Internet Literacy of Vocational High School Teachers

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Abstract. Internet literacy is needed to know the development of the world in various things quickly and precisely, as well as in the world of education, especially teachers. Seeing the importance of internet literacy, there is an interest to discuss and analyze the level of internet literacy of teachers. The method used in this research is descriptive qualitative. The sample of research is vocational school teacher (SMK) as many as 99 respondents. Data are collected through questionnaires. The theory used is adopted from Suitable Learning Object Type (LRE APV4.7) and Three Elements of Literacy Digital. The result data of the questionnaire is processed and analyzed using Capability Maturity Model theory, the result of the research shows that the level of internet literacy of vocational teachers is at level 2, meaning that SMK teachers have used the internet many times to assist their daily activities and have pattern of repetition in internet utilization. The use of internet by teachers of SMK with various needs that support the process of teaching, communicating, sharing knowledge, but the most dominant is to communicate through social media. Factors affecting internet usage include age, gender, and employment status.

1. Introduction
Recent studies reveal that the use of technology and the Internet will offer many benefits in the development of effective education and learning [1]. With the Internet can broaden the information needed by the teacher as a basis for knowledge development, improve the efficiency of the learning process as well as with the Internet can cultivate lifelong learning [2]. The productivity of internet use in education is reflected in the fact that students can learn easily and they are willing to accept tasks with new technology [3]. The Internet in education is used for the purpose of improving the quality of teachers especially in providing teaching resources, sharing ideas and opinions, working on projects and enabling teacher or group collaboration [4].

In addition, the use of the internet in education is considered an efficient teaching process and is followed by interactions such as presentations, demonstrations, practices, and collaborations [5].

Studies ever conducted on internet use, teachers rarely or never use the internet related applications such as online discussion, voice chat, and video conferencing [6]. Some teachers with low self-esteem do not have sufficient capability in information retrieval resulting in limited use of internet resources [7]. The research ever conducted states that teachers are not ready to use the internet in education [8], as well as in the study [9] states that it is difficult to build relationships between teachers and the internet in the learning process. This problem is one of them occurred in Prabumulih City, South Sumatera Province, most of teachers in Prabumulih have not utilized internet in teaching and learning process and making lesson plan.
Research [10] states that schools use the Internet to design instructional plans, provide individual guidance and how to use the internet, use the internet for teacher professional development, and provide assistance to students through online courses. In an effort to provide creative, innovative, and easy-to-understand education in education and the demands of 21st century education, teachers are encouraged to develop a sense of confidence and competence in using the internet to teach [11].

A large number of studies have been conducted on teachers' perceptions, opinions, and attitudes on issues such as subject matter, teacher professional development, internet usage training, implementation of Internet innovations in education, etc. [12]. Small study that discusses the internet teacher's literacy. Similar studies discussing the internet literacy for the learning process begin by utilizing social media, web-based learning, and creating online discussion groups [13]. The results revealed the teacher's internet literacy is influenced by the intention of a teacher. Therefore this study will evaluate the internet literacy of teachers in the learning process, knowing the intensity of internet usage time and how the internet is used in daily work by a teacher in education. This research was conducted in Prabumulih City, especially in Vocational High School (SMK) teachers.

2. Concepts
2.1. Internet Literacy
The Internet began in August 1962 which was first proposed by J.C.R. Licklider from MIT (Massachusetts Institute of Technology). The Internet is a computer network that connects millions of computers spread all over the world, all computers can be connected in the internet network even though located in different places. The Internet can also be interpreted as a global network connecting about one million organizations of computer networks to more than two thousand countries on all continents [14].

An association of "The Association of Colleges and Research Libraries (2010)" defines Internet literacy as people associated with the use of computers, software / applications, databases, and other technologies to achieve certain goals. Internet literacy can also be interpreted as a skill that includes a location to acquire internet and use the internet for knowledge of interpreting and evaluating information [15].

Internet literacy by Shapiro and Hughes (1996) includes seven constructs, including:
1. Tool, refers to the ability to understand and use practical and conceptual information technology tools in their respective professional lives
2. Resources, is the ability to understand the form, location, access method, and format of the information source
3. The social structure of literacy, expressing an understanding of how information is socially located and produced
4. Research, demonstrating the ability to understand and use relevant information technology for research
5. Publishing, reflecting the ability to format and publish research and ideas in text and multimedia
6. Important technology, refers to the awareness and ability to adapt in understanding, evaluating, and using existing information technology
7. Literacy is critical, revealing the ability to critically evaluate the strengths and weaknesses, capabilities and limits of information technology.

2.2. Personal Capability Maturity Model (P-CMM)
Each generation in each country has different ICT / e-literacy literacy levels, as well as individual e-literacy capabilities will have different patterns according to the needs of people's lives and maturity. According to the Personal Capability Maturity Model (P-CMM) [16], a person's e-literacy level can be described more or less as below:
1. Level 0, if an individual is totally ignorant and does not care about the importance of information and technology for everyday life
2. Level 1, if an individual has ever had one or two experiences in which information is an essential component of achieving desire and solving problems and has involved information or communication technology to look for it.

3. Level 2, if an individual has repeatedly used information and communication technology to assist his daily activities and has had a pattern of recurrence in its use.

4. Level 3, if this person has a standard of knowledge and mastery of information or technology required and consistent use of standards as a reference.

5. Level 4, if an individual has been able to significantly improve the performance of his daily life activities through the utilization of information technology.

6. Level 5, if an individual has regarded information and technology as an integral part of everyday activities and directly or indirectly has colored the behavior and culture of his life.

2.3. Technology as a Learning Resource
The growing use of technology in teaching and learning has led to an expansion in the production and dissemination of digital content. This digital content is known as Learning Objects (LOs). LOs are commonly used by teachers and learners in the learning process, LO repositories are specialized software systems used to manage the collection of LOs, a collection of several LOs namely The Learning Resource Exchange (LRE) [17].

3. Research Methods

3.1 Research Design
This research is a descriptive research aimed at giving systematic and factual description which is in accordance with facts about the level of internet literacy of vocational teachers. The data collection used a qualitative approach to the survey through questionnaires [18].

3.2. Development of Research Instruments
Data collection in this study using questionnaires. Indicators measured refer to the internet literacy area such as: Tools (availability of tools for accessing the internet), resources (use of support resources, location, access methods), literacy social structures (understanding and ability to use the internet in education), research Ability to understand and use the internet to support research and improve the professional competence of teachers), publishing (the ability of teachers in using the internet to create or create something like simple media and shared on the internet), important technology (awareness and ability to understand the internet, Education), critical literacy (revealing the ability to critically evaluate the strengths and weaknesses, abilities and limits of the internet) [19].

The questionnaire adopted from the Learning Resource Exchange (LRE) Metadata Application Profile Version 4.7 and Three Elements of Literacy Digital and Model of SCONUL 2006, these three elements are among the first to connect with the Internet including Internet use orientation, surfing the internet, internet focus and location Access the internet. The second is internet interaction including critical thinking, evaluating internet usage [20]. Third is utilizing the internet that includes changing, communicating, and implementing the internet [21] [22]. The instrument grille is shown in Table 1.
Table 1. The instrument grille

| Indicator | Item Questions / Statements |
|-----------|-----------------------------|
| Availability of tools to access the internet | The following tools are already available to access the internet |
| Location and amount of internet access time in one day | 1. At school using a computer |
| | 2. At school using a smartphone or tablet |
| | 3. Home using a computer |
| | 4. Home using a smartphone or tablet |
| | 5. In public use smartphone or tablet |
| Use of the Internet in education | 6. Search for teaching materials from search engines (google, yahoo, bing, amazon) |
| | 7. Looking for training / replication questions from search engines (google, yahoo, bing, amazon) |
| | 8. Search for information related to prakerin places or street vendors for students from the internet |
| | 9. Search for job related information for vocational graduate students from internet |
| | 10. Using the glossary to collect specific terms and their meanings in enriching the teaching materials |
| | 11. Use of an online dictionary, an encyclopedia to find specific information about a learning topic |
| | 12. Downloading electronic books (e-books) |
| | 13. Download (download) video, audio, animation from internet / youtube |
| | 14. Download Power Point for learning |
| | 15. Demonstrate the downloaded video / audio, animation that has been downloaded / downloaded |
| | 16. Using the online editor tool (edit photos, change pdf-word files, etc.) |
| | 17. Learning using e-learning (edmodo) |
| | 18. Doing exams / replicates online |
| | 19. Leveraging online educational games |
| | 20. Save the file / resource in cloud computing (google drive, drop-box) |
| | 21. Using social media for communication in learning |
| | 22. Incorporated in an online discussion forum |
| The type of social media used | 23. Facebook |
| | 24. Instagram |
| | 25. Whatsapp |
| | 26. Blackberry Messenger (BBM) |
| | 27. Line |
| | 28. Google+ |
| | 29. Path |
| | 30. Twitter |
| Utilization of the Internet for Research | 31. Searching research information from internet |
| | 32. Join the forum or research group |
| | 33. Active in forum or research group |
| | 34. Submit research results in a forum or journal |
| Utilization of the Internet for sharing knowledge | 35. Create an electronic mail address (e-mail) |
| | 36. Create a blog |
| | 37. Creating a website |
| | 38. Actively publish useful things on your blog or website |
| | 39. Actively publish material related matters and resources on blog or social media |
| | 40. Actively publish things related to prakerin or job vacancy on social media |
| | 41. Create and upload learning media on your blog or website |
| | 42. Create and upload learning videos on Youtube |

3.3. Maturity Model Level Mapping

Once known the score of each category followed by calculating the value of each respondent for each variable. Furthermore, the calculation of index maturity or index maturity with the formula:

$$\text{Index maturity} = \frac{\text{Number of Answers}}{\text{Number of Questions}}$$
After known index maturity (IM) for each variable then followed by scaling that refers to Personal Capability Maturity Model (P-CMM) [23]. The maximum maturity index is 2 and the minimum maturity index is 0, so the obtained range is 2, after it is known that many classes are 6, then there is a long interval \( I = \frac{\text{range}}{\text{many classes}} \), i.e. \( \frac{2}{6} = 0.33 \). Index maturity scale for mapping to maturity model level can be seen in table 2. Index maturity scale.

| Indeks Maturity (IM) | Personal Capability Maturity Model (P-CMM) | Information |
|----------------------|--------------------------------------------|-------------|
| 0,00 ≤ IM ≤ 0,33     | 0                                          | Someone does not know the internet |
| 0,34 ≤ IM ≤ 0,67     | 1                                          | Someone has one or two experience using the internet |
| 0,68 ≤ IM ≤ 1,00     | 2                                          | Someone has repeatedly used and used the internet |
| 1,01 ≤ IM ≤ 1,34     | 3                                          | Someone has standard and understanding in using internet |
| 1,35 ≤ IM ≤ 1,68     | 4                                          | Someone has been able to improve performance through the use of the internet |
| 1,69 ≤ IM ≤ 2,00     | 5                                          | Someone has assumed the internet is partly inseparable in everyday activities |

Table 2 shows scaled questionnaires referring to the level of maturity model. Of the total variables, four variables mapped in the level of maturity model including the use of the internet in education, social media used, the use of the Internet for research, and the use of the Internet for sharing knowledge.

3.4 Population and Sample
In this study population is all teachers of SMK in Prabumulih City amounting to 358 people, consisting of 2 SMK Negeri and 8 SMK Private. The number of sample members is often expressed by the size of the sample, the larger the number of samples approaching the population, the less probability of generalization error and the smaller the number of samples away from the population, the greater the generalization error. The sample size is 99 respondents.

4. Results and Discussion

4.1. Availability of Internet Access Tool

Figure 1 shows the availability of internet access tools owned by both school and private inventory holders. If averaged ownership of internet access tools SMK teachers have had internet access tools such as computers or personal computers (PCs), laptops, smartphones, and tablets. The dominant internet access tools owned by SMK teachers are laptops. In many countries accessing the Internet via cellular networks and portable equipment such as laptops are experiencing a surge in demand [24]. Research has been conducted on the selection of types or internet access tools that are influenced by
gender, age, experience of internet usage. The study revealed a younger age and male respondents preferred mobile access tools [25].

4.2 Location and Number of Times Accessing the Internet

| Internet Access Location | Number of Respondents |
|--------------------------|-----------------------|
| Average Time of Day (Hour) | 0 | <1 | 1 | 2 | 3 | 4 | >5 |
| At school using PC/Laptop | 11 | 19 | 15 | 26 | 13 | 5 | 10 |
| At school using smartphone/tablet | 10 | 8 | 25 | 24 | 13 | 10 | 9 |
| At home using PC/laptop | 16 | 11 | 25 | 21 | 17 | 4 | 9 |
| At home using smartphone/tablet | 6 | 9 | 16 | 19 | 22 | 15 | 12 |
| At public area using smartphone/tablet | 11 | 11 | 27 | 16 | 17 | 10 | 7 |

The internet access time of SMK teachers in Prabumulih if averaged in one day approximately 2.6 hours and if in one month approximately 57.2 working hours. Based on the above categories (table 3), the intensity of internet access of SMK teachers in Prabumulih City is included in the category of heavy users or internet addiction. Some researchers have conducted research on the effects of Internet addiction, in this topic of psychological security for Internet addicts [26]. Internet access made by SMK teachers in Prabumulih for some interests such as seeking information, other fun activities such as playing games, communicating, and making transactions such as buying and selling [27].

4.3 Use of the Internet in Education

Figure 2. Use of the Internet in Education

Figure 2 illustrates that the use of internet in education comes in level 3, respondents have standard and understanding of internet usage in education. Most vocational school teachers at Prabumulih have downloaded and demonstrated the video as a teaching support especially on subjects requiring labs and props.

4.4 Use of the Internet for Social Media

Based on the findings on the use of internet for social media entry in level 3, that is, respondents have standards and understanding in the use of social media. The results of data processing stated that SMK teachers in Prabumulih already have standards and understanding in the use of social media, social media most widely used to interact with others locally and globally, in various languages both oral and written. Social media used by SMK teachers in Prabumulih besides whatsapp is facebook. Social media allows teachers and students to have fast and reliable information anywhere in the world. The use of social media for those actively participating will produce accurate new knowledge [28].

4.5 Use of the Internet for Research

Figure 3. Grafik Maturity Use of the Internet for Research
Figure 3 shows the internet use by SMK teachers in Prabumulih for entry research at level 2, the majority of respondents using the internet only to search for research information. To advance the science of the profession as a teacher in the world of education, teachers are required to conduct research and publish the results [29].

The average teacher of SMK in Prabumulih has never sent or published the results of his research via the internet, respondents use the internet to search information and join research forums.

4.6. Use of the Internet for Sharing of Knowledge
The results of data processing of 8 statements to determine the utilization of the internet for sharing knowledge is at level 1. Level 1 means an individuals never have experience once or twice in the use of the Internet for information sharing. Research reveals the use of social networking sites for sharing information online in teaching and learning, such as downloading and downloading social networking based resources [30].

4.7. Maturity Rate of Internet Usage SMK Teachers
Based on the calculation of maturity model level starting from the variable of internet utilization for education, internet usage in social media, internet utilization for research, and exploiting internet for sharing knowledge obtained average score that is 0.93. The internet literacy of SMK teachers if rounded up on a Personal Capability Maturity Model scale of the internet literacy level of SMK teachers entered in level 2.

The use of internet by teachers of SMK in Prabumulih with various needs such as supporting the teaching process, communicating through social media, and sharing knowledge, but the most dominant is to communicate through social media. Previous research on internet use by math teachers shows that most math teachers use the internet for personal affairs. The results of the analysis suggest the need for technical, pedagogical, and didactic training on the use of digital resources [31].

Research has been conducted by surveying more than 200 teachers, research results suggest teachers have Internet usage patterns but they do not use the internet to explore the wider world and learn about alternative ways of thinking. The study also revealed that the majority of prospective teachers use the Internet only a little to find information on various world perspectives and the search for very minimal supporter information [32]. There are many factors that influence teachers to use the internet in education that is individual perspectives, organizational influences and technology to be used [33].

5. Conclusion
The analysis of internet literacy of SMK teachers using six indicators such as availability of internet access tool, internet access location and internet access intensity, internet utilization in education, internet usage for social media, internet utilization for research, and for sharing science / information. After calculated and analyzed from the six indicators, the level of maturity of internet literacy of vocational teachers has reached level 2, meaning that SMK teachers have been using the internet many times to help the daily activities and has had pattern of repetition in the utilization of internet.

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