Movement Education Program Assessment)」 in 1985, (a revised version, MEPA-R was published in 2005), along with an usage guide now available (Kobayashi et al., 1986; Kobayashi et al., 2006), attracting further attention to movement education. The reason MEPA attracted attention is that was a system that can support the circulating form of support which consists of goal setting and planning, implementing, and assessing. In addition, MEPA also does not limit assessors to professionals but assumes participation by actual supporters and families, allowing anyone to naturally make an assessment in daily life and play. MEPA also perceives development comprehensively and presents a perspective which focuses and nurtures strength. In other words, MEPA was an assessment tool that is already equipped with necessary elements for practicing “community collaboration” and “family support” desired in special needs education in Japan today.

Furthermore, Ito et al., (2008) discusses that children who display clumsiness not only needs support in aspects of physical movement but also daily behavior and psychological areas, and that they need to experience connecting and communicating with friends naturally through playful activities and fun light exercise such as Movement Education. Harada & Kobayashi (2008) mentioned the potential of Movement Education to support “nurturing of mind” based on an investigation of the mood of pupils who took part in Movement activities. Further, Movement Education is being utilized in supporting aspects of learning. Many reports have already been made of practice that has applied Movement Education theory to subject lessons of special needs education (Nedachi et al., 2008; Kobayashi & Yokohama National University Affiliated School for Children with Special Needs, 2010), which indicate that utilizing movement education is effective in creating “tricks” and envi-

ronment for children with LD to enjoy learning when concentration at a desk is difficult.

Parent support and family support is especially important in supporting children with developmental disorders, and historically there has been an underlying thought to presuppose family participation as well as methodologies for family members to enjoy participate (Kobayashi & Imura, 2006) Through such experience of fun and receptive play, it has been reported that type of play at home becomes varied, thereby increasing opportunities for families to enjoy each other, and that such experience positively transforms parents themselves, which leads to improved QOL of parents and an increased satisfaction in childrearing, and such changes, in turn, are thought to positively influence child development (Fujii et al., 2007; Abe, 2009a).

Childcare facilities and kindergartens hold hopes for Movement Education, for its activities based on play, as a practical approach that allows teachers to provide professional care to children with developmental disorders or children “of concern” while utilizing their experience and accomplishments. To explore the potential of movement education in integrated childcare, Abe (2009b) conducted a survey on its expected effects on the integrated education perceived by nursery teachers and trainers who participated in a Movement Education training. As a result, Abe reported that rehabilitation care providers valued how participants may enjoy the activities and also the flexibility in caring for various situations of children while supporting the improvement of development. Nursery teachers who are involved in integrated childcare focused on Movement Education’s ability to address various issues such as social, emotional, and motivational issues in participating in activities of children with developmental disorders and “of concern.” These teachers found Movement Education promising due to its effects on not only the affected child but also other children as well as its ability to be administered to a group of children with various age groups. Furthermore, by the request from teachers and child care workers, trainings programs are often conducted, and opinion surveys targeting the participants of such training programs have suggested that support providers themselves experience an increase in the feeling of happiness through movement activities (Abe, 2011 ; Sugimoto & Ohashi, 2012). Kobayashi et al. (2011) has analyzed how nursery schools that have incorporated movement method into special needs education actually utilize play equipment and assessment tools, and discusses the possibility of Movement Education’s leading to inclusive childcare. Furthermore, utilizing the expertise of nursery teachers, the approach by “Takenoko movement class” in Fukui Prefecture has been examined as a model in order to support community childcare, implement early intervention for children with disorders (Takeuchi, 2012; Imura et al., 2012).

At the 48th conference of The Japanese Association of Special Education held in 2011, an independent symposium titled “Supporting Children with Developmental Disorders with Movement Education –Its current situation and its future” was held to discuss developmental support by virtuous cycle of child and environment based on reports of practices of special needs edu-

cation and community support. Movement education's original assessment tool MEPA was confirmed to be attracting much attention during the general discussion (Iimura et al., 2011).

3.2 Five Approaches of Movement Education for Assisting Children with Developmental Disorders

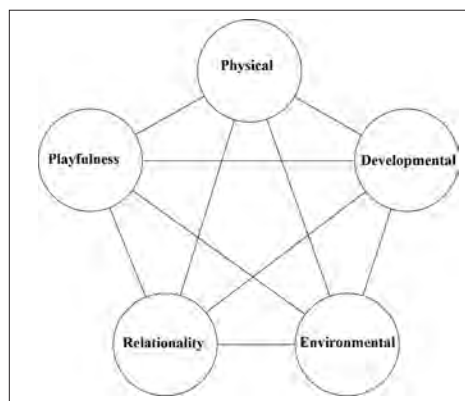
(1) Physical aspect

① Support of Children with Developmental Disorders in Terms of Physical Movement and its Necessity

In assisting children with developmental disorders, more attention has been paid heretofore on problems related to classroom learning, social adjustment, and interpersonal relationships rather than on an approach from the aspect of physical movement, and more energy has been spent on how to reduce behaviors that bother others and the people surrounding them. A field survey in Yokohama city conducted by Kobayashi et al. revealed that children with LD obviously had difficulty with physical movements compared to normal children (Kobayashi, 2001). The difficulty was especially found in “gross motor skills” when using the whole body to play on horizontal bars or with balls, “fine motor skills” such as using finger dexterity, and relative position and sense of direction which makes children prone to fall out of line or march (“immature physical consciousness”). Although “clumsiness” is a critical concept when discussing LD, there have been few supports or studies on involvement of physical movement that incorporates sensory function or perceptual function related to the foundation of development.

And many of children with ADHD have difficulty with motor skills, and it has been pointed out in the past that they especially lag in perceptual movement using eyes and hands or eyes and legs such as in ball play, therefore, support to promote sensory function has been called for. Additionally, children with ADHD tend to dislike physical activities involving many people, thus restricting the types of physical activities that they can participate. For this reason, support such as individual coaching has become mainstream; however, not being able to participate in group physical activities deprives them of the opportunity to learn together in peer relationships and groups, which may lead to lost interest and motivation in activities.

Characteristics that are common among children with ASD are known to be that they have problems in mainly interpersonal relationships and sociability. Since some children with ASD have sensory hyperactivities, their defensive mechanism of sensory stimulation causes them to eccentrically avoid physical contacts with others and listening to



[Fig. 1] 5 approaches of movement education for supporting children with developmental disorders

noisy music, hesitate to participate in group activities and remain alone without opportunities to interact with others. Such characteristics that appear in sensory movement sometimes gradually decreases with age and development in motor functions, but repeated failure in difficult movements and scolding from others in infancy and childhood leads to psychological problems including lower self-esteem and peer consciousness. Comments by adults with developmental disorders such as “Physical Education class was a pain because I was clumsy with movements,” “I felt inferior and often lost motivation,” and “I ditched class and hid in the classroom or the locker room because I didn’t want to feel miserable during Physical Education class” (Tojyo et al., 2004) reveal the seriousness of the problem. Support that centers around physical movements is a task that cannot also be neglected in preventing secondary problems for children with developmental disorders, suggesting a positive meaning in support through movement education.

② By moving, one discovers oneself and the world

Aside from the practice targeting children with developmental disorders, in this rapidly changing modern society, there is an increasing sense of crisis about the lack of physical senses and direct contacts through the body. When nurturing and assisting children, we must understand feeling with the body, thinking with the body, moving with the body, and interacting with the body as the core of living and focus on “physical” aspect from the point of view that moving plays an essential role in triggering life or awareness/perception.

This very “physical” aspect is the first keyword in the Movement Education. In Movement Education, the body is considered to be a medium for feeling and expressing in the first place and is the center for experiencing events in all spaces, and by moving, physical and self-consciousness is formed as well as consciousness of time, space and others is generated, it is believed. In other words, “By moving, one discovers oneself and the world” (Frostig, 1970). Furthermore, through dialogues with the environment, we explore possible movements of our own body, face the value of the environment and actualize behaviors. As a result, new opportunities for exploration are brought about, which in turn drives development.

In addition, humans are not simply a biological existence but a social and cultural existence, which means that they can achieve social independence and make social contribution. On the premise of the dignity of life including the maintenance of life, the enhancement of health, the prevention and treatment of illness, and recovery of function, the basis of Movement Education that cherishes human love based on humanitarianism lies in “the body.” Movement Education, by moving one’s body in a fun and playful manner, which coordinate various behaviors, prompts the formation of physical and self-awareness and consciousness of time/space and others, from acquiring perceptual and motor skills as necessary elements. In other words, Movement Education is a dynamic and complex physical activity, and the goal of physical activity conducted in this education is to, first of all, develop sensory motor skills. Since, however, it is not a training nor a passive

activity, its method leads to fostering a variety of other functions while centering around all other activities. In other words, all functions related to a child's development is connected to "physical movement."

(2) Developmental aspect

① Independence in development — Children learn "on their own" by doing —

Conventional approach to support for children with disorders was to "promote development" by making up for the "developmental delay" captured by comparing a child's ability to average developmental indicators. Recent findings from narratives of persons with developmental disorders have revealed that daily trainings where they are forced to endure and devote themselves led to self-denial and to painful living (Ayaya & Kumagaya, 2008). Kujiraoka (2002) grieves the actual situation in education and medical care for children with disorders that aims to promote development by "constantly striving for 'what children can do' and 'makes them do'" with a lopsided goal to "improve ability" and "decrease disabilities." He emphasizes that this lopsided situation that has leaned towards "gaining strength through drill teaching" has greatly taken a toll on a child's individuality, i.e., a child lacks confidence and motivation, not knowing joy, and silently does "what is told", which leads to a life with an inhibited individuality that ought not be the way of an independent individual. In the recent medical and educational practice situation, biased involvement to "make them do something" and encouragement to "make them do something" are overemphasized, and, unfortunately, it is becoming increasingly difficult to nurture independence.

On the other hand, what Frostig herself held as a belief for Movement Education's practice was that "Children learn 'on their own' by 'doing.'" Her theory valued that a child's development is brought about by "experience" in a situation arranged for children (Frostig, 1976). Kobayashi (2001) discusses that Movement Education is "an approach where a learner (child) actively takes on challenging tasks and gradually acquire them", and that "active learning not reinforced by external influences have brought much positive results in a child's development process." As seen from above, Movement Education views the agent of development as children themselves, and its basic principle is to support children with their own strength to grow. In this view, "developmental possibilities" of a child lies in interactions with the environments including other people and play equipment and communities, the optimal tasks for children to take on are considered the events and experiences that they as "agents of development" get from play environment, and we can say that the method of developmental support in Movement Education is to aim to present an environment that brings about high chances for children to encounter their own agenda.

② Entirety of development — Understanding developmental disorders with "body, mind, and heart"—

Difficulties experienced by a child with developmental disorders include problems with motor skills represented by clumsy movements, cognitive problems which leads to learning disorder.

ders, and emotional and social problems brought upon by difficulty in communication and social adjustment. Support providers often overlook the mutual relationships among these problems, and a partial and symptomatic treatment may not easily break up this vicious cycle caused by this inter-relationship.

For example, while repetitive learning method is an effective way to deal with a cognitive problem of a child having difficulty in reading and writing tasks and calculation, it rarely leads to fundamental improvement of the child's problem. Even as a child masters writing hiragana, katakana and kanji are soon introduced as the grade progresses. With the pace of learning accelerating, the child may not be able to keep up with the tasks, which in many cases may develop into secondary problems from an emotional stand point as he/she accumulates a sense of inadequacy. Many children who cannot write well have problems with basic motor skills, so rather than making them learn writing by repetitive practices, it is more important to nurture coordination of body image, vision, and finger movements to support the fundamental aspects of writings letters.

In addition, on the contrary, while training that is focused only on sensory and motor aspects of a child with developmental disorders may enhance basic sensory processing and motor skills, experience of given tasks in a one-on-one training approach may deprive children of actual feeling of how their enhanced physical awareness skill relates to cognitive and emotional aspects becomes their strength, and cannot support further motivation or independent growth.

The basis of Movement Education is to understand human development in an integrated way by always considering the connection among “body (physical movement), mind (cognition) and heart (emotional, social),” to support overall development of a child. This shift focuses not only on weaknesses but also strengths (what the child is good at or likes). At the same time, Movement Education makes it possible to promote the development motor skills (“body”) through group play activities and to enhance various perceptual functions, memory, concentration, association skills, and problem-solving skills while incorporating elements of “heart” and “mind”. Thus, as each child is cherished, their motivation and confidence are built up, interest in others, joy in interaction, and self-control needed for living in a group are nurtured, and emotional and social development is promoted.

The developmental aspect of children with developmental disorders is coming to be expressed as “biased” or “uneven” development rather than simply a “delay” in development. That is why it is crucial to respect their originality while understanding them holistically, and to have an attitude of trying to capture “the whole picture of what it means to live.” At the same time, an approach that considers the overall development of “body, mind, and heart” is called for.

③ Individuality and continuity of development

—Respecting individuals while taking advantage of expansion and flow of development—

Frostig (1976) explains that the tasks of Movement Education that enables children to feel

he/she “wants to” experience and learn out of his/her volition must require the child to make an effort, and that the task must not be too easy or too hard, and tasks that the child is ready to tackle from a developmental standpoint must be given in an appropriate amount. In order to give the child the optimal task, we must grasp the degree of each child’s development phase in detail.

While the speed and degree of human development vary from individual to individual, it has been made clear that they progress in a certain order and direction. Frostig emphasized that development is continual and takes common steps, and the importance of understanding a child’s developmental stage from the points of view of visual perception, auditory perception, motor skills, cognition and language, and worked intensively on developing various assessment tools to capture those aspects. Kobayashi et al. (1986) succeeded and developed these studies, and concentrated on the development of an original assessment tool to grasp the “expansion” and “flow (continuity)” of human development from motor, cognitive, and emotional perspectives. Assessment in Movement Education was not created to label and separate children, but to capture more in detail the child’s development phase, and it is a tool to present an environment of movement activities that best suits the promotion of independent growth according to the individuality and continuity of development.

Movement Education is not an “approach to try to fill in the gaps” assumed from the normal standards of developmental stages with each child’s actual life and characteristics ignored, but develops an concrete approach based on a developmental theory in order to respect each child and support their independent growth.

(3) Environmental aspect

① Interactions with the environment

Mutual relationship with the environment thanks to the spread of the WHO-ICF model, support based on the notion that children and the environment influence each other, and therefore, by preparing the environment sufficiently, children’s ability to learn and think and willingness to challenge will be enhanced, has been emphasized recently even in the efforts targeting children with developmental disabilities. For example, causes of child’s inattention and hyperactivity have been examined, and in order to reduce these problems from the environmental point of view, creating visual environment such as postings and blackboards in the classroom are becoming widespread.

In Movement Education, the use of Movement playground equipment which attracts children’s interest in the interactions with the environment is emphasized. For example, if there is a report from a parent saying “My child has autism, so she can’t participate in any group activities,” the movement leader then perceives the complaint as saying “Until now, she hasn’t encountered an environment of a group activity that she wants to participate in.” Then the movement leader takes into consideration her personality including her obstacle, i.e., autism, trying to leverage her positive attributes (strengths) such as her favorite things, interests, etc., then recommends to come up

with attractive program by arranging various “environments” and focusing on improving “activities” and “participation.” Thus, the basic point of Movement Education is, first of all, to present a place for children to play as an accepting and universal environment where they participate with ease while being themselves. In addition, it aims to maximize the power of environment and produce a “circular” system. For instance, if a balloon appears in front of your eyes, you will end up reaching it. Likewise, we obtain various information from the environment surrounding us, get involved in the environment by expressing ourselves to the environment actively at the same time. Therefore, Movement Education activities include various playground equipment, music, and group activities. Space characteristics are used effectively and children can arrange the environment where they think they “want to move,” “want to touch,” and “want to get involved.” They try to expand their natural movement through the interactions between themselves and the environment. In other words, compared to the traditional symptomatic treatment methods that aim to develop abilities, Movement Education has an underlying concept of “designing an environment and arrange the relationship rather than intervening in individuals.” The approach can be described as follows: The program provides opportunities rather than giving one-sidedly. It is established by having children experience proactively.

② From the Affordance Theory

There is a theory called “Affordance Theory.” It is connected to the perspective of creating an environment of movement education. “Affordance” is a word created by an ecological psychologist, Gibson (1979). It is based on the word “afford”. The meaning is the “possibility of behavior,” which is given to people and animals by the environment. It can be said that characteristics that are common in movement playground equipment, which creates various activities, are in the abundance of this affordance. In addition, in outdoor movement, activities that are a bit different from outdoor programs, such as sliding down an embankment or rolling on grass, can also be enjoyed. However, it can be said that this is also taking advantage of “possibility of behavior” which is given to us by the natural environment. If the abundance of activities of aqua movement that are practiced in a pool is known, the environment of “water” that gives us a lot of behaviors other than “floating” will be well understood.

In addition, even in the same environment, affordance is perceived differently depending on the person. Such perspective is also important. For example, an elephant and an ant have very different affordance when perceiving a tree. In the same way, the existence (body) of each person is different, so the affordance that each person picks up is also different. In addition, even the information that the same person picks up changes depending on daily changes (development). This is also an important point. For example, if a baby turns over in bed, sits, stands, walks and finally jumps, runs, goes around, and turns around repeatedly, the relationship with the environment will give him various behavior opportunities. The movement will bring progress to the body’s behav-

ior. Then if the movement and behavior change again, a different environment will be discovered. The newly discovered environment will continue to give him new behavior opportunities. The mutual circular relationship between the progress and the environment can be understood.

If such an idea is understood, the power of the environment to suit each child with developmental disabilities can be arranged. The effectiveness of movement education, which emphasizes the creation of a circular system that urges "interactions with the environment", can be understood. In other words, the excellent supporters in Movement Education know a lot of affordance information which exists in various environments in their experiences. Moreover, they will choose the affordance that is suitable for the program and become the people who have the power to arrange the environments. In Movement Education, we believe that it is possible to develop activities that emphasizes the participants' spontaneity and independence, by perceiving the "environment" for bringing out movements and various "things" surrounding each person's body, including playground equipment and music.

③ People are also an environment — raised in a group —

Same as attractive playground equipment and facilities, movement education also uses "people" as an environment in support. In the practice of movement, it is important to create a place for everybody, including adults and children, to do activities that both parents and families can participate together. Same as playground equipment, music and facilities, it is a support method that perceives the "people" who gather there as an important "environment," and they are related to the adequacy of the activities. Children receive new stimuli by just looking at the movement of other children. By listening to their mothers' gentle singing voice, they feel relieved and can ride a parachute. By using their fathers' physical strengths, they can start active activities. The group's applause and their voice of support give courage to the children. Somebody's smile produces another person's smile. In movement activities, our "existence" therein is each other's "environment." We can feel that we are influencing each other.

Frostig (1976) explained that it is necessary for teachers (adults) to perceive the "environment" that is the most influential to the children and promote the environment for the children's learning. She argued that the role of teachers is an important "model" for the children to "learn actively and happily." In the practice of movement, the supporters pay attention to the volume of their own voice, intonation, facial expressions and clothes. It is because sometimes they are aware that in their representation like a pierrot, they are the first important "environment" that will influence the children. For the children, compared with "adults who take care of them," "the existence of enjoyment while playing seriously" and "playing with adults together" is recognized as more attractive "environments."

The various difficulties that children with developmental disabilities have vary depending on the human relationships with people around them, such as families and friends. It is very important

for people involved in the life and support of children with developmental disabilities to be aware that the environment and we are influencing each other and to continue to raise such awareness, through the activities of Movement Education.

(4) Relationality aspect

①Leveraging individuality within a group; Leveraging the group to support individuality

While emphasizing individual attention suited to each child's development, Frostig researched the state of certain learning environments and also stressed the importance of learning in cooperative activity with other children of differing developmental levels. Like Frostig, Kobayashi also pursued research into individual attention for children of diverse needs and developmental stages, but at the same time stressed adopting a method of "learning with the strength of the group and with the strengths of the individual" (Kobayashi, 2001). Note here that Movement Education adopts the methodology of learning through the strength of the group and the strength of the individual.

Within Movement Education, methodologies have been developed to support and realize the ideas of "leveraging individuality within a group" and "leveraging the group to support individuality." Approaches are being emphasized where, as much as possible, children are not segregated based on disability, extent of disability, and age, but rather are grouped together to act as a diverse unit. Even children who are not able to quickly adjust to a group program, and who initially display trepidation and lack of interest, often naturally slip into the group after being attracted by the atmosphere of other children actively enjoying themselves. Also, there are some aspects that tend to appear when we extend our observation to slightly longer time periods. Children who remained entirely uninvolved in the group (from all observable appearances) can, several months later, suddenly enter the group and conduct themselves as if they had been happy participants all along. Some young children will carefully observe the activity of older children, then begin to act similarly. Consequently, as this type of experience builds, even separated slightly from the group in a corner of the room, for example, it is meaningful for the child since he or she is in a place where it is possible to view and listen to the group's activity. Being in such a place is a form of participation in the group and is a very important experience (Kobayashi&Ohashi, 2010).

This way of thinking within Movement Education is clearly supported by the discovery of "mirror neurons" in recent neuroscience research. One's own activity of "doing" something is related to action, while "seeing" another person performing the same action is related to observation. However, mirror neurons treat the two similarly, acting as if the action of another is an action of the self, analogous to a mirror being held up. In other words, mirror neurons link the actions of the self and others, processing information related to one's basic awareness of "self" and "other." Moreover, scientific attention toward mirror neurons also includes speculation that they may sup-

port a crucial function of the brain to empathize with or intuit others. Human nature is expressed in our social intelligence in communicating with others. Mirror neurons make it possible to simulate or recast the observed activity of others as if it were one's own activity. Then, as one's own activity overlaps with that of others, we become able to surmise the psychological state that corresponds with that activity. Stated differently, it is believed that the ability to understand the behavior of others and fluidly communicate with them is developed through the activation of mirror neurons while participating with others in a group.

In recent years, the belief has spread, including within research on principles of learning, that learning in societies and communities, or the work and activity of their members, is not a matter of individual acquisition of knowledge, but rather daily human activities, the way the activities are done and a constant, uninterrupted process of mutual negotiation. This can be taken as an indictment of the practice of assisting disabled children by choosing to isolate them and remove them from social and cultural daily activities.

② Working within an interactive environment to cultivate the desire to interact

One of the characteristics of developmentally disabled children is their marked difficulty in communicating and interacting with others, which is argued to be a result of the small number of opportunities they have for building and accumulating meaningful relationships of reciprocity. This view is supported by theory of mind deficiencies (Baron-Cohen et al., 1985) that point to communication failure brought on by the long-term inability to intuit or understand others. However, after its introduction, the theory of mind encountered various limitations and difficulties. It increasingly became an expression of a person's level of social development, more than defining an individual's disability itself. Baron-Cohen himself presented new theories regarding empathizing disabilities and systemizing disabilities (Baron-Cohen, 2005). In addition, developmentally disabled children are thought to possess disabilities of self-awareness and awareness of others, as well as shortfalls in their capacity to grasp the relationship between self and others. In particular, ASD children's communication disability is recognized from the pre-verbal period and shows obstructed communication, including information transmission, with others.

In communication support for developmentally disabled children, there have been ample research results claiming that the disability is "fixed" and emphasized use of academic or lifestyle drills, or palliative approaches for directly excising only the "idiosyncratic" behavior for the sake of social adaptivity. However, counter arguments have arisen declaring that the communication or personal relationship problem of the developmentally disabled child is not peculiar to the disability, nor is it unchangeable. The disability can transform with age and developmental growth, while its nature can be changed in relation to shifts in the person's cognitive level and interpersonal relationships. In addition, it has been pointed out that the palliative approach biased toward repetitive drills has only focused on the response model in which social interaction is an individual skill, and

has not adequately considered the attendant relations between the individual and his or her environment. Trying to form habits of social utility and practicability in a context removed from social conditions and devoid of direct demands and motivations is akin to teaching swimming techniques outside of the water. There is a concern that if emphasis is placed only on teaching communication skills, the acquisition of those skills becomes the final objective at the expense of the important act of building social relationships.

In the face of these issues, recent emphasis has moved away from treating the developmentally disabled child's idiosyncratic behavior as an entity unto itself, and moved toward considerations of functional failures in the individual's interaction with his or her environment. Intention, context, and background of behavior are correlated and addressed so that changes to the child's interaction with the environment, while leveraging his or her strengths, are pursued to create a stable adaptation.

The features of communication support within Movement Education do not remove communication skills to target them for direct instruction, but rather aim for the accumulation of reciprocal and complementary experiences with others in the natural context of a play area open to anxiety-free participation. As a result, these features include an understanding of how to interact with others and corrections for problematic behavioral patterns. Without feelings of isolation and alienation, developmentally disabled children can experience interaction with others as pleasurable and important by accumulating experiences of having their self-initiated communication and conduct received and accepted by others. The result is not only acquisition of social skills but also cultivation of self-confidence with regard to interacting with others, in addition to increased social adaptivity. The important point is that children's "health and well-being" are achieved through rich interaction with others and higher order communication skills should not be unduly championed as the objective of support efforts. The actual implementation of free and receptive Movement Education is a process of rotating experiences of various basic forms of communication which are employed as templates at the same time that a desire to interact is cultivated, thereby strengthening developmentally disabled children's communication abilities.

(5) Playfulness aspect

① Contradictions in methods of developmental support that make use of play

Play is "the source of our ability to live," and children acquire various necessary capabilities and grow through play. When considering the practical uses of play for supporting not only children with developmental disorders, but also supporting child rearing and development, play has been defined as "an activity that has significance," and clarifying how it functions to "assist in development" has been fundamental in investigation on this topic. For example, educational and psychological approaches have been developed in order to encourage various forms of play that are

a factor in development, such as outside play for developing physical strength, group play for developing inter-personal skills, and play in the past for the purpose of acquiring dexterity. However, another opinion concerning play is that the above understanding conforms to adult values, whereas children themselves play because they want to play, and children master a variety of skills “as a result” of playing. This opinion further notes that one should not mistake the relationship between the results brought about by play and the goal of said play and demand there be a specific outcome to these activities. In support methods, which attempt to accelerate children’s development through play, neglecting a child’s individuality, results in the danger of harming or “contradictions” that harm the true nature of play. In other words, if one emphasizes the educational significance of play, therefore forcibly making play occur, it will no longer be play.

Now, Frostig’s movement education is a development support method, which takes play as its point of origin. The underlying idea behind this method is that play, as a functional activity for children in which they use their whole mind and body to enjoy themselves, encourages all aspects of development and supports the development of a human being as a whole. However, the ultimate goal of movement education is for a child “to achieve health and a sense of well-being,” and one standard guiding this method is that play is an activity that is spontaneous and voluntary and someone has not coerced someone else into carrying this activity. Therefore, the fundamental approach of movement education is to not “to force to do” but to draw the participant “to want to do.” The method supports development, while placing an importance on children experiencing “enjoyment” and immersing themselves in the activity. Significance is placed on not only the developmental benefits that children have gained from play activities, but also on the fact that the participants feel delight and enjoyment, and participate independently.

In the case of children with disabilities, one does not wait until “play” occurs in so-called ordinary environmental conditions, but instead one needs to analyze what environmental conditions the children would find easy to carry out play in and prepare the ideal conditions. Within Movement Education, in order to make creating “play” ideas easy, an environment that has the potential to allow children to be spontaneous and make choices is prepared, and it can be understood that “play” is guided in a way that respects the likes and dislikes of the children, placing the child’s selection first. When the child “wants to carry out an activity,” the method places importance on providing appropriate encouragement and a flexible environment, which allows the children to participate whenever they choose.

② Bringing out a child’s strengths—“slow and enjoyable” support made possible because it is play—

When supporting the development of a child, it is important to establish a play environment so that children can engross themselves in and engage with the subject in question to the best of their ability. The supporter must have the ability to ascertain what the children find entertaining and what the children are able to make into a play activity. While supporting play, it becomes

important to understand aspects of the children's developmental stages, and the child's "special likes," their strengths and weaknesses and likes and dislikes.

In Movement Education, each individual child's strengths (the things they are good at, the things they like) are increasingly expanded. Movement Education supposes it increases overall abilities, and utilizes these expanded abilities in order to develop activities, and as a result, these activities also are connected to supporting the development of undeveloped qualities in the children involved. This is because "play" is a foundational aspect of movement education and is deeply connected to the fact that activities are never practiced. The significance of leveraging these strengths is in the 'spontaneity' and 'persistence' that results from the participants' 'enjoyment.' If the children leverage things that they are good at and things they like as they play, they will voluntarily enjoy themselves and will be able to continue to concentrate and immerse themselves in what they are doing. Furthermore, with these types of activities, adults involved also enjoy themselves to a greater extent, which forms a positive cycle. However, during practiced activities, which attempt to unearth a child's deficits and conquer their weaknesses, adults, witnessing crying children, must also desperately harden their hearts. As a result, these strict practices do not persist.

There is a great deal of significance to the continuous engagement seen in Movement Education. For example, there are many cases in which autistic children have acquired speech after they reached 6 years of age (Fujii, Kobayashi et al., 2005) and persons with multiple severe disabilities who became able to sit up and walk after they had matured, and in these cases "a dynamic environment for enjoyable play" has been understood to have slowly continued to stimulate participant's nerves, and resulted in sensory-motor integration. These results have attracted attention as elements that demand the review of a preceding theory stating, "there is a critical period of development." Furthermore, a longitudinal research investigation concerning development of coarse motor skills in students attending schools that have incorporated movement education consistently from elementary to high school level confirmed that children with disabilities continue to develop "slowly" into their later teen years, exceeding the critical period of motor development for healthy children. This study notes the necessity for biomechanical activities that children with disabilities could continue to enjoy and engage in until puberty or adolescents (Koreeda, 2005).

Individuals develop differently and continuing activities is especially important for supporting "slow" advancement of development. Supporting children with developmental disorders demands consistent support over a person's lifetime. In actuality, however, maternal and child health, child-rearing support, welfare for the disabled, medical treatment and rehabilitation centers, schools, local action groups, such as NPOs, businesses, and other institutions concerned with each life stage have established their own policies, and the fact that support has become fragmented has become an issue. It is important to develop a method of support that children with developmental disorders can independently continue throughout their lifetime, the child themselves, as well as all

those concerned with the care of said child, including staff and family members, can enjoy, and that fulfills the conditions of various institutions. For this reason, Movement Education serves as a method of support that most leverages “play”.

③ Playing and Creating together

In a place of play, development focusing on “playfulness,” which is created through the relationships created between those playing, including the emotions of both adults and children, is important. The supporter in this instance should not attempt to take on the stance of trying to coach children with developmental disorders, but instead needs to position themselves as a fellow play partner, while at the same time, constantly searching for the direction in which the play is developing. A common feature of a place of movement that has developed full activities is that the clear distinctions between the positions of “those being taught and those teaching”, “those being supported and those supporting,” and “those receiving a service and those providing it” becomes difficult to distinguish. In other words, as movement education activities deepen, relationships are not composed of unilateral connections between teacher and child and parents (family). Instead, people from various positions retain their independence when participating in activities, and a relationship of mutual growth is formed whereby all participating grow and are fostered by each other.

This results from the fact that movement education activities are not implemented according to a narrow way of perceiving, which aims to compensate for weaknesses, “to conquer disabilities” and “improve abilities.” It respects human dignity and is carried out with the goal of supporting “health and well-being” in order to allow each and every participant to live enthusiastically, have self-respect and work towards self-realization. Movement Education does not seek how to stop behavior that appears problematic at a glance and fit things into a state desirable to the general population under the name of medical treatment and practice. Instead, it stresses the importance of creating a place of play, based on a sense of security and trust, which can allow the participant to carry out activities enthusiastically with confidence and ambition. Movement Education, of course, aims to accelerate the children’s development, but begins with “play” and what is important is creating a place of play in which they themselves feel that they are “having fun,” “happy,” and “interested” and in which they can move independently. The supporter ought not perceive the children as subjects of a training or coaching activity from a directive attitude, unilaterally making them perform, but instead perceive the children as people living and creating a space along with the supporter. Movement Education calls for an attitude that supports their self-realization. The children are able to grow as an individual precisely if and only if they are accepted as one.

If the supporter approaches activities from a prideful stance, “coaching parents” or “instructing parents,” or from an excessively benevolent stance, “doing for the parents” or “rescuing the parents,” in regards to even the children, they will never be able to build a relationship of mutual trust and cooperation together with the parents. Unilateral support possesses the risk of destroying

the parents' individuality, of making them simply the receiver of a service, and of making them even more dependent on the support. Support for children with developmental disorders calls for the creation of a place where the children and the parents can grow together. For this reason, support activities can be considered to require all involved to be conscious of their role as "participants," and to be able to independently participate.

In a place of play through movement, participation as parent and child or as a family is fundamental. Everyone recognizes that each and every person, regardless of the role they are playing, whether they are the child, parent, sibling, leader or staff member, forms this space of play together. Furthermore, by mutually accepting the fact that they are living as individuals and they can exist in diverse individuality, they can be in the space without fear. For parents, the most gratifying thing is seeing their child smile, while at the same time adults are able to feel "enjoyment," "happiness," and "interest" when encompassed in a play environment just as children do. This kind of personal experience encourages and inspires adult participants. A self-awareness of their role as one responsible for the space begins to form, they begin to actively participate, and a "virtuous cycle whereby smiles invoke smiles" is born from a common desire to "create a place of play that everyone can enjoy (Kobayashi&Ohashi, 2010)." Originally, places of play that nurture children were not artificially made, but where children involuntarily decided they wanted to play. These places are worlds without adult intervention where the children can become the protagonist and play can freely develop. In modern Japanese society, however, where a vicious cycle where places of play are disappearing, repeats itself, systems for supporting the growth of children through play activities and play environments, where children can actively participate in play, need to be artificially provided. "The power of play" is essential for creating a place where diverse people, including children with developmental disorders can participate as individuals, or "a community where they live together." The activities carried out in Movement Education might also be said to constitute a personal experience of creating a place of playing together with others.

4 — Conclusion

This paper investigated prior literature regarding the effectiveness of movement education in supporting children with developmental disorders and clarified its characteristic features and significance. Firstly, it analyzed movement education research trends in Japan in recent years, and confirmed movement education's high level of applicability for supporting children with developmental disorders. Furthermore, this paper compared the modern issues facing support for children with developmental disorders with the principles of movement education from five different points of view, "physical", "developmental", "environmental", "relationality", and "playfulness". There are aspects of Frostig's principle of aiming to "teach respect for human beings", the underlying

philosophy behind movement education, that can provide significant insight into the various issues affecting children with developmental disorders today. The field research by Kobayashi and others, developed while applying principles inherited from movement education to Japanese education culture, contains an effective theory and method for the support of children with developmental disorders.

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