

Management Counseling System for Junior High School Students With a Knowledge Management System Approach

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Abstract - Non-academic problems are often experienced by junior high school students that lead to, among others, disruption of academic achievements. Careful handling shall be necessary as the students at this level are still in their self-development stages and have yet found a good level of maturity. Thus far, a school counseling system has been implemented but in reality the system has not been well documented by using an aid tool in information technology-based system.

A knowledge management system (KMS) is necessary in providing assistance to school counselors ("BK teachers") in managing counseling processes, and by using this approach as the aid tool, thus non-academic problems experienced by the students can be dealt with.

This system is built by conducting a proper database design for managing the knowledge. The development process uses a Socialize, Externalize, Combined and Internalize model (SECI model) approach and implements a tacit knowledge to explicit knowledge method in a knowledge management system that has been developed for purposes of counseling systems.

The knowledge management system that is developed has met with expected requirements in documenting the problems dealt with by the students as well as making BK teachers easier on making the best use of their own knowledge from experience in dealing with various problems that have been faced in their school.

Keywords – *Knowledge Management; SECI Model; Tacit Knowledge; Explicit Knowledge; Knowledge Management System.*

I. INTRODUCTION

The success of students in taking education is not only judged from academic achievements, but also their good characters or also often called as non-academic factors. Non-academic problems are often experienced by students which lead to such impacts as, among others, disruption in academic achievements. For junior high school students, the non-academic problems should receive a special attention since at this age the establishment of their characteristic being built and developed from childhood to become adulthood. In relation thereto, the role of counselors is an integral part of the educational process in which he has the task of assisting students in terms of character establishment. The practice of counselors' activity in school is realized by conducting such counseling guidance services ("BK") as performing the functions of understanding, prevention, settlement, maintenance and development.

Based on the research by Feni, it is found out that there are a number of problems experienced by students resulting

in a deviant behavior [9]. Student behaviors which are apparent include a non-conform behavior or the behavior which violates the rules applicable in school, such as, coming late to school, not wearing inappropriate school uniforms, smoking, skipping classes, scribbling school walls and uttering harsh and rude words to other people. While the students' deviant behavior classified as criminal acts include fighting with friends, bringing sharp weapons, and committing an "extortion" or aggression. The results of the study also note that as many as 46.7% of the students' deviant behavior can be dealt with by counselors ("BK teachers").

A lot of various problems are faced by the students and the BK teachers have to deal with a lot of them well, especially in case of recording the problems and methods to handle each of them. Based on field observations and discussions with a number of BK teachers in a school, the recording of counseling services in many schools in Jakarta has still been conducted by using paper or books (manual

recording). The manual recording results in extra efforts for the BK teachers in case they need to look back the previous large amount of their students' counseling data, monitor the progress of the consulted students, and give a solution in case of a problem with any students. In order to have better counseling processes then this activity needs to be supported by an application or computerized system to record the counseling guidance data.

This research is focused on applying a concept of Knowledge Management ("KM") considering the process of dealing with the students' non-academic problem is unstructured, a special handling shall be necessary for any of the cases although the root of each problem may be the same. It is important to employ the KM concept as it has different ways to deal with each problem and this solution may become a source of knowledge for each BK teacher to be shared among other BK teachers if they have to experience the same case and need a reference in the form of case-handling experiences. The knowledge of each BK teacher is known as the tacit knowledge while the experiences which have been dealt with are known as the explicit knowledge.

Cheng gave a statement in one of his papers that knowledge is one of the most important assets of a school organization, and is critical to school sustainability [7]. Another source, namely, the knowledge management glossary of the National Electronic Library for Health in 2010 provided a definition that "Knowledge is derived from information but is richer and more meaningful than the information. It includes familiarity, awareness and understanding gained through experience or study, and result from making comparisons, identifying consequences, and making connections."

The definition of Knowledge Management was made by Cheng in his publication in 2012 that the Knowledge Management is a systematic and integrative process of coordinating the organization-wide activities to retrieve, use, share, create and store knowledge, actionable information and expertise of individuals and groups in pursuit of organizational goals [6]. Cong and Pandya argued that the Knowledge Management is "An ability of an organization to use its collective knowledge through a process of knowledge generation, sharing and exploitation enabled by technology to archive its objectives". This opinion was cited by Yonannes Kurniawan in one of his publications [9]. Greenman stated in a publication that Knowledge Management System is thought to be useful in facilitating Inter-organizational Learning (IOL) and in providing

competitive advantage. Often these systems are shared across complex networked organizations and the relationship between the allied organizations may even depend on the quality of the systems they share [8].

The concept of a Knowledge and Knowledge Management described in the previous section is used as the basis of our research. In addition, this research also conducted a study of similar researches, especially those that have the same theme of Knowledge Management presented in this section. A research on counseling services and guidance in Indonesia has been done a lot and it can be seen from journals which have been published. Septiady, in his research on web-based guidance counseling information system using PHP and Mysql suggested the implementation of an online system and the existence of communication in the form of chat between students and their counseling teachers [13]. While Andi, in his research on Application of Information Systems Guidance and Counseling by Using Forward Chaining Method stated that the application of this information system was used to record students' consultations and help the BK teachers solve the problem of imposing sanctions on students who conducted violations, based on the number of points of violations and classification of the type of sanctions [1]. Ardhy, suggested in his conclusion that the Information System on Guidance and Counseling Unit and School Medical Unit at Multi-Level School "X" helped school medical attendants identify previous students' records, and obtain necessary students' academic records to help facilitate reporting processes as well as records on students' medical visitations, and parents could monitor their children's academic records online [3]. However Ardhy in his research gave advice for the extension of notification by using a method of notification via email. Sri, in her research suggested that in the future the Guidance and Counseling services to students could be developed online [9]. Based on the journals above, it can be concluded that the information system on students' guidance and counseling services has been conducted in several schools, although some state that the information system service has not been conducted online.

Based on a summary of results of the previous research above, in this study an application on Student Counseling Guidance Monitoring Services on an Online (web-based) and Interactive Basis will be developed as the first application. In addition to being implemented online, this research also develops a knowledge management application (research focused) which processes counseling guidance data to become a basis of knowledge and information. With the existence of the KM system, the BK

teachers will be well facilitated in providing their guidance and consultancy activities.

The application of the KM here under shall be necessary as a large amount of tacit knowledge of the BK teachers must be transformed into the explicit knowledge so that the existing knowledge may be employed by other teachers when dealing with problems of their students of the same nature previously. Another function of the KM is making the existing knowledge which has been obtained based on the implementation of a particular problem is not specifically attached to a certain experienced BK teacher, instead, the knowledge may be well documented in a system which can be utilized by other BK teachers. Even additional experience of the same case can be broken down first into the tacit knowledge and explicit knowledge and then recorded into the knowledge management system ("KMS").

II. MATERIAL AND METHOD

Prior to conducting a more detailed discussion of this research, the initial stage was to firstly learn the concept of the counseling. "Guidance and counseling" are derived from two words, which are: "guidance" and "counseling", and the word "guidance" contains several meanings. Sertzer & Stone suggested that "guidance" was derived from the word "guide" meaning to direct, pilot, manage, or steer (indicating, determining, organizing, or steering) [12]. Prayitno and ErmanAmi argued that guidance was the process of providing assistance by experts to an individual or a number of individuals, children, adolescents, and adults so that the assisted individuals might develop their self-confidence and independence by employing their own power and existing measures which could be developed based on prevailing norms [11]. Gladding has defined counseling as a relatively short-term, interpersonal, theory-based process of helping persons resolve developmental and situational issues and this process can be triggered by the person seeking help or by the counselor [15]. Meanwhile, Winkel defined the word "guidance" as follows [16]:

1. An effort to provide individuals with knowledge, experience and information about themselves.
2. A measure of providing assistance to an individual to understand and use in efficient and effective manners all the opportunities which come his way for his personal development.
3. A type of services to individuals to allow them to make choices, set goals appropriately and create realistic

plans to adapt themselves by indulging in the environment which they live in.

4. A process of providing assistance or help to individuals in terms of understanding themselves, connecting the understanding of themselves with the environment, choosing, determining and creating plans according to their own concepts and environmental demands

In general outline, the research stage was conducted by firstly using an as-is analysis followed by arranging a design and application (in a prototype form) of the Knowledge Management (KM) and concluded by conducting an evaluation of the research result. The detail of the activities will be described in the following sections.

A. AS-IS ANALYSIS

The analysis activity was conducted to observe how the counseling guidance system was carried out at a junior high school in which this research took place. The analysis was conducted by observing the initial process of the counseling guidance which was began by the presence of a student to convey his problem, and the BK teachers would pay attention to the student's problem and analyze it. Then, the counseling process provided by the BK teachers began and the resolution of the problem would finally be given. During the counseling process, the BK teacher would record all the problems and also noted down any action to be taken to solve them. Once the problems were solved, the BK teachers would record the method which had been used.

Further analysis activity was the data analysis used in the counseling process, namely, observing the notes taken during the guidance process, and records were made on a form or book prepared for the counseling process.

Knowledge Management ("KM") Design Based on the results of the analysis, a KM design is made to be implemented, especially, for the counseling guidance. The design made herein is to design a process to manage the knowledge which has been obtained from the database application already created. The process herein is how a tacit knowledge can be transformed into an explicit knowledge. This application uses a Socialization, Externalization, Combination, Internalization ("SECI") model approach. The SECI application of this model is conducted on a non-automation and automation basis. In addition to the process, the KM design is also making a user interface design to be used in the KMS. SECI Model can be seen in the picture below.

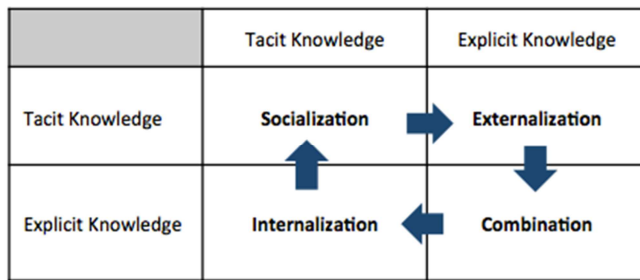


Figure 1. SECI Model

B. APPLICATION DESIGN

1. Data

Data relating to Counseling Guidance at Junior High School. Based on the observation and interview with the BK teachers it is found out that student personal data is the first data have to record it. After that each time the counseling is conducted, the BK teachers record it in a counseling-status form.

2. System Scenario

The service application system which is made to meet the current research site includes two major activities, namely, recording activities process of daily counseling activities conducted by the BK teachers, and recording management of the daily counseling data into a knowledge-management basis which are implemented into a Knowledge Management System.

The first process facilitates users of the system, namely, the students, BK teachers, homeroom teachers (another teacher) as well as on-duty or administrative officers and finally, the head of the school (school's principal and deputy). The process carried out includes the activity of recording data of students, ranging from their personal data to data on complaints experienced by them. In addition to the data of the students, the input data is also conducted by the homeroom teachers (other teachers) as well as the on-duty officers in charge of the students' data related to their academic "grades". The process conducted by the BK teachers include recording (noting down) the counseling data, which is all the actions having been carried out in terms of dealing with the problems experienced by the students. The results of this guidance and counseling activity will be reported to the school leader, in this case, the Principal and his Deputy.

ITEM	DETAIL	REMARKS
Users		
	Students	▪ Data Entry
	Homeroom Teachers	▪ Process
	On-duty Officers	▪ Data Output
	BK Teachers	
	School Principal, Deputy	
Process		
	Recording Process of Students' Problems	By students
	Recording Process of Students' Achievements	By homeroom teachers or on-duty officers when "something" faced by students is found out
	Process of dealing with students' problems	Guidance and counseling activity by the BK Teachers
	Reporting	Complaints of the recording result of guidance and counseling activity

Figure 2. System Plan - Users and System Process

The second process is the management of knowledge in which in this process the BK teachers manage the knowledge which has been recorded based on the results of counseling activities in the first process. By default, the system in this process continues to use the paradigm of information systems which is conducting the Input, Process and Output (IPO). The process of knowledge management is conducted by the BK-teachers as the users in charge with the data and information on the situation experienced by the students so that resolutions have to be conducted in the form of Guidance and Counseling activities.

3. Modeling of Knowledge Management (KM)

The Knowledge Management (KM) Model developed herein includes the knowledge resulted from the counseling guidance activities (BK) in a junior high school located in South Jakarta. Currently, all the BK process can be run properly but no technological supports are available, such as, a storage media and media support management of all the activities. The impact resulting from the existing process is the abundant paper documentation of the BK processes (a

large amount of paper and books) and the BK teachers have to carry out more paper recording activities resulting in the obstruction in conducting an exploration to manage further activity results. The exploration referred to herein is that the BK teachers should have been well assisted to evaluate the problems and equipped with solutions, and it is hoped in the future they can develop the knowledge on counseling processes of their students.

In this research, the place of the research is not supported with a data processing technology so that the KMS development model is merging the process of managing data into a database system which is also made in the research, and the result of the data stored from this process will be managed into the KMS. The form of the developed model can be seen in the picture below.

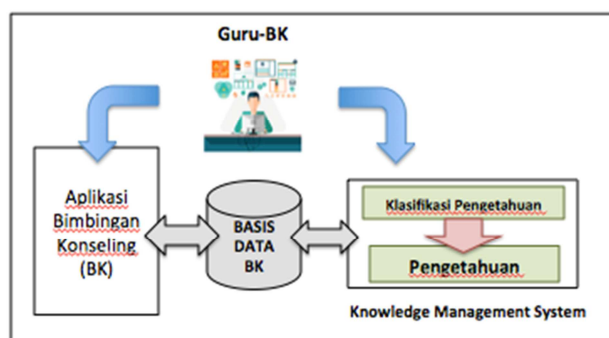


Figure 3. Knowledge Management Model

C. EVALUATION OF RESEARCH RESULTS

The final process to be conducted is evaluating the design result which has been made in the form of a prototype which has been created in consultation with prospective system users, namely, the BK teachers of the relevant junior high school, to get feedbacks from them about the system. The main target of this evaluation is to see responses of the prospective users whether or not the proposed system is acceptable, in particular, to meet the need of being able to record the guidance and counseling processes electronically (no more manual records) and to manage the knowledge of dealing with the students' problems well. The results of this evaluation will be discussed specifically in the following sections.

III. RESULT AND DISCUSSION

The object of the research is the Junior High School Counselors at Junior High School of St. Markus II that has not actually had any application whatsoever. Therefore, in this research, two applications are developed, namely, the

application to record counseling activities (BK) and the application to process the knowledge management that has something to do with the counseling and guidance activities.

The first application was developed to record the counseling and guidance activities conducted at the research site. This application is made with the aim that the data related to the counseling and guidance activities is recorded in a system (application), in which the data storage is kept in a digital form. This data will be used by the subsequent application to be managed as the knowledge that can be utilized by the BK teachers.

The second application serves as the main application that becomes the theme of this research, namely, the Knowledge Management for the needs of the counseling and guidance activities. This application has been prepared to be used for the management of the counseling and guidance activities. In general, the data management that is prepared includes the data of problems faced by students, especially that of the non-academic problems that affect the students' achievements.

The system is prepared for BK teachers as well as other teachers who have interests in the problems faced by the students. Whereas, the data storage is still in the form of the non-structural data that includes all of the students' non-academic problems and solutions thereof conducted by BK teachers. Referred to as the non structured data is the data in which its weight/value of the problems faced by the students still cannot be determined due to the fact that the BK teachers have not had the time to determine the weight/value of the problems faced by the students as they still do the record manually (by using paper or books).

The performance of the developed application has adopted the counseling and guidance process activities that have been in operation thus far so that in general, it can help the BK teachers handle the problems faced by the students, especially in the form of digital recording. Constraints faced in the implementation thereof is the unfamiliarity of the users in operating this application at first so that there was still a slightly longer process compared with the manual processes. In other words, BK teachers still need the guidance and are trained to be familiarized with the new application.

New factors arise while implementing the new application that uses the automatic counseling and guidance process activities in schools, namely that simplification should be conducted to make easier for the users to handle a number of processes. The users even suggest that some processes and reports should be removed due to result of the

automatic processes. For that end, the researchers conclude that in order to reach an optimal result they need to discuss the matter with the users to conduct an overall evaluation of the developed application for a better process in the following development.

IV. CONCLUSION

Based on the above explanations, it can be concluded as follows:

1. With the existence of this BK Service system, the administrative work of BK teachers can be made easier. The BK teachers are able to work more efficiently in accordance with their functions by focusing on providing the counseling and guidance services.
2. With the existence of this BK Service system, it is easier for the BK teachers to monitor the students on a sustainable basis.

V. RECOMMENDATION

Based on the previous explanations, the recommendations are as follows:

1. The completed application should be consulted with prospective users, namely, the BK teachers, especially in terms of simpler processes.
2. Conducting a joint evaluation to find out the best model and design agreement, especially in terms of facilitating the implementation of Guidance and Counseling (BK) application when it is in use for development in the future

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REFERENCES

- [1] Andi Priyolistiyanto, Joko Saefan. 2014. Aplikasi Sistem Informasi Bimbingan dan Konseling Dengan Menggunakan Metode Forward Chaining. *Prosiding Mathematics and Sciences Forum 2014*. ISBN 978-602-0960-00-5, 153-160
- [2] Andreas E.W., 2014. Model penerapan knowledge management system untuk penyusunan tugas akhir berbasis teknologi *mobile* menggunakan J2ME (studi kasus STMIK Subang). *Seminar Nasional Informatika 2014*, 190-195.
- [3] Ardhy Widodo Widyanto, 2013. Pembuatan Sistem Informasi Unit Bimbingan dan Konseling dan Usaha Kesehatan Sekolah pada Sekolah Multi Jenjang "x". *Calyptra: Jurnal Ilmiah Mahasiswa Universitas Surabaya Vol.2 No.1*.2013
- [4] Brian Newman, Kurt W. Conrad, 1999. A Framework for Characterizing Knowledge Management Methods, Practice, and Technologies. *The Knowledge Management Theory Papers*.
- [5] Bhusry, M., Ranjan, J., Nagar, Raj., 2012. Implementing Knowledge Management in Higher Educational Institutions in India : A Conceptual Framework. *Liceo Journal of Higher Education Research*, Vol. 7 No. 1. January 2012.
- [6] Cheng, E.C.K., 2012. Pragmatist Perspective on Knowledge and Knowledge Management in Organizations. *International Business Research*, 5(9), 78-88.
- [7] Cheng, E.C.K., 2015. Knowledge Management for School Education. *SpringerBriefs in Education*. DOI 10.1007/978-981-287-233-3_2.
- [8] Greenman, M.B., 2006. The Contribution of Knowledge Management Systems to Interorganizational Learning. *ACM SIGMIS-CPR*, april 13-15
- [9] Kurniawan, Y., 2014. The Role of Knowledge Management System in School : Perception of Application and Benefit. *Journal of Theoretical and Applied Information Technology* Vol 61 No 1. 10th March 2014
- [10] Lestari, Feni. 2014. Peranan guru bimbingan konseling dalam menanggulangi perilaku menyimpang siswa di SMP Muhammadiyah 44 Pamulang.
- [11] Prayitno dan Erman Amti. 2004. *Dasar-Dasar Bimbingan Konseling*. 2nd edition.

- [12] Sertzer & Stone (1966). *Fundamental of Guidance*.
Boston : HMC
- [13] Septiady Irawan Saputra, 2014. *Sistem Informasi Bimbingan Konseling Berbasis WEB di SMAN 2 Ngaglik Menggunakan PHP dan MYSQL*
URL : <http://www.e-jurnal.com/2014/10/sistem-informasi-bimbingan-konseling.html>
- [14] Sri Jaitun, 2014. *Sistem Informasi Bimbingan dan Konseling di SMP PGRI Baturraden*.
URL :
http://onlinepublication.amikompurwokerto.ac.id/index.php/publication/pdf/535/publikasi_535.pdf
- [15] S. T. Gladding, (2003). *Counseling. A comprehensive profession* (5th ed. Aug.). Prentice Hall.
- [16] Winkel, W.S.,2005. *Bimbingan dan Konseling di Institusi Pendidikan*, Edisi Revisi. Jakarta : Gramedia