Scientific inquiry circle activities of local citizens for bottom-up type innovation

Hajime Eto

University of Tsukuba,
Nakano 3-43-17-305,
Nakano-ku, Tokyo 164-0001, Japan
Email: etohajime@peach.ocn.ne.jp

Abstract: This paper proposes a long-ranged innovation policy via intellectual or scientific development of locals in the situation of economic depression. Specifically, this paper proposes to organise local inquiry circles of citizens such as teachers, experienced farmers or fishermen, unemployed youths with a certain educational background, and students. The creative inquiry activities are purposed to accumulate intellectual or scientific knowledge for future innovation potentials in locals. These circle activities can learn lessons from the experiences of success in small volunteer-based circle activities such as 4-H clubs (Head, Heart, Hands, and Health) in agricultural areas in the early and the middle 1900s and quality circles in industries in the middle and the late 1900s. These proposed activities can be voluntarily allied with the currently active tourism policies in locals. In a long-ranged scope, they are expected to foster the intellectual or scientific potentials in locals and to push up the innovations in locals.

Keywords: citizens participation in innovative inquiry; creativity education in locals; fosterage of local innovation potentials; 4-H club; grassroots level innovative inquiry; inquiry-based science education; little science; local-centric innovative circles; long-ranged innovation policy; pushup-type innovation.


Biographical notes: Hajime Eto, PhD, is a Professor Emeritus, University of Tsukuba, Japan. He is interested in the methodology of sciences such as logic, philosophy and sociology of science, particularly in the methodologies of new interdisciplinary sciences including computer language, operations research, and science policy. He has contributed to international scientific communities by publishing nearly 80 papers in various scientific journals and several books. Retiring from the teaching jobs, he is still serving several international journals as the editorial board member of several journals including International Journal of Services Technology and Management (Inderscience).

1 Introduction

Background: The economic depression has decreased the R&D and education investments in the latest years in many countries. This caused the decline of R&D activities and stagnated the transfer of their results and high-tech knowledge to industries,
although information technology is diffused to every corner of the society and the number of tourists is increasing in many areas. The depression causes a variety of social problems such as the unemployment, the decay of locals, the disillusion of young generations for the future, and others. Governments planned to construct innovative clusters and science centres and promoted creative ventures, but their effects remain limited thus far.

The increase of unemployment due to the economic depression affects the educational and training behaviours of schools, teachers, students, and parents. They concentrate the educational efforts on improving the academic scores in exams at the sacrifice of creativity development. The creative potentials are dried up in locals. At the same time, young intellectuals leave locals for cities. The potentials of innovations drain away from locals.

Needs: While the manufacturing sectors decline, the number of tourists is increasing in many areas. Locals need to develop new tourism resources by “discovering” the new aspects of existing hills, forests, old houses, and the likes, or “adding the values” to such existing tourism resources by “rediscovering” their cultural or scientific significances. Locals see the problems how to satisfy these needs. Besides the tourism, it is needed to start up new venture businesses hopefully in new or high-tech fields such as information fields. But it is needed to build, accumulate, get or find the capitals including the human capitals or technical seeds in locals.

Aim of this paper: This paper aims at exploring and proposing a cheap and feasible solution to the above-stated problems such as the decline of R&D and education investment; the stagnation of innovations; the decay of locals; and the increases of unemployment at a national level with the unemployed or idle youths in locals. Specifically, this paper proposes a long-ranged innovation policy to raise the intellectual or scientific potentials in locals in cooperation with the local tourism promotion policy in the age of the diffusion of information technologies to locals (called the E-tourism).

The flow of the analyses may be restated as follows.

Research Question 1: How to implement an innovation policy of locals in feasible ways under the above-stated difficult situations of today.

Research Question 2: How to make the tourism businesses compatible with breeding the innovation potentials.

Assumption 1: Innovations are possible only when and where the innovation potentials exist.

Assumption 2: The inquiry-based education movement stimulates and breeds the intellectual and scientific minds.

Assumption 3: Many local people have some local patriotism for their homelands and some motivations to join the activities for revitalising the homelands.

Literature survey to identify the tasks: Many works have appeared about technology development, innovation, ventures, clusters, regional economics, local development, unemployment, education, human capitals, and others. De Solla Price (1963) presented an idea “little science” against “big science”, the latter of which was dominant around the 1960s. After the decline of development led by big science, Eto (2005) noted the incongruence of venture and cluster policies to the traditional values underlying the policy of Japan, and stressed the need to explicitly deny the values underlying the past policies. Baum et al. (2009) and Sorensen (2009) showed the implication of creative industries for local development. But these works left it an open question how to start up creative industries in locals. Fritsch and Stuetzer (2009) studied the geographic
distribution of creative people as a source of local development. Eto (2013) claimed that
tourism industries can gain from the collaboration with the educational activities at local
levels and further showed the “potential economic value” of unemployed youths who
returned home from cities. Similarly, Gorsky et al. (2016) analysed the historical
perspectives of the local policies regarding ‘returning home’ of the natives to homeland.
Johnson (2006), Taylor et al. (2008), Lawson (2009) and Capps et al. (2016)
discussed the value of investigative inquiry in regard to liberal or creative education
philosophies and methods. Arya and Maul (2016) found the effect of secondary students’
program on building knowledge of climate change. Regarding various kinds of plants and
animals, Eto et al. (2015) and Eto and Mahujchariyawong (2016) marked the
anthropological and sociological significance of popular foods, drinks and herbs, and
discussed their science policy implications. Banerrjee et al. (2015) discussed the medical
tourism in relation to the diffusion of medical informatics to developing areas.

Dobrov (1977) stressed that the organisation (he called “orgware”) is as important as
the hardware and software technologies. Eto (2008) and Kristensen et al. (2015)
discussed that the small circle or team organisations at lower levels significantly
contribute to the development of the entire organisations. Meanwhile Gottinger (2015)
characterised the innovations in network systems.

Definitions of terms: The concepts of “big” or “large” and “little” or “small” are
relative, and there is no “absolutely valid” separation between them. Indeed, the fuzzy set
theory started with the attempt to explain “old”, “big”, and others (Zadeh, 1965). Their
definitions depend on context. In some decades of the last centuries, expensive science
such as space science and high-energy physics were called big science, which were often
organised directly or indirectly by governments using the large-scale project management
techniques. The development of new medicines is not necessarily regarded big, but the
development of new cancer medicines is often called big science because the amounts of
mobilised resources for them were big and were often managed by national project
systems. This paper uses these conventional usages (called pragmatics in language
theories) of the words as the “definitions” of big or little sciences.

As the society was interested mainly in big science in the 1960s, there was no
particular discussion or definition for non-big science except for the concept of little
science discussed by de Solla Price (1963). “Little science” in this paper is “ill-defined”
as complimentary to big science; i.e., as non-big science.

“Science” originally denoted “knowledge” and was nearly synonymous to sophia or
philosophy. This paper uses the words of “natural science” and “social science” as in the
senses conventionally used. In some contexts, “science” denotes intellectual knowledge
including what is often called humanities such as philosophy, philology, linguistics,
history, and others. Psychology is originally regarded as belonging to humanities because
its object is the human mind but recently often regarded as belonging to social science
because of its use of statistical methods and sometimes regarded as science because of its
experimental methods like natural science. This paper regards psychology as science,
social science or humanities according to contexts.

The concepts of “urban”, “metropolitan” or “central” areas, or “cities” are not strictly
distinguishable in general and also not strictly distinguished in this paper. Similarly, the
concepts of “suburban” “local”, “peripheral” or “rural” areas or “countryside” are not
strictly distinguished in general and also not strictly distinguished in this paper. Among
these “nearly synonymous” words, this paper uses mainly “urban” and “local”, although
other nearly synonymous words are used in some contexts.
“Venture” and “startup” are originally different words but now are nearly synonymous in economic or managerial contexts. This paper uses “venture” when emphasising the aspects of technological or other risks, while uses “startup” when emphasising the newness. But their difference is often indistinguishable.

“Inquiry” is also a key concept in this paper. This was classically emphasised by the Dewey’s pragmatism philosophy as an epistemological and educational foundation of spontaneous, bottom-up or democratic knowledge development against pull-up knowledge development in authoritarian training systems.

2 Transition from big science to little science

2.1 Near future prospect of big science

Breakthroughs in big scientific fields are not forecasted now in the present financial situation. Seemingly, no paper appeared about the bright prospect of big science in the recent issues of related professional journals. Oppositely, Kubo (1992) and others negatively evaluate the significance of big science.

2.2 Traditional and contemporary little science

Traditionally, science was small or little on the present standard. Classical knowledge of medicinal plants, botany, zoology, geography, and others were all small or little on the present standard. “Scientists” in old ages used their naked eyes rather than modern expensive telescopes or microscopes.

Without expensive apparatuses, local teachers, students or citizens can observe plants, woods, insects, fishes, lakes and others. As there are so many species and subspecies of plants, insects, or fishes, there is a big opportunities for amateurs to discover new species or subspecies. Although amateurs without professional training, the late Emperor of Japan (titled Showa or often called Hirohito) and the next Emperor (called Akihito) of Japan discovered several new species, subspecies or variants of marine livings without using big apparatuses. Interestingly, they discovered new (sub)species or variants in the coastal sea, where many professional fishers and fishing hobbyists were already active.

As the national floral emblems of Japan, a lot of efforts have long been devoted to the studies of cherry blossoms and chrysanthemum. Still now, their new subspecies are discovered in the fields. K. Iida, an amateur citizen, accidentally discovered a new subspecies of cherry tree (now named *Cerasus lannesiana Carriere* or *Prunus lannesiana Wils. cv. Kawazu-zakura*) along Kawazu River, Shizuoka Prefecture, Japan, in 1955. Kawazu Zakura (or Kawazu Sakura) is now very popular in and outside Japan. It attracts many tourists to Kawazu and contributes to the local economy of Kawazu area.

The most popular subspecies of cherry blossoms (*Cerasus yedoensis (Matsum.) A.V.Fassiljeva. Somei-Yoshino*) were purposefully developed by gardeners in a small village called Somei (now a part of Tokyo) probably around 1720–1735 by using a sort of clone technique (planting a cutting). Another theory says that Somei-Yoshino was accidentally discovered by an (or several) amateur(s). In 2016, another new subspecies of cherry was discovered in Ito, near Kawazu.
On the 30 March 1951, a female pupil of low teens discovered an old seed of lotus (*Nelumbo nucifera*) in the peat-bed, six metres under the surface in Chiba, Japan. More seeds were discovered on the 31 March. These seeds were found to be about 2000 years old by the radio-carbon dating technic. Dr. I. Ohga planted the seeds, and one of them successfully opened flowers as the oldest flower in world. This success led to a new theory of seed and flowering.

As the staple or principal foods in many countries, a lot of efforts have long been devoted to the studies of rice, wheat, barley and corn, all of which are taxonomically relative each other (botanically called *Gramineae* or *Poaceae*). Also, buckwheat (botanically called *Fagopyrum esculentum*: the staple food in Tibet, Nepal, Bhutan and a second staple food *soba* in Japan), potato (botanically, *Solanum tuberosum* L, a relative of tomato: *Solanum lycopersicum*), sweat potato (*Ipomoea batatas*, botanically different from potato and belongs to *Solanum* and a relative of morning flower: *Ipomoea nil*), beans or peas (*Legumenesaceae*), and bananas (*Musa paradisiaca var. sapientum*; the staple food in South Pacific Islands) are the staple foods in many cultures, although botanically very different. The rice (*Oryza sativa* in Asia and *Oryza glaberrima* in Africa) is known to have as many as 10,000 subspecies and variants, but still now the new variants are discovered in fields not necessarily by scientists but often by farmers or sometimes even by amateurs. These discoveries provide the professional studies of food with new information and helped agricultural scientists in developing new subspecies or variants. The agricultural experiment stations in locals of Japan successfully have developed new subspecies of rice with the cooperation of volunteer farmers and the staff of agricultural colleges or high-schools. Based on such nationwide activities including the grass-root level efforts, new subspecies or variants of rice now are cultivated in cold areas such as mountainous areas and Hokkaido Island. This helps the local economy.

Besides the widely known cereals, some (often called the miscellaneous cereals or the millet) are staple foods in some areas or religious foods on particular occasions such as festivals. Amateurs can join the anthropological studies of such foods, some of which can be the substitutes of staple foods in bad harvest years.

Many species of fruits were originally rather sour than sweet. Ancient people believed that the acidity is associated with what are now called the vitamins. They valued sour fruits as medicines and improved them in two ways: one as medicines and the other as sweet fruits (called “water candy” in old Japanese). The latter course has been commercially successful.

The apple (*Malus pumila*) is the most favoured fruit. In fact, over 7500 variants are cultivated. It was originally from Central Asia and came to Japan as a medicine around the 800s. But it was too sour to eat. Kasuga Shrine, the central shrine in Nara, still keeps the tree of apple but not for food. It came to Japan again in the 1200s but was still sour to eat. In the late 1800s, sweet kinds of apples came from Germany and USA to Japan and were improved in the northern part of Japan. Today, Fuji is one of the world-most favoured variants of apple, which was bred by Masasuke Sadamori and others in a small town called Fujisaki, Aomori Prefecture of Japan, in 1962.

As the orange is called *Citrus sinensis* (*sinensis* means China) or Mandarin orange, it was originally from Asia (Assam or southern China), but many new subspecies were developed by farmers in the Mediterranean areas and later in Japan and California.
The grape (Vitis spp.) has originally been cultivated in Central and West Asia and came to Japan around 700, but it was too sour to eat. According to a legend, Daizenji Temple in Katsunuma (now Koshu City), Yamanashi Prefecture, planted grape trees for medical use in 718. A few Japanese people ate grape and kept the grape trees before the sweet subspecies came from abroad around the 1700s. But country people of mountainous or cold areas Japan and others like Mongol, Siberia, Sakhalin (Russia) had the knowledge to eat a sort of wild grape called ebi-kazura (native vine) or yama-budo (mountain grape), which is botanically called Vitis coignetiae. Some country people of Japan have long believed its fermented liquor or wine as healthy. The folk knowledge of this plant, the fruits and the liquor is expected to provide the worldwide study of grape and wine with some new knowledge and even a new product of locals. In the 1970s, Ikeda Town in Tokachi, a population-loosing or decaying area in Hokkaido Island, Japan, successfully developed Tokachi Wine from the local wild grape (Vitis amurensis Rupr.) perhaps originally from Siberia.

A similar local-global program in the 1980s was the One Town One Product (OTOP) movement in Oita Prefecture, Kyushu Island, Japan, and is often compared to Kibbutz in Israel. This promotes the vitalisation or innovation of local economy.

Around 1990, the “advances” of the financial sector (called “bubble boom” or “economic bubble”) overwhelmed or indirectly suppressed this kind of product-based innovation movement at bottom levels in locals. The revival or “renaissance” of such local movement is important now.

As to many species, some newly discovered subspecies or variants (e.g., wild or mountain grapes) are tough against pests and grow almost without agricultural chemistry. As the compatibility between the food supply and the environment protection is a critical issue, the discoveries of new subspecies or variants of rice, wheat, and other staple foods are useful. Amateurs can contribute to solving these difficult problems.

Herbs (medicinal or aromatic plants) including mint (Mentha), tea (Camelia sinensis or Camelia assamica) and others were extremely important in old days. The rediscovery or “renaissance” of medical efficacies of herbs and ethnic therapies are now important against the modern ones. In countryside, local people can pick or cultivate the “weeds” in “wild” fields as “new” medicines. Picking the medical plants in mountains or fields or their cultivation as well as the catching of insects or fishes with some medical effect help the increase of intellectual or scientific knowledge and foster intellectual or scientific personnel. In addition, this brings some economic income and breeds the innovation potential in locals.

The fermented foods produced in traditional ways are attracting the attentions of people and governments for their effects on health. Each local area has its own fermented foods in adaptation to the subtle condition of local climate. The rediscoveries or “renaissance” of such local foods has the economic effects on tourism businesses by attracting gourmet tourists and the educational effects on the food-chemical knowledge of local people.

3 Social background of little science

3.1 Gaps between urban and local areas

Industries, hospitals, colleges, research institutes, museums and the likes are concentrated on cities, which absorb intellectuals such as medical doctors, scientists, engineers, artists,
and others from locals. That is, locals are loosing intellectual or scientific human personnel, which are the innovation potential for the future development. This further enlarges the economic, intellectual and scientific gaps between urban and local areas in the future.

Without other industries, locals are forced to promote the tourism industry by using the local resources such as the natural (mountains, beaches, hot springs, etc.) and cultural (old architectures, folk dances, etc.) resources. In this respect, the promotion of tourism industry induces locals to value and to study their natural and cultural geographies and histories. For this purpose, locals need intellectual or scientific personnel. This raises problems where and how to find such personnel.

3.2 Counter stream between urban and local areas

The economic depression deprived local youths of job opportunities in homeland. Particularly, many educated youths left locals for cities, where intellectual or scientific jobs were available. As the national economic situations became worse, however, urban economies became unable to employ such personnel and “released” them from jobs in cities. As unemployed, they were forced to return hometowns (the returning home phenomena) because of the high living cost in cities. Now, there are a significant number of unemployed intellectual and scientific personnel in locals, some of whom hold the college diplomas (e.g., the bachelors of science) or teachers licenses. Such educated personnel are potentially useful for the local development but remain unemployed as idle resources in locals at present. The “job creation” is needed for them in locals. Living with the parents in homeland, they do not necessarily need so much money but are seeking for opportunities to utilise their knowledge.

3.3 Experiences of small circle activities in agricultural, industrial and service sectors

History observes that the small circle activities at bottom levels significantly contribute to the development at the national level. History also sees that the innovations of bottom-up type are highly effective. Circle activities at grass-roots level may be expected to contribute to national level innovations. This is not infeasible. In fact, many unemployed intellectual or scientific personnel now returned home and are looking for the opportunities of intellectual or scientific activities.

The concept of 4-H club was developed in the agricultural areas of USA in the early 1900s, where “4-H” stands for Head, Heart, Hands, and Health. This was promoted in Japan in the late 1940s after WWII, when many youths were released from army. Such youths joined the 4-H club activities. Still today, this is active in USA, Japan and others with the assistances of the agriculture-related ministries of national or local governments. Also in the late 1940s and the 1950s, quality circles were promoted in industry of Japan, and many ex-activists of workers union joined this circle movement. Their activities helped the success of Japanese industries.

The concept of quality circle has been extended from manufacturing sectors to service sectors. The experiences of the area-based activities of 4-H clubs are expected to contribute to the revitalisation of local areas. As well, the experiences of the business-based or shop-based activities of quality circles are expected to contribute to the quality improvement of local intellectual and scientific services in relation to local businesses including tourism businesses.
4 The revival of intellectual and scientific powers in locals

4.1 The motivation of well-organised intellectuals

As the “orgware (organisation-ware)” (Dobrov, 1977) is as important as the hardware and the software, there is a need to organise the local human resources in proper ways. Some residents in locals have some experiences of various organisations such as the 4-H clubs in locals or quality circles in factories or service shops.

As each person has different experience, a problem is how to organise the various experiences into one activity. Fortunately, there are some common grounds among local people. That is: The local-centric cultural tradition; the localism identity; and the cooperation spirit for the homeland. In the decline of the own homeland, some native people are expected to have the motivation to cooperate each other to rebuild the homeland. Youths including those with intellectual or scientific backgrounds may be no exception, and some are expected to voluntarily join the creative activities for the own homeland. This gives them the opportunities and the satisfaction to use their knowledge. In this respect, they are motivated to join the creative activities. In fact, the cases of several cities and villages of Japan show that some youths join the geo-park circles to study volcanoes and hot-springs with local schoolteachers and retirees.

4.2 From idle to idol workforce with intellectual and scientific knowledge

At present, youths who fail to get desired jobs in cities and returned homelands are the idle resources in homeland although some have good educational background and diplomas. If they join the creative activities in locals, they are expected to contribute to the local intellectual development and to be respected as intellectual idles in locals. This encourages and motivates them to engage themselves in the creative activities in locals.

Local areas have natural and cultural assets or heritages such as old trees; old houses; ruins of old castle; archaeological sites of stone-age village; traditional customs; folklores; folk music and dance; dialects; wild flowers and birds; folk therapies and herbs; technical systems for irrigation; remote monitoring systems for the diagnosis of agricultural or wood pest; radar systems for fish shoal detection; and others. However, local people often neglect the values of these things and the related knowhow, and regard them as worthless.

Similarly, many tourists tend not to regard them as valuable enough to visit or to learn. But the volunteer activities by local inquiry circles with knowledge rediscover the seemingly valueless or common things to be valuable legacies, heritages or knowledge from the ancient ancestors or from the parents’ generation.

Rediscovering the values of heritages, the inquiring circles rediscover the values of their own inquiring activities and acquire the spiritual energy for the further activities. Then, the youths are no longer idle human resource but rather respected as idols. This encourages and motivates their further activities.

Combining the rediscovered heritages with the development of local tourism resources, the inquiring activities in locals help some increase of tourists and are acknowledged by the tourism industries in locals. These merits encourage the inquiring activities. This feedback loop positively works for the re-creation of the further activities.
4.3 Creative inquiry circles motivated by localism

As the national patriotism or the nationalism is important in international competitions with foreign countries, the local community patriotism, localism or the regionalism is important in socio-economic or cultural competitions between locals. In this context, the local quality circle movement is expected to learn the lessons from the experiences of the 4-H clubs and quality circle movements in the last century through the parents’ or grandparents’ generations.

The economic depression and the globalisation have undermined the foundation of national political power and the nationwide power of big businesses. At this point, the local power is relatively strengthening itself. Now the time has come for the localism.

4.4 Return home program for revitalisation of locals

It has long been said that youths leave hometowns for cities and never return. However, the long-lasting economic depression has changed the course. Recently, without job and the rise of living cost in cities, some youths return home. Some local governments began to deploy a new strategy to prompt their return home movement: “Youths, return home!”

Now an important problem is what kind of jobs to prepare for them in homeland.

The gap between the urban and local lives used to obstruct the return of youths to homelands. Now, the diffusion of communication system to countryside narrows the gap between urban and local lives. Living in locals, people still enjoy the city life to some extent. This removes some obstacles for youths to return home. But the removal of obstacles alone is not sufficient. Some strategies are needed to attract them. In the recent situation of job markets, educated youths often fail to find intellectual or scientific jobs even in cities because of the nationwide gap between the supply of jobs and the desires of job hunters. Many graduates from colleges and universities desire intellectual or scientific jobs, but the opportunities of such jobs are limited in number. In this situation, “Youths, return home for intellectual and scientific activities!” is expected to be attractive in the “recruit” of youths.

5 Local-based nationwide Innovation

5.1 Two basic types of startups in locals

The breeding of intellectual or scientific personnel in locals is expected to contribute to the rise of potentials of startups in locals. The potentials are expected to promote and realise startups in locals with some probability. The probability depends on how the intellectual or scientific circle activities make barren fields fertile and from where the innovation seeds come. Regarding innovations, a fully endogenous type and a partly endogenous type can be considered.

1 Type 1: Endogenous seeds in locals Among the intellectual or scientific personnel in locals, somebody (somebodies) may try startups in the locals. They (he, she) play(s) the role of core(s) with seed(s) to pull the development of the local(s). This may be a most fundamental and desirable type of startups in the locals.
Type 2: Attracting exogenous seeds to locals

The existence of intellectual or scientific personnel in locals is expected to attract volunteers of startups from other areas, who are looking for adequate places with appropriately trained personnel for startups. A problem is from where and how the seed comes. Botanical knowledge of seeds dispersion (by wind, bees, birds, etc.) suggests several possible answers to this question.

5.2 The integration of spontaneously innovative locals to nationwide innovation networks

When many locals succeed in starting up venture businesses, it is expected that they form cooperative network organisations, which are expected to cover broad areas of a nation. This can spontaneously lead to a nationwide innovation. A successful example is Japan Geo-park Network (JGN), which organises local geo-study circles in a nationwide scale under the guidance of UNESCO to study the natural geo-heritage. If local circle activities do not spontaneously proceed to the nationwide innovation, then government can interfere into its expansion to the entire nation by various ways of assistance. The experiences of the governmental assistance to 4-H club activities and of the corporate top assistance to quality circles at bottom levels toward total or corporate-wide quality management (TQM or CWQM) are expected to provide useful lessons in the efforts to integrate the local innovations to the nationwide innovation network.

Several decades ago, some universities (e.g., Stanford) provided models of the integration role in high-tech clusters (e.g., Silicon Valley). Regarding little science locals at a grass-root level, it is needed to develop a new model of integration network. The experiences of high-tech clusters or science cities in the several decades ago are expected to provide useful lessons for this.

5.3 Contradiction and obstacle analyses

The present economic depression requires governments to cut off the personnel and the budget, and contradictorily to play more active and leading roles than before in order to overcome the present depression. That is, cheap and effective policies are requested.

As stated earlier, local and national governments are requested to support the volunteer circles of intellectual or scientific inquiry activities at the bottom levels in locals. The major members, particularly the leaders, of circles are often the public or semi-public personnel such as schoolteachers, the staff of public museums, health centres, agricultural or fishery experiment stations. In this situation, the inappropriate personnel management of local offices obstructs the volunteer circle activities.

The narrow-minded localism can be another obstacle to the evolution of local innovative activities to nationwide innovation activities. The localism is requested to have a broad view to cooperate the activities in other locals.

Local politics are not free from the conflicts between political parties at a national level, and some of active members of the creative circles may be related to some parties. This may lead local governments to oppress the circle activities. But local governments are requested to be neutral in such political conflicts.
5.4 Policy-related matters

Local governments are requested to encourage and support the creative inquiry activities in locals rather than to interfere in the circle activities from the viewpoint of political conflicts. This really happened in quality circle activities, where the conflict between workers unions and management sometimes obstructed the quality improvement. Political parties at a national level are strongly requested not to bring political conflicts into the creative circle activities. The creative inquiry-based education at local levels has long been in conflict with the “standard” education policy based on the government-authorised textbooks. Such political conflicts need to be avoided for the revitalisation of locals.

5.5 Remaining problems

Assumption 1 in Introduction took only the endogenous innovation into consideration. Here, the endogenous innovation denotes the innovation where the major capitals including the essential human capital are from the within of the locals. Meanwhile, there is another type of innovation: the innovation with the major capitals from the outside and locals provide mainly natural resources such as land. In reality, many innovations are of exogenous type. For example, the capital of innovative tourism businesses like modern hotels are often from outside, and locals provide only the land and the foodstuff. This type of innovations must be considered elsewhere.

Another remaining problem is to take the specific conditions of each local area into consideration. As the condition or the situation differs from one local area to another, a specific “prescription” is needed to each local area. In this respect, a case study is useful. Among others, Ito City, Shizuoka Prefecture, Japan, is a desirable candidate of case study. It is a sightseeing tourism city with hot-spring, volcanoes, and sand or rocky beaches. It has some cultural treasures. The geo-park circle and the history study circle are already active there and have succeeded in some discoveries. Its other industries are the fishery and the tea cultivation. The inquiry circles of fish and herb including tea are desired to be organised there. Assumptions 1 and 2 were only assumed in Introduction but may be requested to be quantitatively tested in the future.

6 Conclusion

In order to revive, activate or energise locals in long range perspectives, this paper proposed to organise volunteer circles for the intellectual or scientific inquiries in locals. These activities were shown to give economic incentives to tourism industries and versa versa. That is, the activities are expected to smoothly collaborate with the local tourism industries as a new type of cultural tourism in relation to ecology tourism, forestry tourism, geo-science tourism, herb tourism, food tourism, archaeology tourism, and others. This paper showed the high possibility of the collaboration of these activities with local tourism, agriculture, fisheries, and others besides tourism. This paper showed the spontaneous motivations of youths to return hometowns for these activities. This paper further claimed that these inquiry activities contribute to scientific advancement at grass-root levels in bottom-up ways, breed the intellectual or scientific potentials, and foster
such personnel in locals. Further, this paper discussed how these activities motivate or promote locals to start up new venture businesses in locals and how these local vitalisation activities can lead to a pushup type innovation at a national level.

References


Scientific inquiry circle activities of local citizens for bottom-up type innovation