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# Interactive Check System for facilitating Self-awareness of Dorm Students in Upper Secondary Education

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**Abstract.** We describe a new interactive system using a social learning platform to provide dormitory students with the ability to communicate with teachers/advisors in a timely manner to promote self-active awareness of the dormitory environment. Our system comprises tablet PCs, cloud computing services, and application and server software to enable collaboration over a high-speed wireless local area network that covers the campus, dormitory, and teachers' homes. The purpose of this system is to facilitate the self-recognition of behavioral problems, raise awareness, and encourage student initiative in a natural manner.

**Keywords:** Mental Health, Wellbeing, Upper Secondary Education

## 1 Introduction

In present-day society, encouraging the role of computers in schools is very important. It has been suggested that the primary challenge in our information-rich world is to use information specifically to say the right thing at the right time and in the right manner [1]. In particular, the fundamental pedagogical concern regarding information use is to provide learners with the right information at the right time and place in the right manner rather than merely enabling them to learn at any time and any place.

In our present study, we have developed a new collaborative learning system called Terakoya [1] for remedial education, which helps students actively study anywhere on a high-speed wireless local area network (WLAN) that is linked to multipoint remote users and covers the campus, dormitory, and student and teacher homes. Terakoya provides interactive lessons and a small private school environment similar to the 18th-century Japanese basic schools called Terakoya.

We propose a new interactive communication system with the use of a social learning platform to provide students housed in dormitories with the ability to communicate with teachers/advisors in a timely manner for promoting self-active awareness in the dormitory environment. The target dormitory houses over 400 students and is supported by 11 staff members. At least one staff member is present in the dormitory

at all times when it is occupied by students. Regularly scheduled transition briefings allow information sharing among staff members. Nevertheless, the staff members are a small group, and it is hard to provide instantaneous services for real-time information sharing.

Under such conditions, it is necessary to design and implement a new communication system for the students to create the environment required to build self-discipline by reflecting on their behavior. To enable the students to review their behavior in the dormitory, the staff records student activities, i.e., the five W's and the one H (who, where, when, why, what, and how), related to acceptable and unacceptable behavior using a tablet PC. Information that is difficult to quantify is recorded as objective information by obtaining the camera image on a tablet computer.

This information is stored as centralized time-series data on a cloud server using several front-end graphical user interface (GUI) tools via the dormitory WLAN. Thus, students can review their behavior in chronological order. The dormitory WLAN connects seamlessly to the campus WLAN. Multipurpose pocket size electronic devices are provided to all students; thus, each student can access the high-speed WLAN anytime and anywhere. The purpose of this system is to facilitate the self-recognition of behavioral problems, raise awareness, and encourage student initiative in a natural manner.

This paper describes how the proposed new interactive communication system assisted in student dormitory life, and the implementation of a prototype framework and its practical application. The test verified the feasibility of the system for helping the students to obtain advice actively and willingly. The feasibility of the system indicates that the proposed new interactive communication system has the ability to create an environment that facilitates the development of student socializing skills. Enhancing student sociality through dormitory life is an educational policy of our school.

## **2 Basic Configuration**

Our prototype system comprised 10 iPad tablet PCs, cloud computing services, and application and server software to enable collaboration over the WLAN. The prototype system was applied to facilitate real-time counseling for a group of students in a dormitory. The tablets were used to record the evaluations of the acceptable and unacceptable behaviors of the students based on dormitory room inspections, which are then stored as secure centralized time-series data on a cloud server. Students can review their behavior by accessing the data on the cloud server using a multipurpose pocket-sized electronic device provided to each student. Individual data of the students on the cloud server is backed-up in order to secure data. Furthermore, the parent of a student can access that student's behavioral data on the cloud server via the Internet to monitor his/her child's activity.

As the cloud server, we adopted Edmodo, which is a social learning platform website for teachers and students, and some customized ICT tools running on Windows. Edmodo supports the Japanese language on the login screen—a portion of the “Invita-

tions” page—and some menus and buttons. As such, it is accessible for teachers and schools in Japan.

### 3 Implementation and Practice

The proposed prototype system was implemented experimentally in a foreign student’s dormitory. The conventional procedure employed in our dormitory required an inspection of each student room every weekday morning by a dormitory counselor to ensure that the door and the window were locked, the bedding was put away, and the curtains were opened. The inspection results were recorded on a checking list, and later manually entered into a computer. The dormitory staff provided only verbal commentary to a student in accordance with the records. It seems that it is difficult for many students to heed the staff’s advice due to verbal advice alone. We have come to embrace the idea that to facilitate self-recognition, raise awareness, and encourage student initiative in a natural manner, it is necessary for students to review their actual behavior in the dormitory.

We required the new procedure incorporating the interactive communication system that additional procedures be kept down to the minimum necessary, and the conventional procedure used by the dormitory counselors employing non-exclusive equipment such as pens and paper were retained as much as possible. Doing so alleviated the need to require individuals unfamiliar with the usage of electronic devices such as smartphones, tablet PCs, and laptops to adopt complicated and non-intuitive procedures in order to provide digital records of review results. This also allowed students to obtain feedback easily and timely from the written record on the checking list, and the communication is recorded for students’ subsequent use.

Fig. 1 illustrates the prototype system and GUIs for viewing a result of the routine

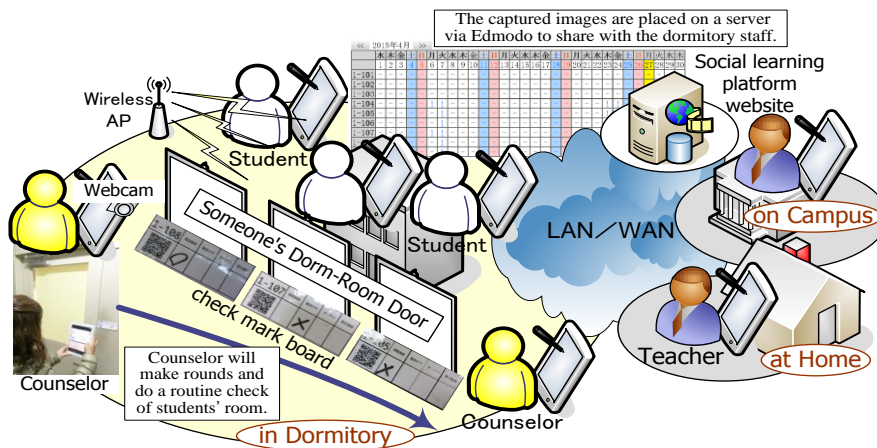


Fig. 1. Prototype systems and GUIs for viewing a result of the routine check.

check. After the dormitory counselor inspects the condition of the room, the results are entered on the appraisal list as check marks for each condition, and the written

record is then captured by the camera on the tablet PC and stored electronically. The written record remains on the wall outside the room as a message to students. The students are therefore provided timely information regarding their behavior when they return to their rooms.

The captured images were posted on our server made of the customized ICT tools through Edmodo to share with the dormitory staff. The on-campus teacher was capable to access Edmodo to clarify the conditions of each student's dormitory room, and the teachers were capable to engage in face-to-face and/or online contact with students as required. The student's parent would like to be able to examine their child's conduct in the dormitory via Edmodo.

## 4 Conclusions

In this paper, we detailed how the proposed new interactive communication system assisted in student dormitory life. A prototype system was implemented experimentally in a foreign student's dormitory as a social learning platform to provide dormitory students with the ability to communicate with teachers/advisors in a timely manner for self-active awareness of the dormitory environment. The staff members, including student advisors, record acceptable and unacceptable behaviors using a tablet PC. This information is stored as centralized time-series data on a cloud server using several front-end GUI tools via high-speed WLAN in the dormitory in order to enable students review their behavior in the dormitory. The feasibility and practicality of the system in helping students to obtain advice actively and willingly was verified through observation and by evaluation of the assistance provided.

For our system, we considered the benefit of continuing the usage of conventional methods employing paper and pens owing to its simplicity and requirements for no exclusive equipment. The written records can be used by students, to review their behavior. Therefore, the new communication method requires no additional procedures, no complicated and non-intuitive actions, and no exclusive equipment. The captured images are located on our customized server via Edmodo to share with the dormitory staff. The campus teacher is able to access Edmodo to clarify the conditions in a student's room. The teachers can engage in face-to-face and/or online contact with the students as needed. The proposed system can also evolve to provide the necessary counseling and a perspective to provide relief from study stress, relationship difficulties, SNS-addiction, and serious mental health problems.

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