The utilization of E-learning in an elementary school-- Take PHS phones as example

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***Abstract*—**This study intends to investigate PHS phone and its utilization in an elementary school. The interview process targeted on the projector who is an executor of the plan of PHS phones from an experimental elementary school located in Kaohsiung County, southern Taiwan. She joined all of digital experimental project and observed interaction between the parents and their own children in the specific elementary school. In the experimental period, the projector observed each parents using a PHS phone; through message transmission and mobile net communication, parents using PHS phones to discuss and share feelings with the teachers as well as other parents. The research summarized the projector's ideas and provided references opinion to instruction designers and mobile learning projectors to develop further innovative instruction.

***Keywords*—**PHS phones, instructional design

I. BACKGROUND

Rising Internet population has made net surfing a part of daily life activities. More and more updated versions of mobile devices are going to bring rapid expansion of wireless network. According to eTForecasts report, the number of Internet users surpassed 1 billion in 2005 globally among which connection via the wireless takes 365 millions; the U. S. continues to lead with nearly 200 million at year-end 2005, followed closely by Japan, China, Germany, and U. K., Taiwan ranking as the 15th. The report estimated spread of wireless internet access and upgrade of related devices will have a major impact on growth of internet population in every country and change the ratio of distribution of internet users across the globe[10]. North America, west Europe and some Asian Pacific nations including Taiwan are projected to get ahead on wireless internet communication in 2010. For this reason, in order to have a clear view of what consequences future progress of these equipment and relevant infrastructure are going to bring about. Taiwanese educational authorities worked with PHS (Personal Handyphone System) mobile telecommunication suppliers to carry out an experiment that would help determine the feasibility and effect of PHS mobile phone utilization in education. This study intends to demonstrate handheld mobile net devices application on education, to provide reference opinions and information for teachers and educational officials in charge.

People access audio, video, animation data or search for information increasingly via the World Wide Web, while connecting onto the net through the cable is inconvenient. As a result, 'informational appliances' discard the PC's complicated architecture, presenting as simple, low-price, and consumer-oriented [3]. At the same time, we also ask for convenient environment to process learning.

In 1996, the Ministry of Communication in Taiwan proposed to local people a telecommunication business, caused the liberalization of international of telecommunications in Taiwan, and promoted the market more competition. Therefore, the mobile phones have become convenient and necessary in our daily life, and have made the wireless communication market flourishing. Presently the personal handyphone systems (PHS) smartphones' standard basically with the following features [5]: Large volume phone number and email address book; 'Emoji' (i-mode picture symbol) support, multiple typefaces/fonts; fast digitalized telecommunication key and diverse record functions. Its main feature consists of powerful standard transmission and communication protocol in core technology and Java support. Technology and Java support bring excellent performance on wireless networking.

With the advantages of mobility, mobile wireless technologies improve efficiency and effectiveness in teaching and learning [4]. We intend to search answers for this equipment and its relevant infrastructure to see what is going on and where it will bring us to. This study intends to demonstrate the projector's ideas and PHS phones application on education. In order to provide references opinion to instruction designers and mobile learning projectors to develop further innovative instruction, the educational authorities worked with PHS mobile telecommunication suppliers to carry out an experiment in the future. It will help to determine the feasibility and effect of PHS mobile phone utilization in education.

II. DEFINITIONS AND SITUATION

Generally speaking, M-learning is defined as e-learning

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through mobile devices. Mobile wireless technologies are defined as any wireless technology that uses radio frequency spectrum in any band to facilitate transmission of text data, voice, video, or multimedia services to mobile devices with freedom of time and location limitation [2]. In Taiwan, the production of WLAN exceeded 90 percent in the world. The popular rate of using mobile phone also surpassed 100 percent. We are the number one of using mobile phone in the world. In the plan of "The demonstration and application in wireless broadband network" in Ministry of Economic Affairs, it has helped the 25 cities, the nearly 400 schools, 16 wireless networks industry, 1 telecommunication industry connect with international roaming organizes iPass [6]. This will be helpful to carry out the public wireless region network service in Taiwan schools.

Mobile phones are the most popular and common mobile wireless technology in personal communication tool. People use wireless application protocol (WAP) to access to the Internet from mobile phones. Although it is possible to deliver content to WAP phones, the reading is rarely easy enough. The mobility of the devices used in M-learning scenarios involves a new context data, the thing that needs to be considered is location. The service providers have extremely limited opportunities to offer interactive data services. Interactive data applications are required to support commonplace activities such as [9]: (1) email by mobile phone, (2) sports results, (3) news headlines, (4) music downloads.

In personal or private user mobile phones market, informational appliances focused on hand-held products such as e-mail communicator, e-book reader, mp3 player, website browser, safe protector, personal handyphone systems (PHS), wearable PC equipment. They also offered the functions in teaching and learning applications as follow [1] : (1)Use a tutorial for self-study, (2)Do research on the web, (3)Look up a word in a thesaurus, (4)Give students step-by-step instructions or visual plans for projects.

The wide distribution of internet services made it an indispensable part of daily life. Trends of digitization, broad-band internet, and interaction promote integration of conventional consumer electronic products with computers and the internet. People increasingly access audio and video data or search for information via the world-wide web, while the out-of-date way of connecting onto the net through a computer is complex and expensive. As a result, 'informational appliances (IAs)' discard the PC's complicated architecture, presenting as simple, low-price, and consumer-oriented [10]. There hasn't been yet an explicit standard as to what exactly is IA; however, all those which have internet functions and are able to exchange and process information with other devices can be named IAs.

IAs are categorized according to different application environments into three realms as of enterprise-wide network computing environment for business users, multimedia entertainment for household users, and mobile information or message for personal users. Among which the business user market includes such as net call, thin-client windows-based terminal; house-hold user market covers net TV, internet game console and screen phone; personal or private user market focuses on hand-held products such as the palmtop computer, personal handyphone systems (PHS), smartphone, mp3 player, wearable PC equipment (Web Pad for example) [11].

According to IDC, an information technology market research firm, the so-called smart or intelligent hand-held devices come in various types, basically with personal information management function, simple text-edit, weighing less than one pound, synchronization with a PC, but not necessarily with voice connectivity. However with more and more functions converging on a single unit, old type data-centric PHS have been replaced by those facilities with capability of telecommunications, sending or receiving emails, internet browsing. Today, United States leading these world hand-held mobile net devices market, followed by Japan, etc. [12]. Taiwan does not possess much of proportion of the global market, though, the number is stepping up.

III. TYPES AND SPECIALITY

PHS is basically a wireless telephone, with the capability to handover from one cell to the other. The PHS smartphones' standard is not unified now, but they still have characteristics as follow: [5] [7] [9]:

(1) Many value-added services: Modern PHS phone can also support such as high-speed wireless data, Internet connection, WWW access, e-mailing, text messaging and even color image transfer.

(2) 32-chord polyphonic sound support plus stereo-widening, adjustable 7-level brightness: Polyphony chord ringtone is the basic component of an in-style hand-set. 32-chord stereo widening sound, or up to forty-three incoming call ringtone to select, tune-composable and downloadable and even to record. Otherwise, you can built-in 7-level brightness mode and make yourself another seven levels, flashing alternately; there will be fourteen possible incoming call flashing effects. Here several examples are cited.

(3) Large volume phone number and email address book: 200 entries contact phone book, 10 group management, each entry with up to three names and two email addresses, 200k email inbox, 100k sent messages/drafts outbox and 100k for MiMi (Mobile Information Mobile Internet) Thumb service, easy to manage emails and thumb information, coupled with off-line reading function.

(4) MiMi (Mobile Information Mobile Internet) Thumb service: PHS MiMi thumb information is just like the Internet homepage. [8] When your PHS mobile phone is connected to the homepage, you can freely browse any value added services

on the MiMi menu, such as: news flash, monthly billing services, categorized menus, and search engines.

(5) WiWi Netspeed service: People Avoid troublesome fixed line connections, and get online anywhere with your mobile phone at anytime. WiWi connection equipment has the widest choices, so you can access at notebook PC or all kinds of PDA. The simple operating method and connection settings allow you to easily expand your wireless vision.

(6) Fast digitalized telecommunication key and diverse record functions: MiMi Thumb service, call blocking function, automatic call return, calendar and schedule, alarm clock, through-hole for straps, interchangeable voice-control (voice command and voice-dial), Walkie-Talkie, as radio telephone within 100m, no need to change the handset when taking a trip. The initial concept for PHS design in Taiwan is EPOC, the operating system for hand-held devices which has the largest coverage in Europe. In addition to application in PHS, EPOC has also been used in tiny-scale computers (Psion 618c) and mobile phone systems (Ericsson R380 and Nokia 9210). Its main feature consists of powerful standard transmission and communication protocol in core technology and Java support which bring excellent performance on wireless networking. Plus Unicode double-byte character support's birth which solves Chinese character's display problem, EPOC's future prospect is competitive.

In the future, there are some important technologies, including GPRS、EDGE、WCDMA、Mobile IP and the Wireless LAN etc., will lead us into the society of E-learning of science & technology[13].

(1) GPRS(General Packet Radio Service): it will enhance high efficiency link between the Internet and the company interior network, almost instantaneous building up link. And the high speed material transmission will also cause the innovation of individual and the commercial utilization.

(2) WCDMA(Wideband Code-Division Multiple Access) : Meanwhile it provides the brand-new and appealing motion multimedia for individual and the company users.

(3) WLAN(Wireless Local Area Network) : it extends company's network, and provides the high reliable communication, also provides the high velocity company network acceptance.

(4) WAP(Wireless Application Protocal) : it mobilizes the Internet. The cell phones also can provide the interaction service.

(5) WWW : MMM(Mobile Media Mode) : it is general marketing sign which integrates the Internet and the motion communication.

(6) Bluetooth : it can let the users link various electronic equipments.

(7) EPOC : The new generation operation system makes the telephone of speech appropriation become to even surmount a multi-media telephone.

According to above, we can discover the current motion media, mostly including wireless communication equipments like cell phones and PDAs etc., to let the users deliver or receive the data or the message which includes the writing or video with digital transmission mode under the situation which network on-line can move at any time. The users also can make use of the characteristic of its interaction, carrying on instant response. The message dissemination which mainly embarks from the personalized characteristic on the motion media sends writing or the pronunciation messages to the individual specific object, but sometimes also makes use of the function of broadcast (like message group transmission) deliver the information to particular communities in the meantime. Therefore, the E-learning of science & technology includes the hand-hold wireless motion vehicle, digital deliver mode and motion information software etc.

IV. DEVELOPMENT AND IMPACT

The development of the E-learning of science & technology can be divided into two kinds, mobile devices and technology of motion communication, as follows:

(1)The development of mobile devices

In 1993, Apple Computer announced Newton PDA which is the first ancestor of PDA. Newton wasn't set as an omnipotent small computer, but only as an electronic notebook which provides some functions of personal digital assistant. The time of its promotion was too early, and it was too big, heavy and expensive. Thus it did not attract manyconsumers. Apple Computer in 1998 gave up Newton.

PDAs started popularly because an American company, Palm Computing, made efforts. Establishing in 1992, Palm announced Pilot 1000/5000 series in 1996 and made a success in one stroke. The successful reasons are its graceful shape and its moderate size. It only has four functions : address book, calendar, task and memo. The buyers knew very clear about PDAs which is not a PC, and did not think its function is too few.

Palm's operation system (OS) opens completely. There are a lot of people to write software. And other famous factories, like Visor and TRG, join to develop a compatible model and additional hardwares.

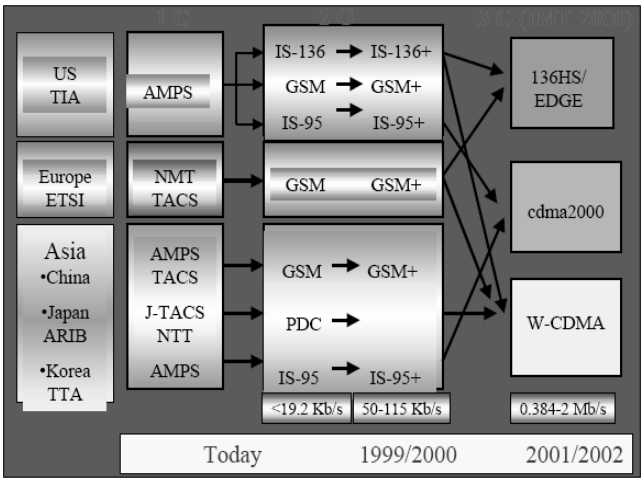
Comparing PDAs and cell phones, both of the difference lies

in that appearance of PDAs is bigger and PDAs can link with personal computer and order function. In regard to appearance, the appearance of cell phones is smaller and shows just enough several words, but the PDA has bigger appearance and can show image. Because the appearance of PDAs is bigger, the PDA can show static image and dynamic image which conform to the users' need relatively. In addition, PDAs may unifies with the personal computer and can provide the method which is different from the application of the cell phone. The cell phones usually use ten keys to input a writing, therefore is not suitable to input the massive materials. But PDAs can input the data into the personal computer by keyboard, then do the data synchronous way with computer to achieve the goal which inputs massive writing. The cell phones can't respond personal need and order function, but PDAs can install an applied software by themselves. Therefore, PDAs can become different kinds of tools. At present, there are many applied software. The users can respond on own need to order function and use PDAs as game machine, photo album and e-book. In the future, the more PDAs' function, the more PDAs' use, and the cheaper PDAs' cost. Hence, we can foresee that the operation of PDAs in any where any time will come true.

(2)The development of technology of motion communication

The entire evolution of technology of motion communication may roughly divide into the analogy-like first generation of motion communication system (1G), digital-like second generation of motion communication system (2G), the enhancement digital data service 2.5G system as well as the third generation motion communication system (3G), as shown in Figure 1.

The entire evolution of technology of motion



communication may roughly divide into the analogy-like first generation of motion communication system (1G), digital-like second generation of motion communication system (2G), the enhancement digital data service 2.5G system as well as the third generation motion communication system (3G), as shown in Figure 1.Picture 1 The evolution chart of technology of motion communication [14]

Judging from the development of technology, the motion data communication is divided into two kinds, analog and digital. Nowadays the major part of motion data communication has already developed toward digital-like direction. Because digital network enhances the capacity and transmission speed, and the transmission quality is more reliable and also easily connects with the Internet.

In view of the process of development, the motion data communication is divided into three major realms, the first generation of motion communication system (1G) is the analogy-like honey-comb system, using frequency division multiple access(FDMA) which means that the assigned spectrum is divided into several channels to provide the use of the motion communication. The second generation of motion communication (2G) is digital-like honey-comb system is constructed by the technology of a digital transmission specification, and the technology of radio frequency transmission taking time division multiple access (TDMA) and code division multiple access (CDMA) as a foundation. At present, global system for mobile communications (GSM) is mostly constructed in the 2G network. The principle of TDMA is that each telephone is assigned the channel and the time. The signal of each telephone is cutted into a fixed time effectively and deliver crisscross on the same channel. CDMA cuts the telephone signal into different fragment which has the unique code, then using different channel to send out in the meantime. Transmission method of these two kinds of technologies makes communication digital signal calculating and decoding in the receiving terminal. The merit of the this kind of technology is that there is no misgivings for digitize interception. Comparing with analogy-like type technology, its pronunciation quality is clearer and few disturbances. General packed radio service is a product which was made in hand over to connect a period between the traditional wireless pronunciation electric circuit switched network (2G) and packet switched wireless pronunciation and the data network (3G). The original design construction of GSM can deliver data on pronunciation transmission system, and its basic data transfer speed is 9.6 Kbps, also it has the more advanced code technology to be possible to reach bandwidth of the 14.4Kbps. GPRS has the further strengthening data transmission function. This technology will seal and pack data which is inputted from different communication process. In view of the situation of channels using, it makes the best disposition to the packed capacity. The transmission speed of this technology theoretically may reach 170Kbps, and its speed after the general commercialization reaches 56 Kbpses~115 Kbps as same as the speed of fixed lines modem. The third generation mobile communication(3 Gs) constructs on W-CDMA, founding on packed switch technology. In the Internet agreement of communication level utilization standardization, this technology is the data network which founds on packed switch technology, can take along pronunciation information and is different from the second generation of motion

communication with taking along data imfromation pronunciation.

(3).The development of E-learning of science & technology impacts to the development of our country's science & technology

It is no debate problem that the E-learning of science & technology has changed the human life and the social state. The E-learning of science & technology is also an important part of the whole organic structure, simultaneously responses historical vein and social situation in the development process of science & technology. The E-learning of science & technology makes a contribution to humanity, including the change of the time and space, the obtainment and store way of the lately information, the new work type, and it also changes the human relation, thinking mode and sense experience. On the other hand, the use of E-learning of science & technology causes negative result, including the new crime type, excessive dependence and command of information, estrangement of interpersonal relationships and ego, alternative type of cultural nurtures.

Nevertheless, in view of the history of mankind, the existence of science & technology to the choice and use of society has being different experiences, which frequently are the results of competition of various departments in society, from its invention. The introduction and use of the new technology did not happen spontaneous, not only was intently chose by superiority in politics and economy, but also was approved by social authority in the meantime, or was resulted by social member interacting. McQuail (2000/2000) pointed out that the development of technology is influenced by social cultural vein. When the invention is accepted, developed and applied, the result just probably appears. Thus, judging from consideration of monopoly of technology, it is actually impractical.

V. PHS UTILIZES ON EDUCATIO

According to American website K12 Handhelds [1], it offers different ways to use the handheld computer in education. We find great educational benefits and new ideas of handheld information devices, which include:

(1) Administrative applications: Keep your schedule; track student progress on specific skills; conduct authentic assessment; use a calculator; make a database of key content and concepts for student use; take attendance; access into student's information instantly, such as students' schedules, demographics, or parents' contacts; organize your reading lists; take notes at a meeting or in a class, record and tabulate grades; track computer hardware and software inventory; enhance school safety with bar code IDs and an emergency management system; store and access lesson plans; use a rubric to assess and score student's work; access a database of curriculum standards and related curriculum resources; keep an inventory of books and other instructional materials; store and track student IEPs; track technical support requests; keep a list of all your important contacts; evaluate teacher performance and record observation notes; access, track, and manage library book or textbook inventories; track, organize, and control inventories and safety information for chemicals in the lab; let students have constant access to their current grades (very motivating!); track teacher recruiting activities; access human resources benefits information; look up technical troubleshooting information; keep emergency procedures and checklists readily accessible.

(2) Communication and collaboration applications: Send an email; group schedule school meetings; collaborate on a graphic organizer; send or receive a fax; make a presentation; make a phone call; distribute school activity information to students and parents; exchange information with a colleague; share a downloaded web page with someone; send assignment information to parents; have students submit an assignment electronically; get parents' sign-offs; transfer a file from your PC for instant access; write an e-book and share it with others; take an online course; send and receive instant messages; conduct group writing activities; record voice notes; transmit closed captioning of lectures for the hearing impaired; access online educational events and news.

(3) Teaching and learning applications: Take and store digital photos for a project; Make a spreadsheet; Draw a picture; Make a concept map summarizing a chapter; Form, visualize, and solve equations; Keep track of your class schedules, assignments, and grades; Record observations on a field trip. Read an ebook; Find locations with a GPS; Study and compose music; Graph data; View and use maps; Increase content accessibility for those with disabilities; Gather data on temperature, light, voltage, pH, and more with data probes. Program your own handheld application; Conduct a surveying expedition; look up a word in a dictionary; use flashcards; use a tutorial for self-study; conduct a stock market simulation; take notes and write a research paper; take notes in class, practice handwriting; study a foreign language; listen to historic speeches; take part in a collaborative simulation; do research on the web; conduct an academic competition; gather and analyze data on environmental issues; make a timeline; look up a word in a dictionary; create an outline; study for a test; give students step-by-step instructions or visual plans for projects; keep a journal; create fitness records for students; access writing prompts and editing checklists; learn to read and write Japanese characters; learn about concepts in measurement; practice multiplication tables; access the periodic table; manage a collaborative project; look at reference diagrams on parts of the human body; make a photo album; listen to and study classical music; build a robot controlled by a handheld device; track a community service learning project; read about the latest current events; study astronomy; build vocabulary through word games; find or create a gouache; have classes create their

own mobile information channels to share information with other classes or the community; create a database of endangered species; read historical primary source documents.

VI. STUDY WAY

This research went through concerned literature and interviewed the projector. The projector planned PHS phone directly from an experimental elementary school, which participated in digital learning special case located in Kaohsiung County. The projector's feeling and opinions were discussed. The conclusions were made after the experiment. Later, those reference materials will compile opinion and information to instruction designers and mobile learning projectors to develop further innovative instruction.

VII. PROCESS

In the experiment, the research team composed a semi-structured interviewing outlines, which were revised by professionals and experts. The interview was carried out by the projector's observation in utilizing PHS to express the teachers' and the parents' after-thoughts. We would understand what background the projector was.

Subject background

This study involved an entire class student who is in the projector's school participating in digital learning special case. Every couple of the parents was assigned with a PHS handset. There were six parents and teachers who stayed for the whole process. However, the projector is an educational expert with experience in using personal digital assistant. She is a director of educational affairs division in Cheng-Jeng primary school in Kaohsiung County.

Interviewer' s background

The interviewer is an educational expert with experience in using personal digital assistant. He was a professional being consulted in this interview outlines.

VIII. EXAMINATION AND ARGUMENT

The keynotes of the projector's comment were as followed:

(1) **As you work as a project initiator in this PHS mobile learning case, what is your motivation?**

Many kinds of artificial intelligence or technological products are designed for people to process data more efficiently and to make our work more effectively. Therefore, it is very important to teach our students learning how to adapt the artificial environment early via technological implements.

(2) **What were users' difficulties and opinions in the beginning? How did you overcome the hurdles to continue promoting their learning?**

It is very important to learn technological knowledge and scientific thought while as a child, but it fails to give our children new messages about science and technology to study today. When the users face new technology in the beginning, they feel embarrassed to operate it. In addition, it is not easy to change their learning habits. In the face of this predicament, we do our best to communicate with them and offer them assistant with the software and hardware to get familiar in various operational functions in PHS.

(3) **As time goes by, how many concrete changes have taken place in users?**

We see some changes in the users, including improving their technological knowledge about mobile devices, accepting PHS hand-held in education, sharing their opinions with others and applying cooperative learning in this course.

(4) **What did they find concrete educational application after using PHS mobile learning device?**

PHS basically serves as an individual helper. It is not necessary to use mobile devices in class, so it takes a long time to teach parents and teachers to know how important it is. Although, we learn many educations of science and technology from the "PHS Handset case" and we need to teach our students what to learn in future.

(5) **What items did you accomplish in this PHS mobile learning case? What would you suggest that other projectors to do in the future?**

In this course, we have seen that the users change their attitudes toward the science and technology, including attitudes toward using PHS and behavioral intention in usage of mobile devices. In the future, we may design questionnaires to collect data from experimental schools which carry on this special project in order to design mobile learning targets. In addition, we should strive for the new scientific and technological products to give our students a chance to enable them accept the education of science and technology in the basic education early!

IX. ASSUMPTION

Many educational opportunities are made possible in the future because of mobile technologies' unique characteristics and positive impacts identified progressively in education. Using technology products bring additional value for teachers, parents and their children. In the beginning, lack of proficiency may cause inconvenience for users, but making up their minds to try new things is really rewarding. We were happy to hear that PHS had been gradually accepted in education, and was used to encourage good interactions between parents and teachers. We would be glad to offer the m-learning environment choice in elementary schools.

In this article, we examined many resources and cited studies to answer the practicability of mobile wireless technologies in basic education. This research intends to demonstrate the projector's ideas and the application of PHS phone on education, in order to provided references to instruction designers and mobile learning projectors to develop further innovative instruction.

We summarize from documents of the interview and discovered as follows:

1. It is very important to teach our children to learn how to adapt the artificial environment as earlier as possible via PHS hand-held.
2. Only when we do our best to communicate with parents and teachers; they will become familiar with various operational functions in PHS. Meanwhile, they can offer assistance in the software and hardware development.
3. PHS has been gradually accepted in education. Meanwhile, it is used to encouraging interactions and communication between parents and teachers.
4. We learn many concept of mobile learning from the "PHS Handset case". We will know what our students want by learning in technological education.
5. We will strive for the new mobile products to give our students many chances to learn the education of science and technology in elementary school.

We hope that our contribution will encourage other researchers to look at the big picture, how we presently design to interact and communicate between parents and teachers in small devices. Through this experiment, the projector and the research team received good response and effects, which were proven useful in education. These enhancements will be crucial for supporting the growth of mobile devices in education.

In recent years, the booming development of not only represents that personalization mobile devices are gradually popular, and means that the times of internet combination has already arrived, becoming gradually an indispensable part of consumers' life. The application service of the communication network of the E-learning of science & technology are portable, movable, personal-based and so on. Along with the development of 3G, the individual product of the E-learning of science & technology is of progress, and the structure and technology of communication is of promotion, even expands to the entire information industry possibly.

Currently, the E-learning of science & technology have gradually formed in corporate world, the market growth can be expected. The international information big factories put into one after another and try in this market to contend a place through every kind of strategic alliance. It is believed in the extremely short future, and we might see that the E-learning of science & technology has applied during our daily life. In order to respond the need of times, education cannot fall after the tendency, and should teach students the new science & technology information to be able to adapt the future social life.

The essential factors for introducing the meaning of the E-learning of science & technology into national education include the popularization of mobile phone, which implies high market potential in mobile phone user groups. The users' satisfaction level in bandwidth, stability, coverage and safety is gradually rising, but the most important thing is the quality and efficiency of life can be significantly improved through applying e-learning technology in education. E-learning technology development is a key for a nation to increase or keep competition ability. The E-learning of science & technology can help people to resolve many bothersome issues, such as inconvenience in communication and so on, reduce time and economic cost, and also improve life quality.

To summarize all above, this paper discussed the applications of strategies of the E-learning of science & technology integrated education, the potential issues and the possible solutions. Based on the theoretical analysis and the experience in practical teaching, we can integrate the meaning of the E-Learning of science & technology integration in science and technology curriculums of primary school through the combination of theory and practice. This is also able to be a reference of administration and teachers for the contents in new generation education.

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c)Scientific Activities: Technology education and its Application

- Technology—in Primary School
- Health and Physical Education
- Art and Humanities
- Music

d) WSEAS Activities (papers, sessions, organization of sessions, organization of conferences, books, special issues in the journals etc… within WSEAS)*

- 1.At 2006 to 2008 WSEAS publications Journal total(EI) 21 papers.
- 2. WSEAS International Conference on EUROPEAN COMPUTING CONFERENCE (ECC '07)-2007/09/24-26/ special issues chair.

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