ISSN 2189-9460

Theory and Research for Developing Learning Systems

Volume 2 ／ March 2016

RIDLS
学習システム促進研究センター

Theory and Research for Developing Learning Systems(TRDLS)

Volume 2, March 2016

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Theory and Research for Developing Learning Systems

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ISSN 2189−9460

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(TRDLS)

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Edited by
Research Initiative for Developing Learning Systems
(RIDLS)

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Research Initiative for Developing Learning Systems(RIDLS)

Presentations in Hiroshima and Tokyo, Japan July 23–26, 2015

How do we learn Virtue, Character, Morals and Social Responsibility?

Stephan Ellenwood

School leaders around the world are more and more accepting responsibility for including social and moral education in their schools. Expanding a traditional academic curriculum to include these two issues usually generates a great deal of enthusiasm, confusion, and criticism. Thus, it is important for educational leaders, teachers, parents, and community leaders to think and plan carefully about the history, philosophies, and research pertaining to these broad reforms.

First, it is valuable to be clear about the two central elements of this broad educational reform−a curriculum that enables students to grow into young adults with individual integrity and good character as well as a curriculum that helps students develop into socially responsible and civically active members of their communities. For many generations and in many countries these key elements have been excluded from schools and were presumed to conducted in other parts of a student's life; that is, in their homes, their churches, and community agencies. Often today that presumption is unwarranted.

Second, two powerful forces−globalization and rapidly expanding technology−have transformed the lives and learning of young people. One of the transformations affecting students social and moral growth involves their instant access to vast new information sources, ideas, and differences. Thus, schools need to provide guidance so students can integrate their traditional academic subjects with their emerging capacities to make consistent, clear-eyed moral and civic choices.

Third, the basic modes of analysis across subject areas are part of the solution, but those must be much better integrated with students decision-making talents so that ethical, moral, and socially responsible dimensions are regarded as just as vital as strictly rational analytics. The ability to reflect carefully and collaboratively about these kinds of daily decisions is the foundational ingredient of effective social and moral education.

Key Words: Virtue, Character, Social and Moral Education

Across a wide range of cultures teachers, parents and school leaders have been challenged to provide effective education in values, ethics, morals, virtue, and character education. This challenge usually emerges from a cacophony of reports about failures of individual character, particularly among the young. President Theodore Roosevelt has long represented many basic, classic American values. Early in the last century, he explained that "to educate someone in mind and not in morals is to educate a menace to society." Unfortunately too many have failed to understand his warning. And additionally, his warning could have been better expanded to include not only education about individual morals and virtues, but also education about each individual's social-civic responsibility. The failure to teach students about the complexity of moral situations, both individual and civic moral problems, is not merely an oversight lost amid many other school responsibilities. Teaching this complexity is often risky and as a result assigned low priority. Because there are always many other pressures, schools and state legislatures often make a conscious choice to focus heavily or exclusively on the development of academic talents. This leaves matters of each student's character growth to others. As a result, our national civic mind eventually suffers from a stultifying and artificial separation of academic and intellectual powers from moral decisions and behavior.

Too many educators are unable to resist the temptations of small, measurable bits of information which keeps their emphasis on a narrow version of traditional academics. This means we have not developed good answers to T.S. Eliot's important questions:

> "Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?"
>
> "The Rock"

It is important that the basic question driving this conference is wider: "How do we Learn Virtue, Character, Morals, and Social Responsibility?" I propose that these important capacities, which in significant ways are teaching wisdom, are learned in these ways:

1. Through Examples
2. Through Collaborative Academic Study-Analytic and Aesthetic
3. Through Careful Reflections on Experiences.

While educators have devoted enormous amounts of energy; time, resources to academic achievements (represented primarily in comparing international standardized test scores), they have correspondingly ignored education in morals, character, and social responsibility. Similarly, this entire process has narrowed not only the content of teaching and learning, but also the process of teaching and learning. Michael Novak has attempted to restore the importance of educators as exemplars for students. He makes important distinctions that apply particularly to students learning through examples. We can extend his claim from students modeling themselves on individuals to also include modeling according to values that schools, communities, and institutions represent. According to Novak

> Contemporary studies in ethics, especially in Anglo-American philosophical circles, concentrate upon logic and language. I wish, instead, to concentrate upon the drive to understand and upon the myth of symbols. My reason for doing so is that men seldom, if ever, act according to principles and rules stated in words and logically arranged. They act, rather, according to models, metaphors, stories and myths. Their action is imitative rather than rule abiding. Prior to their intention to obey sets of rules they are trying to become a certain type of person.
>
> (Novak, 1970, p.26)

John Goodlad over 30 years ago identified this problem succinctly. He argued that we must overcome a major difference: "Students go to schools; teachers go to classrooms." He is concerned that students are heavily influenced by the message, direct and indirect, from schools to students when a school is no more than a collection of discrete classrooms. This influence is especially noteworthy in education about morals, character, and social responsibility. There has been a long, unfortunate tradition in American schooling that schools somehow teach academic competence without teaching about morals and civic responsibility. Educator often regarded these latter obligations as the responsibility of families, churches, and other social-civic agencies. As that developed schools began to serve as an exemplar of an actual false dichotomy. It is not only unwise to separate these matters, it is impossible. By privileging academic education so markedly schools are in fact providing an incomplete education, academically and moral. It is impossible to fully understand a concept academically while excluding the moral dimension. And it is impossible to hold many moral positions while ignoring an academic component.

But the concerns and hesitations by educators are not completely unfounded. Many educators and some schools have overcome the challenges, particularly, the challenge embedded in the question – "If you are going to have the schools teach morals, then how do we decide what morals to teach? " This is an especially complex question in a multi-cultural society. To tackle that issue we must turn our attention to a key element in the teaching morals matter; what is meant by the phrase "to teach morals."

A group of successful students recently graduated from fine liberal arts Colleges were preparing, as graduate students, to become teachers. They were asked to rank the priority of important educational goals for the public schools. This group generally had understood the educational system in which they had been so successful for sixteen or more years. Of ten commonly cited goals for schools, students were most hesitant about setting "to teach moral values" as a high priority. They usually ranked it last or next to last. However, another group of students with the same background and professional aspirations using an only slightly modified list of the same ten goals ranked the phrase "to teach about morals" as one of the most important goals of schools. In the discussions of this prioritizing it was clear that the first group was deeply afraid that "to teach moral values" really meant instill or indoctrinate a specific set of moral values. They claimed that doing so would clearly violate all academic traditions as well as the important separation of church and state. They also thought that somehow doing so would violate the basic pedagogical value that encourages Students to explore options and draw their own conclusions. In the second group, the responsibility "to teach about moral values" drew strong support as a high priority because the group understood that teachers could discuss moral issues without the teacher exercising any leverage compelling an individual student to hold a particular set of values. They also hoped that by having such open-ended discussions teachers could avert declaring a position that would aggravate members of the community at large. When a group of talented young people, successful in schooling and eager to become teachers, equates the verb "teach" with "instill," "inculcate," and "indoctrinate," great care must be taken. Unfortunately, the discussion about teachers' rights and duties in studying moral issues in schools has often not proceeded far beyond this simple misunderstanding of the verb "teach." Nor has it often extended beyond the simplistic dichotomy that schools can only either indoctrinate or avoid values.

But the question remains of what morals and civic responsibilities should schools teach about when it comes to morals and social responsibility? On the first level schools should see themselves as forums for

diverse ideas needing careful analysis and reflection. If schools restore some balance between academic achievement and the development of student capacities that lead to wisdom, they must recognize that the real and respectful exchange of ideas is a fine goal in and of itself. Doing so enables students to see that moral questions that are individual and moral questions that are civic are complex, interdependent, and cully mutually informing.

Let's look at an example of each. Students seldom have a problem knowing that being honest is better than dishonest or that kindness is preferable to being unkind. But those are individual virtues in which one gradually declares that he or she will be an honest, kind, reliable, responsible, respectful, diligent person. Those are all individual virtues that we can commit to as individuals and entirely on our own. Some educators have suggested that our duties as educators end with that. But two issues arise. First, what does a student do when two moral values are in conflict, known as the problem of competing goods? Second, what do we do about moral values that extend to broader community and civic decisions, policies and responsibilities?

Let's take up the competing goods problem first. When the standards of honesty conflict with the standards of kindness in a particular situation students need guidance on how to sort through the nuances and implications. For example, in simple but intensely personal situations, such as asking children how they like Aunt Betty's pie while in Aunt Betty's presence, we are asking for subtle judgments to be made quickly. One answer may be preferable to another, and students need to think carefully. Responding to the question about Aunt Betty's pie is one kind of moral-value judgment that is made spontaneously. Practice in this kind of judgment is important. Students have to assess quickly how to be honest and kind and how they can be caring toward Aunt Betty. Real life decisions are complex, demanding, evolving and involving. Too often, providing students, a list of important virtues is of little help because they are too simplified, abstract, sterile and independent.

We do learn by example. We also learn about moral values and social responsibility by more traditional academic classroom teaching. There are two rich sources for teachers that Jerome Bruner identifies in his 1986 book, *Actual Minds*, *Possible Worlds* (Bruner, 1986) He describes two basic ways people make sense of experience and construct reality. Bruner's two modes of mental functioning are propositional thinking and narrative thinking. The first, propositional thinking, accords closely with what we usually mean when we discuss cognitive functioning. It is the kind of thinking that schools encourage in students, the cause-and-effect thinking which we learned regularly in formal education. Bruner describes this propositional thinking as a "logico-scientific" attempt to arrive at conclusions which are abstract and context-independent. The second is narrative thinking that is enmeshed with people and events, with time and place. It is concrete and context dependent. To think narratively is to think in story form. Actions and ideas are lived out in the intuitions, intentions, decisions, and experiences of each individual. While propositional thought may be more highly regarded for many human ends and in academic settings, narrative thinking, in many ways, is more fitting and more effective in helping students develop complicated moral understandings.

The clearest and most famous example of the propositional thinking in the area of moral education is the plan constructed by Harvard's Professor Lawrence Kohlberg. Kohlberg predicated his reform on the analytic processes necessary for Students to resolve moral dilemmas. The ultimate goal is justice in a universal sense. Thus, to Kohlberg, the student's conclusions are universal and basically independent of cultural differences as well as independent of individual choice.

The strengths and weaknesses of the Kohlberg

approach are epitomized in a moral dilemma often used by teachers. In simplified form, a young German woman in Nazi Germany is faced with the opportunity to possibly save her young Jewish friend. To do so, she will have to break German law and risk her fate, her family's, and her friend's. In determining a course of action, the Kohlberg-trained teacher is urged to provide a rationale and a clear, concise set of classroom procedures that reveal to students the strengths and weaknesses of each option. The procedures include rational/analytic questions and more general contextual questions. However, the overall strategy omits any sustained discussion of how this larger crisis came to be and, more specifically, how it could have been avoided. It also avoids the vital nuances of narrative analysis.

The heavy emphasis on discrete and artificially constructed cases can amount to an ahistorical and decontextualized habit of mind in students and, eventually, in our nation's civic mind. It is tantamount to the Harvard Law School Dean who claimed that the persistent study of only cases in law schools is like trying to educate horticulturalists by only allowing them to study cut flowers.

Concerns have been raised about the Kohlberg model being too rational and analytic. Good teachers recognize that the students' intellectual cognitive development must be taught interdependently with their emotional development. A lack of attention to the emotional, non-cognitive development would actually restrict the students' moral judgment capacities.

One of Kohlberg's Harvard colleagues, Carol Gilligan, has presented a specific challenge to his moral development model. She claims that Kohlberg completely omits the "morality of caring" that characterizes women's approaches to the kinds of dilemmas found in Kohlberg's materials. She asserts that Kohlberg's base of empirical data, upon which his curriculum is built, derived from a study of 84 boys over period of 20 years. The result, she concludes, is that the very traits that have defined the "goodness" of women, that is, their care and sensitivity to the needs sf others, would "mark them as deficient in an analytic model of moral development." Kohlberg's putatively higher and better stages, Gilligan claims, are inadequate to the lives of women in which their moral problems arise "from conflicting responsibilities rather than from competing rights and requires for its resolution a mode of thinking that is contextual and narrative rather than formal and abstract" (Gilligan, 1982, p.19).

Beyond the academic analytic model – morals, character, and social responsibility in classrooms – is the academic aesthetic model taught less often in classrooms. A good example of this would be a literature based curriculum on morals and social responsibility. This aesthetic approach could be used with other types of art, but must be based on a clear understanding of John Dewey's important observation:

> "As long as art is in the beauty parlor of civilization, neither art nor civilization is secure."

Literature teaches us the important talents required for imagining the lives of others. A long list of desirable character traits like honesty, courage, respect, fairness, persistence, and social responsibility can be taught to students abstractly. Using literature to identify the nuances of each of these traits is vital to having students value them enough to practice them on a daily basis. These nuances are also indispensable to enabling students to conduct the kind of wise judgments necessary to live a life of integrity.

Character education that is predicated upon literature and biography enables teachers to address important aspects of good character. It recognizes how true character is something more than a sum of individual character traits such as honesty, courage, and responsibility. Character also involves judgment, which is more than analytic problem-solving skills or decision

making skills. At times judgment seems abstract and ineffable to students. They recognize that is has to do with real, but largely remote, concepts like integrity, wisdom, and experience. However, in Harper Lee's contemporary classic, *To Kill a Mockingbird*, much of this is made compelling and clear. As students see Atticus Finch bring his sense of courage, humanity, respect, and justice to bear in an urgent situation, they realize that high principles are worth holding, thinking about, and putting into action. This kind of story is important secondly because it shows how individuals affect the course of events. Character education must be personalized for students to see how it is worth attending to. If the curriculum in history and literature ignores, or even de-emphasizes, the role of individuals, the course of history risks becoming inevitable. As soon as that occurs, the schools have unwittingly mitigated the importance of individual responsibility and shared deliberation. Thus, the concept of citizenship is seriously damaged.

In the final analysis we must provide students with a rich and refined vocabulary so they can make fine distinctions in ways that capture and respect a wide range of subtleties and nuances. An authentic understanding of these more refined vocabulary terms only occurs when students apply them to real-life situations. Helping students understand the value of and process of careful and constant reflection will lead to graduates who are well educated and far from Theodore Roosevelt's dreaded "menace to society."

And finally we learn morals through experiences-spontaneous and planned. We can extend the narrative model to the students' daily lives by asking them to keep a journal of events they observe in daily life. John Dewey explains that such events are merely happenings unless we reflect on them. They become learning experiences when we reflect on the causes and consequences of events we observe or participate in. Students who keep a log of reflections about the moral and civic meanings of daily events and who also share those ideas with their teachers and classmates develop a rapidly refined vocabulary and a much sharper eye for detecting vital details essential to a more mature understanding. Thinking collaboratively with classmates about spontaneous events is an opportunity schools do not use effectively for moral and civic education.

Teachers planning experiences beyond schools have often devised a rich opportunity for students to understand individual and social values. One of the widespread uses of these planned experiences are service learning programs, or as named in the UK, Youth Social Action Programs. Before considering service learning, or youth social action, think of Shakespeare's magnificent "quality of mercy" speech. In the Merchant of Venice Portia begins,

> "The quality of mercy is not strained.
> It droppeth as the gentle rain from heaven,
> Upon the place beneath.
> It is twice blessed,
> It blesseth him that gives and him that takes.
> It is mightiest in the mightiest,
> It becomes the throned monarch better than his crown."

Though the setting for Portia was judicial, both those leading school-based youth social action or service learning programs and the students experiencing them can easily recognize service to others is also "twice blessed." Providing service can be much more than merely helping others and good teachers realize such service is greatly enriched by detailed reflection about the nuances of such acts. The true benefits to the providers can only occur when teachers help students reject all forms of self-congratulation. Students in these programs come to understand richly how basic virtues such as humility, responsibility, respect, kindness, and gratitude, as well as the powers of careful reflection, derive from well-planned service and youth social action experiences.

At a service learning program in one of New England's poorest high schools students regularly help others who are even less fortunate than they. One of the high school students was a recent immigrant living with relatives who had arrived not too much before he arrived. In discussing with the school principal his thoughts about his service project he commented with obvious pleasure, "Ms. Binienda that was the first time anyone has ever needed me." As the conversation unfolded he realized the connection between his benefitting from the gifts of others and his emerging duty to help others. His story is a rich data point for anyone trying to explain, or account for, why an educational service learning program has to extend, in design and in implementation, well beyond the commonplace observation that service is really only volunteerism and charity. Extending beyond such simplistic descriptions is a foremost challenge for good youth social action education. The most effective ways to extend beyond simplifications require thoroughly preparing students for the experiences as well as developing thoughtful refection and debriefing components after the experience.

It is easy to imagine service learning and youth social action as a curriculum bangle − costume jewelry to brighten the solid, stolid characteristics of the basic curriculum. Sometimes public relations administrators pigeon-hole it all into a "helps improve community relations" space. It should never be regarded as an add on while all the rest of the school program continues to conduct "business as usual." Certainly service learning and youth social action programs have often been documented to:

--- improve scores on standardized tests

--- build authentic self-confidence

--- strengthen communication skills

--- improve problem-solving capacities

--- deepen students' abilities to work effectively with others

as well as other worthy educational goals. These are important. But in fact service learning and youth social action are much richer, much more powerful, educational reforms that can completely transform how we teach and how we learn, in and beyond schools. Far too many schools have become academic terrariums with their own little sealed and scripted learning biospheres. With careful planning and community collaboration service learning and youth social action programs can easily re-invigorate a school's basic curriculum and lay the foundation for achieving two of the most fundamental and often overlooked goals of schools; which are, developing life-long learners and developing students able to move beyond their own highly localized ways of thinking and participate productively with an ethic of social responsibility.

In the steady to and fro about whether schooling should concentrate on transmitting the culture or transforming it, these experiential programs provide potent opportunities for schools to meet both goals. Through reflective experiences, good schools refine and transmit the finest qualities, understandings, and virtues nearly all would like to develop in young people. And they can at the same time enable students to participate actively in solving deep-seated problems across society, not only during their school years, but during a life-time habit of community participation.

In order for an individual, a group, or a society to truly learn each learner must be a little unsettled from a homeostatic condition. Tolstoy put it simply, "education must be troubling." Important learning opportunities are often annoying and confusing. Well-designed service learning and youth social action programs require students to depart from their comfort zone. The most common complaints about schooling deve from the passivity too often required of the learner. But, if learners are disturbed from their expectations and are a bit puzzled, then their intellect, emotions, curiosity, and creativity are stimulated. Well-crafted experiential education programs involve the students in

planning prior to their providing service or conducting a social action. In Robert Coles' classic, *The Call to Service*, he illustrates the importance of those who serve being completely respectful of those being served. One clerical leader, a veteran of many service projects, explained that "The last thing the kids in the ghetto need is for snotty kids from the suburbs to come into their neighborhood− or invade their neighborhood -in order to show how smugly virtuous they are." (Coles, 1993, p.59) It is important to add that "smugly virtuous" is the very last thing that the kids from the suburbs need as well. Any completely effective service learning or youth social action activity must be built on a foundation in which the students learn how to serve. They start by learning that much more is involved than an act of charity. Before they can learn from their serving they must learn about how to provide service in ways that form a collaboration with those served. Careful pre-planning by teachers and students is the vital center of the learning to serve dimension. Though service is fundamentally characterized as a giving event, it is just as important to students that they understand it must all be rooted in truly understanding and caring about the recipients. The more they know about the culture, history, problems and opportunities in the served community the more they will better interact on a personal level with the recipients. Successful service learning programs help service providers elicit personal narratives from the recipients. Understanding how to have those conversations is a vital part of the learning to serve phase. Though thorough preparation is important, we must also recognize that while delivering the service or completing the social action students must remain capable of and willingly accept surprises. Far too much of schooling these days is based on pre-digested understandings. The steadily heavier emphasis on standardized testing has only exacerbated that problem. Life is full of surprises, positive and negative ones, which means that educators must equip students to deal with life as it actually unfolds. Experiential learning is the ideal opportunity to develop this talent. The heavy emphasis on individualized testing also turns student's attention regularly to their own individual learning most often devoid of working with others. Learning how to productively collaborate with others generally is a vital skill for a successful adult life. In first-rate service learning and youth social action models students learn not only by reflecting on their own experiences and understandings, but also from reflecting on the complete life stories of others unlike them. Authentic, face-to-face human interactions including careful reflection about those experiences, cannot be anything other than transformative for what educators, students, and parents understand about learning morals and social responsibility.

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Theory and Research for Developing Learning Systems, 2：9-22, 2016
Research Initiative for Developing Learning Systems(RIDLS)

Presentations in Hiroshima and Tokyo, Japan May 27-June 3, 2016

Agency and Identity:
How Research Informs *Teaching for the Common Good*

Linda S. Levstik

As argued in Teaching History for the Common Good, the measure of a democratic society lies in the degree to which its members learn to exercise individual and collective agency in informed, intelligent, and humane ways and to demand the same from national and global institutions. One way in which teaching history can advance democratic aims involves the exploration of the historical roots of democratic dilemmas with particular attention to analyzing the differential agency available to individuals, groups and institutions in responding to such dilemmas. This paper draws on an on-going research project to explore the ways in which personal and aspirational identities support students' deeper engagement with history. Students' more nuanced understandings of how the past influenced the present led to interest in and concern for the power citizens have to shape those influences.
Key Words: History Education, Agency, Identity, Perspective, Civic Engagement

> Power concedes nothing without a demand. It never did and it never will. Find out just what any people will quietly submit to and you have found out the exact measure of injustice and wrong which will be imposed upon them. . . . The limits of tyrants are prescribed by the endurance of those whom they oppress.
>
> Frederick Douglas, 1857

The measure of a democratic society lies in the degree to which its members learn to exercise individual and collective agency in informed, intelligent, and humane ways and to demand the same from national and global institutions (Bourdieu, 2000, 1994; Hess and McAvoy, 2014; Parker, 2002; Levine, 2013; Levinson, 2012). As a quality of human experience, *agency* describes ways in which individuals, groups, and institutions ignore, support, resist, blunt, or otherwise alter historical conditions. As we suggest in *Teaching History for the Common Good*, history curricula with democratic aims would take Frederick Douglas' warning into account and not only explore the historical roots of democratic dilemmas but analyze the differential agency available to individuals, groups and institutions in responding to such dilemmas (Ayers, 2003; Sant, et al., 2015).

In writing *Teaching History for the Common Good* we drew on an extensive body of research that suggested that history education could inform a humane civic agency that acknowledges and respects citizens' intersecting and sometimes conflicting identities. Because this is a considerable challenge, we continue to examine how this might work. In recent years I have worked with colleagues in archaeology to investigate how archaeological methods and concepts might help in this regard (Levstik, 2014; Levstik & Henderson, 2016, 2015; Levstik, Henderson & Lee, 2014). Our most recent work (Levstik & Henderson, 2015), speaks directly to the intersection of agency and identity. Briefly, students age 10-13 studying in predominantly (97%) European American, Protestant, high poverty ($27,000 median family income) and rural schools used archaeological and historical sources to examine a civic controversy involving a working poor community (Davis Bottom) in an urban area near their communities (Youngman, 2015; U.S. Government, 2014).

Established as a haven for newly freed African Americans in 1865, Davis Bottom thrived for a time. Perhaps the most interesting aspect of Davis Bottoms' history involves how it became an integrated neighborhood—the first in its city—and, over time, home to generations of black, European immigrant and Appalachian families. Faced with the destruction of their tight-knit community to make way for highway consruction, residents wanted to make their stories public. The concessions they demanded from a city that had discounted them for over eighty years included creating affordable housing while preserving historical aspects of their neighborhood. Among other responses to community concerns, the city funded historical and archaeological work in Davis Bottom. As a result, Dr. Henderson and I had access to rich historical and archaeological sources to support student investigation (Levstik & Henderson, 2015).

As we designed this study, Dr. Henderson and I thought we had a powerful inquiry into a civic issue, the destruction of a community whose deep historical roots could be explored using a wide variety of sources. We knew from previous studies that students identified archaeological study as investigatory, but we were not sure how they would respond to investigating a community that was economically similar but urban and racially quite different (Pew, 2008; U.S. Government, 2010). Our observations indicated about six minority students across the four schools, but only one of the study participants identified as black. In one of the schools (5b) students recalled one black student ever attending their school. Only two students described any significant personal experience with individuals from other racial or ethnic groups. The

majority experienced differences in race or ethnicity at a distance, through media, occasional trips to larger cities, and by listening to the adults in their lives.

As it turned out, students strongly identified with the residents of Davis Bottom as "normal" and "real" people like themselves, working hard against overwhelming odds and facing discrimination when they left their community. They did, however, identify a disjunction between their own communities and Davis Bottom that surprised us. Students described Davis Bottom, the poorest neighborhood in its city, as an enviable place where children played together outdoors, were watched and cared for by the entire neighborhood and where adults were mutually supportive and interacted with each other on a regular basis. This, students said, stood in stark contrast to the isolation they experienced in their own lives.

Several factors seem to be at play here, beginning with how powerfully students focused on the lives of children in Davis Bottom. Studying shelter involves studying the people sheltered—the size and composition of households, the affordances and constraints of a particular type of shelter on the lives lived within it, the day to day social, cultural and economic activities that engaged residents. Students examined the detritus of other lives from historical documents tracing early settlement and housing patterns and artifacts of daily living found when the privy and house were excavated to oral histories of lives spent in Davis Bottom. Many of these sources provided evidence of children's communal play. For example, in every interview group, students expressed some degree of envy for children who had playmates nearby and the freedom to enjoy themselves outdoors. With a tiny handful of exceptions, student participants were not allowed to wander their neighborhoods on their own. Only two children reported playing outside (usually basketball) on a regular basis. And, they admitted, computer games often kept them indoors and by themselves. As a result, life in Davis Bottom had considerable appeal—at least in the abstract.

Focusing on shelter had another advantage in not presenting Davis Bottom and its people as a problem for investigation. Rather, Davis Bottom was presented as an answer to the lack of housing for free blacks in post-Civil War Kentucky. Historical sources described the community's origins as motivated by emancipationist aims (Davis, 2013; Law, 2013; McDonald, 2009). Fire insurance maps, photographs and census records allowed students to examine housing patterns, occupations and family structures in order to interpret the kind of lives people might have lived as the community integrated. They knew exactly how big a neighborhood house was likely to be—they had laid one out on the playground. Their examination of census data allowed them to conclude that some households included multiple families and that black and white families lived side by side. Reading the fire insurance map, they noted the juxtaposition of commercial, recreational, religious and residential structures. Oral histories introduced them to residents who described their community as a good place, and safer, in many ways, than the surrounding city with its daunting array of discriminatory practices.

Although photographs showed how poor the community would have looked to outsiders, had those outsiders ever ventured into the neighborhood, in all but one fifth-grade classroom, students looked beyond houses in disrepair to search out details of lives they thought should be recorded and remembered. If anything, the perspectives represented in the sources led students to romanticize rather than demonize Davis Bottom. Students addressed the civic issue—road construction at the expense of affordable housing—as a form of official urban neglect and concluded that residents deserved a different outcome than demolition, even if a land trust would eventually provide affordable housing.

Students' overwhelmingly positive analysis of integration in Davis Bottom also defied our more

pessimistic predictions. Only one of the sixty-seven students thought that different races should live separately to prevent the protests and street violence he had seen on television. All the other comments were striking for the remarkable degree of longing they exhibited. As it turned out, these students envied a community where it appeared that people "got along" across racial lines, where, in fact, racial lines seemed not to matter to the degree that they did elsewhere. Even when they thought it likely that power was more often in the hands of white people, they reported this as a sad fact, rather than the natural order of things.

To some extent, this response was supported by the sources students examined. In the oral histories, for instance, residents tended to locate virulent racism outside Davis Bottom. It occurred more often when residents visited or worked in other parts of the city, or when their children went to segregated schools. And, because this community was a *bottom* economically as well as topographically, helping each other might be considered less a social nicety or moral high ground than a life-saving necessity. As one resident commented, too, not everyone was quite so community oriented as some of the oral histories suggested. She estimated that about 75% of the population included "good people" and the other 25% accounted for the bad reputation the community had among outsiders (Law, 2013). In many ways, then, students' discussions of race were naïve (Bolgatz, 2005; Epstein, Mayorga & Nelson, 2011; Lee, 2005; Segall, 2014; Thaneka, 1999). They are nonetheless important because they represent, at least in part, the impact of an instructional shift from race as an inevitable problem to race as a fact of community, and community as an agent of positive responses to social change.

Students may not apply their analyses of race relations in Davis Bottom to whatever encounters they have across racial boundaries in their own lives. One study is unlikely to have so profound an impact. Students' descriptions of racial harmony appear to represent what students wish for but do not always experience in their own lives. Their wonder at and enthusiasm for a peacefully integrated world may also reflect trepidation about encountering more volatile responses in their home communities and elsewhere. The poignancy with which they express their concerns about the racist views of friends and family contrasts with the world suggested to them by Davis Bottom, where help and friendship were less bound by race (Bolgatz, 1999; Lee, 2005; Thaneka, 1999).

The city's decision to demolish Davis Bottom to make way for a major thoroughfare struck the majority of students as a bad idea. They thought residents should have had more say in what happened to their community. They were also convinced that this would not have happened to a wealthier white community. However, when asked what alternatives were available to people on any of the various sides of this public issue or how citizens might have intervened at any point over the years, they struggled with institutional agency. They knew little of how government might be involved in resolving community issues, and were equally unfamiliar with such functions in their own communities. Fifth graders in the smallest rural school, knew something of the separation of powers at federal levels of government but were unsure of how their community was governed—whether there was a mayor or if they were incorporated into a nearby town. By seventh grade some students were pretty sure that ordinary people had little power relative to any level of government. One of the seventh graders captured this sense of defeat in the face of larger powers, explaining that the people in Davis Bottom had done everything they could to "make everything better, but there is really not much you can do without a lot of money. . . the city kind of over-ruled them and that is why they destroyed it to make the road (SM7). Another concluded that decisions about Davis Bottom "shows people. . .what the power of the city can do to a neighborhood" (SH7).

Not all students were quite so pessimistic. Some fifth and sixth graders thought that talking to government officials had, in fact, helped in making sure that residents were assured of housing once the road was completed. Asked who the most powerful people were in determining the fate of the community, however, they, too, noted that prejudice and poverty had led the city to ignore Davis Bottom for almost a century. Seventh graders explained that even in this seemingly equitable community "that probably the most powerful people [from 1865 to the present] were the white people. Even if they are ok living with black people, I think [whites in Davis Bottom] had the most power in that neighborhood"(EM7). One of her interview partners considered this argument, then offered a different interpretation:

> HM7: I think the people with the most power was the people who were willing to change their neighborhood. . .because they were willing to stand up for their rights, stand up against the racist people like maybe powerful white leaders who didn't want them to have rights even though it was legal, since the Civil War. The people who had the most power were the ones who stood up for each other and for themselves and for their community. They were willing to change their way of life, others' way of life, and basically how life would be for future generations.
>
> EM7: That was a *really* good answer.

Fifth graders more often represented Davis Bottom as an example of social justice. Asked what that meant, one student responded that "justice is like peace" and people "don't treat each other bad" (G5b). As the fifth graders explained it, a more just community encouraged active civic participation, even when prejudice and poverty constrained people's civic agency.

Teaching for the Common Good?

What does this study have to do with teaching history for the common good? In my previous work investigating the impact of archaeology on students' historical thinking my colleagues and I noted the distinctions students drew between archaeology as inquiry, and history as learning the end results of someone else's inquiry (Levstik, Henderson & Schlarb, 2005). We argued for expanding students' historical repertoire to include greater attention to material objects, landscapes, and oral histories as sources and to collective agency as a way to help students imagine taking historically informed individual and collective civic action (Levstik, Henderson & Lee, 2014). The findings from this study lead us to argue for more careful attention to three types of *positionality*—how questions and sources position historical content, how historical inquiries position students in relation to civic agency, and how students' identities position them in relation to historical questions, sources, content, and civic agency.

First, in emphasizing the importance of understanding working class people in a historically integrated neighborhood, the Davis Bottom inquiry called students' attention to race as a connective rather than divisive feature of community. It also identified collective agency as a powerful response to racism. As one of the seventh graders explained, people were "willing to stand up for their rights, stand up against the racist people" in order to "change. . .how life would be for future generations" (HM7). As a result, the inquiry provided a space for discussing what might otherwise have been a more volatile topic (Bolgatz, 2005). Further, the majority of the inquiry was not oriented towards debating the *governmental* response to a public dilemma, but to investigating the richness of the lives lived in the path of governmental decisions. As a result, students addressed the civic dilemma on a very human rather than institutional scale.

Second, the question and sources that initiated student inquiry positioned *shelter* as provisional—a

sometimes fragile thing that could be lost—rather than as a given—something to which everyone had access. The questions focused inquiry on three aspects of the common good: a very human need for shelter, an equally human fear when facing the loss of shelter, and a profound debate about a humane response to threats to shelter.

The primary sources emphasized individual perspectives through the oral histories and the collective life of Davis Bottom through census records and artifacts. Further, that collective life belonged to a community established with emancipationist intent that became an integrated community at a time when that was not only rare, but also sometimes illegal and often dangerous. This combination of content, methods and materials supported discussions about agency and identity and their relation to informed civic engagement in a pluralist democracy (Barton & Levstik, 2008; Bolgatz, 2005).

Third, although students identified with the economic status of residents of Davis Bottom came to identify with a wished-for community rarely experienced in their own lives. Davis Bottom presented them with an alternative to prevailing local constructions of racial identity that emphasize separation, especially as young people approach adolescence (Coates, 2015; Thaneka, 1999). Students' response to race differed from their expressions of class solidarity, representing a nascent cosmopolitanism. They did not elect to be poor—that was a condition and an identity that attached to them by virtue of the families into which they were born. What they made of that identity, and the extent to which they saw it as separating them out into a definable group, motivated interest in Davis Bottom and influenced how they interpreted the data they analyzed. It was, however, an identity only one student explicitly said she would choose. In contrast, all but one student said they would choose to be part of an integrated community. That was an identity they admired and participated in vicariously.

Overall, their class identification reflected populist perspectives that fit within the larger political environment in their communities. For them, Davis Bottom exemplified the historical struggle between "normal" people like themselves who rarely entered the historical record—at least as they experienced school history—and the privileged elite who lived on the labor of others.

Perhaps more surprisingly, students expressed admiration and envy for Davis Bottom as an integrated community *unlike* their own. The counties these students live in are not benign in regard to race—students mentioned the blatant racism they experienced in their homes and communities. One student explained, for instance, that people in Davis Bottom weren't "raised so you have to hate that color. You are raised as 'Hey, you are now my best friend'. . .instead of 'you can't be friends at all'". She recalled her grandparents' explicit racism and expressed relief at her parents' divorce, saying, "I'm glad [my mother] got me out of that environment because I have a lot of black friends. I'm glad I have them. I've shared a lot of good memories with them, and if I'd stayed with my dad I'd probably hate their guts." Another student was impressed that people in Davis Bottom "didn't care who they was [sic] friends with. They just wanted to be friends with Black and White."

If we are serious about teaching history for the common good, we should be exploring the ways in which student identities can support deeper engagement with content and more attention to differential agency and more nuanced understandings of how the past influences the present and what power citizens have to shape those influences.

Acknowledgments

This research is funded by a grant from the U.S. Army Corps of Engineers, Nashville Branch.

Notes

1. In the U.S., school districts are independent of the state, county, and municipal governments.
2. A *Making History Local Academy* was conducted by the researchers in collaboration with local archeology educators and Project Archaeology national staff.

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Apprendix A. Student Survey

Name_____

Date_____

Project Archaeology: Investigating Shelter
Pilot Project
Student Survey

Hello:

We are about to start an investigation using archeology and history to study shelters. All investigations begin as researchers ask themselves what they already know and what they still need to learn.

As good researchers, we need to figure out the best questions to use to organize our investigation. The survey below will help us do that.

This survey won't be graded. We will talk about the results, but other students will not know which answers you gave, and you won't know what answers other students gave. Instead, we will all know what we still want to learn.

As you complete the survey, don't worry if you don't know the answer to a question. You can guess the answer or just leave it blank. Remember, if we knew all the answers, there would be nothing left to investigate!

****

Part 1.

How much do you agree with the following statements?

	Agree	Not Sure	Disagree
a. I like learning about the past.	☐	☐	☐
b. I am good at history and social studies.	☐	☐	☐
c. Doing archaeology is one way to learn about the past.	☐	☐	☐
d. Archaeology is a way of understanding people by studying the objects they make and use.	☐	☐	☐
e. Learning about the past helps me understand how things work today.	☐	☐	☐
f. History means questioning, explaining, and interpreting people, ideas and events.	☐	☐	☐
g. Learning about my culture is important to me.	☐	☐	☐
h. I am interested in learning more about my culture.	☐	☐	☐
i. I am interested in learning more about other cultures.	☐	☐	☐
j. Understanding culture helps people make better decisions in a democracy.	☐	☐	☐

Part 2.

How much do you already know about the work done by archaeologists and historians? If you need more room to answer the questions below, please write on the back!

Linda S. Levstik

2.1. How would you describe the work done by archaeologists?

2.2. How is the work done by historians and archaeologists similar?

2.3. How is the work done by historians and archaeologists different?

2.4. What do you think we could learn about people by studying their shelters?

2.5. Archaeologists use *observation*, *inference*, and *classification* as tools to help them in their research.

Give an example of an archaeologist using the tool of *observation*.

Give an example of an archaeologist using the tool of *inference*.

Give an example of an archaeologist using the tool of *classification*.

2.6. Archaeologists study artifacts in context. Look at the picture below. In what context could an archaeologist find an artifact like this?

One way archaeologists and historians learn about the past is through *inquiry*. An inquiry is an investigation with three parts: 1) asking a question, 2) looking for data or evidence to help answer the question, and 3) answering the question using evidence.

2.7. Have you ever done an inquiry or investigation about the past? (Please circle your choice).

Yes No (If not, skip to #2.9)

2.8. If yes, briefly answer the questions below:

What question were you investigating?

What evidence helped you answer your question?

What was the most important thing you learned during your inquiry?

Archaeologists and historians help protect and preserve important places that tell us about the past. Many people like to visit these places.

2.9. Name two rules people should follow when they visit an archaeological and historical site like the one in the picture below.

Why should people follow these rules? ?

2.10. Name two actions you think people should *not do* if they find or visit an archaeological or historical site.

Why should people *not do* these actions?

Appendix B

Project Archaeology: Investigating Shelter
Student Interview Protocol

Interviewer: Welcome students, introduce yourself and say:

Thank you so much for being part of our study. We know you have been working on investigating shelters in ways similar to how archaeologists and historians investigate them to learn about how people lived in the past and how they live now. We are interested in how people your age think about the past and how they use the past to help make sense of what is happening in the world right now. We hope our discussion today can help teachers do a really good job of teaching about the kinds of things you learned in the Investigating Shelter unit.

There are no right or wrong answers to the questions we are asking today. We just want to know about your ideas about studying the past.

Test recording equipment. Be sure to have the students say their names on tape. Play names back to check for sound quality.

Introduction: History Background Questions:

- Why do you think people want to know about how people in the past lived?
- Other than in school, have you ever learned about how people in the past lived? Where? What kind of things did you learn?
- What is the difference between archaeology and history?

Tool-mediated Human Behavior Questions:

- [Show picture of outhouse.]:
  - What tools, technologies or inventions would people need to know in order to make and use this technology?
  - How would having this technology change the kinds of shelters people might build?
  - When archaeologist finds a privy, what might the archaeologist want to know about the people who used it?

Inquiry As a Tool: How Shelters Illuminate Lives of Working Poor Questions

- [Show Image #2]
  - This is the portion of a **Sanborn map** you used when you studied the Davis Bottom shotgun house What two observations can you make based on the Sanborn map (wait while they discuss and decide what to say). Now, use your observations to make two inferences about the people who lived in this community or about the community itself.
  - People sometimes complain that the only thing they learn about in history is how rich and powerful people lived and thought. What do you think we can learn from studying people who weren't rich and powerful?
  - What are the most important things you learned about the people who lived in Davis Bottom?

- [Show set of images of Davis Bottom]
  - If you were creating a documentary about Davis Bottom using the theme "social justice", which two of these images do you think would be most important to include? How would each image help explain your theme?

Civic Engagement/Site Protection and Preservation Questions

- In what ways could protecting and preserving archaeological and historical sites help people be good citizens?
- What power did people in Davis Bottom have to change their lives and their community? Who do you think had the most power in deciding what happened to the Davis Bottom community? (probe…Why do you say that?)

- Probe: (use if there is time or if they struggle with first two questions here) How might understanding Davis Bottom's history have helped people in Lexington make decisions about what should happened to that community?

Final Shelter Questions:

- What are the most interesting things you learned from your study of shotgun shelters?
- What were the most confusing things from your study?
- Would you recommend this unit for other students in Kentucky and in other parts of the U.S.? Why or why not? What makes it worth using?
- What problems might students have using the unit?
- If you could change anything about the unit, what would it be?

Interviewer, say: Thank you for talking to me today. Your answers will help us improve the shelter unit and other inquiries for students your age.

Theory and Research for Developing Learning Systems, 2 : 23-33, 2016
Research Initiative for Developing Learning Systems (RIDLS)

How Do Pre-service Science Teachers Develop Their Teacher Knowledge?:
A Qualitative Study Focusing on Teaching Practice in Schools

Takuya Ochi and Tetsuo Isozaki

This study aimed to explore the facts of what knowledge student teachers acquired/developed through teaching practice in schools, along with the primary factors behind this. First, a framework for interpreting teacher knowledge was stipulated through analysis of previous studies. Next, one teaching-practice group that trained student teachers in Lower Secondary School B Attached to National University A was selected to perform field work as a case. And also, we observed lessons, participated in reflective meeting/conference, and conducted interview survey. Then, the data that was gathered through the interview survey was analysed qualitatively with SCAT (Otani, 2008b, 2011).

The results gained through analysis were classified from three viewpoints: the influence of the mentor, observations on other student teachers' lessons, and reflection on their own practice. Discussing with the model of teacher professional knowledge and skill by Gess-Newsome (2015), the followings were pointed out: (1) knowledge base is acquired/developed by capturing reflectively their own classroom practice, reflective meeting/conference and observations of other student teachers based on their view of (science) lessons, which is begun to construct through educative mentoring and observations lessons by the mentor; and (2) collaboration with other student teachers enables to conduct teaching practice more reflectively.

Key Words: Science Teacher, Pre-service Teacher Education/Training, Teaching Practice, Teacher Knowledge, Pedagogical Content Knowledge

1 Introduction

Up until the 1980s, research on teacher education/training focused on what were the necessary qualification and/or abilities to be a teacher by utilising behavioural science approach. From the 1980s onward, it focused on what knowledge and/or thought patterns were needed for teachers by utilising cognitive psychological approach (Abell, 2007; Akita, 1993). In other words, the paradigm in teacher education research shifted from 'how teacher should behave and what they should be able to do' to 'what teacher should know and how they should think'.

This is why current teacher education research is beginning to have a big tide of research based on teacher knowledge (e.g., Lederman & Lederman, 2015), as Shulman (1986, 1987) proposed in his presentation on pedagogical content knowledge (PCK). Although PCK is still highly evaluated as a useful idea over twenty years after it was first put forward, PCK has many unclarified points such as the process of being acquired/developed (Abell, 2008; Großshedl et al., 2015). Even in Japan, there are demands that teacher education research is done from a PCK viewpoint (e.g., Tokuoka, 1995). However, not all would agree that there has been sufficient research on it.

When capturing professional growth as a teacher from the viewpoint of continuing professional development (CPD), teaching practice is an introduction in this context. This study especially focused on teaching practice, which forms the core of pre-service teacher education/training. On that point, in view of today's situation wherein there are demands to establish 'the ideas of teachers who continue to learn' (Central Council for Education, 2012), this study inquired in depth the process of how PCK is acquired/developed through teaching practice as an initial stage of CPD.

Upon further consideration, since PCK is also perceived as what is enriched through teaching experiences, there is research that sees PCK as something that those with little teaching experience, such as novice teachers and/or pre-service teachers, are not familiar with at all (e.g., Sato et al., 1991; van Driel et al., 1998). Nevertheless, some researchers have attempted to investigate the facts of novice teachers' and/or pre-service teachers' PCK (e.g., Nilsson, 2008; Nilsson & Loughran, 2011; Großshedl et al., 2015). A study by Loughran et al. (2008) was not research on PCK itself, but used PCK as a tool to reveal pre-service teachers' 'learning to teach science'.

This study cited the ideas of Loughran et al. (2008) and aimed to explore the facts of what knowledge student teachers acquired/developed through teaching practice in schools, along with the primary factors behind this.

2 Theoretical Framework

2-1 Pedagogical Content Knowledge

The interpretation of PCK differs depending on the researcher; therefore, we needed to interpret PCK as employed in this study. As first definition by Shulman (1986), PCK is seen as knowledge utilised in order to transform subject matter into a comprehensible form for students.

Similar to PCK itself, there are various interpretations of what knowledge base that composes PCK is, and many models have been demonstrated (van Driel et al., 2014). Among these, a consensus as to what constitutes PCK or what knowledge influences PCK has been reached on the following three knowledge categories (e.g., Grossman, 1990; Gess-Newsome, 1999): subject matter knowledge, which is (speaking of science) knowledge of science; general pedagogical knowledge, which is knowledge of curricular, school management, and so on; and context/contextual knowledge, which is knowledge of students, school culture, and so on. PCK model have been divided into almost two types (Gess-Newsome, 1999). Either as integrated model in which dynamic knowledge of PCK is only demonstrated when knowledge base is utilised in classroom practice (e.g., Bishop & Denley, 2007) or as transformative model representing one interdisciplinary area in which there is no clear boundary between categories of teacher knowledge, and each teacher knowledge category mutually influences

the others (e.g., Grossman, 1990).

It is not that either of these two models is superior to the other, however it is important to understand the nature of each model. Namely, in capturing PCK as knowledge that is represented in classroom practice, it is better to consider from the viewpoint of integrated model. On the other hand, in capturing what knowledge that teachers utilise in classroom practice is derived from, it is better to consider from the viewpoint of transformative model (Gess-Newsome, 1999).

Much of the research on science teachers' PCK so far has employed the model presented by Magnusson et al., (1999) as a framework for interpretation of PCK (e.g., Nakata et al., 2012; Fraser, 2015; Hume & Berry, 2011). However, some problems have also been indicated, such as the idea that concepts related to teacher beliefs are treated as being on the same level as other knowledge base (e.g., Gess-Newsome, 2015; Friedrichsen, et al., 2011). As stated earlier, it is hard to say that student teachers, which are the focus of this study, possess a sufficient level of PCK. To think of what student teachers themselves do possess or perhaps to think of knowledge they acquire/develop through teaching practice as part of what constitutes their overall teacher knowledge would comprise a model that takes the standpoint of transformative model and utilising this model makes it possible to hone in on the facts of this question.

On that point, Gess-Newsome (2015) is developing a structured model (as seen in Figure 1) of a teacher professional knowledge and skills, which constitutes teacher professional knowledge base (TPKB), topic-specific professional knowledge (TSPK), and knowledge used in 'classroom practice' as well as 'amplifiers and filters' of teacher, 'amplifiers and filters' of student, and 'student outcomes' that mediate all of these knowledge. PCK is defined within this model as 'Personal PCK is the *knowledge* of, *reasoning* behind, and *planning* for teaching a particular *topic* in a particular *way* for a particular *purpose* to particular *students* for enhanced *student outcomes*' (Gess-Newsome, 2015, p.36, italics are in the original). And also, PCK is perceived as dynamic knowledge that combines static knowledge base such as TPKB and TSPK.

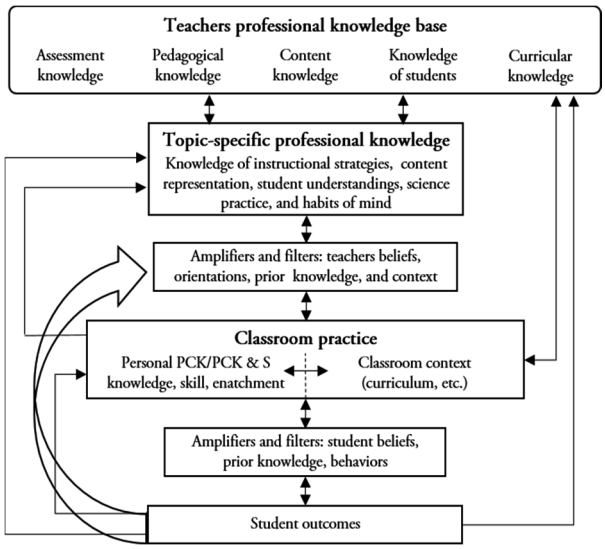

Figure 1: Model of Teacher Professional Knowledge and Skills

Source: Gess-Newsome (2015, p. 31, Figure3.1).

Based on the above arguments, this study employed Gess-Newsome's (2015) structured model of teacher knowledge focused on PCK as the framework for interpreting teacher knowledge.

2-2 Development of Teacher Knowledge

Some primary factors in development of teacher knowledge are said to be collaborations with other teachers such as observations of others teachers' lessons, educative mentoring[1)] and coaching, reading books and/or periodicals, and reflection on their own classroom practice (e.g., Wellington & Ireson, 2008; Akita, 1993). What are the specific ways that teacher knowledge is developed through these opportunities?

In Nilsson (2008), for instance, student teachers held reflective meeting/conference where they watched their video-recorded lessons. The student teacher who conducted the lesson was able to share what they had been thinking during the lesson. And then, they came to grasp context knowledge, and as a result, this indicates a connection to the development of PCK. Nevertheless, it

cannot be said that there has been sufficient research of student teachers overall or what knowledge student teachers acquire through which opportunities.

Therefore, it is necessary to discuss the specific ways that collaboration with other teachers (in this case, teachers belonging to the attached school and other student teachers) and reflection on their own classroom practice contribute to development of teacher knowledge in teaching practice.

3 Research Questions

In order to achieve the aim stated earlier, this study focused on the following two research questions (RQ).

1. What do student teachers learn through educative mentoring, observing other teachers' lessons and reflection on their own classroom practice?
2. How it be perceived when capturing the answer of RQ1 from the viewpoint of teacher knowledge?

4 Research Methods

4-1 Research Design

We employed qualitative research method in order to achieve the aim of this study. Qualitative research from an interpretivist standpoint interprets the meaning of participants' experiences from the intrinsic viewpoints. It is hard to establish condition controls for events that occur in classroom that are targeted educational research and/or professional growth (the target of this study) because of parameter excess. Rather than employing quantitative research with an intention to generalise, there are some cases where qualitative research is more suitable for singling out the inherent meanings in the events (Flick 2002/1995; Creswell, 2007/2003; Treagust et al., 2014; Taylor, 2014; Otani, 2008a).

Therefore, this study employed qualitative research in an attempt to single out the inherent meanings in what student teaching means to the survey participants.

4-2 Outline of the Survey

This survey was conducted from 16th September, 2015 to 2nd October, 2015. It was targeted teaching practice where conducted at Lower Secondary School B Attached to National University A. In the survey, observations lessons, participation in reflective meeting/conference and interview surveys were done. At University A, in order to get secondary teacher's certificate, each student teacher need to be dispatched to two out of the four attached schools, where from approximately September to October, they teach for two weeks at each attached school. This study was conducted at one of these attached schools, and first-time student teachers were the survey participants.

4-3 Data Collection and Procedures

There are four survey participants, all of whom were acting as student teachers at Lower Secondary School B during the period we conducted the survey. These four were all teaching under the same mentor [2)] (hereafter referred to as Teacher C), so they make up one group of student teachers. This research analysed teaching practice conducted by these four student teachers and their mentor, Teacher C, as a single case.

A simple profile of the four student teachers and Teacher C is shown in Tables 1 and 2. Teacher C possesses specialised teacher's license, and before being hired as a teacher, he spent two years as a upper secondary school teacher and a specially appointed assistant professor at a university respectively. This is Teacher C's first year at Junior High School B, and the school he was previously assigned to was an upper secondary school with an attached lower secondary school.

The four student teachers (who are also the survey participants) were subject to a roughly thirty-minute semi-structured interview once all of their classroom practice at Lower Secondary School B was completed, and they were ordered to talk about what they had learned through teaching practice and their challenges.

Teacher C was also subject to a roughly thirty-

Table 1: Student Teacher Profiles

ID	Gender	Faculty	Science Background
ST1	Male	Education	Physics
ST2	Female	Science	Biology
ST3	Male	Education	Physics
ST4	Female	Science	Biology

Table 2: Teacher C Profile

Gender	Faculty	Science Background	Teaching Experience
Male	Education	Chemistry	7 Years

minute semi-structured interview once all of teaching practice for 2015 was completed and was ordered to talk about Teacher C's view of science lessons and teaching practice, and what was devisal point for teaching practice.

The contents of these interviews were subject to analysis once they had been transcribed. In conducting interview, questions were asked based on information gained through fieldwork.

Before the survey, its intentions were thoroughly explained and informed consent was gained from all participants. Consent was also gained to use the contents of the surveys in research.

4-4 Analysis

As to analysis, SCAT (Steps for Coding and Theorization: Otani, 2008b, 2011) for analysing qualitative data was utilised. SCAT is an analytic method with explicit procedures (which will be described later) used for analysis has a high falsifiability (Otani, 2008b).

In SCAT, storylines are described through four steps of coding. Transcribed, textual data was used for the analysis. This textual data was segmented in advance to consolidate meanings. In <1>, noteworthy words and phrases within the text of each segment are written out. In <2>, the words and phrases are rephrased into different expressions. To further explain <2>, concepts from outside the text are entered in <3>. After completing these steps, statements concerning the themes and core concepts of the text are written in <4>. Next, by extrapolating from <4>, a storyline of the entirety of the interview data is described. The method of selecting noteworthy words and phrases in <1> produces great changes in the resulting storylines.

For this study, the noteworthy words and phrases were selected based on RQ1. The underlining in the storylines quoted below is meant to indicate the themes and core concepts of <4>.

The interview with the mentor was analysed multilaterally to triangulate the connection between what student teachers learn, and educative mentoring. Therefore, this was done to increase the validity of the results.

5 Results

The results gained through analysis and based on RQ1 were classified from three viewpoints: (1) learns from the mentor; (2) observations on other student teachers' lessons; and (3) reflection on their own classroom practice.

5-1 Learns from The Mentor

What do student teachers learn from their mentor? Part of ST4's storyline is shown below as one example of that.

> From their mentor's advice and the view of lessons based on their mentor's model lesson, that is to say, the influence of the mentor's view of lesson she learned to seriously consider the nature as points on making lessons. (Omission) From listening to their mentor's advices in reflective meeting/conference, she learned how their mentor viewed lessons, and became to capture targets of the lessons and/or the core of the lessons as the viewpoints of assessments of lessons.
>
> (Quoted from ST4's storyline)

In short, through educative mentoring and observations of the mentor's model lessons, she learned that science lessons should focus not on how to solve problems or formalise methodology but rather on the nature parts of the teaching material. And also, she became to capture that these points are seen as something that should be paid heed to when making a lesson. In addition,

by listening to the mentor's advices on the student teachers' lessons in reflective meeting/conference, it is seen that she got the viewpoints of observing lessons that were the goals of lessons and/or 'what was the core of the lesson'.

As to this, Teacher C said that when making lessons, the point that should be emphasised is that 'It is vital to clarify for myself in advance what I want the students to learn from this lesson'. This suggests that Teacher C himself has always stressed the importance of clarifying the goals of a lesson.

This indicates that student teachers, through educative mentoring and observation of the mentor's model lessons, learn what science lesson is together with acquiring the viewpoints of observations of lessons.

5-2 Observations on Other Student Teachers' Lessons

What do student teachers learn from observing other student teachers' lessons? Part of ST1's storyline is shown below as one example of that.

> In observations of lessons, he was watching from a third-person point of view so he was able to objectively observe the students. He was able to pick up on how the students reacted to the lesson, which is something he was not able to notice when giving a lesson himself. Consequently he could find out strategies for students who cannot follow the lesson.
>
> (Quoted from ST1's storyline)

In other words, observing other student teachers' lessons allows for study of student reactions, which is something that one cannot notice when giving a lesson themselves and enables one to think of how to deal with a wide variety of actual students.

It may be thought that when observing lessons, the focus of the observation is to learn how to give a lesson. As one reason why observations on lesson did not lead to that, part of ST3's storyline is shown below.

> Because of fully cooperating with the other student teachers, he was able to understand the aim of before and after lessons and was able to complete teaching practice collaboratively.
>
> (Quoted from ST3's storyline)

This suggests that ST3 was able to grasp beforehand the details of what kind of lessons other student teachers were conducting. As a result, it can be thought that they are focusing more on 'how will students react to this lesson?' rather than what kind of lesson to conduct.

This indicates that student teachers, by observing other student teachers' lessons, are able to study and discuss the ways in which the students react to the teacher's actions.

5-3 Reflection on Their Own Classroom Practice

Next, we consider what student teachers learned from their own classroom practice. Part of ST1's storyline is shown below as one example of that.

> ST1 evaluated, based on comments given in reflective meeting/conference that are strategies for time management that lesson should spend time fully into make the core part of the lesson, the factors of learns from his own successful lessons during teaching practice that is to make what is core of the lesson in order to give lessons with clarified goals. Specifically, he reflected that suggesting its goals at beginning of the lesson enables to clarify its tasks.
>
> (Quoted from ST1's storyline)

From this, we understand that upon his reflection on their own lesson, and after taking in what was said in reflective meeting/conference about how time should be spent on the parts that are the core of the lesson, the reflection caused him to realise that within their successful lessons, there was one part of the material that formed the core of the lesson, and this clarified the goals of the lesson for him. In other words, it can be seen that clarifying the goals when making a lesson and managing time to focus on the parts that make up the core leads to the success of a lesson.

Therefore, this indicates that student teachers, through making and giving their own lessons and being assessed in reflective meeting/conference, are learning the

necessity of clarifying goals of the lesson and strategy for time management.

5-4 Conclusions to RQ1

As seen above, there are three points that can be indicated as answers to RQ1.

- Through educative mentoring and observation of the mentor's model lessons, student teachers learn what science lesson is together with acquiring the viewpoints of observations of lessons.
- By observing other student teacher's lessons, student teachers are able to study and discuss the ways in which the students react to the teacher's actions.
- Through making and giving their own lessons and being assessed in reflective meeting/conference, student teachers learn the necessity of clarifying goals of the lesson and strategy for time management.

6 Discussion

6-1 What Student Teachers Learn and the Primary Factors in This from the viewpoint of teacher knowledge

In order to answer RQ2, we would now like to discuss, based on the answers to RQ1, student teachers' learn during teaching practice and the primary factors from the viewpoint of teacher knowledge by utilising the model of Gess-Newsome (2015).

First, since student teachers learn what science lesson is from educative mentoring and observation of mentor's model lessons, it could be interpreted that they influenced their 'teacher beliefs', and then they started to form their own views of (science) lessons.

Next, since student teachers learn how students react to teachers' actions through observations on other student teachers' lessons, this falls under the general 'knowledge of students' category of TPKB. One can also perceive student teachers as acquiring how to transform teaching contents into the understandable form for students, which is 'content representation' in TSPK; they are also acquiring knowledge to use when dealing with specific students, which is 'classroom practice'.

Further, when student teachers have classroom practice and are assessed at reflective meeting/conference, they are learning specific instructional strategies; therefore, we can think of this as acquisition of knowledge used for 'classroom practice'.

These knowledge are not acquired independently from each opportunity, but rather it is thought that the opportunities of educative mentoring, reflection on one's own classroom practice, and reflective meeting/conference all lead to, little by little, mutually acquisition/development of teacher knowledge. In this research in particular, 'amplifiers and filters' of teachers that includes a view of (science) lessons is perceived as something that mediates between the knowledge used in 'classroom practice' and static knowledge that is TPKB and TSPK. As a result, the view of (science) lessons that forms from the influence of the mentor serves as proof that reflective opportunities for classroom practice and reflective meeting/conference promote acquisition/development of various knowledge. Furthermore, starting with reflective meeting/conference and observations on lessons, the collaboration with other student teachers serves as proof that it is possible for teaching practice to be conducted even more introspectively.

When teaching practice is done reflectively like this, it becomes possible to provide feedback on each territory of knowledge based on 'student outcomes' during the lessons.

By the way, constructing teacher knowledge is differentiated into what one can accomplish individually and what they gain from collaboration with others (Akita, 1993). In the case of teaching practice, however, opportunities advised by other (student) teachers such as reflective meeting/conference promote, as indicated, their own reflection. In other words, collaboration with others during teaching practice causes results that are greater than what one could achieve individually.

As can be seen, there are two points being indicated as primary factors in what student teachers learn from the

viewpoint of teacher knowledge. First, knowledge base is acquired/developed by capturing reflectively their own classroom practice, reflective meeting/ conference and observations of other student teachers based on their view of (science) lessons, which is begun to construct through educative mentoring and observations lessons by the mentor. Second, collaboration with other student teachers enables to conduct teaching practice more reflectively.

6-2 Evaluation of this Study as A Qualitative Research

This study does not intend to generalise the process of learning during teaching practice; it was an attempt to get suggestions by utilising qualitative research methods to explain individual details in depth. Although qualitative research cannot guarantee the generality of its results as quantitative research can, to secure generalisability and applicability the suggestion that is got, it is necessary to guarantee comparability and translatability of the results (Otani, 2008a).

What student teachers learn from educative mentoring and observing the mentor's model lessons, for instance, will differ based on the view that the mentor possesses towards teaching practice or (science) lessons. Nevertheless, there are enough possibilities that student teachers acquire/development various teacher knowledge based on the view of (science) lessons, which is constructed because of the influence from his/or mentor. In this way, it is sufficiently possible that the suggestions indicated through this study can be applied to other cases.

7 Conclusion and Implications

This study analysed qualitatively what student teachers learn through teaching practice and considered this from the viewpoint of PCK as a framework of teacher knowledge.

If teaching practice is viewed as the initial stage of CPD, then it is vital for student teachers to learn the way of learning from their own classroom practice. As indicated in this study, collegiality, which is one of the important factors identified in previous studies into professional development, becomes particularly important in teaching practice through educative mentoring and collaboration with other student teachers.

Meanwhile, as University A's teaching practice is needed to conductd in two attached schools, it becomes necessary necessarily to be guided under two or more mentors, although this study cannot make any comment regarding that. It is necessary to inquire in detail in what way conducting teaching practice in different schools (under different mentors) leads to the acquisition/development of teacher knowledge over a one-month teaching practice programme. This is a topic for future discussion.

Acknowledgements

When conducting this research, we were incredibly fortunate to have the full cooperation of Teacher C and the student teachers. We would like to express our gratitude to them here.

Notes

1. In mentoring, teaching 'what to teach and how to teach it' has come to be considered as more important than the traditional way of mentors (refer to note 2) instructional strategies and the reasons for their choices. However, the words "educative mentoring" that convey the meaning of student teachers' ability to learn and grow from their own practice is coming to be used (Barnett & Friedrichsen, 2015; Brabury, 2010). The mentoring in this case points to the meaning of educative mentoring.
2. Normally, the teachers who coach the student teachers are not referred to as mentors but as guided teachers. Mentors have the role of supporting the student teachers and collaboratively thinking through the complicated processes of teaching (Isozaki, 2014; Barnett & Friedrichsen, 2015; Bradbury, 2010). This study also takes this standpoint, so the teachers who instruct the student teachers are referred to as mentors.

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This article translated into Japanese is published in the journal *Gakushu Shisutemu Kenkyu*, Vol.3.

Theory and Research for Developing Learning Systems, 2 : 35-47, 2016
Research Initiative for Developing Learning Systems (RIDLS)

Research into Development of Beliefs about the Goals and Purposes of Science Teaching:
Analysis of Life Stories of Five Experienced Science Teachers

Yuta Ueda and Tetsuo Isozaki

This research, through analysis of five experienced science teachers' life stories, was done to further evaluate prior research into beliefs of science teachers. Furthermore, it attempts to clarify the development of beliefs about the goals and purposes of science teaching to show how beliefs about the goals and purposes of science teaching develop through pre- and in-service teacher education/training, the value of this, and suggestions towards the realization of this. First, an overall concept of beliefs about the goals and purposes of science teaching is clarified by further evaluation of prior research. Next, life story was utilized as a research methodology for the clarification of belief development, and an interview survey was planned and conducted based on this methodology. The stories gained were analyzed, and the facts that various experiences, whether in or out of school, have an influence to clarify beliefs about the goals and purposes of science teaching, that there are cases where experiences outside of school can provide motivation for adding new concepts to one's beliefs about the goals and purposes of science teaching, and that beliefs about the goals and purposes of science teaching that were held at the time of becoming a science teacher do not change throughout a professional career, were all made clear. Based on the above results, the development throughout one's professional career concerning beliefs about the goals and purposes of science teaching is perceived as part of a science teacher's consecutive professional learning, which happens in and out of school. Pre-service teacher education should make a vital role as giving an opportunity for developing beliefs about goals and purposes of science teaching. Suggestions were gained for how to realize development of beliefs about the goals and purposes of science teaching through pre- and in-service teacher education, as well as the value of this.

Key Words: Science Teachers, Beliefs, Continuing Professional Development, Life Story, Goals and Purposes of Science Teaching

1. Introduction

Beliefs of sciences teachers are said to be one of the concepts at the core of a continuing professional development (Gilbert, 2010). Beliefs have an influence in various sides of classroom practice, for example, the acquisition and interpretation of knowledge, interpretation of the curriculum, lesson planning practice, and evaluations (Jones & Leagon, 2014; Bryan, 2013). When discussing Japan, beliefs of science teachers include their various concepts such as views on (science) education, (science) teaching, learning, and science. One example of prior research into beliefs of Japanese science teachers is the views towards science and classroom practices of elementary and lower-secondary school science teachers (Shimizu, 2002).

It is important to mention that outside of Japan, some research dealing with the science teaching orientations, which be shaped by three subcategories (Friedrichsen et al., 2011): "beliefs about the goals and purposes of science teaching," "science teaching and learning," and "the nature of science", has come forth (for example, Campbell et al., 2014; Cobern et al., 2014; Avraamidou, 2013). In Campbell et al. (2014), a before and after survey of the development [1] of science teaching orientations over one year of professional development was conducted, and it was made clear that beliefs about the goals and purposes of science teaching play a central role in the development of that science teaching orientations. Although clarifying the development of science teacher beliefs about the goals and purposes is one vital research topic, research into the beliefs of Japanese science teachers has mainly focused on their beliefs about science teaching and learning, and the nature of science. There is not a large body of research into beliefs about the goals and purposes of science teaching.

In this study, an outline of prior research into beliefs of science teachers will be given first, and a concept of beliefs about the goals and purposes of science teaching will be clarified. Subsequently, there will be a discussion of the research methodology that was applied to clarify the development of beliefs of science teachers. The results gained from the survey based on this methodology are organized from the viewpoints of 1) beliefs that science teachers hold towards the goals and purposes and 2) the process of how those beliefs develop. Finally, based on these, the value of developing beliefs about the goals and purposes of science teaching through pre- and in-service teacher education are established, and suggestions towards realizing this are reached.

2. Theoretical Framework

2-1 Beliefs about Goals and Purposes of Science Teaching

In Friedrichsen et al. (2011), prior research is further evaluated and beliefs that shape the science teaching orientations are classified into three categories, as can be seen in Table 1. Here, beliefs about the goals and purposes of science teaching are placed into one of the categories of science teaching orientations and are beliefs on the general goal and function of science education.

Table 1: Classification of Beliefs that Shape Science Teaching Orientations

Beliefs about Goals and Purposes of Science Teaching
Conceptions about the goals or functions of science education in general, for example, divided into learning science, learning to do science, and learning about science, or teaching science for intellectual development, or for individual fulfillment, or for socioeconomic benefit.
Beliefs about Science Teaching and Learning
Conceptions of science teaching and learning, including beliefs about the role of the teacher, the learner, how students learn science, and how to teach it in ways that make science attractive and comprehensible.
Beliefs about the Nature of Science
Conceptions about the nature of science, sometimes divided into ontological beliefs, that is, beliefs about the status of reality or the existence of scientific objects and epistemological beliefs, about issues such as "what counts as knowledge, how this is produced and warranted or justified."

Source: Created based on: Friedrichsen, P., van Driel, J. H., & Abell, S. K. (2011). Taking a closer look at science teaching orientations. *Science Education*, *95*, 370-371.

Also, Campbell et al. (2014) subdivided beliefs about the goals and purposes of science teaching based on Roberts' (2007) classification of scientific literacy into Vision I and Vision II. According to Roberts (2007), Vision

I is the view that science education fulfills the function of teaching knowledge of the products of the natural sciences as well as its process while Vision II is the view that science education fulfills the function of teaching citizens from childhood how to solve specific situations that they may happen to encounter in the future.

In this way, beliefs about the goals and purposes of science teaching can also be perceived as beliefs about the goals of the school subject "science", which is placed at the highest level of the hierarchy of goals for science education.

2-2 Definition of Beliefs

Here, we will define beliefs as used in this study. Although over twenty years of research in science education has given attention to teachers' beliefs, there is still no universal definition of beliefs. At the root of this is the philosophical question of how knowledge and beliefs are different (Jones & Leagon, 2014; Bryan, 2012; Pajares, 1992). Dewey (1922), for example, states that the history of human learning is a chronicle that includes the emotional parts of human learning and refers to the indivisibility of past humans' knowledge and beliefs, as their knowledge was limited to the extent of their past beliefs.

On the other hand, research into the differentiation of knowledge and beliefs in science education has also yielded a differentiation that has attained a fixed consensus. Although Jones & Leagon (2014) states that both knowledge and beliefs originate from experience, it does recognize a fixed distinction between knowledge as a mainly cognitive structure, and beliefs consist of both a cognitive and an emotional structure. Fletcher & Luft (2011) differentiate knowledge from beliefs stating that there is no necessary condition that beliefs are factual.

Based on these arguments, a science teacher's beliefs in this study will be treated as "a science teacher's individual thoughts based on experience and prior knowledge."

2-3 Beliefs, Classroom Practice, and Professional Growth

Although a consensus has been reached that belief is a concept that influences every aspect of a science teacher's classroom practices, the positioning of beliefs within a science teacher's classroom practices differs by researcher.

Jones & Leagon (2014) are devising a model that shows the association among a science teacher's knowledge, beliefs, and their classroom practices. Concepts inherent to the science teacher are divided into four domains: "Instructional Task or Problem," "Planning and Goal Setting," "Lesson Design," and "Evaluation." The domain of "Evaluation" mediates the others, and they all have a mutual influence on one another. Classroom practices are determined in part by the science teacher's perceptive filter and external concepts of socio-cultural context. The results of the teacher's classroom practices also work in reverse to influence their inherent conceptual beliefs. Beliefs of science teachers are, together with their concepts of knowledge, seen as one important factor in how a science teacher clarifies "Instructional Task or Problem." The definition does not end by stating where each factor starts from but rather says that science teachers conduct their classroom practices while cycling through these factors.

Gess-Newsome (2015), however, is designing a model that shows the relation between a science teacher's professional knowledge, skills, classroom practices, and includes their PCK (Pedagogical Content Knowledge). A science teacher's belief is seen as something that mediates between their classroom practices and professional learnning, similar to an amplifier or a filter. This model is recursive and fluid, and it leads a science teacher to the professional knowledge, skills, and classroom practices that they need to improve student outcomes.

Regarding the position of a science teacher's beliefs, Jones & Leagon (2014) position beliefs (together with knowledge) as one of the factors in "Instructional Task or Problem" that are regulated on the basis of a science

teacher's instructional planning and strategy. Although Gess-Newsome (2015) argued that beliefs are fluid, they are positioned as an amp or filter that mediates between a science teacher's professional knowledge and their classroom practices. Although there are some discrepancies between the positioning of a science teacher's beliefs within their classroom practices, a science teacher's beliefs are undoubtedly seen as one of the vital factors in the process of giving and learning classroom practices.

By contrast, a teacher's beliefs are (together with a teacher's knowledge) also seen as one factor in the execution of a teacher's classroom practice, as well as how teachers accomplish professional growth through reflection (Clark & Hollingsworth, 2002). Similarly, science teachers are perceived in both Jones and Leagon (2014) and Gess-Newsome (2015) as achieving growth by cyclically being influenced by each factor within the model, which all have a mutual effect on each other. In other words, a science teacher's beliefs not only influence their classroom practices but also are factors that play a vital role in achieving professional growth.

3. Discussion of Methodology Applied to the Survey

3-1 Outline of the Main Research Used for the Interview

A science teacher's belief system is complicated; therefore, most of the research mainly takes a qualitative research approach. An interview is one of the most popular qualitative research methods (Jones & Carter, 2007). In research that utilizes data gained through interviews, there are oral history, life course, life history, and life story, which are all broadly classified depending on the focus of the research (Yamada, 2005).

Oral history is defined as "verbal records of public figures, by the specialists, for the people (Mikuriya, 2002, p.5)." Therefore, the main objective of oral history is to gather historical accounts by interviewing public figures related to the functions of the government, politics, the economy, diplomacy, and more.

Life course is defined as "the multiple tracks throughout a career divided into ages, namely the societal pattern that is seen in the interval and sequence of what one accomplishes throughout opportunities and periods of transition (Inagaki, 1988, p.2)." Therefore, the main objective is to generalize the lives of specific age groups.

Life history utilizes documents and other things aside from the oral data gained through the interview to create the historical context necessary for comprehending the story (Goodson & Sikes, 2001). The main objective is to close in on the historical facts of an individual's life (Yamada, 2000).

Life story pays attention to the way in which a person speaks about their own experiences, and the main objective is to hone in on the experiential facts (Yamada, 2000) by interpreting the meaning of the experiences the person has had (Sakurai, 2012).

Beliefs are concepts that "many people are not self-aware of, going about their day to day life without realizing what kind of beliefs they hold (Akita, 2000, p.194)." Based on these distinguishing features of beliefs, this study does not seek to hone in on historical facts on the development of beliefs from a life history point of view but rather to employ the life story point of view to hone in on the experiential facts in the development of beliefs and pay attention to "the meaning of how a person organizes their own experiences when speaking of them to other people (Yamada, 2005, p.192)." In other words, the study takes the standpoint of "even if what is being told is not historically accurate or remembered correctly, it is still thought of as the reality of that person's 'story or tale' (Yamada, 2005, p.196)."

3-2 Life Story Methodology

There are cases where a "life story" refers to primary source and cases where it refers to methodology. A life story that is primary source is defined as a person chooses to tell about the life he or she has lived, told as completely and honestly as possible (Atkinson, 1998, p.8). Therefore, life story highlights the most important aspects of a

person's life. By contrast, life story used as research methodologies are defined as "a qualitative investigative method that takes stories which are based on experience and seeks to read as holistic of an individual's life, their world, as well as changes and phases in society and culture (Sakurai, 2012, p.6)."

The important thing when conducting life story research is that attention must be paid not only to the content of the story but also to the way the person talks, as this provides an indication as to the significance of what is being discussed in the story (Sakurai, 2012). Stories in an interview are organized into three aspects (Sakurai, 2012). The display of the progression of past accomplishments within the limits of an interviewee's unique experience is the taleworlds. Outside the framework of experience, the story's significance index, indicated through the mutual effect that both the interviewee and interviewer cause in each other, is the storyrealms. Greetings and so on are conversation.

In this study, stories are analyzed from the viewpoint of how science teachers organize their stories when speaking on the development of their beliefs while keeping in mind the differences between the different aspects of a story.

4. Outline of the Interview

4-1 Framework of the Interview

Based on the methodology of Atkinson (1998), Sakurai (2012), and Sakurai & Kobayashi (2005), a semi-structured interview was created, the full course being three interviews. The time anticipated for each interview was about an hour and a half, and Table 2 shows the established theme as well as the main questions.

Interviewees were informed in advance by email that the intent of the interview was to learn "What experiences have influenced your thoughts on science education, and how have these thoughts changed?" Also, approximately one week prior to each interview, the interview's theme and main questions were emailed to the interviewees. At the interview location, the interviewee spoke freely about what they wanted to, based on the main questions. In the event that the interviewee was not motivated to speak of their own accord, the interviewer would ask the main questions in sequence. When the stories became abstract, the interviewer would request more specifics by asking additional questions.

Table 2: The Main Questions and Theme of Each Interview

1st Interview: Recalling Life Memories
1. How did you view school science in your elementary, lower-, and upper-secondary school years? 2. Which university (and faculty) did you choose? What were the reasons you wished to attend that university? 3. What did you study specifically during your university years? 4. Did experiences as a student teacher have a positive influence on you? Or did it have a negative influence on you? 5. When did you ultimately decide to become a teacher? 6. Please tell us about the progression after becoming a teacher; what kind of schools did you work at, what grades did you teach, what other official responsibilities did you have, and what difficulties or hardships arose within your educational practice? 7. If you went to graduate school, why did you decide to go there?
2nd Interview:Experience as a Science Teacher
1. What kinds of goals did you have for normal science lessons? What kinds of lessons did you create to achieve those goals, and what kinds of teaching did you apply? How did you reflect your own lessons? Please elaborate for each school that you worked at. 2. Throughout the process of your work as a science teacher, what influenced your growth as a science teacher? For example: encounters, activities, books, educational practices, training, graduate school training, or something from fields outside of your formal occupation as a teacher, such as regional or family influences. If there are multiple influences, then please tell us about all of them.
3rd Interview: Beliefs on Science Education
1. What do you think science is? 2. What do you think school science is? 3. What way do you think school science should be taught? 4. What is your image of a good science teacher? 5. What kinds of abilities does a good science teacher need? 6. How and where is one able to acquire such abilities?

4-2 Selection of Interviewees

When selecting interviewees, a total of five experienced science teachers were chosen. Four of them held administrative positions as teacher supervisors, and exhibited professional growth as teachers and ascended through the job ranks. One of them continually grew as professionals, and voluntarily acquiring doctoral degrees. A short CV for each interviewee is shown in Table 3.

Table 3: Interviewee CVs

Teacher A	Worked for 38 years in public junior high schools (20 of those in administrative position), now retired.
Teacher B	Worked for 31 years in public high schools (12 of those in administrative position), currently the principal of a public high school.
Teacher C	Worked for 8 years in a public high school, then 30 years in a high school affiliated with a national university (held the position of vice principal), then 3 years at the research institute for higher education, currently retired.
Teacher D	Worked for thirty-five years in a public junior high school, now retired. After retiring, has acquired a doctorate (in education) while continuing to work as a part time lecturer, but only in the mornings.
Teacher E	After working at company, worked for 35 years in a public junior high school (11 of those in administrative position), currently the principal of a public junior high school.

4-3 Interview Times and Dates

It was considered important that the interviewees be able to speak freely; therefore, there is a large disparity in the actual times of the interviews. The actual times and dates on which interviews were conducted is shown in Table 4.

Table 4: Actual Interview Times and Dates

Teacher A	2/10, 2/19, 2/25/2015, Approximately 4 and a half hours in total.
Teacher B	1/31, 2/20, 3/9/2015, Approximately 9 hours in total.
Teacher C	3/5, 3/10, 3/17/2015, Approximately 4 hours in total.
Teacher D	9/18, 10/2, 10/23/2015, Approximately 4 and a half hours in total.
Teacher E	10/7, 10/21, 10/30/2015, Approximately 4 and a half hours in total.

4-4 Analysis of the Survey Results

The acquired stories were written out, and they were segmented by a change in speaker, or when the speaker shifted to a different subject.

As no uniform analytical method for life story has been developed, in addition to basing the study on life story methodology, the specific analytical method of SCAT (Steps for Coding and Theorization: Otani, 2008, 2011) was utilized. SCAT is an analytical method that describes storylines by coding from 1) to 4): 1) what words and phrases within the data should be given attention, 2) words and phrases from outside the data for rephrasing those important items, 3) words and phrases that explain those important items, 4) themes and conceptual constructs that arises from 1), 2), and 3). At the end, themes and conceptual constructs weave into storylines. When considering what data in 1) is noteworthy, the differences between the taleworlds and storyrealms were always kept in mind. Experiences within the storyrealms related to beliefs about goals or purposes of science teaching, Meanings were given to experiences within the taleworlds, or in the event that the interviewee was speaking on the beliefs they currently hold towards the goals of science teaching, all of these were indicated in 1) as noteworthy data items that should be paid attention.

5. Survey Results

Here, the storylines gained through the previously described analysis are quoted, and what each storyline says about the development of beliefs about the goals and purposes of science teaching is arranged according to each of the five experienced teachers.

5-1 The Case of Teacher A

Teacher A held the beliefs about the goals and purposes of science teaching are to "cause students to have interest in the theories of the familiar natural phenomena," and to "make students understand the fact-based theories of familiar natural phenomena."

Teacher A's beliefs about the goals and purposes of science teaching were held from the time Teacher A became a science teacher, as can be interpreted from this storyline: "while studying physics in upper-secondary school, I came to have an interest in the theories of the natural phenomena around me as they were expressed in simple numerical formulas. (…) From the time I started teaching, I utilized OHP to make it easier for the children to achieve the goal of science teaching, which is understanding the theories of familiar natural phenomena." Other than that, an "argument I had with friends during university" before becoming a science teacher also had an influence on Teacher A's beliefs about the goals or

purposes of science teaching.

After this, Teacher A's beliefs about the goals and purposes of science teaching were clarified throughout Teacher A's professional career, as can be interpreted from this storyline about researching teaching materials which Teacher A had trouble teaching: "while reading technical books related to what the students were studying, I learned there are theories to natural phenomena aside from physics (for example, weather phenomena). This experience led me to have a deep interest in fields outside of physics. (…) My beliefs about the goals or purposes of science teaching became clear." Other than that, "student reactions" and "observing experienced science teachers' lessons" also clarified Teacher A's beliefs about the goals and purposes of science teaching.

5-2 The Case of Teacher B

Teacher B held the belief about goals and purposes of science teaching is to "make students acquire a scientific way of thinking the world, which are basic requirements whether they become scientific experts or not."

From the time Teacher B became a teacher, Teacher B held the belief that this fundamental way of thinking the world was the goals and purposes of science teaching, as can be interpreted from this storyline: "while studying for exams, I truly felt I was starting to develop my own scientific way of thinking the world (which is the basis of understanding science) in my former teacher's class (Chemistry)." Other than that, "the realization that I'd forgotten knowledge that I'd learned as a young child" before becoming a science teacher, as well as "the experience of feeling that I had learned my own way of thinking the world during my former teacher's lessons (elementary school science and Japanese history)," and "a developmental psychology course during university, an introductory course on the study of science education, and experience as a student teacher" all had an influence on Teacher B's beliefs about the goals and purposes of science teaching.

After that, at Teacher B's first school which was evening upper-secondary school, Teacher B took advice from a consultant teacher that added to Teacher B's beliefs about the goals and purposes of science teaching the concept that even students who will not become scientific experts need the foundation of a scientific way of thinking the world, as can be interpreted from this storyline: "I was asked what kind of lesson I wanted to teach these students, some of whom will become scientific experts and some of whom will not. (…) Even in my evening upper-secondary school, where most of the students would not become experts, I felt the necessity of ensuring students acquire a fundamental scientific way of thinking that would be useful to them in their work and daily lives."

Teacher B's beliefs about the goals and purposes of science teaching were further clarified through Teacher B's professional career, as can be interpreted from this storyline about student scores that happened when Teacher B was posted at a newly established school that was meant to be a college prep school and another school which had been a college prep school for quite some time: "there were many teachers who thought to increase student scholarly knowledge by providing information and making them do drills. (…) In that kind of school culture, my classroom practices were carried out after I had considered what kind of lesson I should create to make my students acquire that fundamental scientific way of thinking that they would need whether they became scientific experts or not. As a result, my own student's scores were always higher than those of other science teachers." Aside from that, "questions and answers with the students at the evening upper-secondary school," "student scores," "meetings with a person from the Ministry of Education," "research during graduate school," and "analysis of university entrance examination" all further clarified Teacher B's beliefs about goals and purposes of science teaching.

5-3 The Case of Teacher C

Teacher C held the belief about goals and purposes of science teaching was to "properly pass down science, which is what mankind has used to build up its own

culture," but experiences which had an influence on the development of this belief were not recognized. However, Teacher C did speak to the effect that it is possible the beliefs about the goals and purposes of science teaching that Teacher C held when becoming a teacher gradually came into clarity throughout Teacher C's professional career.

5-4 The Case of Teacher D

Teacher D held the belief about goals and purposes of science teaching are to "pass on a feeling of elation towards science as beginning of producers of science," and "cause students to have an interest in technology as consumers of science."

From the time Teacher D became a science teacher, Teacher D held the belief about goals and purposes of science teaching was to pass on a feeling of elation towards science as beginning of producers of science, as can be interpreted from this storyline about research during Teacher D's time at a graduate school of engineering: "the feeling of elation one has whenever an experiment yields results is a true experience as a science producer. (…) What I first thought was that I wanted to pass on to the students was the feeling of elation towards science that I experienced during my time at the graduate school of engineering."

After that, this belief came into higher clarity throughout Teacher D's professional career, as can be interpreted from this storyline about student careers: "among the children who I taught to actually perform science through scientific research, there are some children who became scientific experts. This affirmed my belief about goals and purposes of science teaching was to pass on a feeling of elation towards science as beginning of producers of science." Other than that, "conversations with my Brazilian friend" also clarified Teacher D's belief about goals and purposes of science teaching.

Meanwhile, encountering certain teaching materials also led Teacher D to add a new concept to Teacher D's belief that one goal of science teaching was to make students have an interest in technology as consumers of science, as can be interpreted from this storyline about research at a graduate school of education: "when I was using the internet to research ESD, I stumbled upon *Twenty First Century Science* teaching materials from the U.K., which taught knowledge peripheral to science. (…) I remember being shocked and thinking, 'is this also school science?' With this experience as motivation, I came to hold the belief about goals and purposes of science teaching was to cause students to have an interest in technology as consumers of science."

5-5 The Case of Teacher E

Teacher E held the belief about goals and purposes of science teaching was to "teach all children the universally necessary problem-solving ability by way of dealing with natural phenomena."

Teacher E held this belief about goals and purposes of science teaching from the time Teacher E became a science teacher, as can be interpreted from this storyline about their job at company: "There were absolutely no work opportunities that would allow me to use the professional knowledge that I had learned at university. (…) Thinking that I could also apply the strategies of how to deal with research was useful to my work at company. This experience influenced my belief about goals and purposes of science teaching is not necessarily to teach students what to learn but rather to instill in them other abilities which will be useful for them when they enter society." Other than that, before becoming a science teacher, "science lessons during my junior high school days" also had an influence on Teacher E's beliefs about the goals and purposes of science teaching.

After that, Teacher E's beliefs about the goals and purposes of science teaching came into higher clarity throughout Teacher E's professional career, as can be interpreted by this storyline about the culture of the school that was Teacher E's second school: "until my second school posting, my belief about goals and purposes of science teaching was to nourish students' problem-solving

ability by thinking and talking through them, based on knowledge they already had. But at this second school, there was a culture of nourishing this problem-solving ability through every school subject." Other than that, "student reactions" also clarified Teacher E's beliefs about the goals and purposes of science teaching.

6. Discussion: Reflection on Results

6-1 Distinctive Features in the Development of Each Teacher's Beliefs

The results gained will be considered based on Roberts' (2007) classification of scientific literacy into Vision I and Vision II. Table 5 shows the development of these five experienced science teachers' beliefs about the goals and purposes of science teaching. Beliefs that they had held since they became a science teacher are marked with a "✓," beliefs that they had come to hold since the middle of their professional careers are marked as "Partial," and beliefs that they had never held are marked with an "X."

Table 5: Classification of the Five Science Teacher's Beliefs

Interviewee	Vision I	Vision II
Teacher A	✓	X
Teacher B	✓	Partial
Teacher C	✓	X
Teacher D	✓	Partial
Teacher E	X	✓

In this study, Teachers A, B, C, and D held beliefs about the goals and purposes of science teaching that fall under Vision I, and Teacher E held beliefs that fall under Vision II. Also, whichever beliefs the teachers held on goals and purposes of science teaching when they became science teachers were clarified throughout their professional careers. It can be thought that various experiences both in and out of school, for example, student reactions and outcomes, and meetings with other experienced science teachers, led to the affirmation of the teacher beliefs about the goals and purposes of science teaching.

Meanwhile, experiences out of school, for example, the advice that Teacher B received from a consultant teacher immediately after he became a teacher, and Teacher D's research experience in a graduate school of education during the mid-stage of her professional career, were the cause of them adding Vision II beliefs onto the Vision I beliefs that they already held.

6-2 Development of Beliefs through Consecutive Learning

Sato (2015) indicates that the fields of teacher learning and growing are arranged concentrically from inside to outside of school as follows: self-reflection on their own classroom practices, advice from colleagues at the same school, advice from principals and vice principals, educational research through on-the-job-training, and training at university and lectures from university professors. Sato (2015) also indicates that the function of the fields of teacher learning and growing become weak by spacing from inside of school.

Based on these notions, there will be an attempt to reframe the perception of the results this study gained related to the development of beliefs about the goals and purposes of science teaching from the viewpoint of teacher learning. In this study, experiences that clarified an individual's beliefs about the goals and purposes of science teaching came about both inside and outside of school. On the other hand, development that led to the addition of new concepts to individual beliefs about the goals and purposes of science teaching came from experiences outside of school. These points do not suggest that out of experiences from inside or outside of school, one has a stronger or weaker function than the other of developing beliefs about the goals and purposes of science teaching. Rather, it suggests that teachers' beliefs about the goals and purposes of science teaching are developed through consecutive learning both in and out of school.

6-3 Pre-service Teacher Education for Constructing Beliefs

In this study on the development of science teachers' beliefs about the goals and purposes of science teaching, the results that deserve special attention are the results showing that even if new concepts are added, concepts that are held when one becomes a science teacher continue to be held throughout the teacher's professional career. In the Campbell et al. (2014) survey, out of the eight science teachers who were surveyed before and after one year of professional development, seven of these science teachers continued to hold their Vision I beliefs while the other added Vision II beliefs onto the Vision I beliefs that he/she already held. Therefore, even if new concepts are added to beliefs about the goals and purposes of science teaching, development does not cause one to repudiate their pre-existing conceptions.

In other words, if one holds beliefs about the goals and purposes of science teaching when they become a science teacher, these beliefs maintain vital meaning as a concept that continually influences their day to day classroom practices and their professional growth. This suggests that, in addition to the concepts that it is difficult to change the beliefs that a teacher (Pajares, 1992; Kagan, 1992), in-service teachers with established beliefs are difficult to change their beliefs (Crawford, 2007), and pre-service teachers are easy to change (Luft & Roehrig, 2007), pre-service teacher education should make a vital role as giving an opportunity for developing beliefs about goals of science teaching.

7. Conclusion

Based on the experiential facts of five experienced science teachers, it became clear in this study that various experiences both inside and outside of school have the influence of clarifying a science teacher's beliefs about the goals and purposes of science teaching, that new concepts are sometimes added to these beliefs in the midst of professional career, and that the beliefs a science teacher holds when they become a teacher do not change over the course of their professional career. From these, the development of beliefs about the goals and purposes of science teaching throughout a teacher's professional career can be perceived as part of the science teacher's consecutive learning both inside and outside of school. Pre-service teacher education should make a vital role as giving an opportunity for developing beliefs about goals or purposes of science teaching. Suggestions were gained for how to realize development of beliefs about the goals and purposes of science teaching through pre- and in-service teacher education, as well as the value of this.

Although this study was not able to sufficiently discuss it, much of the prior research indicates that the experience of actually learning in a classroom has a strong influence on a teacher's beliefs (for example, Wong & Luft, 2015; Crawford, 2007; Luft & Roehrig, 2007; Eick & Reed, 2002; Tsai, 2002; Pajares, 1992; Lortie, 1975), just as three out of the five experienced science teachers who were interviewed for this study said that their learning experience during their elementary, lower-, and upper-secondary school years had an influence on their beliefs. Based on this point, clarifying the main factors in the formation of beliefs about the goals and purposes of science teaching held by students as they enter the pre-service teacher education is an urgent topic. Additionally, the revised perception of the development of beliefs from historical facts based on the continual interviews, discussion of other cases that contain quantitative survey, and discussion from the viewpoint that other science teachers' beliefs about teaching and learning and the nature of science have a mutual effect on each other, may be beneficial for creating more effective continuing professional development.

Acknowledgements

We would like to express our heartfelt gratitude to the five teachers who cooperated positively with us all throughout the lengthy interviews.

Note

1. Although *"hattatsu"* has been accepted as an established translation for the term "development," the word in Japanese tends to emphasize the meaning that the word has of explaining where one has made achievements. In English, the word 'develop' has a wide range of meanings. Japanese uses "*kaihatsu"* to describe potential, *"seichou"* to describe slow, natural growth, *"kaika"* to describe the growth of species, and *"tenkai"* to describe the development of images and diagrams. Just like a photograph is "developed" to reveal a previously invisible image, the phenomenon of the way the hidden negative image is seen depends on external influences. In this paper, the word *"hattatsu"* [development] is used to include this wide range of meanings. Yamada, Yoko (2011). "Hattatsu" to "Hattatsu Dankai" wo tou: syougai hattatsu to narathivu ron no shiten kara *(Reconsidering* "*Development*" *and* "*Developmental Stage*" *from the Perspectives of Lifespan Development and Narrative Theory)* [in Japanese with English abstract]. *The Japanese Journal of Developmental Psychology, 22*(4), 418-427.

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This article translated into Japanese is published in the journal *Gakushu Shisutemu Kenkyu*, Vol.3.

Theory and Research for Developing Learning Systems, 2 : 49-65, 2016
Research Initiative for Developing Learning Systems (RIDLS)

Development of a Professional Development Program to Promote the Reconfiguration and Exploration of Life Environment Studies as a View of the Subject:
Analysis and Discussion of the "Essence" of Life Environment Studies

Takumi Watanabe

This paper proposes a training program for teachers in charge of life environment studies (LES), including a discussion of the relevant particulars.

The development policy for the training program is as follows. The objective of training, in addition to fostering an understanding of the existence of alternative opinions and practices and encouraging reflection on the part of teachers themselves, is to promote the reconfiguration and exploration of how LES is viewed as a curricular subject. For this purpose, the substance of the training program has been set bearing in mind the following three points. The first deals with the opinions and practices of the teachers themselves as well as the plans and other materials developed by them. The second deals with research findings (e.g., academic articles) in the field of LES pedagogy. The third deals with excellent unit case studies and practice-oriented videos. Moreover, I will prepare multiple unit case studies with different unit configurations based on the common LES philosophy of "cultivating the foundations of self-reliance." Training will be conducted with a focus on analysis and discussion of materials including the unit case studies and lesson videos.

Based on the above, I have developed an actual professional development (PD) program for LES. The program is ultimately a model, and its time allocation and contents will require changes depending on the needs and schedules of the participants. To enhance possibilities for critiquing the training program, it has been prepared in the format of a syllabus for use in the developmental study of social studies teaching.

The progression of the training is as follows. In the Introduction, after imparting the training objectives, participants study "Why Teach LES?" and "Relationships and Differences between LES and Related Subject Areas (Early Childhood Education, Integrated Learning, Science, and Social Studies)." In Stage 1, participants will gain an understanding of the existence of other options in the curriculum through the following process: cases study analyses of curriculums (year, unit, and lesson planning for LES), followed by plan development and by presentation and discussion. In Stage 2, participants will gain an understanding of the existence of other options in teaching through the following process: analysis of lesson videos, followed by teaching implementation (mock lessons) and by the presentation and discussion of recorded teaching implementations. The Wrap-Up will summarize the overall training program. In addition, participants will also be asked to conduct an evaluation of the training program itself.

This program, through a series of training exercises, is intended to facilitate the analysis and discussion of the essence of LES. We believe that this sort of curricular and pedagogical training is also required in the field of LES education.

Key Words: Life Environment Studies, Views of the Subject, Units, Professional Development, Curriculum and Instruction

Ⅰ. Introduction

This article proposes a training program for teachers in charge of life environment studies (LES), including a discussion of the relevant particulars.

As a subject, LES contains a wide range of learning content related to society (people), nature, and the self. By linking these together in an organic way, LES aims to inculcate children with "the foundations of self-reliance." In terms of the character of learning pertaining to the life environment that surrounds the child, teachers tasked with LES are required to independently develop their own teaching materials and lessons to a higher degree than in other subjects. Accordingly, Nakano points out that "LES practice involves the motivation and competence of teachers and schools to an immense degree, and it truly is a subject that tests the expertise of the teaching profession" (Nakano, 1992, p.3). It could be said that the success or failure of LES depends on the curricular leadership abilities of individual teachers.

Research has been conducted in relation to professional development (PD) in the context of LES.

One example is a study conducted by Nagata (2007). By analyzing the character of two lessons and lesson study groups related to them, Nagata indirectly points the way to one possibility for PD. Arguing that "the 'teaching power' needed for LES, much more than that for 'absolute' components, entails 'relative' components in which variation and change are required depending on the unit, the subject, and the circumstances of the target children" (Nagata, 2007, p.12), Nagata points to the importance of pacing learning from the facts of each lesson. As they explore the "essence of LES" (Nagata, 2007, p.19), each teacher or teaching team can be said to be enhancing their curricular leadership abilities. Toda (1995-96) also shows a similar orientation toward enhancing lesson analysis.[1]

In addition, Koda & Sato (2007) have developed and implemented an approach to "Evaluation and Training Utilizing a Group Moderation Method." This approach seeks to enhance individual teachers' capacity for evaluation and leadership through the scoring and discussion of evaluation materials (i.e., pictures and text on observation cards by children).

Furthermore, Omachi & Nakano (2010), having developed a PD program that aims "to improve LES teaching," have attempted an implementation that aspires to continuous improvement. The contents of the training are intended "to improve the distinctiveness of the subject, key points for the preparation of yearly teaching plans, basic ideas behind LES unit configuration, ideas for teaching and lesson planning, methods of evaluation in LES, and the quality of awareness" (Omachi & Nakano, 2010, p.2). The program may be said to be one that comprehensively covers the curricular leadership required for teachers tasked with LES instruction. The program intends to enhance curricular leadership on the basis of the essence of the subject as it has been prescribed in the curriculum guidelines. This was developed through a study by the Aichi Branch of the Japan Life Environment Studies and Integrated Learning Education Society and could be said to be a prime example of a PD program by professional LES practitioners and researchers.

The above pioneering developmental studies may be noted as corresponding to the needs of schools. However, from what I have found, we have not yet seen a training program that seeks to rethink the *essence* of LES by asking fundamental questions such as "Why teach LES?" and "What is LES in the first place?"[2] Ultimately, we only have a part of such a program, as represented by the indirect proposal of Nagata and Toda mentioned above.

As is widely known, LES was first instituted as a curricular subject in 1989. As a result, the lack of both practical experience (as practitioners) and educational experience (as learners) proved to be challenging for teachers (Toda, 1995, No.49, pp.78-79). Training was undertaken as a means of overcoming these challenges. Nowadays, however, the number of teachers who went through LES themselves as schoolchildren is increasing. Even though the length of the course of lessons for LES is short compared with that for other subjects (Year 1 and Year 2 of elementary school), we can consider that some

view of LES as a subject has been formed as part of teachers' own learning experience. In daily practice and in-school training with colleagues, opportunities to rethink such views are limited. However, it may be that it is precisely by enhancing the subjective awareness of these views that teachers will be able to better realize the independent development their own teaching materials and lessons.

In this paper, I develop a training program that seeks to promote the reconfiguration and exploration of such views of LES as a subject.

Ⅱ. Training Program Development Policy

1. Setting Training Objectives

Typical examples of PD programs incorporating questions relating to the essence of their respective subjects (e.g., "Why teach X?" and "What is X in the first place?") can be found in American-style social studies.

Elsewhere, I have already elucidated the structural principles of such training programs through an examination of PD in the context of American social studies (Watanabe, 2016). In this paper, by applying these results, I develop a PD program that seeks to promote the reconfiguration and exploration of how LES is viewed as a subject. In doing so, I make particular reference to research findings about "Powerful and Authentic Social Studies: A Professional Development Program for Teachers" (hereinafter, PASS) supplied by the National Council for the Social Studies (Watanabe, 2015).

Of course, LES and social studies are separate subjects. However, given that they both share the goal of forming social awareness (i.e., an intellectual awareness of society), in terms of the configuration of a training program, we should be able to obtain some pointers.

2. Development of Teaching Materials and Training Contents

Promoting the reconfiguration and exploration of how teachers view LES requires that individual teachers be encouraged to perceive the essence of LES while reflecting on their own personal experience of the subject. It is from this perspective that the contents of the training program will be set.

The first deals with the opinions and practices of the teachers themselves as well as the plans and other materials developed by them. These aspects can also be found in PASS.

The second deals with research findings in the field of LES pedagogy. Specifically, it uses excerpts from academic papers and books as teaching materials. However, these are not intended to point to correct answers but are treated as one among many possible expert opinions. Teachers are also ensured the opportunity to critique each paper based on their respective practical experiences and circumstances in the field.

Number 3 deals with excellent unit case studies and practice-oriented videos.

Conceivably, multiple unit case studies could be prepared with different unit configurations on the basis of the common LES philosophy of "cultivating the foundations of self-reliance." This is a concept also evident in PASS. In the case of social studies classes, there are lesson types that have been approved by an official association.[3] This is why it is possible to select typical case studies by relying on existing lesson types. However, in the case of LES lessons, the three types presented by Kuwabara (2002) —namely, Environmental Acclimation, Environmental Adaptation, and Environmental Mastery— remain the only case studies that can be attempted.

While based on Kuwabara's typology, in this training program, I set new lesson types and draw teaching materials from typical case studies that correspond to each type. These types are not presented to those participating in the training but are merely intended as a basis for the selection of teaching materials. A detailed investigation of the typology itself will be conducted in future studies.

I used the following procedure to create the typology. I gathered examples of practice concerning the "Town Exploration" unit in Year 2 and grouped these together inductively to four types based on their similarities in terms

of content and methodology. I avoided ranking the types, intentionally situating them as relative to each other. Herein, for convenience, I describe these types as Discovery-, Adaptation-, Research-, and Proposal-based.

The Discovery-based type aims to heighten attachment to sociality, community, and nature through the re-discovery of the life environment. The typical case study used here is Kotsuji Michiko's "Suteki da na watashi ga sumu machi [So Pretty! The Town Where I Live]," included in Kage & Shimizu (2009). This can be checked in texts published as commentary on the Curriculum Guidelines or texts by the History Educationalist Conference of Japan.[4]

The Adaptation-based type aims to deepen the understanding and skills required in the context of the life environment and to heighten public engagement. The typical case study used here is Miyata Shuji's "Watashi no machi [My Town]," collected in Nakano (1990).

The Research-based type aims to rethink the life environment in objective terms. The typical case study used here is Yoshihara Kentaro's "Machi tanken ni iko! [Let's Explore Our Town!]," included in Asakura (2002).

The Proposal-based type aims to propose improvements to the life environment. The typical case study used here is the essay "Randomaku wo mitsukeyo [Let's Find Some Landmarks!]" in Seki (2011).

Note that in my own survey, unit case studies based on the Discovery-based type were the most frequent, followed by those for the Research-based type. In this training program, each type will involve the use of a typical case study.

With regard to practice cases (lesson videos), I used excellent lessons that deal with the same scenes in the same unit. In this training program, I used the example of the Toy-making unit in Year 2. Units on Town Exploration and Cultivation/Husbandry are often taught in lessons that take place outside classrooms and schools, making it difficult to apprehend the aspect of teachers' guidance (support). In contrast, instructions for this unit are frequently given in the classroom, making it easy to apprehend the aspect of teachers' guidance. In this training program, I use "scenarios of working to improve created toys" as teaching materials. As examples, I take up instances of lesson practice conducted by Ishii Nobutaka[5] and Fujiwara Ayako[6] In these, the instruction scenarios of "providing opportunities for reflection and representation," "devising sites of interaction and mutual communication," "providing repeated activities for trial and error," and "making full use of children's diversity" (MEXT, 2008, pp.64-66) are all incorporated into a 1 h session, arguably making them ideal as training materials. Both practitioners specialize in LES, and their lessons are examples of the deployment of high-quality instruction.

3. Methodological Principles for Training

This training program, with reference to the aforementioned PASS program, relies on the analysis of unit case studies and lesson videos as its main methodological principle (I should note that the unit case studies and lesson videos in question include those introduced as part of the training program itself and those produced by the participants themselves). The process of case study analysis is as shown in Figure 1.

In PASS, as shown to the left of Figure 1, the essence of social studies and teaching standards (rubrics) that commensurate with such a basis are set in advance, and the analysis and scoring of case studies for each of curriculum (i.e., year-, unit-, and lesson-based planning for the subject)," Evaluation, and Instruction proceed according to that standard. The process has an a priori quality. However, such an a priori analysis and the act of scoring another's instruction are perceived negatively in the context of LES education in Japan and are difficult to carry out in practice. Even if faithful in theory, the development of a program that would be impossible to implement in the context of Japanese teachers' culture and the Japanese educational system (especially the Curriculum Guidelines) goes against the spirit of this paper.

Therefore, in this LES PD program, I have performed modifications as on the right side of Figure 1.

After discussion of the essence of LES, each teacher analyzes and discusses the various case studies and lesson videos in relation to curriculum (i.e., curriculum-, unit-, and lesson-based planning for LES) and Instruction, respectively, while making reference to this essence. In other words, rather than scoring cases studies based on a priori standards (a prescribed analytical perspective towards teaching practice), the objective is to build a new perspective for observing classes as a basis for engaging in the discussion and analysis of case studies.

In addition, case study analyses relating to Evaluation have been left out. While evaluation (of children's understanding) is given more emphasis in LES than in social studies, it is not something that can be achieved without an understanding of children's appearance and context. Accordingly, I would like to leave this aspect to in-school training. In this training program, by focusing on curriculum and instruction, I distinguish their roles in contrast to in-school training

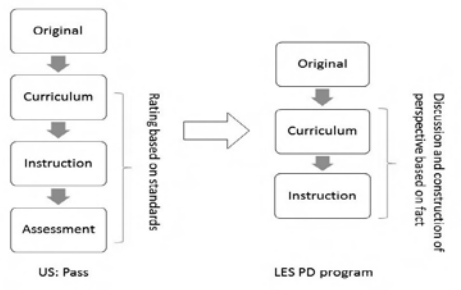

Figure 1: Methodological Principles for Professional Development in Life Environment Studies

Ⅲ. Development of the Training Program

This section explains the LES PD program developed here in specific terms. Its intended audience encompasses professionals with 10 years or less of experience, including novice teachers. In terms of the total number of hours, it assumed 15 h. The program is ultimately a model, and its time allocation and contents will require changes depending on the needs and schedules of the participants. The selective implementation of a portion of the program is also possible. It can also be used in teacher training programs at universities.

The training objective, in addition to fostering an understanding of the existence of alternative opinions and practices and encouraging reflection on the part of teachers themselves, is to promote the reconfiguration and exploration of how LES is viewed as a curricular subject.

The overall plan of the training is as shown on Table 1 on the next page. For more detail, please consult Table 2 (Training Plan). In this paper, to enhance possibilities for critique of the training program, it has been prepared in the format of a syllabus[7] for use in the developmental study of social studies teaching. Table 1 shows the Stage from left to right: Themes (Facilitator's Main Questions and Instructions) and Thoughts to Elicit from Participants. On this basis, I will now explain the Training Plan (Table 2).

To begin with, the Introduction is the stage at which participants are familiarized with the objectives of the training program. At the beginning, through the sharing of teachers practical experiences, the interest of the participants is purposefully guided in the direction of the essence of LES. "Why do you think we teach life environment (studies)?" and "Couldn't helping out, husbandry, cultivation, and local community matters be learned at home as well?" Teachers have a variety of interests and concerns. In-school training, with its collegial focus, should involve the pursuit of various learning objectives based on the interests of each school. However, in this training program, the objective is to make participants aware of the essence of LES and to promote the reconfiguration and exploration of how LES is viewed as a curricular subject. By disclosing the orientation of the training program to its participants, I hope to negotiate any discrepancies between the way the problem is conceived by teachers and facilitators so as to enhance the effectiveness of training. This aspect is also evident in PASS. In the deployment of the program, participants will be prompted to examine "Why Teach LES?" and the

"Relationships and Differences between LES and Related Subject Areas (Early Childhood Education, Integrated Learning, Science, and Social Studies)."

Table 1: Overall Plan of the LES PD Program

Stage	Themes (Facilitator's Main Questions and Instructions)	Thoughts to Elicit
Introduction (1 h)	**Orientation－Training Objectives** (1 h) ○ "Why do you think we teach life environment (studies) in school?" ○ "Couldn't helping out, husbandry, cultivation, and local community matters be learned in the home as well?" ◎ Why must we teach LES?	• Rethinking the essence of LES
Stage 1: Curriculum (7 h)	**Year-based Planning Case Study Analysis** (1 h) ○ Why do such differences occur in year-based planning for LES, even though we are all planning for the same subject?	• A bird's eye view of year-based planning (educational curriculum)
	Unit Case Study Analysis (2 h) ○ Why do such differences occur in unit-based planning for Year 2 Town Exploration, even though we are all planning for the same unit?	• Discover unit (lesson) configuration patterns
	Unit Planning Development (2 h) ○ Let us create unit/lesson plans for the Year 2 Town Exploration unit (or improve lesson plans created in the past, depending on time).	• Employ and modify unit (lesson) configuration patterns
	Unit Planning Presentation and Discussion (2 h) ○ Why did he (she) create the unit/lesson plan in that particular way?	• Examine possibilities for alternative or improved unit (lesson) configurations
Stage 2: Instruction (6 h)	**Instruction Case Study Analysis** (2 h) ○ Let us try to discover instructional techniques from lesson videos of the Year 2 Toy-making unit. (Videos used will be two excellent examples of teaching practice, both by veteran teachers specializing in the study of LES.)	• Discover instructional techniques
	Teaching Implementation (2 h) ○ Making use of instructional techniques and principles, let us select a 1-h-long segment from the Year 2 Town Exploration Unit prepared earlier and stage a mock lesson or exercise (recorded). (If compatible with year-based planning at the home school, it would be fine to place it into actual practice.)	• Employ and modify instructional techniques
	Presentation and Discussion of Recorded Teaching Implementations (2 h) ○ Why did he (she) teach the lesson plan in that particular way?	• Examine possibilities for alternative or improved instruction
Wrap-Up (1 h)	**Training Evaluation** (1 h) ○ Let us prepare to convey the outcomes of this training program to colleagues at our home institutions. What kinds of outcomes seem to be worth conveying?	• Learning evaluation, critical examination of the training program

Table 2: Stages of the Training Plan

Facilitator's Instructions and Questions	Teaching and Activities	Teaching materials	Learning Content
Introduction (Essence and Significance of LES)			
Orientation: Training Objectives			
• What grade do you teach? What is your position in your school?	T: Question P: Present		• Confirm attributes of participants.
• Recently (or until now), what sort of practices have you engaged in with regard to LES?	T: Question P: Interact		• Reflect on your own practice.
○ "Why do you think we teach the life environment (studies)?" "Couldn't helping out, husbandry, cultivation, and local community matters be learned at home as well?"	T: Question P: Discuss		• Explicitly state your own thoughts on LES.
• What did your predecessors think about why we teach LES?	T: Question	(1)	• Think about the philosophy of LES. Depending on the situation, also refer to the Curriculum Guidelines and expert opinions. Re-familiarize yourself with the standpoint of learning from the "life environment."
[Preparatory Assignment] Each participant should prepare interviews with veteran teachers in participants' home institutions and neighboring schools with regard to the question of "Why Teach LES?" (its learning significance for children).	P: Interact	(2)	
• How is LES related to (and distinct from) other subjects (Early Childhood Education, Integrated Learning, Science, and Social Studies)? In groups, choose any one of these subject areas to consider this question.	T: Question P: Interact P: Present		• While reflecting on your own practice, think about the relationship between LES and other related subjects.
• Experts indicate the relationship between LES and these other subjects as follows. Let us read the assigned articles while reflecting on your own experience of teaching practice.	T: Question P: Read materials P: Interact		• Become familiar with expert opinions (article excerpts, etc.). Scrutinize your own experience of practice.
[Reading] Relationship with Early Childhood Education •Kimura Yoshihiko: "Life Environment Studies and the Difference between Early Childhood Education and Elementary School Education" (3)			
[Reading] Relationship with Integrated Learning •Hidai Toshio: "A Review of Life Environment Studies and Possibilities for Connections and Developments with Integrated Learning" (4)			
[Reading] Relationship with Science •Noda Atsunori: "Continuities and Distinctions between Life Environment Studies and the Sciences" (5)			
[Reading] Relationship with Social Studies •Miyamoto Mitsuo: "Continuities and Developments in Life Environment Studies and Social Studies" (6)			
◎ Why do we teach LES?	T: Query		• Direct interest to the essence of LES and to how LES is viewed as a curricular subject.
• Let us think about this question. We believe that this training program will help you all realize the creation of LES lessons in your own style.	T: Query		
Stage 1: Curriculum			
Part 1: Year-based Planning Case Study Analysis			
• What sort of LES takes place over Year 1 and Year 2 in your own school? Why?	T: Question P: Present	(7)	• Understand the overall educational curriculum and the outline and intentions of the two-year LES curriculum in participants' own schools.
[Preparatory Assignment] Confirm the year-based plan and its intensions with the chief of academic affairs or another manger, and bring a copy to the training program.			
• Let us classify similar elements in year-based planning for LES.	T: Question P: Classify		• Notice differences with other schools. Notice understanding based on objective and content organization.
○ Why do such differences occur in year-based planning for LES, even though we are all planning for the same subject?	T: Question P: Interact		• Perceive how content organization varies in accordance with the objectives of LES for

			each school and in accordance with school environments.
Part 2: Unit Case Study Analysis • Glance over these unit case studies A-D for the Year 2 unit on "Town Exploration." Each is an excellent unit published in university-level textbooks, etc.	T: Question P: Read materials		• Be reminded that Unit Planning can be done differently even for the same unit.
A: "So Pretty! The Town Where I Live" (8) Discovery-based (heighten sociality and attachment through the re-discovery of the life environment) Unit Objectives. • Develop an interest in the town where you live as well as the nature, public resources, and other elements; be able to questions and learn about the community by encountering and interacting with local people. • Be able to communicate what you discovered and noticed during your explorations using your own methods of expression. • Learn the merits of the community and the joys of becoming involved with the people and places of your community, and develop a sense of attachment to vour town.			
B: "My Town" (9) Adaptation-based (deepen the understanding and skills and public engagement required in the context of the life environment) Unit Objectives. • Observe and investigate the buildings and people of the town and natural environment. Look carefully at the spaces where you live, develop an interest in people's appearances and local events, and learn to think about the proper way to use common facilities that everyone uses.			
C: "Let's Explore Our Town!" (10) Research-based (rethink the life environment in objective terms) Unit Objectives. • Develop an interest in the various aspects of your town and the people in it; become readily able to attempt to learn about them and also learn to be able to engage in an appropriate manner. • Be able to think about what you should do to investigate something you have doubts about and then be able to communicate what you have found out about it to your peers in an easily comprehensible manner. • Realize that there are a great many people and things in this town and that various discoveries can be made by deepening your involvement with them.			
D: "Let's Find Some Landmarks!" (11) Proposal-based (propose improvements to the life environment) Unit Objectives. • Be able to clarify differences and continuities by gathering all sorts of information about events and subjecting this to comparison and classification. • Be able to devise methods of writing and drawing charts to summarize collected information in an easy to visualize and easy to understand manner. • Be able to see the svmbolism in the events that occur around vou.			
• Of Units A-D, which lesson do you think is the one you would most want to teach yourself?	T: Question P: Interact		• Reflect on your own view of LES as a subject.
• Let us write a list of all of the kinds of continuities and differences in Units A-D.	T: Question P: Interact		• Inductively identify continuities and differences.
• What are the respective strengths that Units A-D seek to cultivate in children?	T: Question P: Present		• Notice what sorts of things arise due to differences in the object-focus of LES (the approach and degree of encouraging understanding of the life environment). Also, direct the attention as well to the underlying context (i.e., the environment).
• What kinds of contents and methodologies are set in Units A-D in order to help them achieve their objectives?	T: Question P: Present	(12)	• Notice that contents and methodologies differ according to objectives. On such occasions, inductively derive contents and methods from unit examples. Where this is difficult, participants may also refer to the 11 perspectives and 15 subjects specifically set out for content configuration in the Curriculum Guidelines.

[Deductive Analysis Using the Curriculum Guidelines] 11 specific perspectives: Safe and Healthy Living, Interacting with the Local Community, Community Spirit, Civic Awareness and Manners, Production and Consumption, Information and Exchange, Interacting with Local Nature, Time and the Seasons, Playful Ingenuity, the Joy of Growth, and Basic Life Habits and Skills.			
[Deductive Analysis Using the Curriculum Guidelines] 15 subjects: School Facilities, School Employees, Friends, School Routes, Family, the Household, People Who Live and Work in the Community, Public Property, Public Facilities, Local Events and Observances, Local Nature, Local Things, Animals, Plants, and the Self.			
• What sorts of learning (teaching) materials and learning activities are respectively set for Units A-D?	T: Question P: Interact		• Notice that the quality of learning materials and learning activities differs according to objectives, contents, and methodology.
○ Why do such differences occur in unit-based planning for Year 2 Town Exploration, even though we are all planning for the same unit?	T: Question P: Present		• Understand the differences between the units in terms of goal theory.
Part 3: Unit Planning Development			
• If you were going to create a Town Exploration Unit, which pattern from among Units A-D would you choose?	T: Question P: Choose		• Select one pattern.
○ Let us create unit/lesson plans for the Year 2 Town Exploration unit (or improve lesson plans created in the past, depending on time). Let us think about applying them in the case of our own schools.	T: Instruct	(13)	• Participants may make use of unit planning formats that use their own towns or communities. However, they must add the objectives, content, and methodology of the unit.
• Let us create a unit plan and, within that, a lesson plan for an arbitrary part of the unit. First, decide the unit name and then try setting a unit objective. Next, we shall examine the contents and methodology.	T: Instruct P: Develop		• Be conscious of examining the lesson from the perspective of the unit objectives.
• By examining learning (teaching) materials and learning activities, let us develop the unit and lesson plans.	T: Instruct P: Develop		• Where time allows, develop these in groups. Or else develop them to bring to the next session.
Part 4: Unit Planning Presentation and Discussion			
• What kind of unit plan will you create and present?	T: Question		• Explain your own unit plan.
○ Why did he (she) create the unit/lesson plan in that particular way?	T: Question P: Present		• Describe your own and another's unit plan from the perspectives of unit planning objectives, content, and methodology.
• Let us try critiquing each other's presentations from the standpoint selected earlier (Units A-D). Let us point out things that we can learn beyond these standpoints.	T: Question P: Present		• Reflect on your own unit planning using that of others as a mirror. Or else, look for common ground.
• After the presentation and resulting discussion, let us improve the unit/lesson plan.	T: Instruct P: Improve		• Engage with the perspective of others to improve your own unit plan.
• Why did you make those particular improvements?	T: Question P: Present		• Consciously describe the reasoning behind your improvements to the unit plan.
Stage 2: Instruction			
Part 1: Instruction case study analysis			
○ Let us try to identify instructional techniques from lesson videos based on the Year 2 Toy-making unit. (Videos used will be two excellent examples of teaching practice, both by veteran teachers specializing in the study of LES).	T: Instruct		• By analyzing specific lesson videos, discover and master instructional techniques.
• Let us watch Lesson Video A from the Year 2 Toy-making unit and attempt to point out instructional techniques. Please record the specific scene and time where these occur.	T: Instruct P: Watch P: Record	(14)	• Lesson Video A is an excellent example of teaching, and a variety of instructional techniques will be discovered by watching it. These will also contain elements prescribed in the Curriculum Guidelines.

[Video] "Scenes of working to improve created toys." (Ishii)			
• What instructional techniques did you find? In which scenes?	T: Question P: Present		• Indicate specific instructional scenes. In addition, think about why the teacher in the video used the instructional techniques that he did.
• Let us think together about instructional techniques and principles. I would like for us to find at least six.	T: Question P: Present		• Participants will build these up together. However, it is expected that the Curriculum Guideline themes of "providing opportunities for reflection and representation," "devising sites of interaction and mutual communication," "providing repeated activities for trial and error," and "making full use of children's diversity" will be included. These elements are included in Lesson Video A.
• Let us watch Lesson Video B from the standpoint of instructional techniques and principles.	T: Instruct P: Present	(15)	• Lesson Video B is also an excellent example of teaching. Through the video, we will gain an understanding of instructional techniques in specific instructional settings.
[Video] "Scenes of working to improve created toys." (Fujiwara)			
• In which scenarios were these instructional techniques and principles apparent. Why did you think they were good?	T: Instruct P: Present		• Discuss better ways of giving instruction.
Part 2: Teaching Implementation			
○ Making use of instructional techniques and principles, let us select a 1-h-long segment from the Year 2 Town Exploration Unit prepared earlier and stage a mock lesson or exercise (recorded). (If compatible with year-based planning at the home school, it would be fine to put it into actual practice.)	T: Instruct		• Implement a lesson based on the instructional techniques discovered in cooperation with the facilitator and other participants.
• In addition to improving the lesson plan produced last time, let us try writing down specific key points related to instruction.	T: Instruct P: Improve		• Based on instructional techniques and principles, carry out specific lesson preparations on your own (or in groups).
• Let us try delivering a (record) mock lesson/exercise from the Year 2 Town Exploration unit.	T: Instruct P: Practice		• Prepare a mock lesson for next time, and bring the video of the lesson to class for discussion. Moreover, summarize the lesson beforehand (about 1 A4 sheet of paper).
Part 3: Presentation and Discussion of Recorded Teaching Implementations			
• Let us present on the kind of teaching that was conducted.	T: Instruct P: Interact		• Describe your own instruction video.
○ Why did he (she) teach the lesson plan in that particular way?	T: Question P: Present		• Reflect on your own teaching using that of others as a mirror.
• Focusing on instructional techniques and principles, let us critique each other's implementations (with a view to improving them)	T: Instruct P: Interact		• Examine each other's teaching from the perspective of objectives and instructional techniques and principles.
• In addition, let us discover new instructional techniques. Whose practices and which scenarios inspired your thoughts?	T: Instruct P: Present		• Based on participants' implementations, work together to develop new instructional techniques.
• Let us think about instructional principles and techniques.	T: Instruct P: Present		• In addition to participants using these techniques in their own future teaching, it is expected that they will carry them back to their home institutions where they will share the outcomes of their training.

Wrap-Up			
Training Evaluation ○ Let us prepare to convey the outcomes of this training program to colleagues at our home institutions. What kinds of outcomes seem to be worth conveying?	T: Instruct P: Note impressions and interact P: Interact P: Produce a Report	(16)	• In addition to an overall review of the training program, participants will reflect on what they have learned. In addition, the preparation of at Training Report will take place. This should be in the formats of individual schools.
• Please offer your views on how to improve the training program in future.	T: Instruct P: Describe		• Evaluate the training program itself.

(Note that T and P denote the Teacher educator [facilitator] and Participants, respectively)

[Teaching Materials Course List]

[Introduction]

(1) MEXT (ed.) (2008) *Shogakko gakushu shido yoryo kaisetsu seikatsu-hen* [*Commentaries on Elementary School Curriculum Guidelines: Life Environment Studies*], Nihon Bunkyo Shuppan, pp.9-13. (in Japanese)

(2) Nakano, S. (1990a) Seikatsu-ka shinsetsu no igi to kadai [*The Significance and Challenges for the Newly Established Subject of Life Environment Studies*]. In National Association for the Study of Educational Methods (ed.) *Chiiku tokuiku no koso to seikatsu-ka no shido* [*Concepts of Intellectual and Moral Education and Life Environment Studies Instruction*] (pp.38-49), Meiji Tosho Shuppan. (in Japanese)

(3) Kimura, Y. (2012) *Seikatsu-ka no riron to jissen: 'Ikiru chikara' wo hagukumu kyoiku no arikata* [*Theory and Practice of Life Environment Studies: Possibilities for Education that Cultivates "Vital Strength"*], Nihon Bunkyo Shuppan. pp.74-89. (in Japanese)

(4) Hidai, T. (2000) Kyoka to shite no seikatsu-ka no minaoshi to togo e no setsuzoku hatten no kanosei [*A Review of Life Environment Studies and Possibilities for Connections and Developments with Integrated Learning*], *Seikatsu-ka* [Life Environment Studies], (7), pp.4-9. (in Japanese)

(5) Noda, A. (2011) Seikatsu-ka to rika no setsuzoku to kubetsu wo kangaeru: Kizuki no shitsu wo takame, kagakutekina mikata/kangaekata no kiso wo yashinau [Continuities and Distinctions Between Life Environment Studies and the Sciences: Improving Quality of Awareness and Cultivating the Basis for Scientific Thought]. *Science Education Monthly*, (702), pp.5-8. (in Japanese)

(6) Miyamoto, M. (1996) Seikatsu-ka to shakai-ka no setsuzoku hatten: Sono riron to jissai [Continuities and Developments in Life Environment Studies and Social Studies]. In M. Miyamoto (ed.), *Seikatsu-ka to shakai-ka no setsuzoku hatten: Sono riron to jissai* [*Continuities and Developments in Life Environment Studies and Social Studies*] Toyokan Shuppansha, pp.57-89. (in Japanese)

[Stage 1]

(7) For example, the following can be used as teaching materials: Otemachi Elementary School in Joetsu (1991) *Sa seikatsu-ka wo hajimemashou: Seikatsu-ka no gakushu no seiritsu to hyoka* [*All right! Let's Begin Life Environment Studies! Learning Formation and Assessment in Life Environment Studies*], Nihon Kyoiku Shinbunsha Shuppan-kyoku.(in Japanese); Nakano, S. (ed.) (1991) *Seikatsu-ka no sokatsu* [*Life Environment Studies Compendium*], Dohosha Shuppan. (in Japanese)

(8) Kotsuji, M. (2009) Suteki da na watashi ga sumu machi [So Pretty! The Town Where I Live]. In M. Kage & K. Shimizu, (eds.) *Heisei 20-nenban shogakko shin gakushu shido yoryo pointo to jugyo-zukuri: Seikatsu* [*Key Points and Lesson Planning for the 2008 Elementary School Curriculum: Life Environment Studies*] (pp.132-139), Toyokan Shuppansha. (in Japanese)

(9) Miyata, S. (1990) Watashi no machi [My Town]. In S. Nakano (ed.), *2-Nen seikatsu-ka jugyo-zukuri no hinto* [*Lesson Planning Hints for Life Environment Studies Year 2*] (pp.50-59), Meiji Tosho Shuppan. (in Japanese)

(10) Yoshihara, K. (2002) Machi tanken ni iko! [Let's Explore Our Town!]. In A. Asakura (ed.), *Seikatsu-ka kyoikugaku [Life Environment Studies Pedagogy*] (pp.84-89), Kyodo Shuppan. (in Japanese)

(11) Seki, H. (2011) Randomaku wo mitsukeyo [Let's Find Some Landmarks!]. In H. Seki (ed.), *Seikatsu-ka jugyo dezain no riron to hoho* [*Life Environment Studies Lesson Design: Theory and Methods*] (pp.143-172), Fukuro Shuppan. (in Japanese)

[Stage 2]

(12) MEXT (ed.) (2008) *Shogakko gakushu shido yoryo kaisetsu seikatsu-hen* [*Commentaries on Elementary School Curriculum Guidelines: Life Environment Studies*], Nihon Bunkyo Shuppan, pp.19-21. (in Japanese)

(13) Hiroshima Board of Education (2015) *Hiroshimaken kyoiku shiryo* [*Hiroshima Prefectural Educational Materials*], Hiroshima Board of Education, p.115. (in Japanese)

(14) Ishii, N. Ugoku omocha wo tsukutte issho ni asobo [Let's All Enjoy Building a Toy That Moves!]. Academic Year. 18th K-9 Consistent Education Study Group (Hiroshima University Mihara Elementary School). Filmed December 5, 2015.

(15) Fujiwara, A. "Asobi daisuki atsumare!": Tsukutte asobo omocha rando [Playtime Roundup! Build and Play Toyland]. Academic Year. Mihara Municipal Minami Elementary School Education Study Group. Filmed November 27, 2015.

[Wrap-Up]

(16) Guskey, T. R. (1999) *Evaluating professional development*, Corwin Press.

With regard to the question of "Why Teach LES?," interviews with veteran teachers in participants' home institutions and neighboring schools will be set as a preparatory assignment. These will then be examined as a teaching tool. I would like to prompt participants' awareness of the philosophy of LES as learning about the life environment. In addition, depending on circumstances, participants will also refer to the Curriculum Guidelines and articles by expert professionals. As an example of such an article, we may cite Nakano's (1990) chapter on "The

Significance and Challenges for the Newly Established Subject of Life Environment Studies."

With regard to "Relationships and Differences between LES and Related Subject Areas (Early Childhood Education, Integrated Learning, Science, and Social Studies)," after sharing their opinions on the topic amongst themselves, participants will read (excerpts from) articles by professional experts and examine these in light of their own experience. Specifically, participants will read Kimura's chapter (in Kimura 2012) on "Life Environment Studies and the Difference between Early Childhood Education and Elementary School Education" with regard to early childhood education and Hidai's (2000) article on "A Review of Life Environment Studies and Possibilities for Connections and Developments with Integrated Learning" with regard to Integrated Learning. They will read Noda's (2011) "Continuities and Distinctions Between Life Environment Studies and the Sciences" with regard to science and Miyamoto's (1996) "Continuities and Developments in Life Environment Studies and Social Studies" with regard to social studies.

Next, in Stage 1, through a process of analyzing curriculum case studies (year-, unit-, and lesson-based planning for LES) and then developing, presenting, and discussing their own plans, participants will come to perceive the existence of alternative options for curriculum development.

In Part 1, participants will conduct Year Planning Case Study Analyses. Participants will bring yearly plans for LES at their home institutions and seek to perceive their similarities and differences. They will come to perceive how the organization of contents varies in accordance with the objectives each school considers for LES as well the particular environments of each school. For younger teachers, this could offer the chance to understand the overall educational curriculum as well as the outline and intentions of the two-year LES curriculum in their own schools. Note that where there are many participants from schools in the same area, it is possible that this stage would end up focusing on broadly similar cases of year-based planning. Thus, distinctive case studies will also be provided, such as that of Otemachi Elementary School in Joetsu, Niigata Prefecture (1991)[8]

In Part 2, participants will undertake Unit Case Study Analyses. The training program discusses case studies (A-D) related to the Town Exploration Unit in Year 2. These, as mentioned earlier, offer varying examples of unit planning that differ in objective, content, and methodology. The focus here is on the possible reasons for such differences despite the fact that all the case studies relate to the same Year 2 Town Exploration unit. After having planned and described the excellent units and courses published in sources such as university-level textbooks, participants will be asked to select a unit that they would intuitively like to attempt themselves. In addition, participants will be assigned the task of inductively analyzing continuities and differences in the respective objectives, content, methodologies, teaching tools (learning materials), and learning activities for the unit case studies A-D. Noted that with respect to content analysis, the 11 perspectives (Interacting with the Local Community, Community Spirit, Civic Awareness and Manners, Production and Consumption, etc.) and 15 subjects (the Household, People Living and Working in the Community, Public Property, etc.) specifically set out in the Curriculum Guidelines content configuration could also be used as points of view (MEXT, 2008, pp.19-23).

In Part 3, participants will undertake Unit Planning Development. With reference to unit case studies A-D, participants will be assigned to produce unit plans for the Year 2 Town Exploration Unit and lesson plans for an arbitrary portion of the unit using their own home institutions as examples. Where time is an issue, a possible alternative would be for students to make improvements to past teaching plans.

In Part 4, participants will undertake Unit Planning Development and Discussion. Participants will present the Unit Plans they produced, which will then be turned over for discussion. Questions will focus on why individual participants created unit and lesson plans in the way they did. Based on these discussions, each participant will be

expected to improve their unit plan.

Then, in Stage 2, participants will gain an understanding of the existence of other options in teaching through the following process: analysis of lesson videos, followed by teaching implementation (mock lessons) and by the presentation and discussion of recorded teaching implementations.

In Part 1, participants will undertake Instruction Case Study Analyses. Participants will watch two lesson videos related to the Year 2 Toy-making Unit aiming to discover new instructional techniques. The videos that will be used will be excellent teaching scenarios performed by experienced teachers who specialize in the study of LES. With the first viewing, participants and facilitators will work together to identify instructional techniques and principles (aiming for six at the least). With the second viewing, participants will analyze the teaching scenario by applying the instructional techniques and principles identified in the first viewing. Through this process, they will discuss possibilities for even better teaching practice.

Part 2 will involve "Instruction Implementation." Using instructional techniques and principles, participants will select a 1-h-long segment from the Year 2 Town Exploration unit produced in Stage 1 to stage a mock lesson, which will be recorded as a video. In addition, where this is compatible with year-based planning at participants' home institutions, it could conceivably also be put into actual practice.

In Part 3, participants will undertake the Presentation and Discussion of (Recorded) Practice Teaching Scenario. Participants will be asked to present their recorded teaching scenario for discussion. Based on this, participants will collaboratively discover new instructional techniques. In addition to participants making use of these techniques in their own future teaching, it is expected that they will carry them back to their home institutions where they will share the outcomes of their training.

Finally, the Wrap-up will summarize the training program. In addition to an overall review, participants will reflect on what they have learned. Moreover, participants will be asked to provide an evaluation of the training program itself. Following the training evaluation perspective advanced by Guskey (1999), a survey related to the perceived usefulness of the contents of the training program for the participants will be performed.

In the training program described above, training is conducted by distinguishing curriculum from instruction. In the context of LES education, there is a growing interest in the importance of children's understanding (evaluation) as the basis for the development of teaching tools (and learning materials). And while these are of course important, in this training program, my intention has been to deliberately shape the capacity to perceive LES teaching from the perspective of objectives, contents, and methodology. In addition, through repeated case study analysis, the program supports the reconfiguration and exploration of teachers' views of LES. Note that it would be possible to focus solely on the Introduction (the essence of LES) and Stage 1 (Curriculum). Alternatively, one could also implement only Stage 2 (Instruction). I have attempted to create a mutable and flexible training program that can meet practitioners' needs and schedules.

Ⅳ. Conclusion: The Significance of this Program

This paper, having presented the basic principles of an LES-related PD program, has undertaken the development of a practical training plan. Herein, I have proposed a training model to support the reconfiguration and exploration of teachers' views of LES as a curricular subject.

LES entails the need to understand the life environment of the child and, to a greater degree than in other subjects, to respect children's subjectivity. It is for this reason that LES maps and LES calendars have been produced and studies of the subject have been conducted in individual schools.

In these circumstances, what kind of training can researchers interested in curriculum and instruction provide to teachers in the field? This question shapes the basic orientation of this paper.

In recent years, amidst calls to enhance cross-subject cooperation and active learning, interest has been chiefly oriented toward cross-subject training. In tandem with this trend, as the other side of the coin, I would like to focus once more on the essential nature (the specificity) of individual disciplines. It is precisely through teachers' arriving at particular views of individual subjects that cross-subject cooperation is encouraged, and it may be that active learning is something that takes place in subject-specific ways. In other words, this points to the necessity of curricular and pedagogical training.

PD for LES has the potential to begin and end with providing teachers with experiences such as fieldwork and extracurricular observation. Certainly this kind of training will also require further enhancement. At the same time, there also seems to be a need for the kind of training that aims to promote the reconfiguration and exploration of teachers' views of LES as a curricular subject.

This training program is ultimately only a model. It is my hope that the model will be modified through implementation, either in whole or in part, in the sites where PD and teacher training take place.

Notes

1. Toda emphasizes the importance of performing lesson analysis (often seen in social studies education) with reference to the principles and claims of curriculum guidelines and private educational organizations. This can also be taken as a recommendation for training.
2. Note that Kodama (2015) reports an initiative to promote the examination of the meaning of LES by comparison with lower-year social studies lessons in the past. This is being conducted as a part of the "Elementary LES" program at the Hyogo University of Teacher Education.
3. As an example, there are the materials used in social studies pedagogy. See Shakai Ninshiki Kyoiku Gakkai [Japanese Association for Social Studies Education] (2014).
4. For example, Kimura (2008) and Rekishi Kyoikusha Kyogikai (1993) may be cited as representative texts.
5. Ishii Nobutaka. Ugoku omocha wo tsukutte issho ni asobo [Let's All Enjoy Building a Toy That Moves!]. 2015 Academic Year. 18th K-9 Consistent Education Study Group (Hiroshima University Mihara Elementary School). Filmed December 5, 2015.
6. Fujiwara Ayako. "Asobi daisuki atsumare!": Tsukutte asobo omocha rando [Playtime Roundup! Build and Play Toyland]. 2015 Academic Year. Mihara Municipal Minami Elementary School Education Study Group. Filmed November 27, 2015.
7. For a more detailed discussion of syllabi, see Moriwake (1978).
8. Cases of year-based planning from multiple schools are also collected in the compilation supervised by Nakano (1991), which can also be used as training material.

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This article translated into Japanese is published in the journal *Gakushu Shisutemu Kenkyu*, Vol.3.

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Theory and Research for Developing Learning Systems(TRDLS)

Volume 2, March 2016

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Edited by Research Initiative for Developing Learning Systems (RIDLS)

ISSN 2189-9460