

Information-Seeking Behavior of Students with Visual Impairments in Facing the Industrial Revolution Era 4.0

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Abstract—Key capabilities that must be owned to survive the era of the Industrial Revolution 4.0 is the ability to manage information. This information management is very closely related to information-seeking behavior which requires vision, hearing and speaking abilities. But how do those who have physical limitations, such as impediments in vision (visually impaired), disabilities in hearing (hearing impaired), or speech disabilities that automatically will make it difficult for them to process information optimally? The purpose of this research is to find out information-seeking behavior, especially for the blind in facing the industrial revolution era 4.0. The method used in this research was a descriptive qualitative obtained from interviews with three informants. The results of the study are that the needs of information by students with disabilities are generally the same as other students who are inseparable from the needs for general information (current events), information related to a subject-matter in school, social life, and information in accordance with their hobbies. The search behavior requires guidance from the accompanying teacher/librarian and as a whole requires the internet in searching for information because the acquisition is fast and can be done anytime and anywhere.

Keywords: Industrial Revolution 4.0, information needs, information-seeking behavior, visual impairment

I. INTRODUCTION

The industrial revolution 4.0 had such a huge impact on life that it demanded someone to be able to follow it. The characteristic of this era is the rapid development in the field of technology which is much needed in improving the quality of life. For example, in the field of education a variety of interactive learning innovations have emerged that do not rule out the possibility for students to learn whenever and wherever. This phenomenon becomes very important because if someone is not able to follow the developments that exist, he will automatically be left behind or commonly known as technologically backward and technologically illiterate. Therefore, we naturally adjust to the environment to get a better life.

This phenomenon also affects the search for someone's information because they have to adjust to the pattern of existing technological developments. In general, someone tends to look for information according to their needs. For example, students look for information to help complete the tasks at school, doctors look for information related to the latest treatment methods,

architects look for information related to "contemporary" home design and so on. The information search above generally uses sensory involvement such as eyes to see, ears to hear, and tongue (lips) to talk. Thus, a person who wants to find information automatically will need the ability to see, hear and speak. But how do those who have physical limitations, such as impediments in vision (visually impaired), disabilities in hearing (hearing impaired), or speech disabilities that automatically will make it difficult for them to process information optimally?

Information behavior is the overall pattern of human behavior related to information involvement. The models of information seeking behavior include (Yusup, 2010):

1. Wilson Model

Wilson describes information-seeking behavior in two models. The first model was made in 1981 and the second in 1996. The following is the first model of information-seeking behavior (Wilson, 1999) in Figure 1.

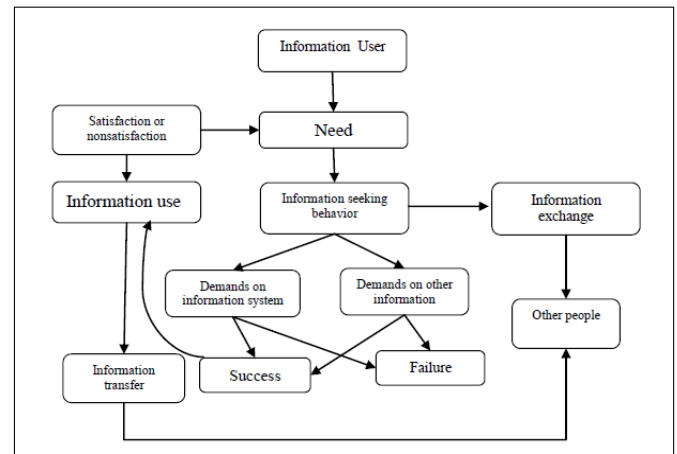


Fig. 1. Model 1 Information-seeking Behavior

Information users in this model have certain information needs. From the information needs, they will create information search behavior that consists of information system requests and requests for other information sources. The result of the information search behavior is success or failure. When the process is successful, the user gets information, and there will be

a sense of satisfaction and dissatisfaction that continues to the process of transferring information to others, then there will be information exchange activities (Case, 2002).

For the second model Wilson's information retrieval behavior is as follows in Figure 2:

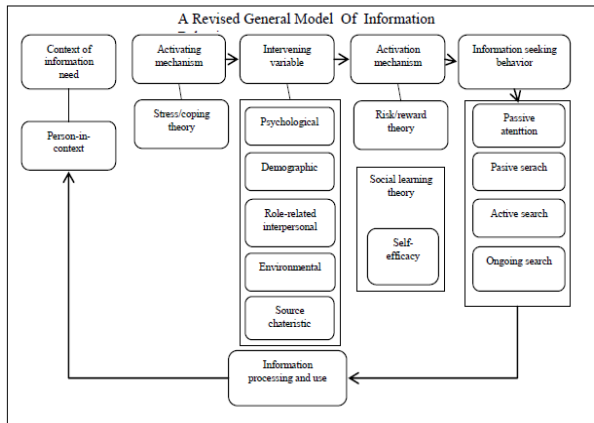


Fig. 2. Model 2 Information-seeking Behavior

This model is limited to the context of information seeking and Wilson considers that information behavior is a circular process that is directly related to the processing and utilization of information in the context of one's life. The need for information does not immediately turn into information-seeking behavior, but must first be triggered by one's understanding of the problems in his life.

2. Krikelas Model

The Krikelas model consists of thirteen components. The Krikelas model of information-seeking behavior starts from the top down. The top component of the Krikelas model is the act of gathering information and providing information. The results of the accumulation of information are directed to be stored in memory, direct observation, and personal data. The act of providing information is based on internal and external sources. Internal sources are memory and personal data, while external is divided into two components, namely "direct contact" and "record". The component of "direct contact" is a face-to-face relationship between interpersonal such as telephone, video calls, e-mail and so forth. The record component is in the form of literature such as books and journals (Case, 2002). (See Figure 3)

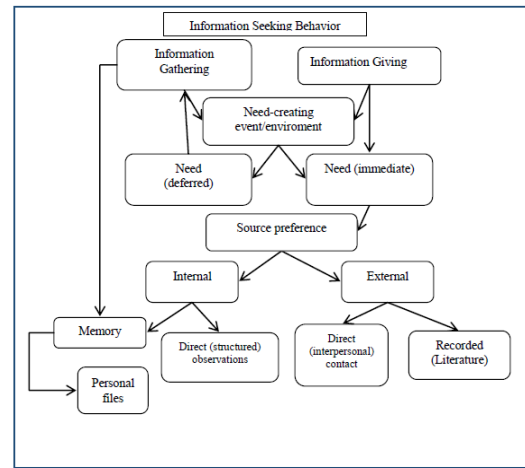


Fig. 3. Krikelas Model

This model can be applied in daily life, but is still used as a model of information retrieval in the library, such as on the reference table (direct/instant needs>external sources> librarians) or library collections (direct/instant needs> external sources> transfers) (Case, 2002).

3. Ellis Model

Ellis in Yusup revealed several characteristics of information behavior based on his research on social researchers, science, and engineers (Yusup, 2010). Ellis observed various activities carried out by her object in searching for information such as reading, researching in the laboratory, and writing papers. Ellis grouped the activities into 6 stages that began by identifying several sources of information to the stage of searching more deeply related to the validation of the information obtained. These stages are (see Figure 4):

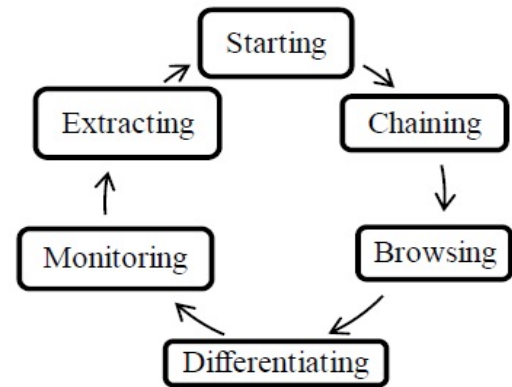


Fig. 4. Ellis Model

Some of the models above are the basis that researchers use in designing research instruments (interview guidelines). These theories are expected to produce the latest models of information-seeking behavior, especially for students who have special needs (visually impaired).

According to Scholl, the person with visual impairment is someone who has impaired and impaired their vision even though they are assisted with repairs, still have a detrimental effect on themselves (Aziz, 2014).

The Indonesian Association of Difabel Netra (2015) also defines that neutrality differs are those who have no vision at all (total blindness) until those who still have residual vision, but are unable to use their vision to read 12-point normal writing in normal light although they are assisted with glasses (Pertuni, 2019).

According to Luali, the blind person is divided into two types, namely (Pertuni, 2019):

a. Totality Blind

The practical limit is that when a person with disabilities blindly stretches his arms forward along with the limits of his arms, he does not see his own fingers. This indicates that the person is totally blind.

b. Low Version Blind

The person still has a residual vision with low vision with a vision accuracy of less than 6/18, where there is a comparison of the ability to see between people with low vision and normal eyes.

Thus the disabled blind cannot be interpreted with total blindness, a person who does not have normal vision even though he is able to see with the help of glasses but is unable to read 12-point writing is also classified as blind.

The site is one of the schools for school-aged children who have special needs in Padang, West Sumatra. This special school becomes a means that bridges children with special needs in obtaining knowledge mandated by Law No. 20 Year 2003 concerning the National Education System relating to equalizing education (Indonesia, 2003). Therefore, researchers are interested in conducting further studies on how information-seeking behavior, especially for blind people so that they can follow developments that occur due to the industrial revolution 4.0.

II. METHOD

A. Research Design

The research design used is descriptive qualitative design. According to Bogdan and Taylor in Moleong, qualitative research as a research procedure produces descriptive data in the form of written or oral words from people and observable behavior (Moleong, 2010). In line with this definition, Kirk and Miller in Moleong also define qualitative research as certain traditions in social science that are fundamentally dependent on human observations both in their area and in their term (Moleong, 2010). Based on the two meanings above, it can be concluded that qualitative research is research that intends to understand the subject to be studied, for example, behavior, perception, motivation, and actions in the form of words and language by utilizing various methods.

The approach used in this research is a descriptive approach. According to Arikunto, this approach only describes "as is" about a variable, symptom or situation (Arikunto, 2013). The descriptive approach tries to find an appropriate and sufficient description of all activities, objects, processes, and people. In a qualitative descriptive approach, the data collected is in the

form of words and pictures rather than numbers (Moleong, 2010).

B. Data Collection Technique

Data collection technique is a way or means used by researchers in obtaining data in their research activities. In this research the data collection process was carried out as follows:

1. Non-Participant Observation

In this data collection technique, the researcher is separate from the activity being observed. The researcher only observes, records what happens without direct involvement from the researcher on the object under study (Sulistyo-Basuki, 2006).

2. Interview

An interview is a form of verbal communication that aims to obtain information, which is done in a face to face conversation or can also be via telephone that occurs within a certain period of time. In this study, researchers used semi-structured interviews. According to Sugiyono, semi-structured interviews are free interviews in which researchers do not use interview guidelines that have been arranged systematically and completely for the collection of data. The interview guide used is only in the form of outlines of an issue to be asked (Sugiyono, 2013).

3. Dokument Review

According to Sarwono, a document review is a tool that helps researchers in gathering information by reading letters, announcements, meeting summaries, written policies, activity documents, and other written materials (Sarwono, 2006). In this study, researchers used data from the school for special needs as a document review for the data of blind disabled students' informants.

C. Data Analysis Techniques

In this study, the authors chose the interactive data analysis method. According to Miles and Huberman in Idrus (2009), the stages used in data analysis begin with data collection, data reduction, data presentation, and drawing conclusions.

1. Data Collection Stage

At this stage, the researchers used predetermined data collection techniques. Data in qualitative research is everything that is seen, heard and observed such as photographs, documents, recordings, and interviews. The data collection phase in this study was carried out by observing each teacher and librarian to obtain results in the form of a general description of the library. Furthermore, data collection is done by conducting interviews with informants, complete with field observations.

2. Data Reduction Stage

At this stage, the data is disaggregated and simplified, while unnecessary data will be separated in order to provide convenience in presenting useful data.

3. Data Presentation Stage

A presentation of data here is a collection of structured information that gives the possibility of drawing conclusions

and taking action (Idrus, 2009). The data has been sorted and set aside according to data groups and arranged according to similar categories to be displayed in harmony with the problems encountered.

4. Decision Making Stage

In this process, researchers look for the meaning of objects, noting regularities, patterns, explanations, possible configurations, causal flow, and provocation (Idrus, 2009).

After the data is presented and discussed, the next step is to draw conclusions. After describing the various data that has been obtained, researchers make conclusions that are the results of a study.

D. The Validity of Data

Test data validity or data validity is the degree of accuracy between the data that occurs in the object of research with data that can be reported by researchers. Data validity test in qualitative research which includes: credibility test (internal validity), transferability (external validity), dependability (reliability), and confirmability (objectivity). But in this study, researchers only used the credibility test in conducting data validity using triangulation. Triangulation in the testing of credibility is defined as checking data from various sources in various ways, and at various times. Thus there is a triangulation of sources, triangulation of data collection techniques and time triangulation (Sugiyono, 2013).

III. FINDINGS AND DISCUSSION

The results of this study were obtained from 3 informants and for a validation researchers interviewed teachers and librarians in the school for special needs students. The details of the informant's data are as follows.

The first informant is Putra, a 10-year-old student. He is a person with disabilities with limited vision or often called the blind person. This limitation he experienced from birth. Although he has limitations in vision, he is not discouraged in studying even though the method of learning is playing while studying. The second informant is Yusrizan, a 21-year-old student. Ichan is a disabled person with limitations in vision and delays in learning. The third informant is Fauzi, a 19-year-old student. Fauzi is a disabled person with limitations in vision as the first informant. According to the accompanying teacher, Fauzi is an intelligent, diligent, and tenacious student so that the learning process in the class does not experience significant difficulties.

Based on the three informants above, related to information-seeking behavior, the first informant in the fulfillment of the information is not too diverse because the percentage of learning and playing is 60:40. Information seeking behavior is usually guided by the accompanying teacher in accordance with the subjects to be given. So it can be concluded that the first informant only followed what topics were instructed by the accompanying teacher without searching independently. This is motivated by his age of 10 years so he tends to play (doing things he likes). Thus the results of this study are more focused on informants 2 and 3 so that it is expected to be able to provide a clear state of information needs and information-seeking

behavior of the blind students in the school for special needs students.

The information needed by blind students is information related to their role in the school and in the surrounding environment. The main information needed is the need for general information (current events), information related to the subject matter in school, social life, and information in accordance with their hobbies.

In addition to the information needs above, the blind person is information about mobility. Mobility is really needed by the blind person because to find something you need mobility and this mobility will be difficult to do when the informant has no experience about it. As stated by informant 3, mobility is very difficult to do when he has never been through that route. Thus, students with disabilities need to gather some information about the place to be visited, how to go through it.

When viewed from the opinion of Sulisty-Basuki (2004) the information needs of the informant can be determined by:

1. Range of information available
2. Use of information to be used
3. Background, motivation, orientation, and characteristics of each user
4. The social, economic, and political system in which the user is located, and
5. The consequences of using information.

From the above theory, it can also be seen that the information needed by research informants is that the first requirement is determined by the range of information available. The blind person must know in advance what information is in their environment, for example, the educational environment, which can support learning activities in the classroom. When they know what information is available, they can only draw conclusions about what information is needed.

Second is the use of information to meet their needs. When getting good information by using the JAWS application, Talks on cellphones or books in braille writing, the research informants know what the information is for and what its benefits are. When knowing the benefits of getting certain information, someone will need it.

Third is the background can also influence in determining what information is needed. The background here could be from family, economic, social factors as well as the problem of the blind person, that is, from what age the informant has a vision impairment. If seen from the length of time a person has limited vision, clearly the information needs will be seen. Someone who has been experiencing vision deficits will be more flexible in terms of reading, walking or concentrating compared to people who have recently had limited vision because they need adaptation to get used to the condition.

The fourth is seen from the social, economic, and political place of the blind disabled. These three things clearly affect what information needs will be needed by the blind person. In social terms, the environment has a big influence on one's life,

here a person with a disability will socialize with the community which will influence his behavior in any case.

When a person with disabilities is blind in the student environment, he will behave as a student seeking information about his educational needs. When viewed from an economic aspect, this is also very influential in supporting the fulfillment of the information. When at a high economic level automatically informants will experience ease in finding information because they are able to buy some supporting tools/media that are friendly to the blind. As for political matters, for example, from the aspect of government that has not yet maximized disability-friendly services in schools so that students still have difficulty in fulfilling information due to inadequate facilities.

The fifth is the consequence of using information. In this case, the users of information such as the blind person must be responsible for the use of information. For example, when one of the informants has a hobby of making short stories and poems, he is looking for information only to complement and support the information he is going to make, not to trace part or all of the information obtained to be renamed. In addition, the thing that needs to be considered is the dissemination of information, any information received should be filtered first and then shared with others (minimizing hoax information) or known as "filter before sharing."

Information retrieval behavior for blind people cannot be separated from the Industrial Revolution Era 4.0, which was strongly influenced by technological developments. When they can follow these developments they can find information easily, quickly and at any time so as to minimize dependence on others.

In general, information-seeking behavior for two informants (informants 1 and 2) requires a third party (accompanying teacher/ librarian). This is caused by the double limitations that are owned, namely limited vision and weak capture power. However, when they are interested in something, they want to look for independence and after that when they do not get an answer just ask a third person (teacher assistant/librarian).

However, for the third informant in an information search, it is usually an independent search that starts from the stage of awareness of information (consciously needs something) and collects data and information related via the internet. After getting some of the data and information, the next step is to do a cross-check or discussion with colleagues. However, when he does not find a solution to his desired needs, the next thing to do is to ask parents, teachers, and librarians in the school.

By referring to some of the theoretical models above (Wilson, Class, Ellis), it turns out that the behavior patterns for students with disabilities are slightly different because they are more likely to use the internet or ask others first. Other people who are meant here are the people closest to them such as parents, teachers, and friends. In addition to the stages of identification and evaluation of search results is still minimal. The information search behavior model can be described in Figure 5.



Fig. 5. Information Seeking Behavior Model Students with Disabilities

IV. CONCLUSION

The information needs of blind disabled students are generally the same as the needs of other students. Evidenced by the information they need is the need for general information (current events), information related to the subject matter in school, social life, mobility, and information in accordance with their hobbies. The information needs of students are also influenced by the social roles they have and also the surrounding environment.

Behavior in meeting the information needs of blind disabled students in two ways. The first method requires guidance from the teacher/librarian because there is no awareness of the information needs. This is due to the double limitations possessed by two informants. As for the second way, information-seeking behavior tends to use the internet rather than reading books in a library. This is caused by the sophistication and speed provided by the internet. Apart from the internet, another way to fulfill information is to have discussions with the people around them.

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