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Development of Ict Learning Task Analysis About Microsoft Office Word on Jaws (Job Access With Speech) Application For Visually Impaired Students Class X At Slbn Pajajaran Bandung City

Euis Nani Mulyati

Nusantara Islamic University, Bandung, Indonesia

Email: euisnanimulyati@uninus.ac.id

Raisa Sabatini

Nusantara Islamic University, Bandung, Indonesia

Email: raisasabatini@uninus.ac.id

Irma Nuraeni

Nusantara Islamic University, Bandung, Indonesia

Email: irmanuraeni@uninus.ac.id

Naufal Irsan Sani O

Nusantara Islamic University, Bandung, Indonesia

Email: nurafifahfitriani@uninus.ac.id

Nurafifah Fitriani

Nusantara Islamic University, Bandung, Indonesia

Email: naufalirsan@uninus.ac.id

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ABSTRACT

The rapid development of technology and informatics requires visually impaired students to adjust to these developments, one of which is the ability to access computers and master applications that can help and make it easier to learn various things so as to expand their knowledge and insights. A technique that allows the visually impaired to access a computer is *Speech Technology*, which is software that can be used by the visually impaired to access impressions on the monitor screen through their hearing, one of which is the *JAWS (Job Access With Speech)* application. In teaching IT to visually impaired students, a detailed step-by-step model of teaching materials is needed, known as task

analysis. This is what drives the interest of researchers to examine more deeply the one formulated in the title above. This study uses a qualitative descriptive method where data is obtained through observation, interviews, documentation, FGD, validation, and trial results. Data from observations, interviews and documentation are analyzed and used as a basis for developing task analysis through collaborative collaboration between teachers and researchers in FGD activities. The validation test was conducted by teachers in 2 different schools and received positive responses and could be tested. The results of the trial show that the task analysis that has been developed can help visually impaired students learn *Microsoft Office Word using the JAWS (job access with speech)* application. It is especially recommended to teachers to add insight in compiling various innovative models of teaching materials in various subjects.

Keywords

Task analysis, Microsoft Office Word, JAWS, Visually Impaired

Introduction

One type of child with special needs is a blind child, which is a child who has visual impairments/limitations both *totally blind* and *low vision*. Quoting WHO, Tarsidi (2012:4) explained that: "there are two aspects that can be measured from visual impairment, namely based on visual *acuity* and *visual field*. The blindness experienced by children will have an impact, especially on their learning where today the visually impaired are required to adjust to various changes / developments in the times. Learning is designed in such a way by utilizing information and communication technology (IT). One of the visually impaired teaching devices that utilizes IT technology is the JAWS (*Job Access With Speech*) application. The technique that allows the visually impaired to access a computer is *Speech Technology*, which is software that can be used by the visually impaired to access impressions on the monitor screen through their hearing. The technology allows the visually impaired to perform various activities such as *word processing* that previously had to be done through sight. It is explained by Budhiharjo (2004:3) that: "*Microsoft Office Word* or commonly called *Word Processing* is an application used to create, transform, and produce documents in the form of text". Thus, the *Microsoft Office Word* application is something that must be mastered by both educators / teachers and visually impaired students, because this application is a support in using the operation of the JAWS program. Various alternatives can be used by teachers in designing teaching material models for the visually impaired to improve the ability of the visually impaired to use the JAWS program, one of which is *task analysis*. Szidon & Franzone (2009:1) explains that: "Task analysis is a technique used to simplify an activity into small, more detailed and manageable parts". Task analysis also solves a complex task or activity into subtasks that are easy to understand and

manage so that subtasks that have been arranged sequentially can achieve the activities carried out (Srinivasan & Parthasarati, 2012). For the visually impaired, this task analysis model is very helpful for them in learning certain skills, where the loss of visual senses causes them to take advantage of other senses that are still functioning. If people are aware, by using their sense of sight when learning the features on a computer they can more easily access it by reading the instructions through readings/descriptions that are usually read. Not so for the visually impaired, they need a teaching model that can help them to learn a feature/system in a computer / laptop step by step that has been detailed in such a way that the visually impaired can more easily learn and master it. Therefore, teachers / educators must be able to compile teaching materials in the form of a task analysis model according to the characteristics and needs of visually impaired students. The reality found in the field based on preliminary studies shows that the model of teaching materials for task analysis that has been created / compiled by teachers, especially ICT learning about *Microsoft Office Word* is still simple and less detailed. Therefore, development is needed in order to improve the ability of the visually impaired using the *JAWS (Job Access With Speech)* application tool, so that this skill will greatly help the visually impaired in learning something according to their needs.

Literature review

The Concept of the Visually Impaired

In Indonesia, the term blind is better known as blind because it refers to the meaning of the word *blind*. The term blind is more often used by the public than the term blind, but in the KBBI and government regulations the term blind is more often used. This is because the term visually impaired has a more positive meaning.

According to Rahardja (2013:4) states that "a person is said to be legally blind if his visual acuity is 20/200 feet or smaller in the best eye after correction, or his visibility is not greater than 20 degrees". The impact of loss of vision function on the visually impaired causes the visually impaired to have difficulty adjusting to their environment or experience obstacles in the social skills of visually impaired children. Social skills are very important for visually impaired children in order for the child to be able to adjust to the environment. Visually impaired people who cannot adjust to the environment cause social rejection or by themselves withdraw from the environment. In this case, children with visual impairments are required by the surrounding environment in order to adjust behavior according to the surrounding environment.

Theoretically, it is also reinforced by the explanation of Hadi, (2005: 46) that the classification of the visually impaired is divided into two types, namely:

a. Blind

- 1) *Totally blind* are those who cannot see at all either dark or light.

2) Having *residual vision* are those who can distinguish between light and dark.

b. Low Vision

- 1) *Light Perception*, when it can only distinguish between light and dark.
- 2) *Light projection*, can know the changes in light and can determine the light source.
- 3) *Tunnel vision* or central vision, visually impaired vision is centered so that when looking at objects can only be seen in the middle.
- 4) *Peripheral vision* or side vision, so that observation of objects is only visible at the edges.
- 5) Spotted vision, observation of objects there are certain parts that are not visible.

Task Analysis

Task analysis is a job that details various activities or tasks into various small steps, then teaches these steps to learners According to Rochyadi and Alimin (2005:126) "suggests that task analysis is work that is summarized with specific work units". Ariyanto (2014) assumes that task analysis is the activity of analyzing or decomposing tasks that are considered difficult into very simple tasks according to the abilities of the child. The advantages have a clear purpose tailored to the child's abilities, can attract the child's interest, not because of coercion, have been carefully prepared before being given to the child.

Teaching material models Task analysis is used for various purposes, including: Manuals and teaching (teaching how to do the task, compiling manuals or **teaching materials, helping to explain the system to others), and capturing needs and designing systems** (guiding the design in choosing an internal model, forecasting the use of the system new, designing detailed interfaces, classifying tasks or objects, connecting between objects with activities).

JAWS Basic Concepts

Job Access With Speech (JAWS) is the most commonly used application. JAWS is a software developed by *Blind and Low Vision Group* in *Freedom Scientific* St Petersburg, Florida, United States. JAWS processes the text or text that appears on the screen to then be reproduced in the form of a sound that can be heard by someone through a *headset* or *loud speaker*. The JAWS app still uses an English spelling and *pronunciation* system, so a text in any language, will be *spelled* in English.

Use of JAWS for the Visually Impaired

JAWS is the main program for the visually impaired because without a *visually impaired screen reader* it cannot operate the computer properly and cannot access other programs that people use. To be able to operate a computer,

an application program is required. In general they can use application programs as people use in general. However, to be able to operate a computer more effectively they need *special software* or application programs, namely by changing the visual display on the screen into audio with a technology called *Speech Synthesiser* or through an actual display with a technology called *Braille Display*. The way to operate komputer by the visually impaired is as follows:

a. Turning Off and On the Computer

Activate each device by pressing the power button, then on the monitor screen will appear desktop with various icons. To find out information about the display on the screen, the visually impaired will hear information through JAWS sounds such as "*JAWS for Windows is Ready*", thus, the computer is ready to execute commands according to the instructions instructed by the user.

b. Open a new document and call the old file

The way to open a new document or worksheet is to press *Alt+F*, select *New* by pressing *Ctrl+N* and then press *enter* twice until a new document appears that is ready to be typed on the monitor. As for calling the old file that has been stored on the hard disk, the method is as follows: press *Alt + F*, select the *Open* menu, then press *enter*, then type the file name in the file name dialog box then *enter*, then the file will appear on the monitor screen.

c. Save the document and name the file

Save the document by pressing the *Alt+F* keys, select *Save As* by pressing the letter "A" or the down arrow. In the *Save As* dialog box, select the *Save in* box by using *Tab*, and then press the arrow to select the type of *disk drive* you want and *then enter*. In the file name dialog box type the desired *file name*, select *Save* using the *Tab* key, and then *enter*. Thus, our files have been saved on the *hard disk* automatically. Another way to do this is to press the *F12* key until the *Save As* dialog box appears, type the desired file name, select *Save* then *enter* then the file will be saved automatically on the active or intended hard disk or folder.

d. Edit a document

The way that is done in editing documents is in principle according to the needs of the user. To mark a document by pressing *Shift+arrow* (left, top-down) as needed. To mark the entire text, you do this by pressing *Alt+E*, select *Select All* by pressing "L" or using the arrows and then *enter*, then the entire text will be selected, or it can be by pressing the *Ctrl-A* key.

e. Print a document

The steps to print the document are as follows: select the file menu by pressing *Alt+F*, select *print* using the arrows, and then *enter*. A print dialog box appears that contains the words *Printer*, *Page Range*, *Copies* and *Zoom*. Next, fill in the dialog box as needed and then *enter*, then the printer will process until the document is printed on paper as desired by the user or with the shortcut press *Ctrl+P* and then *enter* if all documents want to be printed.

Research Methods

According to the objectives to be achieved, this research uses a qualitative descriptive method where researchers examine problems in the field related to the task analysis teaching material model. In addition to teachers, the subjects of this study were Class X blind students at SLBN Pajajaran Bandung City. Data were obtained through observation techniques, interviews, documentation, group discussions (FGDs), and validation. Qualitative research is more focused on the process, therefore several stages carried out include: preliminary studies and determining the problems to be used as research material, collecting various information through theoretical studies and observations, interviewing teacher subjects, and collecting various documents according to research interests, then analyzing these findings as preliminary data for development. The results of the preliminary study show that the model of teaching materials for the analysis of tasks compiled by teachers, researchers consider is still simple and not detailed according to the needs and characteristics of visually impaired students so that it needs to be developed. The data from the analysis is then used as material for development where researchers collaborate with teacher subjects to develop a model of teaching materials for task analysis through FGD activities. To see the readability and implementation of the task analysis teaching material model that has been developed, validation was carried out to teachers in two different schools, and tested on class X blind students who were the subjects of the study.

Research Results

Ability to learn Microsoft Office Word using JAWS (job access with speech) in class X visually impaired students

The learning ability of visually impaired students develops with age and habituation to independence both at school and at home. Therefore, in improving learning, it is necessary to have skills that must be mastered by visually impaired students in getting to know the knowledge of ICT about *Microsoft Office Word*. These skills include: the ability to be sensitive in touching (tactile, sensory integration), the ability to recognize computers and devices, and the ability to listen and listen to navigation.

In ICT learning, class X blind students at SLB Negeri A Pajajaran have been able to get to know computers and devices consisting of monitors, keyboards, mice, CPU casing, USB and Audio Ports, Airphones/Speakers. In addition, visually impaired students are able to operate computers starting from turning on the computer (*turn on*), running *Ms. Office* applications. Visually impaired students are able to recognize access in operating a computer by navigating from the JAWS application by adjusting the needs in operating the computer such as voice back speed, screen shortcut layout in facilitating computer access.

In the ability to learn *Microsoft Office Word* using JAWS (*job access with*

speech) the abilities of students are different, this can be seen from the ability of students to catch when learning to hear a *screen* reader, some can immediately capture sound directly, as for those who still need teacher help. In addition, students' understanding also differs in interpreting the meaning of the voice they hear.

ICT learning program about *Microsoft Office Word* using the current JAWS (*job access with speech*)

The ICT learning program about *Microsoft Office Word* is an important part of improving the competence of visually impaired students to be able to be independent according to the needs of the times in this millennial era. Therefore, in the ICT learning program in class X at SLB Negeri Pajajaran, Bandung City, it is realized by looking at the interests and talents of students who go through ICT assessment first. ICT assessment is an assessment carried out on students who will enter the SMALB level and focuses on special development in ICT learning specialization, so that in class X, students have been focused on ICT subjects and extracurriculars for the development of self-competence of blind students. The ICT assessment instrument tested on visually impaired students who have talents and interests in ICT subjects consists of three important points that are used as a basis in assessing the abilities of students, namely:

The results of the ICT talent interest assessment vary, if the assessment results show that students are capable of ICT, they will enter ICT classes for further learning. If students are considered less capable in ICT learning during assessment but have a strong desire and interest in ICT, special guidance is carried out outside of class hours in the form of courses with teachers at school. The ICT learning program about *Microsoft Office Word* using JAWS (*job access with speech*) for class X blind students at SLB Negeri Pajajaran is carried out based on learning planning in the form of a syllabus, Lesson Plan (RPP), and task analysis carried out through a grid of practices as a program daily assessments in ICT learning reported within a one-month period.

Development of task analysis compiled through collaborative cooperation between teachers and researchers

Development Basics

The steps used to sort out tasks into sub-tasks at SLB Negeri Pajajaran Bandung City by preparing lesson plan and analyzing tasks according to their order. The basis for developing task analysis is carried out by looking at the analysis of tasks at SLB Negeri Pajajaran Kota Bandung regarding ICT learning about *Microsoft Office Word* using JAWS (*job access with speech*).

Development Process

The process of developing task analysis on ICT learning about *Microsoft*

Office Word using JAWS (*job access with speech*) is carried out to detail various activities or tasks into various small steps so that they are more specific. Therefore, the development process is based on the analysis of existing tasks at SLB Negeri Pajajaran which are communicated and discussed simultaneously with class teachers and ICT teachers on ICT learning about *Microsoft Office Word* to improve JAWS (*job access with speech*).

The analysis of tasks in SLB Negeri Pajajaran has not been made in more detail, so the development was carried out to further detail the content of the existing task analysis, by adjusting the same format as that in SLB Negeri Pajajaran, which contains components of content competencies, basic competencies, classes, subject matter and question indicators. It's just that in the subject matter and indicators the questions are further developed into detailed and specific according to the order of task analysis.

Development Results

The development results are made more specific with task analysis steps on ICT learning about *Microsoft Office Word* using JAWS (*job access with speech*) consisting of:

- a. Use computer devices
 - Introducing hardware functions
 - Introducing software functions
 - Introducing hardware layouts
 - Introducing software layouts
 - Introducing screen layout shapes
 - Introducing JAWS app components
 - Introducing screen reader speed settings
 - using the JAWS app
- b. Use the JAWS app
 - Open menu windows in the left corner of the screen/pressing windows key on keyboard
 - Type Microsoft office word in the key bord by listening to the sound of letters on the Air Phone
 - Click 2 times on the Microsoft office word application or press Enter to go to the Application
- c. Using *Microsoft office word* applications
 - Open menu windows in the left corner of the screen / pressing windows key on keyboard
 - Type Microsoft office word in the key bord by listening to the sound of letters on the Air Phone
 - Click 2 times on the Microsoft office word application or press Enter to go to the Application
- d. Using menus and icons in Microsoft Word 2010
 - Recognizing the function of Microsoft office applications i.e. word processing

applications

- Demonstrating the function of windows management contains tools to minimize, maximize, close windows
- Demonstrating the function of quick access toolbar containing quick commands such as undo, redo, save, print table,
- Demonstrating the function of title bar containing the name of the currently opened document
- Demonstrating the function of Control Button has the same function as windows management.
- Demonstrating the function of Tab consists of File, Home, Insert, Design, Page Layout, References, Mailings, View.
- Demonstrating the function of Ribbon is the area used to display the tabs and menus of the active tab.
- Demonstrating the function of Microsoft Account indicates the account that is logged on microsoft word
- Demonstrating the function of Scroll Vertical to scroll the width of the document up or down
- Demonstrating the document area i.e. a worksheet to type a new document
- Demonstrating the function of View Button containing buttons to see the document view
- Demonstrating the function of Zoom is used to zoom in or out of a sheet of a document.
- Desontrating the function of Status Bar contains about the word count of a document page

Create a document with a table

- Setting the border and shading of the table Operating the drawing
- Insert a picture

Validation Results

Validation is carried out to see the readability and implementation of the assignment analysis teaching material model in ICT learning about *Microsoft Office Word* using JAWS (*job access with speech*) in visually impaired students. The first validator, namely a teacher at ABC SLB Nita Karya, Bandung Regency, argued that the task analysis developed by researchers and teachers was quite effective and detailed, so that it could be carried out in continuous ICT learning until students were able to operate computers and their JAWS use capabilities developed. Meanwhile, the second validator, namely a teacher at SLB Nurul Majid, Bandung Regency, argued that task analysis could be used as a guideline for ICT learning or multimedia extracurricular learning for visually impaired students. It can be concluded that both validators agree that the teaching material model for the analysis of the task of development results is feasible and

can be used.

Trial Results

The trial of task analysis in learning ICT about Microsoft Office Word using JAWS (*Job Access With Speech*) on class X blind students at SLB Negeri Pajajaran Bandung City was quite effective, and visually impaired students were able to operate *Microsoft Office Word* well with the theme of making official letters, making up stories and making tables. Although there is one student who has difficulty in interpreting the meaning of the speech that comes out of the JAWS *screen reader*, students are still accompanied and trained to have sensitivity in listening well by the teacher's way of clarifying the sound coming from the *screen reader*.

Conclusions, Implications, and Recommendations

Conclusion

In general, the results of this study can be concluded that the task analysis teaching material model can make it easier for the visually impaired to learn and use the JAWS (*Job Access With Speech*) application. This is possible because with task analysis, the visually impaired can learn step by step through tasks that have been detailed in such a way according to their characteristics and abilities.

In particular, the results of this study can be summed up as follows:

a. In ICT learning, class X blind students at SLB Negeri A Pajajaran are able to get to know computers and devices consisting of monitors, keyboards, mice, CPU casing, USB and Audio Ports, Airphones/ Speakers. In learning *Microsoft Office Word* using JAWS (*job access with speech*) the abilities of students are different, this can be seen from the ability of students when learning to hear a *screen reader*, some can immediately capture sound directly and still need the help of the teacher. In addition, students' understanding also differs in interpreting the meaning of the voice they hear.

b. ICT learning program about *Microsoft Office Word* is an important part in improving the competence of visually impaired students to be able to be independent according to the developmental needs of students. The preparation of the program is based on the results of the assessment to find out the initial abilities of each student. The ICT learning program about *Microsoft Office Word* using JAWS (*Job Access With Speech*) for class X visually impaired students at SLB Negeri Pajajaran is carried out based on learning planning in the form of a syllabus, Lesson Plan (RPP), and task analysis carried out through a grid of practices as an assessment program daily in reported ICT learning within a one-month one-time period.

c. Development of task analysis as a result of collaboration between

teachers and researchers. Development is carried out on the basis that the analysis of the tasks drawn up by the teacher is still simple and needs to be developed. Therefore, researchers in collaboration with teachers compile teaching materials for the analysis of ICT learning tasks about *Microsoft Office Word* using JAWS (*job access with speech*). The process of developing task analysis on ICT learning about *Microsoft Office Word* using JAWS (*job access with speech*) is carried out to detail various activities or tasks into various small steps so that they are more specific. The development results are made more specific with task analysis steps on ICT learning about *Microsoft Office Word* using JAWS (*job access with speech*) which broadly consists of: Using a computer device, using the JAWS application, using the application *Microsoft office word*, use menus and icons in Microsoft Word 2010, and created documents with tables

d. Validation results show that basically the two validators from ABC SLB Nita Karya and SLB Nurul Majid Bandung Regency responded positively and agreed on a model of task analysis teaching materials developed by teachers and researchers to test task analysis in ICT learning about *Microsoft Office Word* using JAWS (*Job Access With Speech*)) in class X blind students at SLB Negeri Pajajaran Kota Bandung is quite effective, and visually impaired students are able to operate *Microsoft Office Word* well with the theme of making official letters, making stories and making tables. Although there is one student who has difficulty in interpreting the meaning of the speech that comes out of the JAWS *screen reader*, students are still accompanied and trained to have sensitivity in listening well by the teacher's way of clarifying the sound coming from the *screen reader*.

e. Trial results show that ICT learning about Microsoft Office Word using JAWS (*Job Access With Speech*) for class X visually impaired students at SLB Negeri Pajajaran Bandung City is quite effective where blind students are able to operate *Microsoft Office Word* well with the theme of making official letters, making up stories and creating tables. Although there is one student who has difficulty in interpreting the meaning of the speech that comes out of the JAWS *screen reader*, students are still accompanied and trained to have sensitivity in listening well by the teacher's way of clarifying the sound coming from the *screen reader*.

Implications

The results showed that the task analysis teaching material model is very important to be used and developed so that visually impaired students learn through material that is arranged in detail step by step. The implications of the results of this study are as follows:

a. Task analysis is a model of teaching materials that contains details of large tasks into small tasks that allow learners to do so. Therefore, every educator/teacher should have skills in compiling and developing task analysis on each subject matter.

b. Skills in compiling instruments and carrying out assessments must be possessed by each teacher as a basis for compiling teaching materials that are in accordance with the characteristics and learning needs of each student.

c. In every preparation and implementation of the program, of course, there are obstacles or obstacles encountered. This obstacle must be overcome immediately by looking for various ways out. Therefore, schools and teachers must strive for various ways to improve competence in overcoming problems by looking for alternative solutions to problem solving.

Recommendations

Based on the conclusions and implications as stated above, researchers submit several recommendations with the hope of being considered in improving teachers' skills in compiling teaching materials that are in accordance with the characteristics and learning needs of visually impaired students.

a. Principals should continue to strive to improve the qualifications and competencies of teachers in understanding, compiling, and implementing various models of teaching materials that are in accordance with the characteristics and learning needs of visually impaired students. This can be done through periodic coaching activities both carried out by the Principal and inviting experts.

b. Teachers should continue to make self-development efforts by participating in various activities related to the preparation of various models of teaching materials and carrying out various learning innovations. This can be done through seminar activities, reading source books, or other relevant activities.

c. For subsequent researchers who are interested in conducting studies on the use of various models of teaching materials for visually impaired learners, it is recommended to conduct research with a wider subject and area, diverse subjects, and more complex research methods and techniques.

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