

**Development and distribution of knowledge and local wisdom by utilizing QR code under Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG)**

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**Abstract**

This paper aims to develop and distribute knowledge and local wisdom by utilizing QR code under Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG). Methodology had 3 phases: 1) conducting study and collecting data concerning local plant genes 2) developing and distributing knowledge and local wisdom by utilizing QR code via books and information boards 3) evaluating satisfaction regarding QR code usage in books and information boards. QR code, videos providing knowledge regarding knowledge and local wisdoms of local plant genes in books and information boards. 30 Banlatwitaya School's students were selected in a sample group. Mean and standard deviation were applied.

The results demonstrated as follows: 1) Study and data collection related local plant genes consisted 3 procedures i.e. conducting documentation study and collect data from documents, writing a script, conducting study and survey data collection

2) Development and distribution of knowledge and local wisdom by utilizing QR code, implementing in 3 phases: developing local plant genes clip video, uploading local plant genes clip video, distributing knowledge and local wisdom, utilizing QR code via books and information boards

3) Satisfaction in QR usage in books and information boards was in excellent level.

**Keyword(s):** Quick Response Code, Plant genes, local, video, uploading, Clip VDO

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## **Introduction**

Promoting local students to acknowledge and instilling knowledge and local wisdom responsibility into them are an approach to national art and culture conservation. Adopting technological advancement in information and communication making accessibility in large amount of data via QR code which its characteristic was multiple functionality (Rouillard, 2008), particularly data access encouragement and attraction in the data for young people (Klopfer, Osterwiel, Groff and Hass, 2009) can strengthen a community, creating love, pride and raising responsibility towards community. Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG): Development and distribution of knowledge and local wisdom via multiple media focused on Banlat Market, Mueang district, Phetchaburi Province at which the area possess plant genetic diversity in accordance with the project. (RSPG, 2017).

### **Objective(s)**

The study has a main goal to develop and distribute knowledge and local wisdom by utilizing QR code under Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG). Objectives were as follows:

1. To study and collect data related to local plant genes;
2. To develop and distribute knowledge and local wisdom, utilizing QR code via books and information boards;
3. To evaluate satisfaction of usage of QR code via books and information boards.

### **Hypothesis**

Development and distribution of knowledge and local wisdom by utilizing QR code under Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG) would yield high satisfaction results.

### **Scope(s)**

1. Population was students in schools in the area of Ban Lat district, Phetchaburi Province;
2. Sample: 30 Banlatwitaya School's students;
3. Variables:
  - 3.1.Independent variable: procedures in study, collection and distribution of local plant genes
  - 3.2.Dependent variable: satisfaction of usage QR code via books and information boards

### **Methodology**

Development and distribution of knowledge and local wisdom by utilizing QR code under Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG) had 3 phases with activities, roles and output in each activities. The details are as table 1:

**Table 1:** Procedures concerning activity of development and distribution of knowledge and local wisdom by utilizing QR code

Step(s)	Activity(ies)	Role(s)	Output(s)
<b>Conducting study and collecting data concerning local plant genes</b>			
1. Conducting documentation study and collect data from documents	<ul style="list-style-type: none"> <li>Documentation study</li> <li>Additional data retrieved from internet</li> </ul>	<u>Biology instructor:</u> checking data, providing support in activities <u>Banlatwitaya School's students:</u> reviewing what they have learned and searching additional data	Accurate, reliable and up-to-date data
2. Writing a script	<ul style="list-style-type: none"> <li>Grouping</li> <li>Applying "Senior helps freshman" technique</li> </ul>	<u>Banlatwitaya School's students:</u> writing their script with them as main character <u>Phetchaburi Rajabhat University's undergraduate students:</u> advising technique and technology using in creating clip video	A script for communicating data
3. Conducting study and survey data collection	<ul style="list-style-type: none"> <li>Survey</li> <li>Field learning</li> </ul>	<u>Banlatwitaya School's students:</u> performing <u>Phetchaburi Rajabhat University's undergraduate students:</u> advising technique and technology using in creating clip video	Clip video
<b>Developing and distributing knowledge and local wisdom by utilizing QR code via books and information boards</b>			
1. Developing local plant gene video	<ul style="list-style-type: none"> <li>Using program to edit video</li> </ul>	<u>IT instructor:</u> providing support in activities <u>Banlatwitaya School's students:</u> checking data and provide additional opinions <u>Phetchaburi Rajabhat University's undergraduate students:</u> Editing video	Completed clip video
2. Uploading local plant genes clip video	<ul style="list-style-type: none"> <li>Storing data on cloud</li> </ul>	<u>Banlatwitaya School's students:</u> checking online data <u>Phetchaburi Rajabhat University's undergraduate students:</u> storing data on cloud	Clip videos stored on cloud
3. Distributing knowledge and local wisdom by utilizing	<ul style="list-style-type: none"> <li>Accessing data via QR code</li> </ul>	<u>h</u> checking data accessibility <u>Phetchaburi Rajabhat University's undergraduate</u>	Cloud data storage accessible QR

QR code via books and information boards		<u>students:</u> storing data on cloud	code
<b>Evaluating satisfaction regarding QR code usage via books and information boards.</b>			
1. Creating an interview form	<ul style="list-style-type: none"> <li>Determining interviewing topics</li> </ul>	<u>Authors:</u> creating interview form	An interview form
2. Interviewing the sample group	<ul style="list-style-type: none"> <li>Proceeding with an interview</li> </ul>	<u>Sample group:</u> accessing data via QR code via books and information boards <u>Authors:</u> interview	Data obtained from an interview
3. Analyzing data	<ul style="list-style-type: none"> <li>Mean and standard deviation</li> <li>Analyzing suggestion and additional opinions</li> </ul>	<u>Authors:</u> analyzing statistical	Satisfaction results in QR code via books and information boards

According to table 1, descriptions are as follows:

**Phase 1:** Conducting study and collecting data concerning local plant genes is a procedure between biology instructors responsible for data collection and inspection assistant; Banlatwitaya School's students responsible for communicating idea and presentation method and Phetchaburi Rajabhat University's undergraduate students responsible for advising video clip script:

1. Study and data collection from documents related to plant genes in Banlat district, Phetchaburi was performed, utilizing learning integration in biology, science subjects related to study on local plants i.e. vernacular name, scientific name, family name, common name and benefits of each local plant;
2. Writing a presentation script from the study and data collection from documents related to plant genes was done to present 3-5 clip video; students worked as groups to study interesting plants, total 12 plants;
3. As for the study and survey data collection, in this step, a study and data collection were performed on actual plants grown in the local area. The obtained data was proceeded according to the designed script in the step 2 i.e. still image and video clip shot with local plants

**Phase 2:** Developing and distributing knowledge and local wisdom by utilizing QR code via books and information boards. In this phase, Phetchaburi Rajabhat University's undergraduate students played the major role as they acquired the obtained data from phase 1 to develop in to complete clip video, as well as communication via QR code technology through familiar media i.e. books and information boards:

1. Developing local plant gene video was performed by Phetchaburi Rajabhat University's undergraduate students. The data in a form of text, still image and video clip as obtained from phase 1 was developed by using computer programs as per

- written script. Combining knowledge concerning Technology and Education Innovation program, an integration was made. Banlatwitaya School's students coordinately checked and provided additional suggestions.
2. Uploading local plant genes clip videos was done on You Tube. URLs of the videos were converted into QR code, then checked accessibility via QR code.
  3. Distributing knowledge and local wisdom by utilizing QR code via books and information boards was done with QR code via books and information boards. Banlatwitaya School's students compiled important data, book using instruction, data concerning local areas and QR code of each plant into books, then acquired important data related to local plants and QR code to make into information boards to install under local plants.

**Phase 3:** Evaluating satisfaction regarding QR code usage via books and information boards.

1. Creating an interview form was done to evaluate satisfaction in usage of QR code via books and information board. The evaluation was conducted according to goals of activities. In order to acquire foremost accurate data, interview conditions would be deployed i.e. evaluating cooperated interviewee and creating informal atmosphere when interviewing;
2. Interviewing the sample group was performed. In this step, it was to evaluate satisfaction in QR code usage via book and information board. The form would be utilized in asking and talking with students using QR code via books and information board. The students did not participate in data collection and knowledge development in the previous activity;
3. Data analysis was performed by utilizing obtained data to find statistical values, as well as for deducting suggestions and additional opinions from the sample group for further development.

**Result(s)**

The results would be classified into 3 parts as follows:

**Part 1: Conducting study and collecting data concerning local plant genes**

3 procedures were taken as follows:

1. **Conducting documentation study and collect data from documents:** It was found that students with moderate-high learning achievement were able to collect data from documents, as well as moderately understand local plants; on the other hands, students with low learning achievement did not possess total understand capability in local plants. Given that, this procedure served as a review and preparation for the students to continue to next activities;
2. **Writing a presentation script:** It was found that students were capable to combine obtained knowledge with their creativity and expressed as a presentation script very well. In addition, with experience of Phetchaburi Rajabhat University's

- undergraduate students, this would help in presentation of clip video, making a script interested and in a scope to realize development based on existing technologies;
- 3. Conducting study and survey data collection:** With the participation in above activities, it would encourage Banlatwitaya School's students and Phetchaburi Rajabhat University's undergraduate students to gain more interest and better notice local plants via a field survey (Banlat district, Phetchaburi), to love and cherish local plants. These are the objectives of Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG).



**Figure 1:** Study and data collection from local plant documents

## **Phase 2: Developing and distributing knowledge and local wisdom by utilizing QR code via books and information boards**

3 procedures were taken as follows:

- 1. Developing local plant gene video:** According to the study, it was found that Phetchaburi Rajabhat University's undergraduate students who have learned how to edit video by computer could edit video at preliminary level. When video editing problems did not proceed as required or the opinions, they had to search for additional data on internet to solve such problems and to acquire knowledge and skills in video clip editing by computer program;
- 2. Uploading local plant genes clip video:** To the undergraduate students, uploading was a new knowledge and has never seen in classroom; nevertheless, most students were able to upload video based on their experience. However, they could not pass on uploading methods to Banlatwitaya School's students and had to resort to "Senior

help freshman” technique, making the undergraduate students gain the uploading skills and Banlatwitaya School’s students better experience uploading video;

3. **Distributing knowledge and local wisdom by utilizing QR code via books and information boards:** Books were compiled by the undergraduate students and students participating in the activities from designing cover, book, layout, as well as printing and pagemaking according to given requirement. As for the information boards, Layout was designed and installed around plants in local areas.



**Figure 2:** Books and information board to distribute knowledge and local wisdom by utilizing QR code

**Phase 3:** Evaluating satisfaction regarding QR code usage via books and information boards.

3 procedures were taken as follows:

1. **Creating an interview form:** With the goals for activities, they inspired interview topics as follows: ease of data accessibility, impression on accessible data, data reliability and suggestions and additional opinions;
2. **Interviewing the sample group:** Interview was performed after a week of information board installation. It was done in informal way by asking random people around the information board. The authors would record and have a conversation and note data as per designated topics in the form. They would be asked with simple

questions, for example “Do you try to use QR code for accessing data?”, “Is it easy to use?”, “Is it enjoy to watch clip videos” and “Do you have anything to tell the friends who shot these video or any suggestion or not? And how?” After these questions, the books would be handed out to provide 12 kinds of local plants, then the questions “Do you see 12 information boards and all of them?”, “Would it be better, if supporting books were handed out?” and “Do you have anything to tell the friends who shot these video or any suggestion or not? And how?”

3. **Analyzing data:** Obtained data from the sample group’s interviews would be analyzed as per designated. ease of data accessibility, impression on accessible data, data reliability are classified into 3 groups: totally rejected, satisfied and very satisfied as per table 2:

**Table 2: Data analysis of data obtained from sample group interview**

Topic(s)	Totally rejected		Satisfied		Very satisfied	
	n	%	n	%	n	%
Ease of data accessibility	5	16.67	16	53.33	9	30
Impression in accessible data	1	3.33	8	26.67	21	70
Data reliability	0	0.00	2	6.67	28	93.33
Mean ( $\bar{x}$ )	2.00	6.67	8.67	28.89	19.33	64.44
Standard deviation (S.D.)	2.65	8.82	7.02	23.41	9.61	32.03

As per table 2, it demonstrate that interviewed sample group was n =30 which is in the very satisfied level with  $\bar{x}$  = 19.33 and S.D. = 39.61 in data reliability. As for totally rejected group, it had the lowest n with  $\bar{x}$  = 2.00 and S.D. = 2.6. n in the group ascribed the rejection to ease of data accessibility and difficulty in internet signal causing inaccessibility.

Suggestions and additional opinions of the sample group (n) could be summarized as follows:

- The activities should be done on all local plants to gain attraction in the plants;
- The activities should be hold annually;
- Opportunities should be offered to other students to participate in shooting video clips;
- These technologies should be included in the computer subject to enable the students to do by themselves
- There should be an application of new technologies which make an ease in presentation in the local areas.

## Discussion

For a discussion, development and distribution of knowledge and local wisdom by utilizing QR code is an application of modern technology with participation of local students to create technological media for distribution resulting in satisfaction in OR code

usage via books and information boards in conformity with study of Rikala and Kankaanranta (2014) as they utilized QR code for promoting instruction according to blending classroom which contributed to better learning achievement and satisfaction towards such instructional process. According to results of the study, they were in align with Durak, Ozkeskin and Ataizi (2016) as they found that using QR code to access text, still image, animation and video contributed to diverse learning.

## **Reference**

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