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Development of Sipejar Content with Accessibility of Students with Special Needs in Coursesassessment of Children with Special Needs

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Abstrak: Mata kuliah Asesmen Anak Berkebutuhan Khusus merupakan salah satu mata kuliah wajib dan krusial bagi peserta didik pendidikan luar biasa. Sejauh ini Pengembangan Desain Pembelajaran dan objek pembelajaran belum mengakomodasi siswa berkebutuhan khusus khususnya siswa. Oleh karena itu, penelitian ini akan mengembangkan konten yang mewadahi siswa tunarungu dengan konten berbasis pembelajaran mikro. Pengembangan konten pembelajaran mikro dilakukan melalui serangkaian tahapan penelitian dan pengembangan. Desain pengembangan yang digunakan adalah model pengembangan Davidson-Shiver dan Rasmussen. Secara umum model Davidson-Shiver dan Rasmussen merupakan metode pengembangan yang mempunyai karakteristik dominan dalam pengembangan berbasis web. Penelitian ini akan menghasilkan konten pengajaran pada Mata Kuliah Asesmen Anak Berkebutuhan Khusus Ramah Disabilitas. Dari hasil diperoleh rincian konten yang dibutuhkan sebagai berikut: Buku Teks 96.18%, PPT 95.54%, Ebook 94.90%, Video 91.72%, Video Podcast 63.69%, Audio Podcast 33.76% dan Audiobook 22.93%. Jadi dapat disimpulkan bahwa konten yang dibutuhkan lebih banyak adalah Buku Teks dan PPT atau Slide Presentasi.

Kata Kunci : Asesmen Anak Berkebutuhan Khusus; Pembelajaran Mikro

Abstract: The Assessment Course for Children with Special Needs is one of the compulsory and crucial courses for special education students. So far the Development of Learning Design and learning objects has not accommodated students with special needs, especially students. Therefore, this research will develop content that accommodates students who have hearing impairments with micro-learning-based content. The development of micro learning content is carried out through a series of stages of research and development. The development design used was the Davidson-Shiver and Rasmussen development model. In general, the Davidson-Shiver and Rasmussen models are development methods that have dominant characteristics in web-based development. This research will produce teaching content in the Disability-friendly Assessment of Children with Special Needs Course. From the results obtained the details of the content needed as follows: Textbook 96.18%, PPT 95.54%, Ebook 94.90%, Video 91.72%, Video Podcast 63.69%, Audio Podcast 33.76% and Audiobook 22.93%. So it can be concluded that more content is needed is Textbooks and PPT or Presentation Slides.

Keywords: Assessment of Children with Special Needs; Micro Learning

INTRODUCTION

Assessment of Children with Special Needs is one of the subjects that must be taken by Students of the Foreign Education Study Program in all universities in Indonesia. This course provides insight into the basic concepts of assessment in ABK education, the scope of ABK assessment, techniques and procedures for preparing assessment instruments, and child development milestones. Furthermore, this course provides opportunities for students to compile grids and instruments for Academic and Development Assessment, collaborate with a team of experts to carry out ABK assessments, analyze assessment results and compile learning programs based on assessment results. State University of Malang has more than 38 Students with Special Needs spread across 8 Faculties. Specifically, the Special Education Study Program has

no less than 11 active students with special needs. The characteristics of students with special needs generally include students with visual impairments and hearing impairments. Devraj and Samsilah Roslan (2006) identified that students with special needs need a different teaching and learning approach from regular students. Students with special needs are divided into visual impairment, hearing problems and learning disabilities (Devraj & Samsilah, 2006). According to Jamila (2005), students with special needs differ in terms of mental characteristics, sensory abilities, communication skills, social behavior and physical characteristics. Therefore, special attention must be paid to facilitating their learning in order to develop their potential in participating in face-to-face or online learning. Students with hearing loss find learning challenging and this can lead to social isolation. Not

being able to interact with other students can affect the learning process and cause them to not be able to learn effectively. Doyle (2002) says that the importance of hearing is often underestimated because it is an invisible disability.

State University of Malang has an online learning platform called the Learning Management System (SIPEJAR). Some of the learning features provided for accessibility of students with disabilities are video recording and voice recording. Students with visual disabilities can record sound during discussion activities in the sipejar. Conversely, students with speech hearing disabilities can take advantage of the video recording feature in discussion activities.

So far, the learning process and the development of learning objects in the course have not considered the needs of students who have sensory barriers (vision and hearing). Virtual face-to-face learning at State University of Malang can be done by utilizing the Learning Management System (LMS), namely SIPEJAR which is used in facilitating synchronous online and asynchronous online learning. Various problems are experienced by students with special needs with sensory problems when accessing SIPEJAR. Some activities are not yet fully usable by students with visual and hearing impairments. Problems that are often encountered by students with visual impairments are access to discussion forums, navigation of sipejar pages, access to text materials, power points, and others. Problems that are often encountered by students with hearing impairments include access to video conference communication, access to video-audio materials, and assignments with audio introductions. Therefore, presenting a material or content in SIPEJAR becomes a challenge that must be a concern, how to find a strategy that is a solution in presenting good, interesting and easy to understand content for students in the midst of many distractions that can divert focus while learning. Microlearning is a new approach that can help learners achieve learning goals carried out online through LMS (SIPEJAR).

In the global era, all activities are connected without borders through ICT support that is increasingly fast and sophisticated. Everyone is interconnected with each other without being limited by place, time, and language. (Lindquist & Long, 2011) states that the impact of technology use has resulted in a generation with characteristics they call “digital natives”, a term to describe individuals who grew up with information technology. One of the ICT technologies developed for learning is e-learning. E-learning is learning using information and communication technology media, where teaching materials, learning media, tutoring, and learning evaluation are carried out remotely.

Micro Learning is an approach that focuses on a single concept that utilizes multisensory and multimodality in a focused short time (Dolasinski, 2020).

Wen and Zhang (2018) investigate “microlearning,” using technology for implementation. Mohammed et al. (2018) found that the learning ability of students increased by 18% compared to traditional methods when using micro learning as a learning method. Micro learning is used as a strategy in designing learning content into small and focused segments. The content in question is in the form of learning objects used in the SIPEJAR LMS.

Microlearning is predicted to help students achieve learning goals in e-learning. Microlearning consists of two words (Micro: small size) and (Learning: learning activities) so that it can be interpreted as learning activities on a small scale. Microlearning is a learning approach that conveys specific information in diverse and in-depth ways (Maddox, 2018) With Microlearning, learning content with a fairly long duration is presented into short videos with a duration of 1-3 minutes, it can even be used as just one infographic. This is done to reduce the cognitive overload of students so that the content is easy to absorb and remember. Presentation with microlearning strategies produces short, practical and accessible content types anytime and anywhere when needed. In micro learning, utilizing multisensory / multimodality information delivery provides opportunities for learners to understand what they are learning from all types of learning modalities provided. Karvounidis et al. (2014) argue that different conditions or different content should encourage different learning objects. They determined there was a significant correlation between learner activity and interaction with various platforms. Mason (2018) argues that based on several studies, multisensory/multimodality learning improves understanding and retention.

Based on this view, researchers are encouraged to develop micro-learning content in lectures with the topic “Development of Teaching Content with Accessibility of Students with Special Needs in the Assessment Course for Children with Special Needs”. With the development of micro-learning-based learning content, it can help and increase the effectiveness of learning for students with sensory barriers. Where the learning objects developed are further strengthened based on the principle of Universal Design Learning to meet the learning needs of Students with Special Needs.

METHOD

In this development, the development method chosen is the Davidson-Shiver and Rasmussen development models. In general, the Davidson-Shiver and Rasmussen models are development methods that have dominant characteristics in web-based product development. The steps of the Davidson-Shiver and Rasmussen Web-Based Learning Design Development Method include: 1) Analysis, 2) Evaluation Plan, 3)

Concurrent Design which includes design, system development, trial and Formative Implementation and evaluation. This phase can be done many times up to an indefinite time limit; 4) Full implementation; 5) Summative Evaluation and Research.

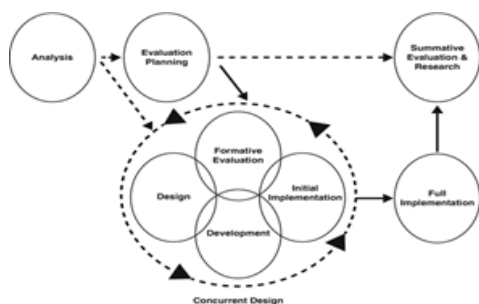


Figure 1. Davidson-Shiver and Rasmussen's Methode

In figure 1 explains about Davidson-Shiver and Rasmussen's development methods in detail can be described in the following activity steps:

1) Analysis

The first stage in this method is analysis, in the chart above the analysis process influences the design process, although the analysis process and the design process are not successive stages.

2) Evaluation Plan

In the evaluation planning process, developers determine formative evaluation instruments at the same time. The evaluation design process has an impact on the summative evaluation process. In this stage is a stage related to formative evaluation and summative evaluation.

3) Concurrent Design

Simultaneous design is a circular process that interlocks with each other. In simultaneous design, four interrelated stages are combined namely activity design, interface design, development, implementation trials, and formative evaluation.

4) Thorough Implementation

Comprehensive implementation can be implemented when expert input on system weaknesses has been corrected. The main aspects in a thorough implementation are facilities and management. This stage includes updates, system improvements, and management of learning in the developed MOOC class.

5) Summative Evaluation

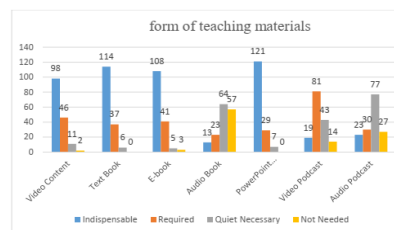
The final stage of this development model is a summative evaluation that is carried out when the product has been implemented during the specified time.

This study involved 157 students of the Department of Special Education, State University of Malang who had taken the Assessment of Children with Special Needs course.

Finding And Discussion

Finding

Indicators of the needs analysis of the development of sipejar content with accessibility of students with special needs in the assessment course of children with special needs include the form of interesting teaching materials, the video format of sipejar content, the duration of the sipejar content video, and accessibility in the sipejar content. The results of the analysis of the needs of the content development of the assessment course are as follows:



Sipejar Content	Indispensable		Required		Quiet Necessary		Not Needed		Total	
	amount	%	amount	%	amount	%	amount	%	amount	%
Video Content	98	62.42%	46	29.30%	11	7.01%	2	1.27%	157	100%
Text Book	114	72.61%	37	23.57%	6	3.82%	0	0.00%	157	100%
E-book	108	68.79%	41	26.11%	5	3.18%	3	1.91%	157	100%
Audio Book	13	8.28%	23	14.65%	64	40.76%	57	36.31%	157	100%
PowerPoint (Presentation Slide)	121	77.07%	29	18.47%	7	4.46%	0	0.00%	157	100%
Video Podcast	19	12.10%	81	51.59%	43	27.39%	14	8.92%	157	100%
Audio Podcast	23	14.65%	30	19.11%	77	49.04%	27	17.20%	157	100%

Figure 2. Form of Teaching Materials

Based on the data in Figure 2, students stated that the need for video content was 62.42% Needed, 29.30% Needed, 7.01% Quite Necessary, and 1.27% Not Needed. Student needs for textbooks on teaching content are 72.61% Indispensable, 23.57% Required, 3.82% Quite Necessary, and 0.00% Not Needed. Student needs for E-Books in teaching content are 68.79% Indispensable, 26.11% Needed, 3.18% Quite Necessary, and 1.91% Not Needed. Student needs for AudioBooks in teaching content are 8.28% Indispensable, 14.65% Required, 40.76% Quite Necessary, and 36.31% Not Needed.

Student needs for PowerPoint (Presentation Slides) in the teaching content are 77.07% Indispensable, 18.47% Required, 4.46% Quite Necessary, and 0.00% Not Needed. Student needs for Video Podcasts in teaching content are 12.10% Indispensable, 51.59% Required, 27.39% Quite Necessary, and 8.92% Not Needed. Student needs for Audio Podcasts in the teaching content are 14.65% Needed, 19.11% Needed, 49.04% Quite Necessary, and 17.20% Not Needed.

The form of teaching materials can be in the form of printed teaching materials and non-printed teaching materials. Digital teaching materials are examples of non-printed teaching materials. In developing digital teaching materials, we can take advantage of various forms of virtual technology so that it becomes a mix of virtual technology. The use of virtual technology

offers promise in fixing previous educational problems. Everything that previously could not be shown well to students can be shown in real life through virtual technology. The Moodle LMS platform is one of the platforms that can support the development of digital teaching materials. An LMS is a platform for administrating, documenting, and delivering e-learning content, offering enrolled students a large number of courses with customizable capabilities. Moodle is an open source learning platform for creating personalized learning environments. It provides flexible tools to support blended and online learning. Moodle can be successfully used both in the educational system, and in private or public institutions. The first version of MOODLE (Modular Object-Oriented Dynamic Learning Environment) was written and designed by Martin Dougiamas, who has a bachelor’s degree in computer science and education. Due to this background, he developed tools, which meet technological and pedagogical requirements. Cloud-based Moodle media can be accessed through a computer or smartphone connected to the internet. As the standard Moodle does not consider learner differences and treats all learners equally, to accommodate learners’ learning styles Visual, Auditory or Kinesthetic and Global or Sequential; It needs to be adjusted. The video format of the sipejar content that students are interested in is landscape 16:9 (e.g. Youtube. The percentage of student video formats that students want can be seen in Figure 3.

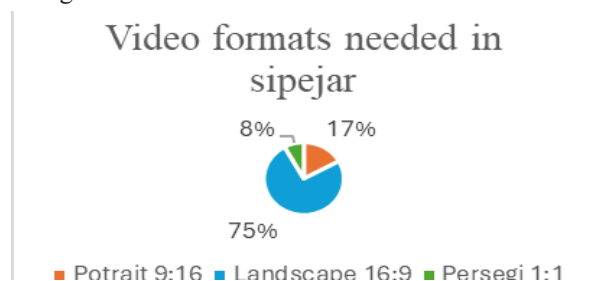


Figure 3. Video Formats Needed in Sipejar

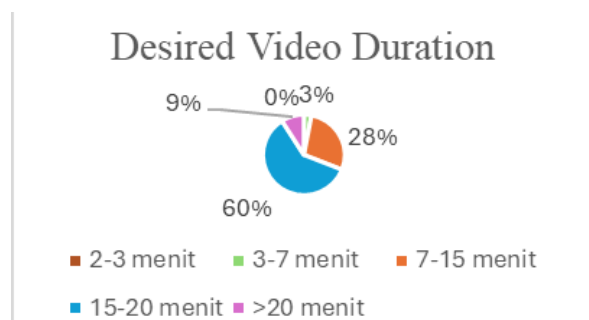


Figure 4. Desired Video Duration

A total of 44 students wanted the video in the sipejar to be aired with a duration of 7-15 minutes. 95 students wanted the video in Sipejar to be shown with a duration of 15-20 minutes. While 14 students want the video in the sipejar to be aired with a duration of > 20

minutes. The length of the video is explained in more detail in the diagram in figure 4.

Discussion

Accessibility for students with disabilities in teaching content is a crucial facility in learning for all students. Students with visual disabilities need more help. They are limited in the perception of space. The condition of visual impairment in a person can cause limitations on several main aspects. Lowenfeld (Scholl: 1986) suggests that there are three serious limitations to the development of cognitive function of blind people, namely (1) in the scope and variety of experiences, (2) the ability to move and move places in their environment, and (3) interaction with their environment. Generally, they have difficulty controlling the environment and controlling their own position because they do not have the perception of space outside the one they occupy. Deaf students perform well in sketching/designing. A deaf person basically has the same physical characteristics as a normal person. The ability of deaf intelligence is the same as normal people, but because of limited hearing to obtain information which results in the development of intelligence which is ultimately slow. Deaf people cannot be beaten flat if the motivation to learn for the deaf is low, many also have a very high learning drive, but it is deaf people who are aware and understand the importance of learning to make life better. For that they also need the same guidance and educational services as normal people. Therefore, it is necessary to provide encouragement or motivation to the deaf to develop their potential. The problem of deaf people in learning motivation is technical such as how to communicate during the learning process.

As part of the academic community in higher education, students with disabilities have unique and diverse needs (Wolf, 2001). Perceived learning needs can be seen based on the visibility function of students with disabilities, but some students with disabilities show learning needs that are more hidden as a result of disabilities (Smart, 2001). In heterogeneous classes, Woodhams and Danieli (2000) suggest that heterogeneity of people with disabilities itself tends to be perceived more as a matter of individual differences than an aspect of diversity.

Based on the results of the analysis of student needs in learning services at SIPEJAR, researchers use several learning media that are accessible and easily accessible to students. At each meeting, RPS has been prepared and the material is adjusted to the needs of each meeting. This study produced an e-book which contains material related to the concept, scope, deeper understanding of assessment and identification of children with special needs. At each meeting at SIPEJAR, a concept map is provided so that students understand what will be discussed during one meeting.

For students with visual impairments or blind people can access learning with audio books so that blind students can understand the content of the material. Video of learning with sign language interpreters shown to students with hearing impairments

CONCLUSION

The content will be developed with a micro learning approach and presented with various media formats namely video, audio books, audio, and presentation slides where learning objects are developed to accommodate students with sensory problems (hearing and vision barriers). Where the results of the development are expected to facilitate learning for students with special needs (MBK) in carrying out learning using the SIPEJAR platform. Deaf people cannot be beaten flat if the motivation to learn for the deaf is low, many also have a very high learning drive, but it is deaf people who are aware and understand the importance of learning to make life better. For that they also need the same guidance and educational services as normal people. Therefore, it is necessary to provide encouragement or motivation to the deaf to develop their potential. The problem of deaf people in learning motivation is technical such as how to communicate during the learning process.

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