

Development of virtual learning community through my buddy school system

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Abstract. As a country with high biodiversity and social community, Indonesian students face differences in learning quality. Students' competencies in rural and urban areas also become a separate problem. With the nature and social conditions of each, students in rural and urban areas have different abilities, hence need peer learning to share knowledge between rural and urban school. Indonesia needs various innovations to solve learning and education problems. One of the solutions to bridge this problem is by developing information systems that can be used by students in villages and cities. Through peer learning, it is expected to improve students' knowledge and skills because the learning design is more natural. In this paper, My Buddy School system is designed and developed to support self-regulated learning and peer learning course. The development method used the ADDIE model (Analyze, Design, Development, Implementation and Evaluation). We applied explicit evaluation using some questionnaires and interview to 22 junior high school students that have already used the developed system. The result shows that user experience score and student's respond from the interview session indicate that the system is good; therefore, an improvement is needed. For the future works, we proposed a user-centered design method to gain a greater score of user experience.

1. Introduction

In some country, the learning quality in many degree levels is still not distributed evenly especially between rural and urban school. In Australia, Victoria for specific, through Department of Education and Early Childhood Development has implemented some activity to solve problems in education in rural areas [1]. In Queensland, the government implemented a specific education framework for rural and remote [2]. Previous research by Trinidad [3] performed an action research experience collaboratively with four universities to prepare specific Pre-service teacher for rural school in West Australia. In the United States, through Center on Innovation & Improvement, Academic Development Institute publish "Promoting Learning in Rural Schools" that explain program and innovation in education for rural school [4].

Based on experience from other districts or other countries that have tried and succeeded in implement innovation to solve education in rural schools, Queensland is good to be considered. Other countries refer Queensland as a pilot study in quality education services for rural and remote school. Queensland implemented innovation in education, one of them is "Distance education; Small primary schools; Schools in provincial towns; and P-10 and P-12 schools in rural and remote areas". Queensland Government also implemented Rural and Urban Schools Linking Scheme (RUSLS) and one of the activities is "Buddy" System. Through this Buddy System, every school can share a strategy, hope, and



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also learning sources that involve student, teacher, staff, and also society. The Buddy System aims to create a network that connects rural an urban school so they can learn to each other.

As a country with high biodiversity and social community, Indonesian students face differences in learning quality. Students' competencies in rural and urban areas also become a separate problem. With the nature and social conditions of each, students in rural and urban areas have different abilities, hence need peer learning to share knowledge between rural and urban school.

Compare to Queensland experience, learning activity in rural school in Indonesia (especially public schools) needs various innovations to overcome the problems to improve education quality. Previous research developed *Kurikulum Belajar dan Berkarya (Jalakar)* or learning and working curriculum that focuses on building student's life skills [5,6]. Implementation of *Jalakar* curriculum for rural schools is done with an integrated learning model that combines main subject, local content, and independent activity at home. The main learning characteristic is more dominant for the utilization of the potential of the local environment. Even though there is a lot of local potentials that can be explored as a school competitive advantage, teachers and students lack insight and stimulation to bring out their new creations. Therefore, efforts are needed to add insight and bring new creativity by building networks and partnerships between schools, teachers, and students in rural and urban areas through peer learning named Buddy School System.

Unfortunately, to mobile between rural and urban takes too much time, money, effort, and energy. It would be more effective if rural and urban students can learn anytime and anywhere without distance and time boundaries. One of the solutions to solve this problem is by developing information systems that can be used together by students in rural and urban areas. Through peer learning, it is expected to improve students' knowledge and skills because the learning design is more natural.

My Buddy School System (MyBSS) is an online learning system through peer teaching/learning to connect between urban and rural schools and the students. The student who registered can share and take course that is made by 'the buddy'. MyBSS that is developed is focused on the purpose that is reciprocal for both, rural and urban student. The purpose of the urban students' existence is to share life skills value such as interpersonal skills and pre-vocational for rural students, while the involvement of rural students can build a deep empathy and solidarity feeling for urban students.

2. Methods

The research uses ADDIE model (Analysis, Design, Develop, Implement, Evaluation) to develop the system. The procedure begins with analyze the needs of use and user, design the system, develop system, implement to students and evaluate the system. MyBSS is analyzed based on the needs of implementing Jalakar curriculum in both rural and urban school through peer learning/teaching. MyBSS design based on generation Z characteristic so some features will be put on the system. MyBSS is developed based on need analysis and previous design. The system is validated by the expert judgment using media functionality instrument named learning object review instrument. My Buddy School System implements to students and they try the system with guidance from researcher. Students also evaluate the system through questionnaire and interview.

Table 1. Expert judgement assesses the system use media functionality instrument.

No	Sub Variable	Indicator
1	Software aspect	The effective and efficiency of the material course Reliability Usability Compatibility
2	Learning design aspect	System documentation The clearness of the logical plot The clearness of the logical plot Giving feedback
3	Visual and communication aspect	Easy to understand language User Interface Multimedia support

The data obtained are quantitative and qualitative data. Qualitative data were obtained from interview sessions with users, while quantitative data were obtained from learning object review instrument from expert judgment and questionnaire results about system evaluation from user. Data analysis techniques used in analyzing quantitative data in the form of questionnaire scores from respondents were by calculating the percentage of answers

The following formula for processing the whole item

$$p = \frac{\Sigma x}{\Sigma x_i} \times 100\% \quad (1)$$

p = percentage

Σx = total number of all respondents' answers

Σx_i = total ideal number

As a basis for making decisions about evaluating the system feasibility percentage level [7] will be used as in table 2. As a basis for making decisions about system evaluation will be used as in table 3.

Table 2. Percentage level of system feasibility.

No	Percentage level	Criteria	Category
1	85,01% - 100,00%	Very Valid	No revision needed
2	70,01% - 85,00%	Valid	No revision needed
3	50,01% - 70,00%	Less Valid	Half revision
4	01,00 - 50,00%	Not Valid	Full Revision

Table 3. System evaluation category.

No	Interval	Percentage	Category
1	3,25 – 4,00	81,25 - 100	Very Good
2	2,50 – <3,25	62,50 - <81,25	Good
3	1,75 – <2,50	43,75 - <62,50	Bad
4	1,00 – <1,75	25,00 - <43,75	Very Bad

3. Result and Discussion

MyBSS is analyzed based on the needs of implementing *Jalakar curriculum* in both rural and urban school through peer learning/teaching to minimize gap between rural and urban school. Analysis considers infrastructure support in the rural and the urban areas. Analysis also considers the characteristic of Generation Z. Despite their young age, Gen Z are professionally active, independent and mature [8]. User as a Gen Z will not find serious difficulties when trying the system by themselves.

MyBSS design based on generation Z characteristic and features that will be put on the system. Gen Z curious about new technologies and use them; they like to communicate, expect feedback on the result of their work [8]. Gen Z will need certain section where they can write a feedback and accept feedback from their 'buddy'.

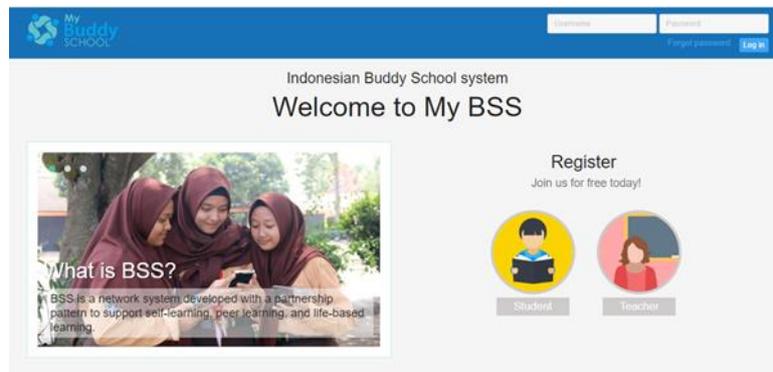


Figure 1. The homepage of MyBSS.

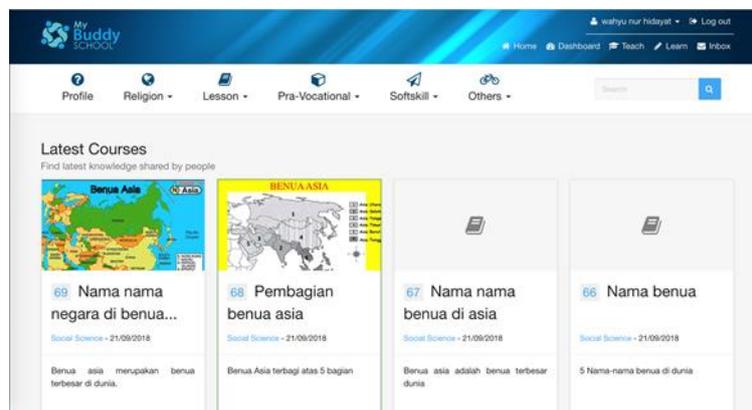


Figure 2. Courses page.

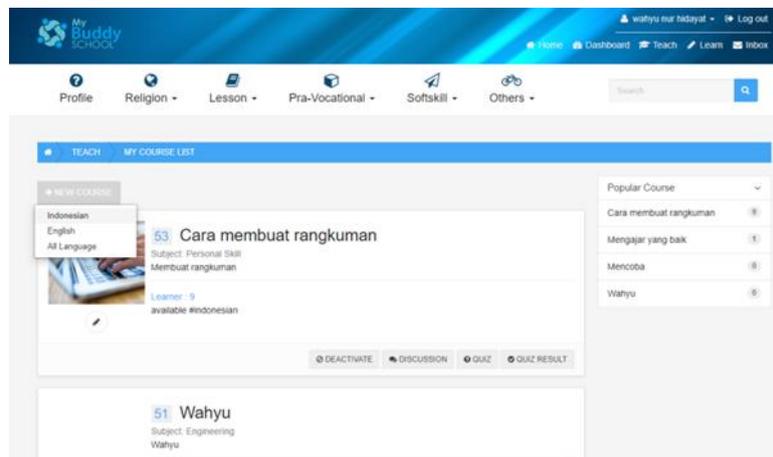


Figure 3. Show courses page

MyBSS is developed based on need analysis and previous design. The system is validated by the expert judgment using media functionality instrument named learning object review instrument. After validated by the expert, the system needs to be revised; the system is revised based on the judgment suggestion.

Table 4. Result of expert judgment.

No	Sub Variable	Indicator	%	Category
1	Software Aspect	The effective and efficiency of the material course	80	Valid
		Reliability	82	Valid
		Usability	85	Valid
		Compatibility	88	Very Valid
		System documentation	78	Valid
2	Design of learning	The clearness of the logical plot	80	Valid
		Curriculum match	80	Valid
		Giving feedback	82	Valid
3	Visual and communication aspect	Easy to understand language	80	Valid
		User interface	78	Valid
		Multimedia support	78	Valid

The expert judgment result shows that MyBSS is valid and can be used as a learning system.

My Buddy School System implements to students and they try the system with guidance from researcher. The trial of the system is done at MTsN 2 Malang with 22 students as the buddy school from urban areas. The students try to take a course and make their own course. The students evaluate the system by answering system evaluation as written on questionnaire and researcher interviews the students.

Table 5. The result of system evaluation by the students.

No	Sub Variable	%	Criteria
1	Context Quality	86	Very good
2	Learning Goal Alignment	86	Very good
3	Feedback and adaptation	85	Very good
4	Motivation	85	Very good
5	Presentation Design	83.75	Very good
6	Interaction Usability	80.0625	Good
7	Accessibility	82.5	Very good
8	Reusability	85	Very good
9	Standards Compliance	76,25	Good

The result shows that overall, sub variables got very good criteria. Interaction usability and standard compliance got good criteria. Based on the system evaluation category, MyBSS can be categorized as very good system.

4. Summary

Indonesian students need an innovation in learning to distribute education quality evenly. Rural school and urban school shall be connected to overcome the gap between student's life skills. Rural student need to increase creativity to maximize local potential in rural areas. Peer learning/teaching is one of solutions that can solve this gap. Rural and urban student can share their value and knowledge to one another. To cut the distance and time, My Buddy School System is developed. This system is focused on reciprocal for both, rural and urban student. The purpose of the urban students' existence is to share life skills value such as interpersonal skills and pre-vocational for rural students, while the involvement of rural students can build a deep empathy and solidarity feeling for urban students.

Based on expert judgment validation, the system is valid and can be used as learning system. Based on trial to 22 junior high school students, the system evaluation can be categorized as a very good system. Although can be considered as a very good system, interaction usability and standard compliance sub variable still need to be improved.

For future work, we proposed a user-centered design method to gain a greater score of user experience.

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