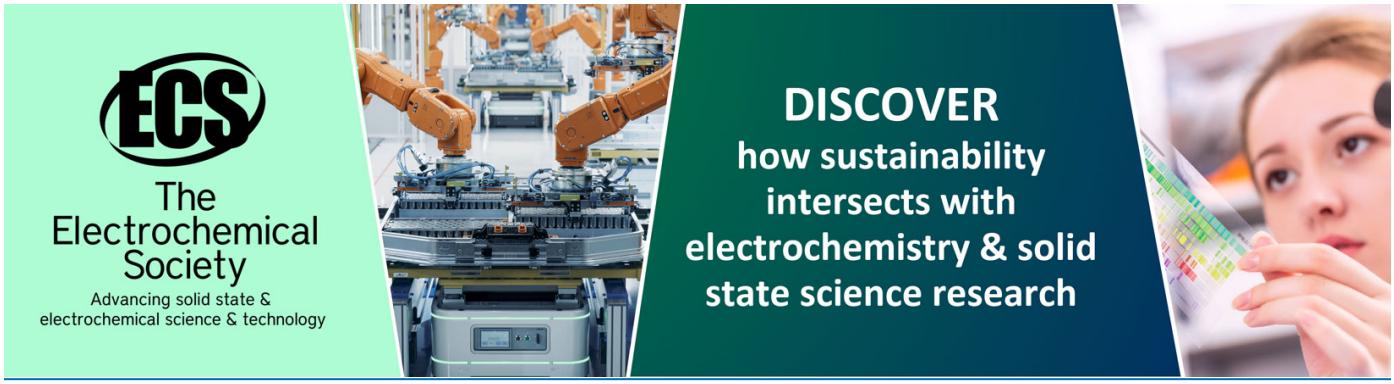
A Study of VHS Culture of Quality through Improving the Role of ICT Center Management



IOP Conf. Series: Journal of Physics: Conf. Series **1028** (2018) 012066 doi:10.1088/1742-6596/1028/1/012066

A Study of VHS Culture of Quality through Improving the Role of ICT Center Management

Hakkun Elmunsyah[1*], Dwi Prihanto[1], Suwasono[1], Soenarto[2], Ansari Saleh Ahmar[3,4], Rusli[5]

[1]Department of Electronical Engineering, Universitas Negeri Malang, Indonesia,
[2] Postgraduate Program, Universitas Negeri Yogyakarta, Indonesia
[3]Department of Statistics, Universitas Negeri Makassar, Makassar, Indonesia,
[4]AHMAR Institute, Makassar, Indonesia
[5]Department of Mathematics, Universitas Negeri Makassar, Makassar, Indonesia

* hakkun@um.ac.id

Abstract. In 2006, Kemendiknas RI have done big enough investment in developing national computer network, called Jardiknas. Based on observation, there are quite a lot unproductive ICT center, is previously established in vocational schools. The study aims to find the suitable model of ICT management for Vocational High School (VHS). The model is expected to give the cultural contribution on the quality of education.

1. Introduction

The first paragraph after a heading is not indented (Bodytext style).

Other paragraphs are indented (BodytextIndented style).

The culture of vocational high school (VHS) quality theoretically is to describe the values, habits and learning atmosphere and work to always improve the quality. The current technological transformation creates a new paradigm of network era. The development in the world of information and communication technology in various sectors can be called as communication revolution. The world becomes so narrow and humans can communicate very fast anywhere in the presence of the internet, mobile phones and satellites.

Andersen [1] said that modern information technology influences government and politics in four ways. First, new technology can change the details of the stages of government operations. Second, technology subtly alters the relationships between elected leaders of society with technology experts in government. Third, there will be changes in the character of government as a source of information for the community. And fourth, the development of technology will change the responsibility of the government as the owner of public information. Based on these opinion, there will be new demands on government, such as transparency, freedom of speech and freedom of information, which is a pillar of democracy. Transparency in planning makes the institution work better. The use of information technology makes the revenue and expenditure budgets will be accurately and well reflected.

The Ministry of National Education in 2005/2006 has invested in the construction of a National Education Network called *Jardiknas*. Diknas also formed Information and Communication Technology (ICT) Center program that serves as the Education, Training and Development Center of Information and Communication Technology in the city. Various training programs have been

implemented by all ICT Centers, and some have collaborated with local governments and other institutions. In some places, ICT Center has become a regional need, so that the use of devices owned not only from the school itself but has been very widespread to the general public. Until 2008, the total of VHS ICT Center throughout Indonesia is 430 Units located in the country.

Jardiknas is designed to make all data and information pertaining to National Education accessible quickly and accurately. However, expectations and realizations are often not synchronized, in fact this is theoretically not the same as a fairly complex implementation in its implementation. Organizing ICT nationally requires technical and non- technical readiness in the real implementation of end users to NOC level in Minystry of National Education (MoNE). From the level of ICT Center in areas of management upgrades to the arrangement of LAN (Local Area Network) is a very important thing. The contrast between expectation and reality is evident in the implementation of the PJJ S1 PGSD and PJJ D3 TKJ programs, with the support of infrastructure built with trillions of rupiahs not significant in supporting the implementation of the MoNE distance learning program [2].

The reality of the implementation of MoNE ICT policy in the Electronic School Book (BSE) program in Malang regency shows that the knowledge of Electronic School Books for 5 groups of trainees (SD, SMP, SMA, SMK and community around the school) that 42% are "very unfamiliar", 28% 'do not know', 20% are "well acquainted," 10% "know" and 0% say "very familiar"[3].

A study by the World Bank in 2000 shows that 150 countries show that the progress of a country is determined by four main factors: (1) innovation and creativity 45%, (2) networking 25%, (3) technology 20%, and (4) natural resources 10% [4]. The first three factors of the study result placed HR as a very strategic factor. It means that in the future the main demand and need is to develop human resources that have ability in developing creativity and innovation and ability in building cooperation on using technology, as well as ability to manage and develop their own resources.

Skinner, an educational psychologist, suggests aspects of technology-based teaching [5] as follows: (1) increasing student attention; (2) inform the results to be achieved; (3) activate relevant talents; (4) provide stimulus-related tasks; (5) presents a direct response; (6) Provide feedback; (7) assessing performance; (8) provide learning transfer; and (9) strengthens memory.

UNESCO classifies the use of ICT for education in four stages: emerging, applying, integrating, and transforming. The transforming stage is the most ideal stage in which ICT as a tool used in learning so that it becomes the basis of school change [6]. This includes the application of ICT, both in learning and in the administration.

In reality, the crucial challenge faced by managers of educational institutions, today, is how to manage schools in order to grow and quality. Hard work will not work well without any mutual support between students, namely teachers, students, means of pre-facilities, curriculum and so forth. Educational institutions need to be managed to achieve optimal results. Here the optimal results are marked by a reliable quality of graduation and in accordance with the expectations of stakeholders. This is important and very strategic because the role of education is studied with information technology related to the future of a nation.

Furthermore, many students who have graduated from educational institutions become unemployed, unprepared to be responsible and productive citizens, thus becoming the burden of family, society, nation and state and ultimately encourage national instability, both ideologically, politically, economically, socially , culture, defense and security. The condition, the main problem is that the students who are the products of the education system held are not focused on quality.

The quality-focused education is the basis of a school's quality mission develops programs and services that meet the needs of users such as students and society [7]. Quality is in accordance with the required or standardized input, process and output [8]. Therefore, the quality of education conducted by schools is required to have standard quality of education standards. Quality in the Deming concept is in conformity with market needs [9]. In the concept of Deming, quality education is education that can produce output, both services and graduates that match the needs or expectations of customers (the market) it. While Fiegenbaum means quality is full customer satisfaction [10], [11] . This

understanding, then what quality schools say is a school that can satisfy customers, both internal and external customers.

In this study is the effort to develop the management of ICT center that has been running through observation in advance which further develop the implementation model of management in accordance with the characteristics of VHSs as ICT center from the observation. The selection of management model that will be developed based on the study of the theory of management model concept and observation, is expected to be more flexible in its implementation and can improve the quality of the school that satisfy the stakeholders.

2. Culture Of Quality Concept In The Use Of ICT

The rapid development of information and communication technology today provides many conveniences in various aspects of life. Technically and qualitatively, the development of ICT shows a drastic increase [12]. However, there are still frequent failures in applying ICT. The successful application of information technology in addition to determined aspects of hardware and software, is also largely determined by users of these technologies. Several studies have shown that current ICT application failures are more due to behavioral aspects of ICT users [13]–[15] revealed on various research results note that the successful application of information technology is determined by many factors, one of which is the characteristics of information technology users.

The study on the acceptance and use of information technology has evolved along with the increasing tendency of utilizing information technology in various aspects of life. Various models have been developed to examine factors influencing the intention to receive or use information technology, including Theory of Reasoned Action (TRA) introduced by Ajzen and Fishbein in 1967 [16]–[18]. In 1985, Ajzen modified the TRA model into Theory of Planned Behavior (TPB), is a relatively popular model for predicting intentions [17], [19].

Davis developed a model of intentions to adopt a technology known as the Technology Acceptance Model (TAM) [20]. In this model there are three main variables for predicting the behavior of computer usage intent, ie perceived usefulness, perceived ease of use, and attitude toward using, see Fig.1. The results of the research show that TAM model consistently and validly can explain about attitude of acceptance of information technology[21], [22].

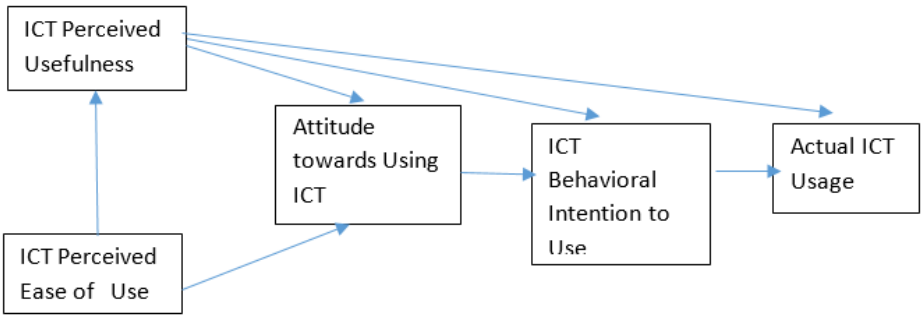


Figure 1. Davis's *Technology Acceptance Model (TAM)*

The use of ICT by teachers both for learning and for supporting classroom management is applied by using the TAM approach. The actual use of ICT by teachers is determined by teachers' attitudes toward ICT use and behavioral interest in using ICT. Intention is defined as the desire to engage in behavior. The intended behavior is behavior utilizing ICT. Attitude is defined as the amount of affection (feeling) that a person feels to accept or reject an object or behavior. One's attitude towards ICT shows how far the person feels that ICT is good or bad [23].

Teachers' attitudes toward ICT use and behavioral interest in using ICT are actually an accumulation of competencies in ICT fields owned by teachers. Ngah and Masood stated that teachers

feel lack of main skills in order to integrate ICT in learning [24]. ICT competencies will encourage teachers to behave in the use of ICT and foster behavioral interest in using ICT. Based on this approach, this study was developed using a modified TAM model by incorporating ICT competence as a variable that determines the use of ICT such as Figure 2.

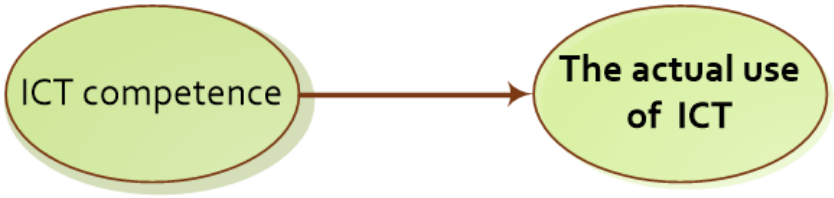


Figure 2. Relational model of ICT competency and the use of ICT.

3. Applying ICT Culture In Organization

The presence of ICT provides benefits for humans, such as: freedom of communication, ease and speed in the exchange of information access, and the distribution of information that is always actual and can improve organizational performance. Therefore, the leadership of the organization is faced with the ability to change the new paradigms of organizational work based on ICT.

ICT is not only an operational tool, but has become a strategic tool to assist decision-making, planning and more importantly as a generator of organizational change, ICT-based work models and services; cultured ICT.

ICT culture reflects the values, habits and working atmosphere in public organizations that are bound and familiar in using ICT. So ICT is binding in their work life and binding to everyone in the organization environment concerned.

Being cultured ICT cannot be seen only and one side is technical aspect of age, but also need to be studied also non-technical aspect, such as human resource condition, behavior, attitude, value, culture and politics in organization. The non-technical aspect contributes enormously to the success of ICT development.

On the other hand Dasgupta [25] states that the source of resistance to the use of ICT is strongly influenced by humans and culture. Organizational culture plays an important role in the invasion or adaptation of information technology and subsequent dissemination of technology within the organization. The technological contributes of ± 10% of success in building ICT in the organization, while ± 90% come from human and social factors of the organization[26]. Balance between developmental aspects are needed in building ICT. Therefore, when building ICT with the intention of making knowledge based work culture in public organization seems like school in particular, it needs step and thought wisely and comprehensively.

This is because, when building ICTs or wanting to cultivate ICT-based work in public organizations, schools in particular, automatically or equally make changes in all elements of the organization. While making changes to face the consequences of various resistances. Although resistance is a natural human reaction, it is necessary to identify potential sources of resistance to suppress the failure of the ICT implementation.

4. Transformation Process Towards ICT Culture

The transformation process is to make the planned changes. In Fig.3, the transformation process as a result of the external organizational change is the development of ICT capable of providing benefits to all types of organizations [27].

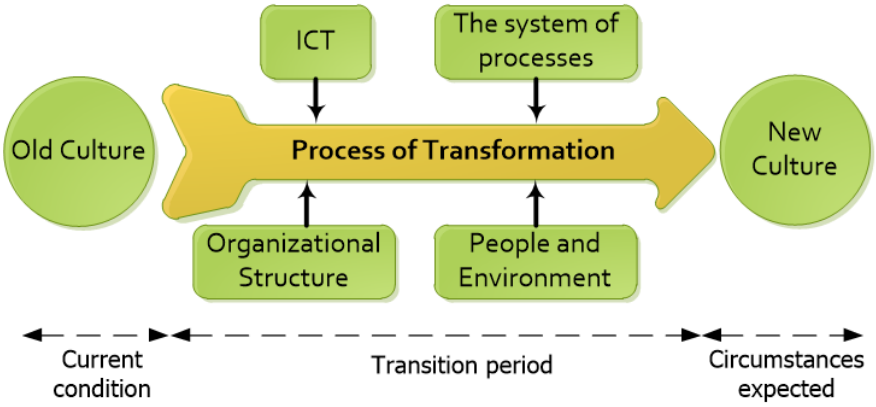


Figure 3. Transformation Process towards ICT Culture

The current state describes the old culture that developed naturally and has been running for many years before being influenced by ICT. The presence and development of ICT as an external factor has a strong influence on the internal organization. So that non-technical aspects, such as system factors, processes, structures, human resources, environment and other united undergo a process of transformation together. To realize the desired new state (desired state) that is cultured knowledge-based work through ICT tools. Afterwards, first pass a transformation process. It is apparent here that building CT as well as the influence of external factors cannot be done partially with only technological aspect. It must be followed by non-technical aspects of the organization and together in the process of its transformation.

To maximize the results of the transformation process it is necessary to follow other changes in the internal organization [28]. In the first form of elimination, which is the act of eliminating or trimming the process that actually does not need to be done. Second, simplification, which summarizes or shortens the process sequence. Third, integration, which is a combination of several processes that can actually be done simultaneously. And the last is automation, the process of manually executed transfers changed to work automatically done by technology. At the same time there is a period of transition to the old attitudes, behaviors, values and organizational culture to adapt to the new environment of ICT-based work environment.

5. ICT Management

Nonaka and Takeuchi [29], and Choo [30], in their book submitted a summary of ideas underlying the notion of knowledge are as follows: (1) Knowledge is a justified trust; (2) Knowledge is both explicit and unthinkable (tacit); (3) The creation of innovation effectively depends on the context in which it is possible; (4) Creation of innovation.

Davidson and Voss [31] say that managing knowledge is actually how organizations manage their staff rather than how long they spend on information technology. Actually, they think that "knowledge management" is how people from different places start talking to each other. Therefore what is now popular to use is the economic information label such as: e-commerce, learning organization, etc.

According to [29] the success of Japanese companies is determined by their skills and expertise in the creation of their organizational knowledge (organizational knowledge creation). Creation of knowledge is achieved through understanding or acknowledgment of synergistic relationships of tacit and explicit knowledge in organizations, as well as through the design of social processes that create new knowledge by diverting from tacit knowledge into explicit knowledge, meaning it is based on learning process.

Thus, understanding of knowledge here is the knowledge, experience, factual information and opinions of experts. Organizations need to be skilled in transferring tacit knowledge to explicit

knowledge and returning to tacit that can drive innovation and new product development. According to [29], Japanese companies have competitiveness because they understand that knowledge is the source of competitiveness, this knowledge must be managed, because it must be planned and implemented. To achieve an innovative institutional culture, the effort to build knowledge sharing (sharing of knowledge) needs to be done. The primary key of knowledge sharing is human. The advantage of people sharing knowledge is that they are able to respond to opportunities quickly, innovatively can be created not reinventing the wheel, in order to achieve business success quickly and cheaply.

This general fact is happening everywhere, that asset knowledge is mostly stored in our minds, called tacit knowledge. Tacit knowledge is something we know and experience, but it is difficult to express clearly and completely. Tacit knowledge is very difficult to transfer to others because the knowledge is stored in the minds of each individual within the organization. Knowledge Management exists to answer this problem, namely the process of converting tacit knowledge into a knowledge that is easily communicated and easily documented, called explicit knowledge. Documentation becomes very important in knowledge management, because without documentation everything will remain tacit knowledge and knowledge it becomes difficult to be accessed by anyone and anytime in the organization.

6. Conclusion

In this study we can conclude that ICT center is an internet service provider unit in SMK that can distribute information on the internet in connected schools. Here, ICT is merely a tool of human beings in carrying out their duties and supporting the strategy of educational institutions that enable contribute to the improvement of the quality culture for vocational high schools which in this case function as ICT centers.

Quality culture is the key to effective and efficient improvement for educational institutions as an effort to satisfy stakeholders. Thus, applying ICT management in accordance with the functions and benefits is recognized as changing the culture. It will affect the overall system in the organization especially in vocational or school.

References

[1] Luna-Reyes L F MartÍnez-Moyano I J Pardo T Cresswell A M Andersen D F and Richardson G P, 2005 Group Modeling of IT-Based Innovations in the Public Sector in *Proceedings of the 23rd International Conference of the System Dynamics Society* **52**, 222 p. 103–104.

[2] Elmunsyah H, 2007 Strengthening Institutional Capacity in Elementary Teacher Education in *International Workshop – Usintec.*

[3] Elmunsyah H, 2010, Pengembangan Model perluasan dan Pemerataan Akses Pendidikan dalam Mensinergikan Kebijakan Depdiknas pada Implementasi Program BSE di Daerah Pesisir Kabupaten Malang.

[4] Pudjiarti E S and Suparjo S, 2015 Creating Competitive Advantages through Organizational Learning Based on Knowledge Sharing Culture and Altruist Spirit in Private Universities *Int. J. Manag. Excell.* **5**, 2 p. 591–598.

[5] Skinner B F, 2003 *The Technology of Teaching* B.F. Skinner Foundation.

[6] Tinio V L, 2014, ICT in Education.

[7] Mizikaci F, 2006 A systems approach to program evaluation model for quality in higher education *Qual. Assur. Educ.* **14**, 1 p. 37–53.

[8] Bobrek M and Sokovic M, 2005 Implementation of APQP-concept in design of QMS *J. Mater. Process. Technol.* **162**–**163**, SPEC. ISS. p. 718–724.

[9] Al-Bashir A, 2016 Applying Total Quality Management Tools Using QFD at Higher Education Institutions in Gulf Area (Case Study: ALHOSN University) *Int. J. Prod. Manag. Eng.* **4**, 2 p. 87.

[10] Reed R Lemak D J and Mero N P, 2000 Total Quality Management and Sustainable

Competitive Advantage *J. Qual. Manag.* **5** p. 5–26.
[11] Reeves C A and Bednar D A, 1994 Alternatives Defining Quality : and Implications *Acad. Manag.* **19**, 3 p. 419–445.
[12] Mardikyan S Yıldız E Ordu M and Şimşek B, 2015 Examining the Global Digital Divide: A Cross-Country Analysis *Commun. IBIMA* **2015** p. 1–10.
[13] Ko M *et al.*, 2015 NUGU: A Group-based Intervention App for Improving Self-Regulation of Limiting Smartphone Use in *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing - CSCW '15* p. 1235–1245.
[14] Egbokhare F A, 2014 Causes of Software/Information Technology Project Failures in Nigerian Software Development Organizations *African J. Comput. ICT* **7**, 2 p. 107–110.
[15] Anthopoulos L Reddick C G Giannakidou I and Mavridis N, 2016 Why e-government projects fail? An analysis of the Healthcare.gov website *Gov. Inf. Q.* **33**, 1 p. 161–173.
[16] Mishra D Akman I and Mishra A, 2014 Computers in Human Behavior Theory of Reasoned Action application for Green Information Technology acceptance *J. Comput. Hum. Behav.* **36** p. 29–40.
[17] Paul J Modi A and Patel J, 2016 Predicting green product consumption using theory of planned behavior and reasoned action *J. Retail. Consum. Serv.* **29** p. 123–134.
[18] Doane A N Pearson M R and Kelley M L, 2014 Computers in Human Behavior Predictors of cyberbullying perpetration among college students : An application of the Theory of Reasoned Action *Comput. Human Behav.* **36** p. 154–162.
[19] Park J and Ha S, 2014 Understanding Consumer Recycling Behavior: Combining the Theory of Planned Behavior and the Norm Activation Model *Fam. Consum. Sci. Res. J.* **42**, 3 p. 278–291.
[20] Alharbi S and Drew S, 2014 Using the Technology Acceptance Model in Understanding Academics' Behavioural Intention to Use Learning Management Systems *Int. J. Adv. Comput. Sci. Appl.* **5**, 1 p. 143–155.
[21] Al-Adwan Adwan A A- and Smedley J, 2013 Exploring students acceptance of e-learning using technology acceptance model in jordanian universities *Int. J. Educ. Dev. Using Inf. Commun. Technol.* **9**, 2 p. 4–18.
[22] Joo J and Sang Y, 2013 Exploring Koreans' smartphone usage: An integrated model of the technology acceptance model and uses and gratifications theory *Comput. Human Behav.* **29**, 6 p. 2512–2518.
[23] Moi M and Rodehutskors N, 2016 Design of an ontology for the use of social media in emergency management in *International Conferences ICT, WBC, BIGDACI and TPMC 2016* p. 129–136.
[24] Ngah N A and Masood M, 2006 Development of ICT Instructional Materials Based on Needs Identified by Malaysia Secondary Schools Teachers *Informing Sci. IT Educ. Jt. Conf.* **28** p. 233–239.
[25] S. D, 1997 The role of culture in information technology diffusion in organizations. InInnovation in Technology Management-The Key to Global Leadership in *PICMET'97: Portland International Conference on Management and Technology* p. 352–356.
[26] McCredie J W, 2000 Planning for IT in higher education: It's not an oxymoron. *Educ. Q.* **23**, 4 p. 14–21.
[27] Mohamed R M. ; 2003, 2003 *Challenges in managing Information & Communications Technology: A CIO Guide.* National Institute of Public Administration (INTAN).
[28] B S, 2005 Knowledge Sharing in Organizations: models and mechanism in *Special Library Conference (Slib 2005)* p. 14.
[29] Nonaka I and Takeuchi H, 1995 *The Knowledge-creating company: How Japanese companies create the dynamics of innovation.* Oxford University Press.
[30] Choo C W, 1988 *The Knowing Organization. How Organizations Use Information to Constract Meaning, Create Knowledge, and Make Decisions. Pp.14.* New York: Oxford

University Press.
[31] Davidson C and Voss P, 2003 *Knowledge Management: An Introduction to creating competitive advantage from intellectual capital.* New Delhi: Vision Books.