

**Re-Examining Japanese Science Education**  
**from Mahayana Buddhism and Bushido Points of View**  
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**ABSTRACT**

Recently science education researchers have come under the influence of multi-paradigmatic research which has led some to rethink classical theories of research practice. This has shifted the focus from content to research methodology. I, Hisashi Otsuji, was once deeply engaged in positivistic research using concept mapping, but am now one of those influenced by multi-paradigmatic methodologies. I am engaged in an auto/ethnographic doctoral research based on my personal upbringing within a Mahayana Buddhist background in which I investigate contemporary science education issues through my lens as a practitioner of pre-service teacher training. In the research I have explored hybrid Japanese Mahayana Buddhism which has been influenced by Chinese Taoism, Zhuangzi, and the original pre-sectarian Buddhism from India. Furthermore, I have investigated Japanese science education's multiple theoretical layers including, e.g., exploring the research interests in abroad. In addition, using a survey I have inquired into how the student-centered science classroom tradition has been influenced by Japanese Buddhism. I have reviewed relevant literature to identify hidden Buddhist elements in everyday classroom practice, such as "greeting". I have furthermore drawn comparisons between the Japanese Buddhism concept of the Bodhisattva and the role of a (science) teacher. In this presentation I draw on my research to foreshadow a new direction for Japanese science education, focusing on Mahayana Buddhism and Bushido (the obligation for the military nobility) and arguing that being conscious of the cultural-self and positioning one's profession culturally can lead to transformation that has the potential to sustain the individual, organization and society.

**Keywords:** Cultural Studies of Science Education, Buddhism, Bushido, whole person, transformative education

**INTRODUCTION**

One of the functions of educational activity is to transmit the cultural body to the next generation and to support its creation. In this sense, education has an influence on culture. On the other hand, education is influenced by culture by being practised using cultural codes. Education and culture are mutually influenced by each other. Then, how about the practice of science education? This question leads us to fundamental thoughts. In the West, Western Modern Science, which emerged in the Christianity influenced era, has been taught in science education. But what about the social and humanistic phenomena of teaching such a science in non-Western countries? This question has been argued about and addressed in many previous discussions (e.g., Aikenhead, 1996; Ogawa,

1995).

This paper is an attempt to explain the phenomena of teaching science in Japan, where it is practiced daily in the cultural context of Mahayana Buddhism.

## **METHODOLOGY**

I adopt a sandwich structure for this paper. Namely, it starts with a few concrete scenes in (science) education in Japan, followed by an explanation about spirituality in Japan. And lastly, the scenes mentioned earlier will be interpreted with from the perspectives of Mahayana Buddhism and Bushido. If these reflections provide a shift in the reader's perspective, the aims of this paper will be achieved.

## **FOUR SCENES**

### **(1) Ideal Image of Teacher**

When a person with a teacher's certification is looking for a teaching job in a school is asked in an interview by the school principal, "What is your ideal image of teacher?", how does the person being interviewed usually reply in your country? The reply is likely to differ across personalities, countries and cultures. Some of you may reply, "We won't be asked such a question", however, this is a typical scene in Japan. A young Japanese graduate may reply: "I want to be a teacher, being besides/among students, who thinks of kids primarily. I want to support the growth of the whole person." This reply is easily supported as normal by many Japanese people. In this far-East country, there is a well-recognized virtue among teachers to pay priority consideration to children, more so than to teachers themselves. Such values are formed in the cultural condition. Can we interpret this as an influence of Mahayana Buddhism?

### **(2) What is Education Aiming at?**

This was a veteran teacher's resolution that I heard during my student teacher training period in late 1980s. Teachers can transfer knowledge, skills and attitudes to students and can help students' problem-solving ability in classes and in school projects. However, teachers are not allowed to support them all the time, especially after students have been promoted to the next grade or even after graduation. The fundamental and eventual target of education is to bring up kids to solve any problem in any situation by themselves. This ultimate target relates to the teacher's own meaning of existence.

### **(3) What is the adequate word?**

This is my favorite sentence which I found in a famous old book (Suzuki, 1934: p.29). Showing this sentence, I often ask participants of my oral session in a conference, "What is the adequate word for the blank in this

sentence?”

[ ] wants us to acquire an entirely new point of view whereby to look into the mysteries of life and the secrets of nature.

You may agree that one possible answer could be “science.” Does this relate to Buddhism?

(4) The answer is given by the experiment

I sometimes call a retired talented teacher to my class (“methodology of science teaching”) which is for undergraduate teacher candidates. He often insists like this. “Let students talk. Let them discuss. Ask their reasoning. Predict the possible results of an experiment beforehand. Let them discuss what result can be expected to be ‘proved’ before the experiment. Then, let them probe by themselves. The answer is given by the experiment. Not from the teacher.”

## **BRIEF EXPLANATION OF SPIRITUALITY IN JAPAN**

### **Buddhism in Japan**

Buddhism was founded by Gotama Siddhatha (463BC-383BC) in India, around 430BC. He is believed to have become the first fully awakened one. Based on the thought of emptiness and mutual dependence upon multiple causes and conditions, he proposed to be awakened by the final extrication out of the Indian indigenous thought of reincarnation. Furthermore, tolerance and compassion were emphasized as in other religions. About one hundred years after his death, the original cults were divided into two major groups (Great Schism) which are called “Theravada” and “Mahayana.” The former group adheres to the original teachings, mainly aiming at individual enlightenment. And the latter ultimately aims at universal salvation, or to save others, or work for others, where the Bodhisattva way (mentioned later) is emphasized. As they spread, they divided into many sects. During a long journey, a monk and philosopher, called Nagarjuna (ca. 150–250 AD), organized the movement of Mahayana Buddhism. He provided the thought of the “middle way” which avoids extreme ideas and actions, and accepts a position that recognizes ‘A’ and ‘not-A’ simultaneously. As Mahayana Buddhism propagated to the north-east it was influenced by Confucianism, Taoism and Zen in China. Thus Buddhism had been transformed by the time it was introduced into Japan in 538AD (Choi, 2007).

Confucianism which aims at practical humanity and emphasizes the relationship between the upper and lower, was adopted by Samurai society, or the military nobility of pre-industrial Japan. In Taoism, the ultimate ideal is to be at one with the tao (i.e., the fundamental truth of the immortal universe and life), and because of its freedom and anti-authoritarianism it has penetrated deeply throughout Eastern societies. “Zen” is the Japanese equivalent for the Dhyana, which “represents the human effort to reach through meditation zones of thought beyond the range of verbal expression (Nitobe, 1899).” It also maintains a distance from authorities.

For an easier explanation of the Bodhisattva, I have borrowed four groups of Buddhism statues from my country. The top group is called the Tathagata group. Those are already awakened existences. Because they have already awakened or become enlightened they do not care about what they wear. Since they wear very simple clothes you can identify easily if a statue is Tathagata by focusing on their clothes. Some Tathagata salvations are by wisdom and others are by medicine. They each have a specialty. They save people by virtue that was gained in their training. I do not have to emphasize that many monks and believers train to be close to Tathagata Buddha. The second group is the Bodhisattva group, which is an important representation in Mahayana Buddhism. They are on the path towards becoming awakened and they have enough ability to become enlightened. However, they often postpone their own practice, preferring to stay in this world and to relieve sentient beings, standing beside or with people. Each Bodhisattva has a specialty, too. Some Bodhisattva relieve people by compassion, some by wisdom, and some go everywhere holding a long walking-stick to relieve children. Since the third and fourth groups are guardians with anger and Indian original gods, I omit their explanation.

I need to add an episode given by Gotama Siddhatha as his second last teaching. When his death was close, the disciples pleaded with him for guidance on what to do without their mentor. The following was his reply.

Do Not Believe in Anything

Do not believe in anything simply because you have heard it

Do not believe in anything simply because it is spoken and rumored by many

Do not believe in anything simply because it is found written in your religious books

Do not believe in anything merely on the authority of your teachers and elders

Do not believe in traditions because they have been handed down for many generations

But after observation and analysis when you find that anything agrees with reason and is conducive to the good and benefit of one and all then accept it and live up to it

(<http://www.teachingsofthebuddha.com/do-not-believe-anything.htm>)

## **Bushido**

To illustrate the cultural background of education in Japan, I found that I cannot ignore Bushido, or the obligation of the military nobility of pre-industrial Japan. It was also influenced by Buddhism and Confucianism. I have used an old book written by Inazo NITOBÉ (1862 - 1933) who was one of the Last Samurai. Interestingly he later became a Christian and worked as the Under-Secretary General of the League of Nations. His book “Bushido”, first written in English, is known as the first book of Japanese culture written by a Japanese. In Confucianism five virtues (Benevolence, Rectitude, Politeness, Wisdom, Veracity) are emphasized, however, Nitobe added a few more virtues (Honor, Loyalty and Courage) to match Samurai culture and uniquely proposed a structure among them (Yamamoto, 2012: Fig.1).

“The tripod which supported the framework of Bushido was said to be Chi, Jin, Yu, respectively, Wisdom,

Benevolence, and Courage (Nitobe, 1899: Ch.10).” Benevolence is “Love, magnanimity, affection for others, sympathy and pity, were ever recognized to be supreme virtues, the highest of all the attributes of the human soul. (Ch.5)”

To take a closer look into Japanese education, it is better to focus on politeness and the goal of Samurai education which aimed at the perfection of the whole person.

“Politeness is a poor virtue, if it is actuated only by a fear of offending good taste, whereas it should be the outward manifestation of a sympathetic regard for the feelings of others. / It also implies a due regard for the fitness of things, ... For propriety, springing as it does from motives of benevolence and modesty, and actuated by tender feelings toward the sensibilities of others, is ever a graceful expression of sympathy. / Its requirement is that we should weep with those that weep and rejoice with those that rejoice (Ch.6).” “Modesty and complaisance, actuated by respect for other’s feelings, are at the root of politeness (Ch.5).” “Without veracity and sincerity, politeness is a farce and a show (Ch.7).”

“The first point to observe in knightly pedagogics was to build up character, leaving in the shade the subtler faculties of prudence, intelligence and dialectics. ... Intellectual superiority was, of course, esteemed; but the word Chi ... meant wisdom in the first instance and gave knowledge only a very subordinate place. (Ch.10)” “Of the three services of studies that Bacon gives, -- for delight, ornament, and ability, -- Bushido had decided preference for the last, where their use was ‘in judgment and the disposition of business.’” “It is the parent who has borne me: it is the teacher who makes me man. (Nitobe, 1899).”

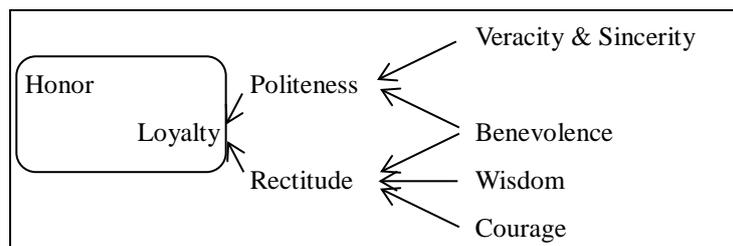


Figure 1: Structure of virtues in Nitobe’s Bushido (Yamamoto 2012)

## UNIFICATION WITH PRACTICE AND THOUGHTS

### Reinterpretation of the Scenes

#### (1) Ideal Image of Teacher

Firstly, it might be easy connect the ideal image of a good teacher in Japan and the image of Bodhisattva, one of the key characteristics of Mahayana Buddhism. They have an existence besides people or students, training themselves and offering a helping hand to others. Secondly, the concepts of “emptiness”, tolerance and compassion, emphasized by Gautama Siddhārtha, and Nagarjuna’s “going the middle way” all effect the

teacher's attitude of devotedness and equality. Thirdly, the growth of the child as a whole person derives from Bushido thought. Interestingly, without being consciously aware of this cultural background most Japanese people, including teachers, share the image of a good teacher.

(2) What is Education Aiming at? / (4) The answer is given by the experiment

Two of these are interpreted in relation to the citation of Gautama Siddhārtha's second last teaching. Bodhisattva gives help to people anywhere anytime but teachers are limited to working in schools. Because teachers cannot be full-time Bodhisattva they prefer to work more seriously. Ultimately, teachers want or need to let their students have the ability to make decisions and act by themselves. These goals remind us of discussions about Scientific Literacy and the goals of Science-Technology-Society (STS) Education. Here we find another parallel between Buddhism and modern science education. The way of the teacher is an endless training of the-Self which is dedicated to students. This notion also fits Mahayana Buddhism.

(3) What is the adequate word?

In Japan, the adequate word for the blank shown in the sentence is "Zen."

[ Zen ] wants us to acquire an entirely new point of view whereby to look into the mysteries of life and the secrets of nature.

Of course, it is not sufficient to conclude that there are great similarities between Buddhism and science based only on this evidence. They have different backgrounds and approaches, however, there is a common goal that they share.

### **Another Interpreted Scenes**

Two other related stories are introduced here.

(1) The retired, talented science teacher, Mr. Hiramatsu, used to be on a Japanese television show on the education channel, in 1980s. I recently found a retired voice actress of a puppet, Kikuko Kinoshita, who worked together with him. I had an opportunity to communicate with her in September 2012. This is the summary of her talking:

At that time of the radio era, adult actors and actresses needed to talk in a kid's voice without visual images. This was the same situation as a voice actress on the TV program. Only through the voice could listeners imagine their own story and enter into the world of drama. It was not easy work at all to act like a child naturally. I was not skillful, I read the script again and again, left the studio, opened the heavy door, keeping distance from adult co-workers, practiced many times until I was satisfied. There was an elementary school near my home, I saw several kids playing.

I went close to them, talked, played with them, to learn their characteristics of natural talk which is different from adults'. At that time, all programs were live and could not be re-played, no excuse. So, still some stories are word-perfect. As professionals, not only me but all staff must be in tense. I got married, kept my home things and became a mother later. However, after I go out of the door of my home, took a train, went into the gate of NHK, broadcast company, and to the studio, I totally switched myself into an actress of a child. Unconsciously, I depressed and depressed my adult mind, way of thinking, sense and voice, in my mind, to accomplish emptiness, not to lose the mind of children. Looking back, I have acted children through my life for about a quarter century. "Children's Voice Actress" seems to be special and there were a lot of difficulties. I am unable to contain my joy and fun to establish such a special, my own world.

Normally, an actress should express herself in a play, however, the best way she chose was to depress herself and to aim for emptiness. This can be a symbolic example of the contradiction where "A" and "not-A" co-exist simultaneously. We can find the "middle way" in her choice.

For teachers here are common responses which are often heard in lesson study or discussion of student teacher teaching. "Your answering was not fully conscious in the moment." "You talked too much. You should have restrained yourself and let the student explain at that time." Bodhisattva teachers do not provide merely right answers or knowledge to immediately save students from their mistakes or failures. They do teach, but also they do not teach.

(2) Japan is a nation that the aims of education are stipulated by law. In the first article of the Basic Law of Education, the objective of education is stated as "the perfection of the whole personality". It is obvious that this goal has originated from Bushido. The ultimate goal of education has been retained even after modernization which was about 150 years ago. Additionally, the basic law was reformed recently, but this goal statement has not been changed.

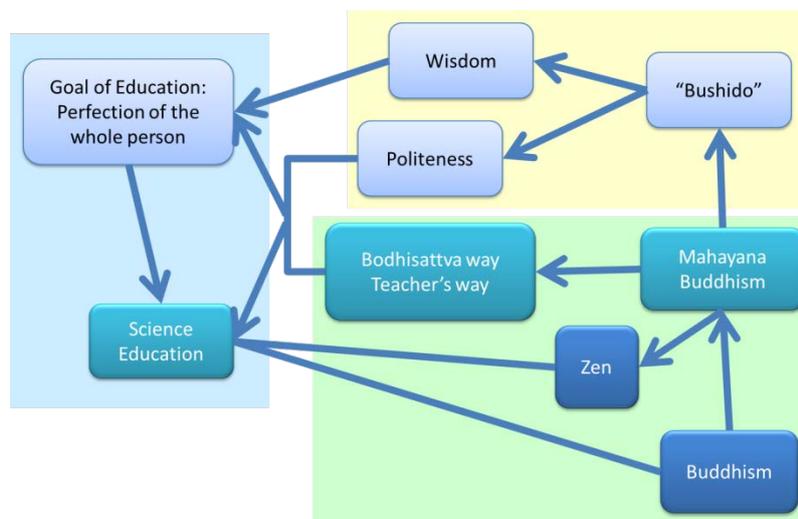
## **CONCLUSION AND IMPLICATION**

I started with a hypothesis that "Japanese science education practice was influenced by Mahayana Buddhism" and I realized that "the Bodhisattva way is similar to the desirable teacher" and that there are similarities in the ways of Buddhism and science education. Additionally, referring to the work of Inazo NITOBÉ, I discovered another root of my/our virtues, which relates to our education and culture itself. The notions are somewhat complex, but I could refine them and make a little progress towards illustrating the whole picture in a concept map (Fig.2).

If the framework proposed in this paper causes you to agree that education and culture might be mutually related then I may be allowed to insist on the validity of my research.

The key of educational reform is the teacher. To transform the self, even without being fully awakened, there is a

need for self-reflection by teachers (Taylor et al., 2012). I hope this research contributes to culturally conscious teacher education in the field of transformative education in the East-Asia region.



**Figure 2: Outline of related concepts.**

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