The Implement of STS Collaborative Tutoring Strategy over the Scenarios with Ubiquitous Learning Environments

Abstract

In establishing a ubiquitous learning environment, it is not only to take notice of its basement, but also the tutoring strategy and the content of the learning activity are should be paid much attention on. While facing a diversified learning environment, taking what kind of tutoring design and strategy will be the key factor to an effective learning activity. Therefore, in this study, we construct a ubiquitous learning environment in which the real world and virtual space, the personal space and the sharing space will be connected with each other so that the students can make the best of information technology and bring up a collaborative learning community on the internet. On the other hand, the idea of STS (science-technology-society) collaborative tutoring strategy is adopted to construct a learning environment and to carry out a series of learning activities. Through the attitude-evaluating sheets of science studying, the tutor can know if there is any apparent difference on the students' learning attitude towards the course of "Natural Science and Life Technology". At the end of the research, the results illustrated that there are some positive effects does impact on the students' attitudes toward science course, science teachers, science learning motivates and science learning strategy.

Keywords: Ubiquitous learning environment, STS (science-technology-society), Collaborative, Tutoring strategy, Natural science and life technology.

1. Introduction

Over the past several years, the development of IT (internet technology) has changed the style of education. Education is no longer restricted to a certain fixed time and in a designated place because of the utilization of IT [14]. In recent, computer-supported learning, such as a new medium of learning, has been widely developed. Especially, in

* Your citation-and-reference style does not adhere to the system used in the sample paper from your target journal. The first citation should be numbered [1], and your first reference should be Zhang et al. Your second citation should be numbered [2], etc. The reference list should not be in alphabetical order; rather, it should be arranged by citation order. Reformat! I will not mark subsequent citations.

1* What you said in this sentence sounds very trite; therefore, I revised to what you probably wanted to say.
2* "Nowadays" is a colloquialism, which should be avoided in formal writing.

the recent years, the advanced and application of ubiquitous computing technologies [12], [comma]
which has revolutionized field of
bring about a revolution in the education field.

this emergent, [comma]
Along with the occurring of ubiquitous computing technology, digital learning models
have changed has become
also change apparently. Research on ubiquitous environment becomes very important; On
whereas the
[avoid verbosity] → the other hand, E-learning via WWW (World Wide Web) has been studying prosperously.
extensively studied
A creative merger of for
Merging creatively the techniques in the two fields to construct a support environment of
Insert sentence within [ ].
needed use
ubiquitous learning is demanded [2]. Learners can apply Wi-Fi (Wireless fidelity)
discipline-specific thereby increasing their
1* handheld device to link with the learning contents, gaining knowledge [14]. There is no
[redundant]
limitation to the learning time and learning space; this is called the concept of ubiquitous
Since it is called
Learners now
2* learning [10]. Nowadays, people take more seriously on ubiquitous learning environment,
[delete comma]
more seriously, primarily [redundant] their [hyphen]
which mostly due to the ubiquitous learning environment can provide an anytime and
availability via handheld-device linkage to a much redundancy here
anywhere learning condition. The users can by means of handheld device to link with the
(LAN). [period]
wireless local area network to learn in a ubiquitous learning condition [9].

This entire paragraph needs to be rewritten. The order of sentences is inappropriate even after moving [ ] to the ^ point indicated.

many
In the recent years, a lot of published papers have addressed the issues on e-learning
s in
and have begun to notice the development of wireless interface of mobile computing
devices and sensor technology; therefore, the focus on the research issue has been
[syntax] transferred from digital learning to m-learning and u-learning now. The change of
occurring quickly formulate in
learning environments is too fast to make the clear definition for a ubiquitous learning
devices
environment. Aside from the basic appliances, it is also worth discussing if there is any
ies ies are also worthy of discussion Furthermore [delete comma]
good tutoring strategy and suitable learning activity [3]. In addition, the authors Chang, et al.
Sheu, and Chan [1] also claimed that the three essential factors of the m-learning
in an
environment are wireless network technology, m-learning device and learning activity
an a
design.

3* In
When facing a multiple learning environment, the key factor to a successful learning
in
are
will be a good tutoring design and strategy. It is known that school is an important place
s ies well s are
for students to study, and teachers are the ones who should take effective tutoring
ing responsible for adopting
[diction] strategy to help the students to study as well as they can. Only when there is a good
ies learn most efficiently
[delete hyphen] [hyphen here] the members of
collaborative-studying tutoring strategy can make a collaborative-learning community's
[redundant]
members harmoniously interact with each other, gaining the best learning results.

3* The plural form without an article ["the"] implies the generality that is needed in this paragraph and in this section.

Extensive revisions to p2--961015

Along with the emergence of ubiquitous computing technology, apparently digital learning models have also changed. Research on ubiquitous environments has become increasingly important; whereas, E-learning via the World Wide Web has been extensively studied. Learners can now use Wi-Fi (wireless fidelity) handheld devices to link with wireless local area networks (LANs) to access discipline-specific content, thereby increasing their knowledge [ ]. Since there is no limit to the learning time and space, this concept is called ubiquitous learning [ ], a type of learning environment now taken more seriously, primarily due to its anytime/anywhere availability. Thus, a creative merger of the techniques in both fields* to construct a support environment for ubiquitous learning is essential [ ].

* But what are these "two fields" (your words)? Do you mean E-learning and Wi-Fi?

1* As I have told you previously, "research" is an uncountable noun. Do not attempt to make it plural.
2* "Arise" is an intransitive verb; hence, it cannot take an object.
3* The phrase "come up with" is collogucial. Use a more formal expression. "Besides" is also collogucial.

Johnson *et al.* [4] stressed that collaborative learning can enhance the learning attitude. An Internet learning community is a kind of virtual learning [redundant] community, in which both the experts and the inexperienced person can discuss together [redundant with "each other"], communicate with each other to find the solution to certain problems; also, they can build up their own knowledge database system. The Internet is just one of the tools, [delete comma] through which people dispersed everywhere can be connected and their knowledge learning experiences can also be gathered collected. Therefore, researches who raised up are now focusing on the concept of an e-learning community, [comma] which also includes collaborative learning [5]. [diction]

STS (science-technology-society) tutoring is a learning activity focused on an issue designed in advance to arouse arise the students' interests, [delete comma] and links with the concept of science and skill [15]. Through STS learning activity, students can think about consider the solutions of problems or plan to learn learning activities either by themselves or by as the team work. Since STS tutoring emphasizes in training the students to think from different angles and inspires them to do research actively active, its development on the international science education field has grown at a high speed rapidly. Furthermore, Most of the researches has focused on conducting STS into Science and Technology course introducing the societal element of. [diction]

Therefore, in this research the combination of a ubiquitous environment with an on-line learning platform [verbose] in order to construct create a ubiquitous learning environment, [delete comma] to let the students enable to utilize make use of information technology to enhance learning efficiency, and adapt as well as themselves to a modern technology society [comma] is presented. [verbose] On the other hand, we create a subject-related collaborative learning community, and come up is created along with the idea of an STS collaborative tutoring strategy and conduct a series of tutoring experiments on in a Science and Life Technology course furthermore conducted. If Whether there are any differences between the students' attitudes towards science learning before and after the utilization of a ubiquitous learning environment is the major concerned subject. Recently, the authors, Li, Zheng, Ogata, and Yano [4], brought about the framework of ubiquitous learning environment designed a for a et al. (ULE) in 2004, and claimed that the ULE (ubiquitous learning environment) is established based on the combination between the real world and virtual space, [delete comma] personal space as well as [redundant] share space. Besides, they also devised came up with a sample model for ULE implementation, [delete comma] which is centered learner-centered. [syntax]

1* Begin a new sentence at "Furthermore."
2* Begin a new sentence at "STS."
3* Begin a new sentence at "They."
4* Begin a new sentence at "Besides."
5* Begin a new paragraph at "Recently."

4* The phrases "ubiquitous environment" and "ubiquitous learning environment" sound redundant.

1✱. Never write "with" immediately after any form of the verb "connect."
2✱ If "PDA" is a trademark or brand name, be sure to insert the appropriate superscript.
3✱ When referring to computers, "memory" is uncountable.

connect fragment to previous clause

on learners. Through the establishment of a ubiquitous computing technical environment
1✱ is completed, and which can connect with school, family, community and society. The
researches, Matsuura, Niki, Katayama and Yano [7], think that the research on digital
portfolio (e-portfolio) has become one of the major themes in educational technology
research field. Most of the current e-portfolio proposal works only for rich client such as
desktop PC. Now that current ubiquitous learning trend makes paradigm shift gradually, [syntax]
various client application on e-learning should work on handheld devices such as PDA
2✱ ( ). The previous authors also proposed e-portfolio environment for PDA client in
addition to the desktop PC clients. The authors, Sakamura and Koshizuka [10], come up
with the concept of Ubiquitous ID Architecture and they also allocate unique identifier
which is called ucode (ubiquitous code) for an object in the real world. The authors used
ucode tags such as RFIDs, barcodes, QR codes, and active tags to attach ucode. High-end
3✱ ucode tags with large non-volatile memories store not only identifier ucode but also
attribute information of the object. If the tags do not have enough memories for the
attributed information, it would be stored in the remote databases that are accessed via
[syntax] computer networks. Handheld devices obtain context information from ucode tags and
remote database are Ubiquitous Communicators. Mitchell and Race [8] argued that the
[syntax] techniques employed allow users to rapidly gain access to a large repository of
4✱ multimedia information through the use of [a camera equipped with handheld device.] The
researches also adopted client/server structure and enabled the retrieval of web-based
information to be triggered by capturing images which are caught by the integrated CCD
5✱ ( ) camera. Yang [13] defined that an important activity in a virtual learning
community is the collaboration. He also thought that the collaboration should be occurred 6✱
inside and outside of a classroom without limitation of space and time.

[dangling participle] On the basis of
Based on the motivation, in this investigation the construction of a ubiquitous learning
environment is illustrated, within which the real world and virtual space, personal space
[syntax] and sharing space are connected invisibly. The students are taught how they can learn in
the ubiquitous learning environment with the assistance of the handheld devices. The
device has to be equipped with the functions of wireless networks, camera, QR Code

[avoid redundancy]

4✱ Within [ ], perhaps you actually mean a handheld device equipped with a camera. Your version sounds "backwards."
5✱ See Note 2, re: trademarks and/or brand names.
6✱ "Occur" is an intransitive verb; hence, it cannot be made passive.

1* This Introduction rambles. It would help to bring all statements pertaining to your purpose together in one paragraph instead of scattering them, as you have done.

encoding. Through QR Code, the users can rapidly link to the e-portfolio website in any learning environment, recording any new e-portfolio, thus a ubiquitous learning environment can be constructed.

In addition, there has not been any tutoring strategy raised for ubiquitous learning environment; therefore, we come up with STS collaborative tutoring strategy, integrating a digital technology interactive mechanism to connect with campus, family and society for the students to make the best of information technology to enhance learning efficiency, and then, the goal of effective learning, communication and sharing can be obtained. Meanwhile, a website is established for recording the e-portfolio through the medium of QR Code, so that the users can easily read the two-dimensional code, which can spare the time of inputting long website addresses and researching. QR Code can also automatically connect with e-portfolio website, sending the e-portfolio back at any time and any space. The users can collaboratively learn and solve problems, forming an on-line collaborative learning community with the website's interactive mechanism.

1*

2. Ubiquitous Learning Environment

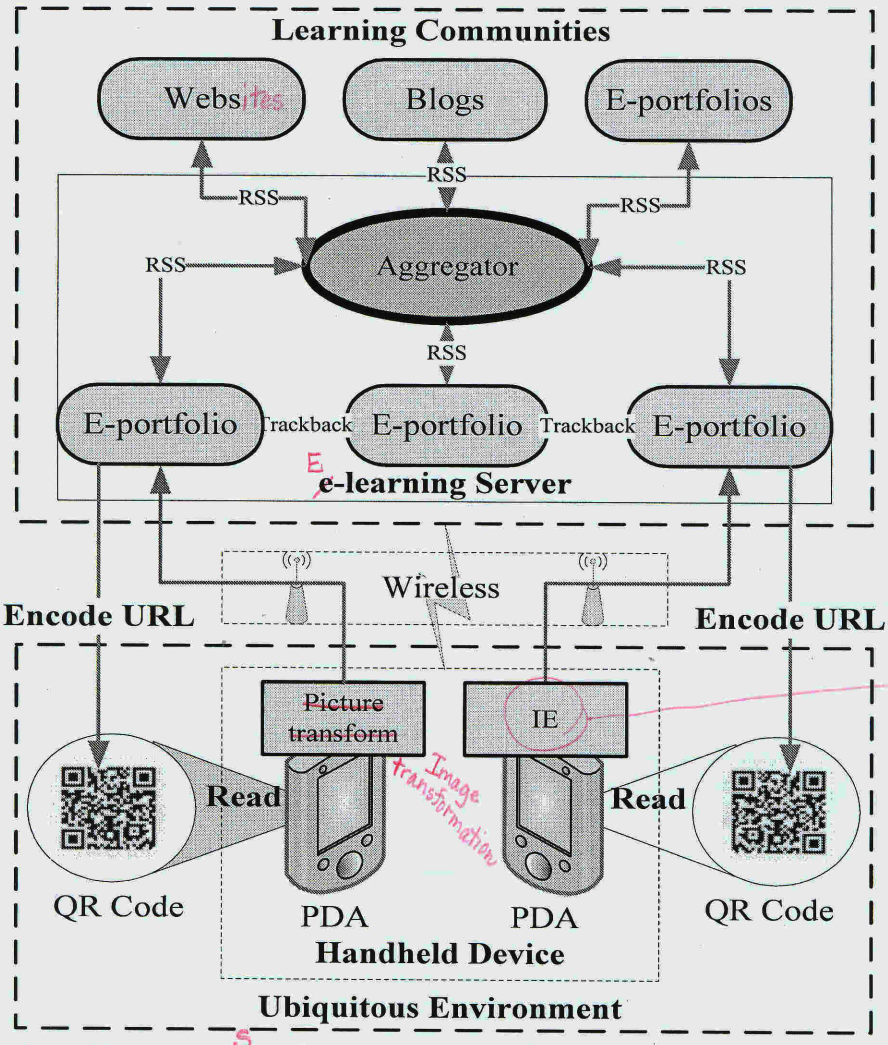
Based on the digital learning platform designed from open-source software, this research has constructed an e-portfolio website and a RSS Aggregation website to work as the aided platforms for learning. Through QR Code, the students can use every kind of handheld devices to connect with the e-portfolio website to create a learning record. The teachers can also use the environmental structure to conduct the students to learn during the learning process, through which it can also accumulate learning resources and materials. Therefore, a ubiquitous learning environment is build up already, and by means of the ubiquitous technology the connection of real space with virtual space can record the e-portfolio in virtual space, which is different from the traditional one-way information searching in real space.

2*

The ubiquitous learning environment is shown in Fig. 1, and it will be explained more clear in the following sections.

2* No, the "research" does not construct anything; rather, "researchers" (persons) construct.

1* For the sake of brevity in captions (and headers), use headline grammar; i.e., omit "the."



1* Fig. 1. The structure of ubiquitous learning environment

[Redundant with Main Header for Section 2]

2.1 Ubiquitous Environment and E-learning Server No italics

Firstly, the teachers encode each e-portfolio's URL into QR Code and attach these QR Code to each learning objects in ubiquitous learning environment. One QR Code represents one URL stored in e-learning server. The teachers and students can use the handheld device's cameras to read QR Code and through wireless network, IE will automatically connect e-portfolios to the server-side database, proceeding information gathering and words inputting. In addition, the users can also use the cameras to take pictures and upload so that the information can be shared.

As for e-learning server, we integrate each e-portfolio, RSS, Trackback and Aggregator technology. Through integrating Aggregator and other related learning resources such as webs, blogs and e-portfolios, learning communities are formed. We will explain more in the following two sections.

2* The noun "technology" is uncountable in this context; hence, it cannot be used with "each."

* "Multiple-influence" (with hyphen) or "multipally influential": the first option is better, as I have revised.

2.2 E-Learning Platform

In our research, the digital learning platform is based upon XOOPS (eXtensible Object Oriented Portal System), and we use its related modules to construct a digital learning platform. With the proceeding of campus activities, this digital learning platform can extend the learning environment into families and societies, establishing a multiple-influential learning environment. The structure of a digital learning platform and its main functions are shown as Fig. 2. The components and their functions are explained as follows.

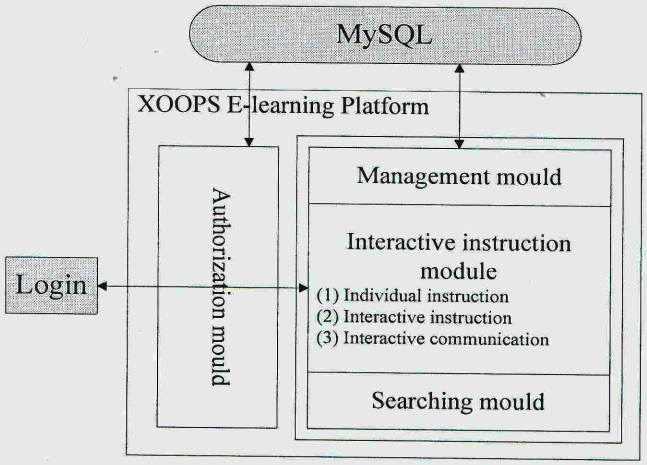


Fig. 2. The Structure of E-learning platform

2.2.1. Authorization module

Due to the protection of personal privacy, class rules and system security, this module provides its users specific accounts and passwords. The users can login by different accounts and passwords, and the system will automatically give different rights to operate and access.

2.2.2 Interactive instruction module

- Personal learning:
  - Personal schedule: It reminds of important items for courses and arranges personal learning projects.
  - Personal learning file: It combines with personal learning files in digital learning system.

- Learning records: System operating recorder for analyzing advanced learning research.

➢ Interactive instruction:

- Course announcement: Important course announcement.
- Learning tools: provides tools for learning.
- Course materials: documents, slides, dynamic learning files, learning images, information links, etc.
- Evaluation: provides simple on-line evaluation

➢ Interactive communication:

- Bulletin: general system announcement.
- Public discussion: discuss for subject publicly.
- Group-discussion Room: discussion room according to groups.
- Personal messages: personal messages transferring.
- On-line discussing room: instant words communication.

2.2.3 Management module

➢ Environmental setting: system operating environment setting.

➢ Personal account management: manage users' accounts.

➢ System management: management of system and discussion boards.

2.2.4 Searching module

Provide user to execute full-text search for the system.

2.3 E-portfolio, RSS Aggregation Website and Learning Community

For the e-learning platform, the WordPress (Blog module) is integrated to the original system "XOOPS" and works as the e-portfolio website. Students will gather resources related to subjects, and they will arrange the records, uploading to the website proceed with teamwork learning. Through theme learning and on-line learning they can share and accumulate knowledge. Teachers can apply this system rapidly and attentively design the learning materials and manage the content of the learning website. The functions of e-portfolio website are designed as shown in Fig. 3.

1* These remarks sound trite because they state what is already very obvious to an intelligent reader. I recommend that you delete the sentences within [ ].

2* Options: information-technology tools or technological tools (without the word "information") — if you ignore the advice in Note 1.

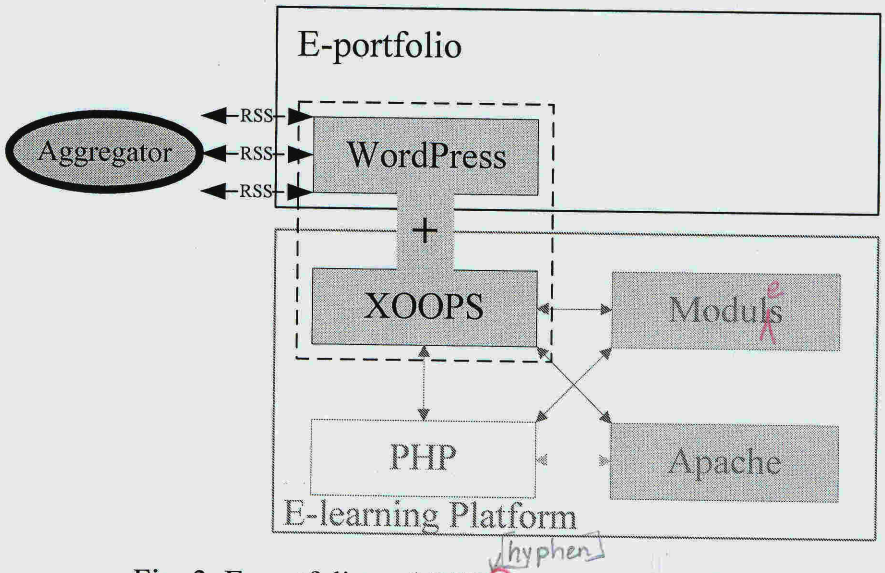


Fig. 3. E-portfolio and RSS Aggregator website

- Management mechanism: Under the original e-learning platform, the managers can set a rapid speed for the users to link to the e-portfolio website according to their accounts.

- E-portfolio: The teachers only have to produce one course material on the internet, because through RSS mechanism, they can save the material sending time; thus, they can manage their own materials and teaching sources efficiently. [On the website, the students can record their learning experiences and interact with their teachers and classmates so that they can build up accurate science concept. Through information-technological tools, they can learn with creative thinking, collaborative learning and presenting ability.]

- Interactive mechanism: Interactive mechanism is the interaction between students and teachers. [Aside from] the teaching mechanism in original digital learning platform, teachers and students can share what they have learned on RSS-Aggregation Website, and through the function of TrackBack on learning records website, the websites can connect with each other.

Furthermore, we use the structure of Zfeeder's RSS Aggregation Website founded by PHP, and aggregate the related records with RSS technology to build a entrance website for learning research. Zfeeder's RSS Aggregation Website can show the latest content. Once if there is any new information or updated news, they will be announced to learning

3* What does "PHP" designate ? A protocol ?

1* You have already said this several times! It would be better to delete this sentence marked by [ ].

[avoid redundancy] [syntax] aggregated site save browsing time by not being required
RSS Aggregation Website. Therefore, the users do not have to browser every website to visit every website to obtain information. This get information, which will save the browsing time. The interactive mechanism can form [diction] an extensive a huge learning community wherein and by digital [redundant] technological interaction, users can efficiently communicate and share information. by digital interaction. *1

2.4 STS Collaborative Tutoring Strategy and Learning Activity

[syntax] An STS collaborative tutoring strategy is proposed along with the tutoring strategies in conjunction with the characteristics of a ubiquitous environment and system platform mentioned in raised from the literature review, [period] as well as the characteristics of ubiquitous environment and system platform. [comma] It's The tutoring structure, process design, and learning activities are going to be described in the following subsections.

2.4.1 Tutoring Structure [no italics]

The principal main tutoring structure and steps are as following: s

[syntax]
- Find questions and conduct to direct students to research on certain a subject actively, and then find the related questions;
- Confirm the questions;
- Draft the plans;
- Proceed with the research;
- Arrange the research results;
- Share and discuss how to apply the solutions to life and society.

End with semi-colons except after the final item.

Do NOT use "and then" in formal writing. Use one word or the other – not both.

2.4.2 E-portfolio Interactive Process [no italics]

You have said this previously. This, too, is redundant!

We design an e-portfolio interactive process with T the idea of STS and collaborative tutoring, along with the characteristics of QR Code, handheld device, s e-portfolio, learning RSS aggregation [hyphen] website ed s and RSS technology, [comma] c The emphasis of our design is on the relation and importance between science, technology and society. led to our design for an e-portfolio interactive process emphasizing of and relationships among

2* During the process of learning, the teachers tutoring records and the students' learning records can be connected by an RSS aggregation [hyphen] website. [comma] They can freely connect their records to any RSS-supposed supported websites, or thus fully using the valuable resources from both schools and society. process both [redundancies] and Moreover, teachers and students

The T teachers can direct conduct their students to proceed the learning activities according to [verbose] follow

2* Most readers understand that teachers are the principal tutors, and students the principal learners. This kind of redundancy is an insult to the readers' intelligence.

the six steps; and the students can prepare, interact, discuss and record with their classmates and teachers through the connection between QR Code and database digital learning platform on records website and learning RSS aggregation website. The design of STS collaborative tutoring strategy is shown as Fig. 4, and the further explanation will be in the next section.

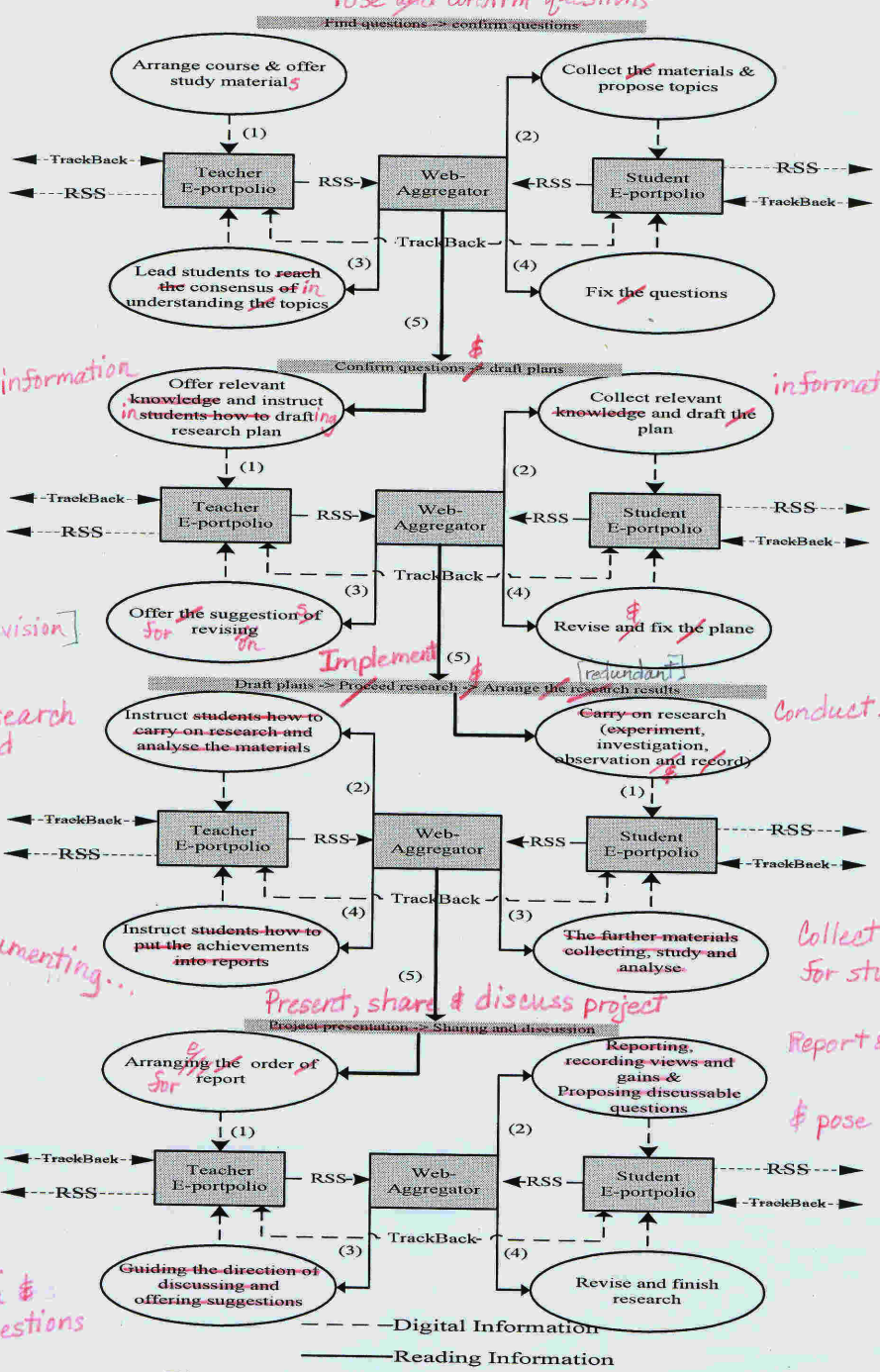


Fig. 4. STS collaborative tutoring strategy

2.4.3 Learning activity

No italics

2.4.3.1 Instruction goal and explanation

This study uses students' life experiences and social issues as the starting point to conduct the students to process science activity. Therefore, we adopt "Plants' Growth" which belongs to Science and Life Technology field as the topic issue. Through observation and information searching, the students have to research on the plants' growing backgrounds and conditions, knowing the suitable plants for planting at the current season, and they have to plan the preparations for planting and recording job, learn how to take care of plants and solve problems during the planting process.

2.4.3.2 Process of learning activity

- Find questions, confirm questions: Use the e-portfolio records interactive process "Find questions -> confirm questions" step.
- The teacher arrange "plants' planting" course, providing guidelines on the website;
- The students gather related information on the website;
- The teacher leads the students to form groups and to decide each group's research topic,
- The students confirm studying questions and directions. Through "Find questions confirm questions" step, they get the final agreement on what to study (and the teacher should guide them and help them during the interactive process in order that the students can reach consensual agreement and fit in with the spirit of STS), and then go on to the next step.

2.4.3.3 Find questions -> confirm questions

Use the e-portfolio records interactive process "Find questions -> confirm questions" step.

- The teacher arrange "plants' planting" course, providing guidelines on the website;
- The students gather related information on the website;
- The teacher leads the students to form groups and to decide each group's research

Still redundant with 2.4.3.2 Why?

topic. for each; [semi-colon] ← [delete period]

- The students confirm studying questions and directions. Through "Find questions -> confirm questions" step, they get the final agreement on what to study (and the teacher should guide them and help them during the interactive process in order that the students can reach consensual agreement and fit in with the spirit of STS), and then go on to the next step.

[delete period] the to reach a to interact. and how Again, useless verbosity! T they proceed [comma]

2.4.3.4 Confirm questions -> draft plans

and No italics [Redundant with sub-header]

Use the e-portfolio records interactive process "Confirm questions -> draft plans" step.

- The teacher provides related knowledge about the draft research plan on the website and guides the students to draft their research structure and plans.

relevant information [The reader will remember WHERE.] instructs in ing it; [semi-colon] [verbose]

- The students gather information according to the guidelines and draft plans, recording on the website. ← [semi-colon] [verbose/redundant]
- The teacher provides suggestions to the research plans. offers for revision; ← [semi-colon]
- The students revise plans according to teacher's suggestions and confirm their plan. s

In this step Through "Confirm questions -> draft plans" step, they get the final agreement on the study plan is formulated. ← [period] (and the teacher should guide them and help them during the interactive process in order that the students can reach consensual agreement and fit in with the spirit of STS), and then go on to the next step. [Verbose & Redundant] T they proceed

2.4.3.5 Draft plans -> Proceed research -> Arrange the research results

Implement and report No italics

Use the e-portfolio records interactive process "Draft plans -> Proceed research ->Arrange the research results and project presentation" step. [Redundant with sub-header] [comma]

- The students do experiments, research, observations, interviews, and records; conduct research via documentation, [delete semi-colon]

the entire process being recorded by meanwhile, through QR Code, the process will be recorded on the website. [semi-colon]

- During the process, the teacher can use QR Code to do field research and object teaching; meanwhile, the teacher guides the students to proceed experiments, investigate, observations, interviews and records, and teaches them how to analyze and arrange information.

conduct [Redundant & verbose!]

- Through field research and object teaching, the students can gather more observational data, so they will have to arrange and analyze these data.
- Use cameras on PDA to catch QR Code (Fig. 5), and through software's reading, recognition (Fig. 6) and automatic connection (Fig. 7), the students and teachers can continuously interact and accumulate knowledge during the field research and object teaching and then, they can put the results on the website (Fig. 8).

Fig. 5. A student uses PDA to read QR Code

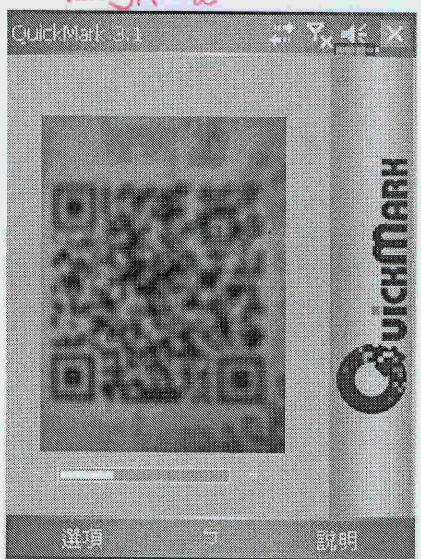


Fig. 6. QR Code reading and recognition

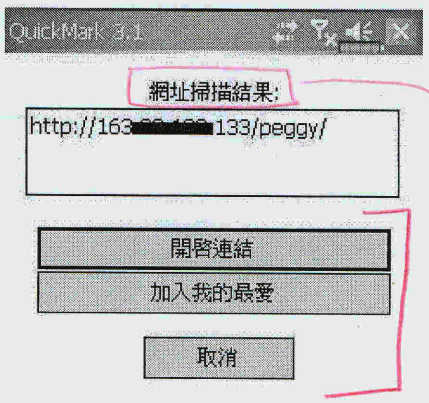


Fig. 7. ~~QR Code recognition results~~

Results of QR code recognition

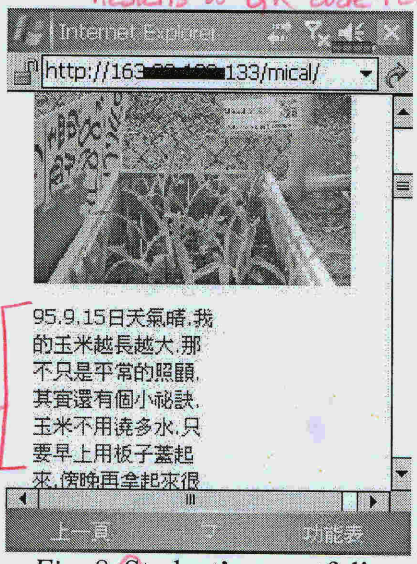


Fig. 8. Student's e-portfolio

Redundant & verbose

~~Through "Proceed research -> Arrange the research results" step, the teachers and the students can continuously analyze and discuss the research results; the teacher will guide~~ After the student to ~~arrange the~~ tabulate results and ~~present to~~ share with the class, and ~~then go on~~ they proceed to the next step.

Present, share and discuss project

2.4.3.6 ~~*Project presentation -> Sharing and discussion*~~

No italics

~~Proceed the e-portfolio records interactive process "Project presentation -> Sharing and discussion" step.~~ Redundant with sub-header

- The teacher ~~will~~ arrange~~s~~ the sequence of the project presentations and presentation's ~~conditions~~ and conditions for (similar subjects ~~will be~~ are presented interactively in the same group~~)~~, and ~~presented~~ close parenthesis & semi-colon

1* The phrase "come up with" is colloquial. Avoid in formal academic writing.
2* The phrases "very disagree" and "very agree" constitute Chinglish. Do NOT express this way! In colloquial English, say "disagree very much," etc.; but in formal English, write "strongly disagree," etc.

~~interactively.)~~

- The students ~~will~~ present in ~~the~~ real ~~context~~ time and post the discussion on the website; [semi-colon]
- 1* During the process, the teacher can ~~come up with~~ offer suggestions ~~to each group research,~~ and ~~guide directions to~~ guidance for the ~~following~~ subsequent discussion; [semi-colon]
- Through ~~the~~ this step "~~Project presentation -> Sharing and discussion~~", the students can revise ~~the project~~ continuously and post the results ~~on the website~~.

[redundant & verbose] [redundant] [redundant] [syntax]

3. Experiments and Results

[syntax & diction] The subjects of this research ~~are~~ were twenty-four ~~elementary-school students in high grades~~ students in the upper grades of elementary school. ~~This research is~~ The experiment was aided ~~with~~ by teachers who ~~teach~~ had taught Science and Life Technology course for more than ten years; thus, they ~~know very well~~ were familiar with the spirit of STS [comma] as well as possessing ~~and have~~ accurate and experienced ~~STS~~ professional skills, [delete comma] ~~and have~~ positive attitude towards science.

The first stage ~~is to~~ consisted of construct ing a ubiquitous learning environment, ~~to~~ design ing a STS collaborative tutoring strategy and ~~to start~~ initiating the experimental tutoring. The content of the course ~~is~~ focused on the field of "Science and Life Technology" [delete quote marks] ~~field~~. In The second stage ~~is to adopt~~ "Science Learning Attitude Evaluating Sheets" on ~~to know if there is~~ was used to determine whether there was any positive ~~increase~~ improvement in the students' learning attitudes. ~~Through comparing the results of pre-test and post-test,~~ The influences of the experiments on the students' science learning were analyzed by comparing the results of a pre-test with those from a post-test. [syntax] ~~we will analyze the experiment's influences on students' science learning.~~

The reliability coefficient of ~~this~~ the evaluating ~~sheets~~ is was 0.95, ~~showing that it is quiet~~ thus indicating the stability of the instrument. [diction] [period, not semi-colon] ~~stable; as for the~~ Concerning the interior consistence, y the Cronbach α is was 0.96; [comma] ~~each branch test's Cronbach α is located~~ ranging between 0.82 and 0.91, so it is an evaluating sheet of good reliability. [verbose] for each branch, thereby indicating [comma]

2* The ~~This~~ evaluation ~~is made according to Liker's 5~~ were measured by a five- Likert [comma] [redundant] -point Scale; the five choices are "very being strongly disagree," "disagree," "no ~~comment~~ opinion," "agree," and "~~very~~ strongly agree." [Redundant by virtue of being so obvious] ~~The subjects can choose the answer closer to their thoughts. Positive descriptive questions will be counted in~~ items were tabulated by addition: 5 points for "~~very~~ strongly agree," 4 points for "agree," 3 points for "no ~~comment~~ opinion," 2 points for "disagree" and 1 point for "~~very~~ strongly disagree." [semi-colon] Negative descriptive ~~questions will~~ items were tabulated by ~~be counted in~~ subtraction. [delete period] [diction] [avoid redundancy] [comma]

[Redundant sentence: delete entirely]
~~The second stage of this research is to use the evaluation sheets to evaluate the~~

1* For the sake of brevity, use headline grammar in Table and figure captions, headers, flow-charts, etc. I.e., omit "the."

students' attitudes towards science learning. Before the beginning of the learning activity, we firstly do pre-test on the students' attitudes; then, after the end of the activity, we also do post-test. Finally, we input the data into SPSS For Window, and proceed t-test on every question, comparing the differences of the students' attitudes before and after the tutoring experiment.

This attitude evaluating sheet is divided to four aspects: attitude towards Science course, attitude towards Science teacher, learning motivations to Science course and Science learning strategy. The analyzing results are shown in Table1.

1* Table 1: Four aspects of the t-test results

Aspects	Pre-test		Post-test		t-value
	M	SD	M	SD	
Attitude towards Science Course	3.02	0.26	3.56	0.34	7.51
Attitude towards Science Teacher	2.78	0.40	3.53	0.37	3.46
Learning Motivations to Science Courses	2.78	0.26	3.56	0.27	8.50
Science learning Strategy	2.95	0.30	3.30	0.27	3.07

NEVER divide a syllable!

Mostly redundant sentence

2* The results of the four aspects (M represents an average value; SD represents standard deviation) are shown in Table 1. The average values of post-test are all greater than the average values of pre-test, and the t-value all reach an outstanding level, which shows that the experiment really have an influence with positive direction on the students' attitudes towards Science course, Science teacher, learning motivations to Science course and Science learning strategies.

avoid redundancies

4. Summary and Suggestions

In this research the handheld devices, wireless network and digital learning platform are adopted to construct a ubiquitous learning environment and low-cost QR Code such as the medium for connecting the real space with the virtual space are also applied in this implementation. The idea of STS collaborative tutoring strategy is conduct and through which it can become a model for the future ubiquitous learning research.

2* The initials "M" and "SD" should be identified in a footnote to the Table: M= mean; SD= standard deviation

This research is based upon the ubiquitous learning environment and tutoring strategy described above, and we apply it to the elementary school tutoring, experimenting through the Science and Life Technology course. Through the evaluation sheets on Science learning attitudes, the results show that the experiment really has a positive influence on the students' attitudes towards Science learning. However, the influence on the motivation to Science course is not apparent as expected.

During the research, it is found that the students can make best of information technology in ubiquitous learning environment so that they can gather related information during the learning process and they can arrange the records, which will be put by the students onto the website to do group collaborative learning. Once the theme learning and interactive activity was being progressed, the students can accumulate knowledge and share each other; the teachers can also utilize the characteristics of two-dimensional code to make the students focus on the activity. By the collaborative learning activity, the students can interact with each other and learn how to rely on others, so the friendship also warms up. The students share experiences, which strengthens the students' learning motivations and helps them to study, and finally get the ideal that students begin to love Science course, enhancing the learning attitudes.

In the future research, we suggest that there could design different using context according to different handheld device, (for example, Tablet PC and PDA), and could evaluate the efficiency of different smart objects such as RFID and two-dimensional code. Furthermore, for the future researching method, there could be two groups (experimented group and controlled group) for experiment so that we can know the differences from the traditional tutoring and the ubiquitous learning activity.

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Avoid verbosity!

1* See Note, p. 1. 2* In all items in this list, type a space between the closing bracket and the first letter in the author's initial. Your format is incorrect by comparison with the References in 18 the sample article enclosed with this manuscript. I have marked only one entry, but you must revise all entries.

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