Current Trends and Prospect on ICT Training in Japanese Context

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1 Basics on Education Policies with Special Emphasis on ICT in Education in Japan

In 1985, the National Council on Educational Reform was established under Prime Minister. In a series of reports made by the Council, the need to reform education in order to be able to deal with the shift to an information-oriented society was pointed out. Then it was reflected in the revised Course of Study of 1989 and 1998 in the form of computers in education such as 'Information Literacy Education,' 'Information Education,' 'Informatics Education,' whatever we call it, and /or subject matters with the use of ICT.

Consequently, the Ministry of Education, Science, Sports and Culture has been developing policies to deal with the shift toward an information-oriented society. These policies include the following focal points:

(1) fostering information literacy, including the ability to obtain desired information from the vast abundance of information available and to use this information efficiently,
(2) applying new information media in education, science, culture and sports,
(3) developing highly skilled technical personnel to lead the shift to an information-oriented society, and
(4) adaptation of educational facilities to the shift to an information-oriented society and development of information networks.

There is also growing interest in the use of multimedia in education. If it is used appropriately and effectively, it has great potential to be a valuable learning tool. However, a number of issues, from philosophical questions to the development of infrastructure, must be tackled.

The Ministry of Education is not the only government sector striving to accelerate the shift towards information-oriented society. The Ministry of Post and Telecommunications (MPS) and the Ministry of International Trade and Industry (MITI) are also making efforts to establish a fiber-optic communications network, which will link schools, libraries and other social or life-long learning facilities throughout Japan.

2 Fundamental Points of View underlying the Course of Studies

In 1989 the Ministry of Education, Science, Sports and Culture announced the on-going school course of studies, which are characterized by the promotion of “New view of learning ability” that includes ability to present idea, ability to think and ability to judge by students’ themselves. The concept underlying in that course of studies is also strengthened in the latest version of course of studies published in the end of 1998 and at the beginning of 1999, which is partly effective in April 2000. The key concept is called as a ‘zest for living’ or ‘spirit to live’ in the uncertain 21st century and summarized as follows:

1. Help children acquire "zest for living" and cultivate sound minds that positively develop a new era
(1) We are in desperate need of turning out Japanese children who can positively cultivate a new era as well as who value Japanese culture and tradition, sincerity and diligence, "the spirit of harmony", the respect for natural environment, religious sentiments and so on.
(2) It is necessary for us to encourage Japanese children to have their own dreams and/or goals for the future, to make the nation and society rich and full of creativity and vitality, to deal with global issues enthusiastically and to become reliable Japanese in the international society.
(3) Thus, the whole society should promote measures for children to acquire the "zest for living" (i.e. abilities to find tasks, learn and think by oneself; rich humanity including a sense of justice and the moral sense; physical health and strength).

2. Help children cultivate rich humanity including a sense of justice, the moral sense and consideration for others
The rich humanity, which is the core of the "zest for living" that children are expected to acquire, includes the following sensibilities and mentalities.
(1) Tender sensibilities to beauty and natural environment
(2) A sense of justice and a respect for fairness
(3) The basic moral sense including a respect for life and human rights
(4) Consideration for others and a spirit of social contribution
(5) Self-reliance, self-control and a sense of responsibility
(6) Coexistence with others and acceptance of difference in kind
We, the adults, need to re-examine what we have done, so that children can cultivate such sensibilities and mentalities successfully. Then, we shall make necessary changes, take various measures and make all possible efforts.

3. Review the moral degeneracy in the whole society
In order for children to cultivate rich humanity, we, the adults, have to review our moral degeneracy in the whole society. An increasing number of adults are not sure about what values to convey to children and have lost confidence in their abilities to give children appropriate discipline and given up making efforts. The adult society is now facing such crisis of losing confidence in bringing up next generation although adults are expected to develop children's sound minds. This is the very basic problem. From now on, we should do our best to straighten up the moral degeneracy and get over this crisis.

4. Do what we can do now one by one
We have so many different things to do now in order to help children cultivate the "zest for living". Do what each of us should do one by one from each one's standpoint.
Further, more opportunities are being provided locally to exchange opinions, to study and to have forums about educational reforms. We consider that accumulation of these

measures will certainly help secure the steps needed to get over the crisis.

3 ICT in Schools

With regard to information literacy education, the 15th Central Council for Education recommends in July 1996 the following key issues, which are still existing at the highest priority in the education reform in Japan; (i) Systematic implementation of information education, (ii) quality improvement of school education with utilizing information and communication network, (iii) establishment of 'New School' coping with highly information- and communication-oriented society, and (iV) promotion of information morals and fostering human being considering the worse aspect of information-oriented society such as less attention of copyright and privacy issues, less contact of human beings and less direct experiences among the students.

In May 1997 'Action Plan for Revolution and Creation in Economical Structure' prepared by the Minister's Secretary is opened to public to recommend the utilization of multimedia and information network.

In August 1997 revised edition of 'Education Reform Programme' by the Ministry of Education, Science, Sports and Culture pointed out the systematic implementation of computers and software into school and the utilization of the Internet in schools throughout Japan.

In April 1998 the third edition of 'Education Reform Programme' pointed out the following issues: as for the primary and secondary education level, (i) further utilization of computers in primary, upper secondary and lower secondary schools, (ii) compulsory of basic contents of information education in home-economics in lower secondary schools, (iii) creation of new subject on information education in upper secondary schools, (iv) further securing of educational computers in schools, (v) development and securing of educational software, (vi) systematic securing of information and communication network in schools, (vii) securing of educational centers as main bases of regional network of schools, (viii) promotion of research in utilizing the Internet and its related fields, (ix) promotion of cooperation in several pilot projects carried out by private as well as public sectors, (x) development of pre-service teacher education curriculum for information education, (xi) promotion of leadership among teachers coping with the progress of information-oriented society, and (xii) securing of national education center for providing comprehensive information on education and culture, while as for the utilization of multimedia in higher education level (i) promotion of university network utilizing satellite, (ii) research and development of education contents and methods using multimedia and providing higher education institutions with its results, and (iii) further utilization of multimedia in higher education institutions.

In these connection as mentioned earlier especially for primary and secondary level of education new course of studies have been published with several kinds of information education subjects in 1998, while as to that of upper secondary schools in 1999.

Table 1 shows the framework and skills of newly developed classroom activities called 'the Integrated Learning Period,' illustrated by five areas.
The aim of creating the period for the Integrated Learning is responding to and considering the real situation of school, students and communities, each school has to carry out education activities derived by the cross-curricular and integrated learning and the learning based on students' interests. The name of the activities will be decided

by school itself Total Number of School hours for the Integrated Learning.
Table 3 shows the standard hours for the Integrated Learning Period (1 hour unit is equivalent to 45 minutes in primary and lower secondary schools and 50 in upper secondary schools).

Table 1 Framework and skills in the process of Integrated Learning Period

Period for the Integrated Learning Environment・Welfare・Health・International Understanding・Informatics （Cross-curricular activities）	
Identifying Problems (consideration)	field trip, survey, experience, observation, discussion, consultation（Incl. planning）
Collecting Information （finding out）	library, community people, community institution, the Internet, family
Synthesis （identify, throw away, leave, create）	discussion, exchange information, multimedia computers
Presentation (presentation, expression)	papers, computers, videos, Home Pages, liquid projectors, Classroom newspapers

Table 3 Standard hours for the Integrated Learning Period

Grades		Integrated learning	Total hours
Primary	3rd	105	910
	4th	105	945
	5th	110	945
	6th	110	945
Lower Secondary	7th	70～100	980
	8th	70～105	980
	9th	70～130	980
Upper Sec		105～210	

Table 4 also shows subject matters in which Networking, by which the information-oriented society is characterized in what way it is connected such as wireless or wired, will be taught.

Regarding the change of idea underlying the new approach to teaching and learning *Table 5* could be referred as a general schema worldwide, under which both constructivism and situated learning could be easily imagined, though it is not published in Japan but in UK.

With regard to computers in education in Asia and the Pacific region, in 1995 Unesco PROAP published the book ‘Computers in Education – An outline of country experiences –‘ in the form of compilation of the result of APEID Tokyo Seminar, which was held in September 1985. In this book it is hardly difficult to find out such rapid progress of computer and its related technologies. All representatives from countries

including those from Australia, China, India, Japan, the Philippines, Sri Lanka and Thailand show the computers usage as CAI tools, not as presentation tools. And at the same time it is dare to say that they could not foresee the dramatically change of education thoughts, behind of which the impact of multimedia on education is marked as constructivism and situated learning.

Table 4 Subject matters utilizing 'Networking'

Available Subject matters et al for the Networking (Course of Study)

	(**Course of Study**)	(**General subjects**)	(**Integrated Learning**)	(**Specific Subjects**)
	New Course of Study (CS)	All subjects	Integrated Learning Period	Compulsory 'Informatics' US LS Pr Compulsory 'Information& Computers'
AY2003	Effective in US			
AY2002	Effective in Pr & LS preparation period			
AY2000	Current CS	Mainly Math, Science, SS	Elective 'Info Basics'	US LS Pr

Table 5 Is this 'New Curriculum' - New Developments in Teaching and Learning -

Viewpoint	**Until 1990's**	**'New' Learning**
Approach	Emphasis on Content	Process-oriented
Focus	Teacher-centered	Learner-centered
Role of Teacher	Expert	Supporter, guide
Emphasis	What to know?	How?
Learning activities	Individual	Group
Mental posture	Competitive spirit	Collaboration
Role of Learner	Passive	Active
Task	Premediated	Adaptive
Topic	Forced	Deliberation
Error	Failure	Accepted, learn from errors

In 1986 followed by the summary report, Unesco PROAP published another title of book 'Developing computer use in education – Guidelines, trends and issues' where also it is hardly difficult to find out the current trends of using computers in education. The heading Likely future developments includes five categories such as (i) Reduction of hardware costs – increased sophistication, (ii) Computers and communication, (iii) CAI, CBL and CBT, (iv) Video technology and (v) Teachers and computers, in which it is also difficult to think about now on-going educational uses of multimedia computers, though indeed nobody can imagine the rapid progress and development of multimedia and the Internet.

Table 6 Course outline of Newly Developed Subject I

Information Processing I - Educational Information Processing - (Freshman, 1st Semester, Compulsory, 2 credits)
In order to cope with the trends of educational methods and contents and to cultivate the fundamental teaching knowledge and skill as well as to understand all aspects of learners the following objectives will be accomplished by all students. Objectives: (1) To understand the difference between educational information processing and informatics education (2) To acquire fundamental knowledge and skill in educational information processing and informatics education (3) To develop several pieces of simple teaching/learning materials and document with the use of the Internet as well as several basic software such as e-mail, web-browsers, spreadsheet, database and presentation. Contents: 1. Information processing in education and informatics education 2. Basics of information processing 3. Basics of informatics education 4. Problems and issues on information processing and informatics education Course Schedule: (1) 1st week: Orientation (2) 2nd week: Information processing in education and informatics education (3) 3rd week: Electronic mail and net surfing (4) 4th – 5th weeks: Basics of information processing (1) Word processing and educational information processing (5) 6th – 7th weeks: Basics of information processing (2) Creation of home page (6) 8th – 10th weeks: Basics of information processing (3) Spreadsheets and educational information processing (7) 11th – 12th weeks: Basics of information processing (4) Database and educational information processing (8) 13th – 14th weeks: Basics of informatics education Presentation and informatics education (9) 15th week: Presentation of products and exchange of ideas and experiences

4 Case Study I: Training Course in Pre-service Teacher Education

Table 7 Course outline of Newly Developed Subject II

Information Processing II - Education and Information Media -

(Freshman, 2nd Semester, Compulsory to school education major, while elective for other majors, 2 credits)

In order to cope with the trends of educational methods and contents and to promote the utilization of media to develop higher order teaching/learning knowledge and skill as well as to understand the fundamental process of instructional design the following objectives will be accomplished by all students.

Objectives:

(4) To identify the significance of several existing media according to the subject content and learners

(5) To acquire fundamental knowledge and skill in the process of instructional design

(6) To develop several pieces of simple teaching/learning materials and document with the use of the Internet as well as multimedia-oriented software

Contents:

1. Trends of school education
2. Media environment in schools
3. Educational information processing and informatics education
4. Development and use of multimedia in school education
5. Utilization of the Internet in schools
6. Practice and development of materials

Course Schedule:

(1) 1st week: Orientation

(2) 2nd – 3rd weeks: Trends of school education - past, present and the future -

(3) 4th week: Change of media environment in school education

(4) 5th – 6th weeks: Information processing in schools and education

(5) 7th – 8th weeks: Significance of multimedia in school and its development and utilization

(6) 9th – 10th weeks: The Internet in schools and practice of its use

(7) 11th – 14th weeks: Development of multimedia materials with presentation software including that of web-page creation and/or CAI software

(8) 15th week: Presentation of products and exchange of ideas and experiences

In 1998 Teacher Education Council published new guidelines for pre-service teacher training courses to cope with the change of needs in the society as well as that of circumstances in schools, families and communities.

One of the important subjects to be offered in universities is information education related subjects. In Tokyo Gakugei University, which is one of the main and oldest teacher training universities, courses have been offered students who entered in the

academic year 2000.

Table 6 shows objectives and course outline of newly offered subject named 'Information Processing I,' which is compulsory to the freshman at the 1st semester.

Table 7 also illustrates the course outline of 'Information Processing II' in which utilization and development of networking and multimedia materials are focused on compromising giving students the basics of the process of instructional design to cope with the Integrated Learning Period in schools and the utilization of ICT in non-formal education institutions.

5 Case Study II: In-service Teacher Training Course for Developing Multimedia Materials

In March 1992 the Ministry of Education, Science, Sports and Culture published a report "Audiovisual Education Media Training Curriculum Standards" which includes "Training Curriculum I" and "Training Curriculum II", while the past version of the curriculum was developed in 1973 to name "Audiovisual Education Training Curriculum Standards" composed by introductory, intermediate and advanced levels. Several features are found in the new version of the standard, one of which is encouraging teachers utilize media in integrated form described in both sections "4 Basics of Integration of Education Media" and "5 Basics of Learning Information System" in the "general remarks." In 1992 "A Manual for Training Education Media for Planner Use" and in 1993 "A Manual for Training Education Media for Practitioners" have been appeared.

Regarding the training curriculum, in 1992, the Ministry of Education started a new training course in development of multimedia material, and at the same time the Japan Audiovisual Education Association (JAVEA) started sponsoring the "Workshop on the Development of Multimedia Materials".

The training course conducted by the Ministry was for four days to reach key personnel in regional education board throughout the country, while the Japan Audiovisual Education Associations was for three days to spread basic knowledge of multimedia to people in general, even to those not only related to education. Tables 5 and 6 describe brief training items and course schedule organized by the Ministry in January 1997 and by the Japan Audiovisual Education Association in July 1996 respectively.

In addition, training items of the course in January 1996 by the Ministry of Education included (1) Lecture "Meaning of Multimedia Use in Education, (2) Lecture "Multimedia and Copyright", (3) Lecture "Application of Multimedia in Education", (4) Lecture "Trends and Issues on Multimedia ", (5) Lecture, Practice and Discussion "Development of Multimedia", (6) Lecture "Practical Development of Multimedia" and (7) Others in 23.5 hours. So that compared these with Table 5, both (3) and (4) in the 1996 course were neglected and in the 1997 course "Creation of Homepage" was added to cope with latest trend in computer networks. In respond to such reorganization of the course item, in the 1997 course to the participants the information on existing two kinds of multimedia, a package-type and a telecommunication-type, were introduced, while they were asked to examine various kinds of multimedia like "Beethoven's Symphony No. 9" "The Fist Emperor of China" "Bunkyo Museum" "Hyper Science Cube II" for a subsequent discussion on links, interface, method of navigation, etc. applied in them. The elaboration and validation of multimedia depend on the meaning and significance

given to "multimedia ." In this workshop, multimedia and hypermedia were considered almost the same. Hypermedia is referred to as a media with strong interactivity, while multimedia as non-structured and with the ability to link contents.

Table 8 Training Items and Schedule (1997 Training Course on the Development of Multimedia Materials by the Ministry)

Training Items	①Utilization of Multimedia in Education	
	②Multimedia and Copyright	
	③Development of Multimedia Materials	
	④Creation of Home-page	
Schedule（4 days; 24hours）		
Day 1（afternoon）	Orientation	
	①Lecture ”Utilization of Multimedia in Education”	
	②Lecture “Multimedia and Copyright”	
Day 2（morning）	③Lecture and demonstration “Development of Multimedia Materials”	
（afternoon）	Practice “Development of Multimedia Materials”	
Day 3 (morning)	Practice (cont'd)	
(afternoon)	Demonstration and Discussion	
Day 4 (morning)	④Lecture followed by Practice ”Creation of Home-page”	
（afternoon）	Demonstration and Discussion	

Table 9 Training Items and Schedule (1996 Workshop on the Development of Multimedia Materials by the JAVEA)

Training Items	①Features of Multimedia and Education Use	
	②Current Trends of Authoring Software and peripherals	
	③Development of Multimedia Materials	
	④Classroom and Practical Use of Multimedia	
Schedule（3 days: 21 hours）		
Day 1（morning）	Orientation	
	①Lecture “Features of Multimedia and Education Use”	
	②Lecture and Demonstration “Current Trends of Authoring Software and peripherals”	
（afternoon）	③Practice “Development of Multimedia Materials”	
	Demonstration、Scenario writing	
Day 2（morning）	Practice (cont'd)	
（afternoon）	Practice (cont'd)	
Day 3（morning）	Demonstration and Discussion	
	④Presentation of Case Study “Classroom and Practical Use of Multimedia”	
	Trends and Issues	

At the end of the workshop, 9 developed materials were presented, "Enjoy Yourself in Ibaragi Prefecture: Hot Spring edition”, “Outlines of Multimedia Training Course”, “Mr.

Sewing", "The Poet of Ibaragi: Ujo Noguchi", "What Happened in the Course?", "Is Your Body Healthy? - How Long Would You Live?", "Introduction to Prefectures", "Earthquake Mechanism," and "Earthquake". From the experience of elaborating multimedia materials, it was established the importance of the material to allow independent learning guided by the users' own interests. However, it was the most difficult element to achieve and multimedia and hypermedia were criticized to be just an "introduction to the content". This recognition was enough to make changes to the curriculum. The curriculum was then modified to promote the connections between contents. For example in the Workshop of 1997, there were 44 participants, 32 of them from an educational institution. *Table 9* presents some tips to help the participants of the workshop in the most difficult stage of the production of multimedia material.

Table 9 Some TIPS for the Initial Stage in the Development of Multimedia Software

1. *Draw a single scene of a film or a movie* that ***impressed*** you or is ***still in your mind***.

If you are not able to draw it, *write it down with a single sentence or a single word*.

If you have no one, then choose a *book* or *music* with which you have been impressed: write down the title of the book or music, and show a single scene with which you have been impressed in the form of a word, sentence or drawing.

2. Those who have no such films, movies, books, music, may consider drawing an ***imagery*** or writing it down in ***a single word or sentence***. e.g. *what do you want to do to*: what is your *dissatisfaction*, what are you *troubled in*, what should *be solved* ?

3. Express *in a single word* the ***fact*** that impressed you, why is still in your mind, or why are you troubled, and then write down several words *successively*.

e.g. communication with parents and children, friendship, human being, balance, social life, ...

These words may lead you to the ***title*** of your Multimedia Software.

4. Express and/or draw ***several imageries*** which are associated with the original imagery or word or even with the former ones in such a way as *why*, *what else*,....

e.g. animal society, "Kinds of Mammals"(Toei Films Co. Ltd. 1987), "American Society and Their Life"(Kyoritsu Movie Co. Ltd.), individualism, ...

These films, movies, books, sounds, words may be useful ***reference and resource materials*** to be included in your Multimedia Software.

These courses and workshops sponsored by the Ministry of Education and the Japan Audiovisual Education Association reveal that duration of the training is enough in 2 or 3 days to achieve the objectives, while almost all participants had difficulties in "integration" and "expanding their idea." So that when organizing such training courses in multimedia both of these together with "expressing their own experience by their own words" should be introduced clearly before going into practice sessions. In addition it

should be pointed out that participants understand to grade up their skills in “systematic thinking,” “decision” and “representations.” It should be also pointed out that course contents of the computers within the “Advanced Training Programme of Audiovisual Education” conducted by the Ministry are changed from "Project on Computer Training Course” and "Development of Software" into "Project on Multimedia Training Course” and “Development of Multimedia”.

Besides such face-to-face training, training workshop with the use of satellite system has started in 2000 with specially developed system called ‘ElNet’ by the Ministry to find that it is still in the stage of development because of the lower capability on the processing and transmitting moving images. In this connection, in Japan nowadays training courses with the single use of web-material is not applicable, while web-based training with printed materials, video materials, audio materials, whatever format they are such as CD-ROM, DVD-ROM et al. The Ministry and other authorities concerned are now keen to collaborate to develop to cope with wireless and remote training course delivery system.

It should be noted that in 1999 and 2000 the contents of the training course by JAVEA sponsored by the Ministry have also been changed dramatically from such multimedia material development to that with focusing on the digital video and sound editing responding to the development of functions of personal computers in the market.

6 Conclusions

It would not be wrong to say that, except for a few cases, the introduction and utilization of computers and information networks in schools have just started in Japan driven by mainly economical sectors, while so-called Millennium Project in Education has been launched since 2000. Even though the progress of several technologies especially those concerned new types of education system is so rapid, it would be better to reconsider that in order to carry out the education reform the ‘requirement-pull’ will have much more higher possibilities in success than ‘technology-push’ as Glennan, T. K. summarized with the survey of innovation study in 1973.

It should be pointed out that in Japan we have long history and experiences on Audio-visual education training, which is basically compulsory to all school teachers when they entered into their careers, while in the teacher training universities students have to get credits of ‘Audio-visual Education’ with computers. In the series of contents of the curriculum the skills and knowledge of handling OHPs, Videos together with the principles of instructional design are highly recommended to develop curriculum of ICT training modules. In other words the aims of ICT training is giving students and teachers the basic knowledge and skill of design of instruction, while the subject matter informatics is completely differ from that idea.

In Japan the number of children has been decreasing, to a degree that we have not experiences before. Many classes not only in rural areas but also in urban areas have been combined because of the decrease in the number of students and the depopulation in those areas, and maintaining education in those areas is becoming more difficult. If ICT is used appropriately, it has a great potential to be an effective tool or rather ‘partner,’ not only to enrich existing programmes but also to deliver education to those areas.

In educational use of ICT, computers are considered the fundamental media. Computers

and networking facilitate the interaction between the theory and the practice of education. Computers process and store visual and audible information collected from audiovisual and broadcasting materials into databases. Then, the stored information even on the networking is mixed with information from existing media such as VTR, video camera, LD, CD-ROM, and CD. Regarding authoring tools and presentation software, ICT takes them as an element that helps in the function, purpose and operation of the materials, which are strongly recommended by the education for the near future.

The process of learning with ICT is absolutely different from each student and that can be recognized to support his own learning style. The way of information processing of mankind, however, has not yet solved to give us the difficulties to create high quality linkage with a sound view to his learning in any subjects like science and literature. In this regard, with the elaboration of collecting practical data and information though development of several kinds of software and conducting teacher training courses the investigation of the knowledge structure of each student will be cleared and this makes the educational meaning and utilization of ICT as well as its technologies more relevant.

Structural reform or re-engineering is now progressing in Japanese society. In connection with this the learning as well as school education system is also expected to be dramatically changed to respond to the recommendations by the 15th Central Council for Education, which organized in April 1995 to discuss “The Five-day School System,” “Educational Use of Multimedia” and their related issues based on the new philosophy of education “Zest for Living.” So that in schools ICT should develop and utilize in order to achieve effectively wider range of educational objectives in existing and new subject matters with a view to develop students' sound ways of living and thinking in the future. Beside this it is also important that informatics education curriculum not only in schools but also lifelong learning society should be developed to cope with the change of the society, which is not focused on quantity of education but quality of education bearing mind the decrease of digital divide among people in the networking society.

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Training youth to use ICTs and using ICTs for training are seen as ways for youth to acquire skills and jobs, to reach more youth with training, and to provide new ways for youth and potential employers to connect with each other (12, 51).Â The report then reviews a number of trends in ICT4WD, relying on reports and studies published within the last five years. Key topics include the role of ICTs in technical and vocational education and training (TVET), a focus on preparing youth for the digital economy, the promise of massive open online courses (MOOCs) to provide training, and noted sources of information that provide key resources for program design. The review of current trends is provided to contextualize the discussion of results from case study analysis. â€¢ ICT (Information & Communications Technology): The word â€œCommunicationâ€ was added to include technologies related to electronics communications, i.e., network communications, wireless communications, etc. â€¢ Japanâ€™s Ministry of Internal Affairs and Communications started using ICT instead of IT in 2005 in their policy papers. 5 Copyright Â© 2015 JETRO. All rights reserved. Global ICT Market. â€¢ According to Japanâ€™s Ministry of Internal Affairs and Communications, worldwide ICT market will reach above $3.9 Trillion in 2015.Â For vendors, this means they need to learn to explain how your SDN solution fits in a broader SDx context.â€ (Matthew Palmer, SDx Central). 67 Copyright Â© 2015 JETRO. This article updates the trends and developments of Japanese as a second language (JSL) research since Mori and Mori (2011) by reviewing nearly 200 selected empirical studies published in English or Japanese between 2010 and early 2019. The first section of this review examines the cognitive aspects of second language (L2) Japanese development, focusing on vocabulary and kanji (i.e., Chinese characters transferred into Japanese) learning, syntactic development, and the issues surrounding reading and writing.Â In Heinrich, P. & Galan, C. (Eds.), Language life in Japan: Transformations and prospects (pp. 186â€“201). New York, NY: Routledge.Google Scholar.Â Deriving meaning through context: Interpreting bare nominals in second language Japanese. As Information and Communication Technology (ICT) has become pervasive in the. world, the way we communicate and learn has dramatically changed over the past several. years. In response to this trend, recent education in Indonesia sees a significant change in its. curriculum in 2013(K-13). The language education is also at the turning point from its.Â the current use of technology in Japanese language learning based on a questionnaire to. Indonesian teachers and discuss the possible future directions toward technology-enabled. learning. ICT and Japanese Language Learning.Â language practice, and learners in the JFL context now can have different learning. experiences. Synchronous tools such as an online video conference have made it possible to connect. In Japan, the ability to speak and understand English is widely regarded as essential for communication in a â€˜globalizedâ€™ world. At the same time, however, many Japanese are reluctant to communicate in English because they perceive themselves (and are often perceived by others) to be poor speakers of English, despite the fact that they will have studied English for at least six years in junior and senior high school. In response to this, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has recently revised the national syllabus for English teaching. The revise