Conditions of E-cloud Roll Calling System (ERCS) in National Formosa University

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Abstract

This research aimed to investigate the conditions and feedback of applying ERCS in NFU. ERCS was first launched in 2011. It was used to confirm the attendance in class to reduce the time of roll-calling for teachers. The research group tended to understand the feedback from students, and the opinions from the system founder and an official from the school. The research group interviewed two officials from the school including the founder of the system and the dean from the Office of Academic Affair. In addition, a questionnaire was used to investigate students' comments and feedback. The results showed that most students were not familiar with the ERCS and it came up with some problems, such as (1) what is the reason for helping others to sense their student ID cards, (2) how to apply for leaves, (3) whether absent would influence conduct evaluation. The results suggested that NFU should take action properly to resolve obstacles. For example, the school should announce more information about day off and absence, provide this information for all class leaders to give guidance for classmates, remind students to keep attention to the emails from school, take action to widely broadcast this news for students, and actively notify students from time to time. In addition to the problem of students helped their peers to sense cards, the school needed to come up some punishment or solutions, too.

Keywords: ERCS, students' attendance, students' attitude

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I. Introduction

In recent decades, with the rapid development of technology, machines had taken the place of manpower (Zhang, 2011). People used 3C (computer, communication, and customer electronic) technologies almost everywhere. It was to say that people could not live without technology. This phenomenon stimulated engineers to make better machines to make our life become better. For example, people built mass transits to take the place of carriages, and computers to be widely used in education. Besides, the Internet was the lead of today's technology, which currently had approximately 1.4 billion users worldwide (Wolfram, 2009). People started to utilize the Internet to do everything online in daily lives instead of going out to shop or do business.

Internet had been used in many fields, and academia was no exception. From the increasing of "e-learning" and web-based instruction, to online libraries and research tools, to computer-mediated student–teacher interaction, college students today exchange many thoughts of their academic lives online.(Jonesa, Johnson-Yaleb, Millermaiera, Pérezc, 2008)

Besides using technology in classroom teaching, NFU also found out that roll calling took too much time during classes. Also, recently there were numerous academics from a variety of discipline and universities complain of student absenteeism (Bati, Mandiracioglu, Orgun, and Govsa, 2012). Therefore, it would be ideal to have an automatic system that assisted teachers to confirm the students' attendance and maintain the efficiency of classroom teaching time arrangement. Zhang (2011) suggested that knowing how to utilize education technology to elevate teaching effect in class was the urgent problem to resolve.

1.1. Invention of ERCS

"Utilizing modern education technology in the exploring teaching of computer subject has become an important way to improve the efficiency of class teaching." (Zhang, 2011, p.1)

As NFU was in an open world characterized by continuous changes in the surroundings and necessities which they had to meet (Ardagna, Casolari, Colajanni, Panicucci, 2012), it was always striving to upgrade its facilities. The school found out that the rate of non-attendance was extensively considered a major issue (Newman-Ford et al., 2008; Hughes, 2005; Rhodes and Jinks, 2005).

Consequently, teachers required to use extra time to do roll-call, so NFU had started using the "E-cloud Roll-Calling System (ERCS)" since the academic year in 2011. ERCS was used to confirm the attendance in class to reduce the time of roll-calling because attendance was approved as a crucial attitude at universities (Ugurlu, Koc, Usta, Simsek, 2012).

1.2. The Outlook of ERCS

The ERCS looked like a calculator with 17 buttons (See fig.1). The main function of it was for students to confirm in for the classes. For most of the time, it displayed the name of the class. In addition, when students were sensing their Student ID cards, it would show the name of the students and confirm the attendance.

Fig. 1.

1.3. Rules of ERCS

The ERCS in NFU was a new classroom technology, which was used to save the time of manual roll calling. Students were required to bring their student ID cards to the sensor of the machine, and the system would store the attendance data of the classes to teachers. Functions of ERCS were set up to students and teachers: a) 10 minutes before to 10 minutes after the classes start was "on time." b) 10 minutes after the classes to 10 minutes before classes end was "late." c) 10 minutes after classes end was "absence." The system would inform students of absence or delay by email. Therefore, if students had problems about the attendance, they could modify the data through the teachers or the Administration's Office.

1.4. Research Purpose

The purpose of this research was to understand the advantages and disadvantages of applying e-cloud roll-calling system on campus. Issues such as attendance rate and time saving for roll-call were to be discussed in this study. Furthermore, we collected the opinions from the professors and the students for the operating of ERCS. According to Zhang (2011), he stated feedback was an essential step in the exploring teaching process, and noted that teachers had to focus on the content and measure of feedback, and the students' attitude toward study. Therefore, we hope these suggestions could help school improve the ERCS, and outcomes of this research would provide a great deal of advice for school to adjust the whole school's prospect of ERCS.

II. Methodology

With the development of ERCS, there was little information about the system. In the beginning, the research group interviewed the inventors of ERCS, who were the staff of NFU. Besides, in order to explore the perspectives from the students, the research group in this study designed a questionnaire to investigate how students felt about the ERCS system in NFU. The participants were chosen by convenient sampling of non random sampling.

2.1. Subjects/ Materials

To understand more about this system, the research group interviewed two inventors. After interviewing the founders, the research group had learned more details about ERCS such as functions of the system and the regulations of the system. Those information helped the research group gain a basic knowledge on how to design research questions. Accordingly, the research group decided to design questionnaire survey to understand students' viewpoints. The questionnaire was divided into three main parts: basic knowledge, current uses survey, and suggestions. The research project focused on the experiences of 600 students for convenient sampling in NFU. Students were composed of four different colleges: College of Engineering, College of Electrical and Computer Engineering, College of Management, College of Arts and Sciences. The project explored the methods of their reflections and suggestions about ERCS. This research could provide opinions for school.

2.2. Interview

In the beginning, the research group interviewed the founder of ERCS. The research group made a list of questions to ask the founders of this system. Followings were the designed questions:

(a) Why did you found this system?

(b) What were the difficulties you met?

(c) What were the main purposes of founding this system?

(d) Did this system enhance the rate of attendance?

(e) Will the record have an impact on students?

(f) What will the school react if students help others to sense the ID card?

(g) What is your expectation for this system for the future?

(h) Are we the first school to use this kind of system?

(i) What are the advantages and disadvantages for this system?

2.3. Questionnaire

According to the suggestions from the discussion with the official from the Office of Academic Affair, the research group designed the questionnaire for students. It was divided into three main parts: (a.) basic knowledge, (b.) current uses survey and (c.) suggestions. In basic knowledge, there were six close-ended questions. The survey included five close-ended questions, and two open-ended questions. Suggestions contained two open-ended questions (See Appendix).

For the data collection, the research group adopted convenient sampling of non-random sampling, and each different college was 150 questionnaires. The research group handed out questionnaires to students during classes, and collected them immediately so that the research group could ensure the response rate was high enough.

III. Result

According to the interviews, the research group reached the conclusion as follows:

The founder was inspired by other schools' seminars. He thought if NFU had the similar system like other schools', it could stable the educational system of school. During the "Teaching & Learning Excellent Program," he suggested the foundation of ERCS to be applied to the whole campus. While setting up the system, he encountered with some difficulties, for instance, the negotiation on the price for setting up the system and the unsatisfied comments from the users.

3.1. Reaction

In preventing of students' illegal behaviors such as skipping the class, NFU set up school regulations to discipline the students. Steenhaut and Van Kenhove stated that getting a positive result might urge individuals to do the illegal behavior. (Xiao Wang, Steven R. McClung, 2012). Besides, it also came to a regulation for teachers because they were not able to skip class or easily change their scheduled classrooms. However, ERCS was not a tool to control students' behaviors, according to the official from the Office of Academic Affair. He thought it was a good tool to manage the students' e-portfolio. That was to say, ERCS was just a tool or a machine for students to record their life in school, but not for ruling them.

For the questionnaire data from the study, the research group handed out 600 questionnaires survey (as 150 for each department), and received 558 back as fig.2. In sum, the return rate was 93%. In College of Engineering, 138 questionnaires were collected. In College of Electrical and Computer Engineering, 136 questionnaires were collected. In College of Management, 137 questionnaires were collected. In College of Arts and Sciences, 147 questionnaires were collected.
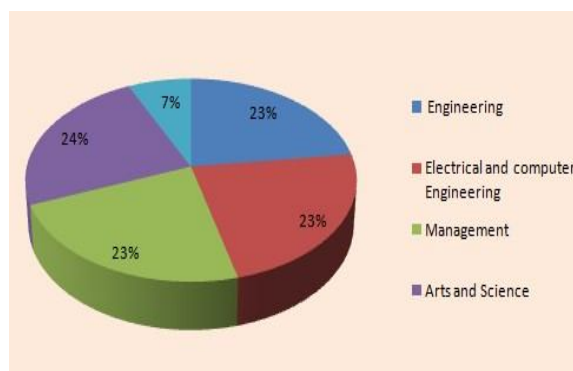

Fig.2.

The calculation of the questionnaire survey was divided into two modified scale methods of 4/5 scale. In the following chart, the research group analyzed students' responses in NFU from every question on the questionnaire survey.

3.2. Basic Knowledge

In the questions of basic knowledge, the research group utilized 4-point Likert scale. In the chart, 100% stood for totally understanding, 70% stood for almost understanding, 35% stood for slightly understanding and 0% stood for students totally not understanding to the question. There were six questions about basic knowledge.

For the first question, NFU hoped students could put emphasis on the situation of absence. However, according to investigation of 558 questionnaire survey, there were 125 students totally understanding of the regulation of day off and absence as fig.3. NFU should announce more information about day off and absence.
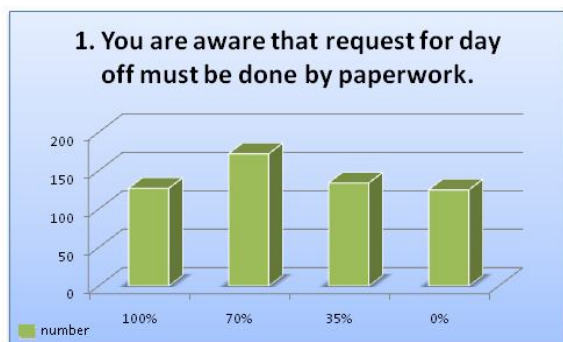

Fig.3.

For the second question, if you failed to attend class more than 15 periods, a notification would be sent home. Nevertheless, according to investigation of 558 questionnaire survey, there were 235 students in total not understanding this information as fig.4. NFU should provide this information for all class leaders to give guidance for classmates.
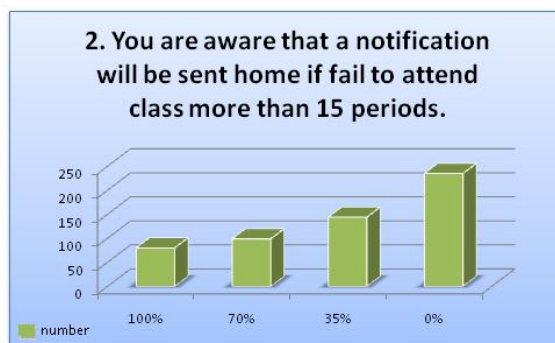

Fig.4.

For the third question, if you failed to attend class, you would receive an email from school. Nonetheless, according to investigation of 558 questionnaire survey, there were 255 students in total not understanding this information because they seldom used mails which were provided by NFU as fig.5. School should remind students to keep watch for the emails from school.
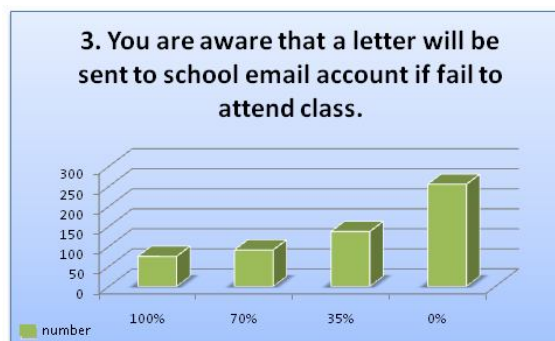

Fig.5.

For the forth question, if you sensed student cards for the other and vice versa, you would have violated the school rule. Discipline was to educate students' behaviors and habits, and to comprehend the moral development all of self-control (Yavuzer, 1998). However, according to the investigation of 558 questionnaire survey, there were 158 students in total understanding this message as fig.6. Although they knew they were breaking the rules, they still helped others to sense the student ID cards. Therefore,

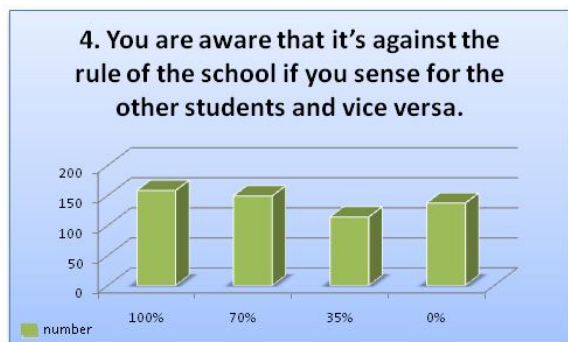NFU should have methods to prevent inappropriate students' behavior happening.

Fig.6.

For the fifth question, if you skipped more than one third of the classes, you would not be able to take exams. Nevertheless, according to investigation of 558 questionnaire survey, there were 159 students in total who didn't understand this message as fig.8. This was one of the most essential information that students ought to understand. NFU should take action to widely announce this news for students.
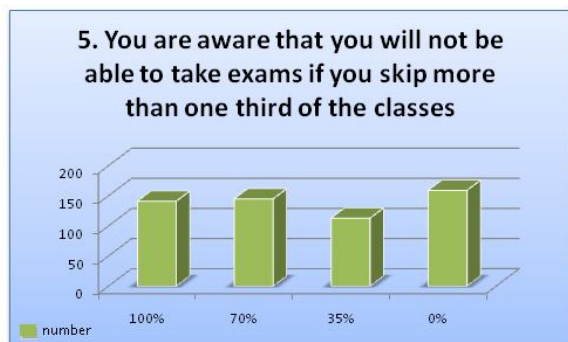

Fig.7.

For the sixth question, if you failed to sense your ID card, you could substitute for a new one. Nonetheless, according to investigation of 558 questionnaire survey, there were 341 students in total didn't understand this message as fig.8. NFU should actively notify students more often.
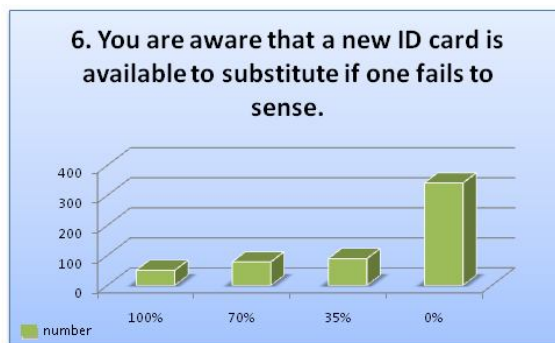

Fig.8.

3.3. Current uses survey

For the questions of current uses survey, the research group utilized 5-point Likert scale. There were five questions about current uses survey. In the following charts, 100% stood for strongly agree, 75% stood for agree, 50% stood for neutral, 25% stood for disagree and 0% stood for strongly disagree to the question. There were six questions about basic knowledge.

For the first question, according to investigation of 558 questionnaire survey, there were 243 students thinking that ERCS didn't have notable influence on raising the rate of attendance as fig.9. Just like the official from the Office of Academic Affair mentioned that ERCS was not for roll calling but for improving students' self-control. Even without the ERCS, the hard working students would still come to school.
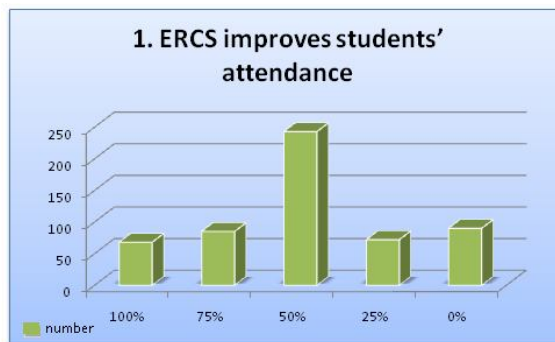

Fig.9.

For the second question, it was about the noise of ERCS. According to investigation of 558 questionnaire survey, there were 125 students thinking the noise made by the machine when sensed bothers the class as fig.10. However, the sound of ERCS was to assure whether student sensed their student cards successfully or not.
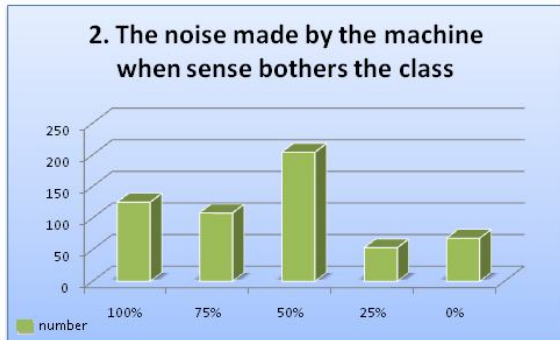

Fig.10.

For the third question, one of the main reasons of ERCS was to take advantage to students and teachers. However, according to investigation of 558 questionnaire survey, 138 students thought that ERCS was not convenient to use as fig.11. Some students complained about they sometimes forgot to bring their cards with them to the class.
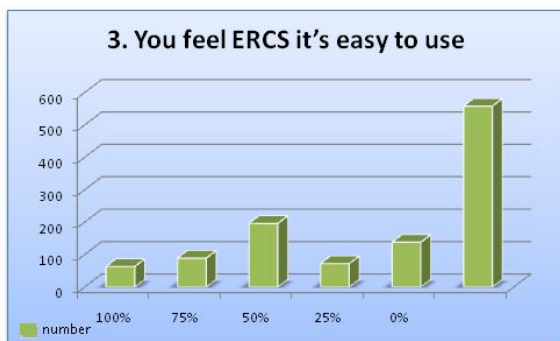

Fig.11.

For the forth question, although most students knew that asking others to sense student ID card was breaking the law of school, there were still 164 students doing it as fig.12. There were some reasons

that could be described as follows: (a) laziness to school, (b) cared the record of absenteeism, (c) mutual helping, and (d) not interested in classes. Lacking of self-motivation was particular one of the most influential factors. It would decrease performance and interactions between teachers and students in college.
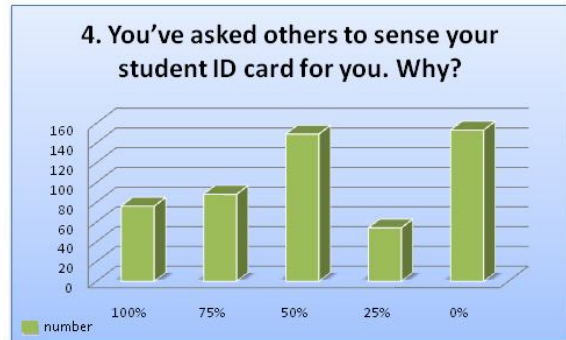

Fig.12.

For the fifth question, according to forth question, 174 students helped others sensing student ID cards as fig.13. The reasons were as following: (a) the pressure of classmates, peer influence appears to be a critical part of adolescent relationships (Sindy R.Sumter, CarolineL. Bokhorst, Laurence Steinberg, and P. Michiel Westenberg, 2009) (b) laziness to school, (c) minded the record of absenteeism, (d) it was more blessed to give than to receive.
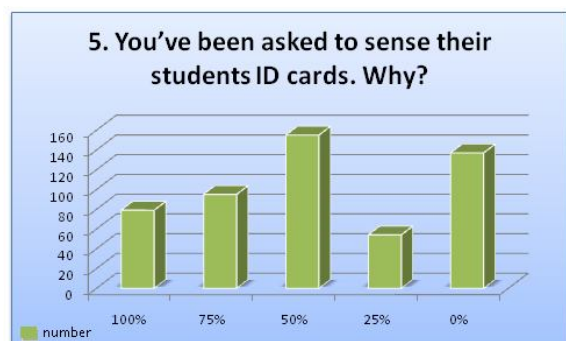

Fig.13.

3.4. Research Findings

Based on the analysis of questionnaires survey, the research group found that many students were not familiar with the functions of ERCS. The research group suggested school to announce information to students by holding speeches about ERCS in first semester of freshmen year as well as other time in the middle of the semesters.

3.5. Opinions from students

Although ERCS came up with kinds of limitations so far, there were still 310 students feeling satisfied with ERCS among 558 questionnaires survey. There were some opinions to ERCS bringing in as following:

3.5.1 Satisfied opinions

- It reduced the roll calling time.
- It increased the rate of students' attendances.
- I'm proud of being the first one to apply to the whole campus.
- It was convenient to use.
- It confirmed the school's regulation.

3.5.2 Dissatisfied opinions

- Some students thought it was not necessary to set up ERCS; they would rather spend money on other facilities.
- Teachers didn't rely on ERCS, so they had to roll call again.

3.6. Suggestion to the school

According to the result of questionnaires survey, students provided their suggestions to school for reference. In general, most of students were not familiar with basic functions of ERCS after it was set up. Therefore, there were many problems regarding to mechanical and human factors that bring outto the school and the system designer.

3.6.1 Performance/ Convenience

- The ERCS machines were not sensitive, students tended to sense their student ID cards for several times.
- Students thought school should fix the online service so that they didn't need to do the paper work for requesting a leave because it was not convenient and also wasting papers.
- Some teachers would forget to change the classroom. Therefore, students had to go back to original classroom to sense their student ID cards.
- Some teachers thought it is unreliable because students might ask their friends to sense for others.
- Students thought it annoying to erase the record of day off.
- Students suggest integrating E-campus with E-portfolio into ERCS.

3.6.2 Voice

Some students complained the noise made by the machine of confirming bothers classes' running, which made both students and teachers were not able to concentrate. Thus, they recommend that the noise could be lower or eliminated.

IV. Conclusion

In this research, the research group explored the conditions of ERCS in NFU after students used ERCS for one year. The research group aimed to comprehend the reflections of students about ERCS.

The research group interviewed the founder in NFU, designed the questionnaires survey and handed them out for students to 4 different colleges: college of Engineering, college of Electrical and Computer Engineering, college of Management, college of Arts and Sciences.

4.1. Advantages

The main purpose of founding this system was to promote students' self-behavior. There were also other advantages along with ERCS: (a.) save the time of manual roll calling, (b.) increase the rate attendance on class, (c.) organize every classroom with identification code, (d.) feasibility to confirm the record of individual attendance.

4.2. Disadvantages

After activating ERCS, whenever students attended the class, they should sense their student ID cards to the scanner. However, as is the case in educational psychology, counterproductive student behaviors have brought out, such as lateness and absenteeism (e.g., Conte & Jacobs, 2003), since so much of the work on negative student behaviors is focused on individual behaviors (Credé & Niehorster, 2009):

(a.) Some students were asked to sense for others' student ID cards.

(b.) It was not convenient to change classrooms.

After analyzing the statistics of questionnaires survey, the research group found that students had diverse opinions, but more than half students were satisfied with ERCS. Students who satisfied with ERCS stated that ERCS reduced roll calling time, increased the rate of students' attendances, were proud of being the first one to apply to the whole campus, were convenient to use, and confirmed the school's regulation. Nevertheless, some students reflected that sometimes the system was not stable, and missed their attendance record. Therefore, the students needed to fill in the application for leave. In order to reduce this problem, the school needs to improve the system's stability.

Therefore, NFU should take action properly to resolve obstacles. For example, NFU should announce more information about day off and absence, provide this information for all class leaders to give guidance for classmates, remind students to keep watch for the emails from school, take action to widely broadcast this news for students, and actively notify students instead of keeping silence until they had problems about it. In addition to the issue of students help their peers to sense their cards, the school needs to set up some punishment to prevent this kind of behavior.

During the process of the research, the research group suggested NFU could host speeches about the introduction and explanation of ERCS to freshmen more often. Besides, NFU could create more functions of ERCS, such as the record of student's learning progress. In a word, the research group hopes ERCS could become better in the future, and the research could be a model for other schools' references materials.

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Appendix

Questionnaire

(a.) basic knowledge

1. You are aware that request for day off must be done by paperwork.

2. You are aware that a notification will be sent home if fail to attend class more than 15 periods.

3. You are aware that a letter will be sent to school email account if fail to attend class.

4. You are aware that it's against the rule of the school if you sense for the other students and vice versa.

5. You are aware that you will not be able to take exams if you skip more than one third of the classes

6. You are aware that a new ID card is available to substitute if one fails to sense.

(b.) Current uses survey

1. ERCS improves students' attendance

2. The noise made by the machine when sensing bothers the class

3. You feel ERCS it's easy to use

4. You've ever asked others to sense your student ID card for you. Why?

5. You've ever been asked to sense their students ID cards. Why?

(c.) Suggestions

1. Are you satisfied with ERCS?

2. What functions ERCS can improve?

雲端點名系統之現況 ：以虎科大為例

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摘　要

　　本研究旨在探討國立虎尾科技大學於 2011 年所設立的雲端點名系統之使用狀況，此系統代替人工點名，減少老師上課點名時間，研究者探討雲端點名系統是否有助於減少學生翹課而提升學生的上課出席表現，及使用後所衍生的優點與缺點。本研究採訪此系統的創辦者以了解對雲端點名系統的想法，並且對學生抽樣調查，藉由問卷來設法了解學生使用此系統的狀況之意見，調查結果顯示大部分的學生對於此系統的運作規程，並不明瞭，而衍生了一些問題：(1) 學生代刷問題(2) 請假問題(3) 曠課是否影響操行。因此，學校應對這些問題採取應變措施：(1) 政策的宣傳(2) 雲端系統資訊提供(3) 學生刷卡態度的宣導。此結果可供學校對於雲端點名系統的參考及改進。

關鍵字：雲端點名系統、學生出席率、上課出席表現

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