

Learning Difficulties for Retarded Students: Case Studies on Biology Subjects in High School

1st Lissa

*Biology Education Departmen,
Universitas Wiralodra*
Jl. Ir. H. Djuanda Km.03, Indramayu,
Indonesia
Lissa@unwir.ac.id

2nd I B Minarti

*Education Biology Department,
University of PGRI Semarang*
Jl. Sidodadi timur No. 24- Dr. Cipto,
Semarang 40154, Indonesia

3rd N Subkhi

*Biology Education Departmen,
Universitas Wiralodra*
Jl. Ir. H. Djuanda Km.03, Indramayu,
Indonesia

4th Nerih

*Biology Education Departmen,
Universitas Wiralodra*
Jl. Ir. H. Djuanda Km.03, Indramayu,
Indonesia

Abstract—In this paper, we analyse the internal and external factors that cause learning difficulties for students with mental retardation. The research subjects were 7 mentally retarded students, to carry out this study the observation sheet was designed to observe students while at school, questionnaire for students and teachers, and interview sheets for students, teachers and parents. The results obtained revealed that internal factors such as motivation and interest had no effect as well as for readiness and attention, while the external factor, which is the school and family environment, influences. So it can be concluded that what affects the learning biology difficulties of retarded students is external factors.

Keywords—*Learning, retarded, Biology, High School*

I. INTRODUCTION

Mental retardation is a mental disorder that can inhibit cognitive and psychomotor functions of a person [1]. The development and growth of mental retardation experience physical or intellectual mental-intellectual social or emotional disorders or deviations, so they need special services [2]. That is due to factors, the first genetic factors such as Down syndrome, William syndrome, Fragile X syndrome and Prader-Willi syndrome, and secondly environmental factors that influence brain development [3]. The limitations of mental retardation have caused it to be slow in responding to stimuli provided by the environment to it, including in class learning [4]. Developmental students need special education, the learning environment plays a role in giving positive responses that support students through the learning process. Parents and teachers are included in the learning environment [5].

Biology generally has an abstract concept. There are many drawings and diagrams to explain the concept, so it needs analytical skills, predictions, and the ability to draw conclusions to be able to understand them [6]. While

mentally retarded students have mental disabilities that cause Intelligence Quotient (IQ) and psychomotor limited [7]. Learning biology that is not varied and full of concepts adds to the boredom of students in the classroom. And that is no different when students practice in the laboratory, students can not be controlled because of the many psychomotor demanded by the teacher [8].

The repetition method is an effective method applied for teaching mentally disabled students' concepts, because it makes them remember better [9]. Students' thinking skills cannot be determined by one learning stage, but stages are required [10]. Learning biology requires careful thought, because many abstract concepts and processes [11]. Students get misconceptions when learning abstract concepts [12]. While mentally retarded children find it difficult to focus on something, so the learning outcomes are below standard [7]. The results of interviews with teachers in schools stated that biology is a subject that is not attractive to retarded students because many concepts are abstract and boring, and that causes their biology learning outcomes to be low.

Intellectual disability in mentally retarded students makes it hampered in activities, including when studying [13]. According to the American Psychiatric Association (APA) [14], Mental retardation is classified into four: first, mild (IQ <70) in this category students are able to be educated, trained and can take care of themselves, secondly, moderate (IQ 35-50), students can be educated and trained but physical abnormalities have emerged as innate, third, Severe (IQ 20-35), students need guarding because they cannot take care of themselves, fourth, profound (IQ > 20) has serious disabilities, both physical and intelligence. Learning difficulties in retarded students vary depending on the IQ category of the student. Student IQ levels are inversely proportional to student learning difficulties, low IQ has high learning difficulties, and vice

versa [15]. Learning difficulties are multidimensional syndromes that manifest as specific learning difficulties, hyperactivity or distractibility and emotional problems [3]. Difficulties in learning mental retardation are divided into difficulties in concept, language and arithmetic [15]. Based on research on biology learning difficulties, it is found that evolution is a concept that is not well understood by most students [16]. Students have difficulty interpreting diagrams due to lack of basic knowledge and incompetent in connecting between basic knowledge, spatial ability and ability to remember [11]. Students have difficulty asking questions in class when finding concepts that are not of interest and are abstract [17]. Difficulty in understanding cell concepts due to conventional classroom teaching methods [6]. These results, concluded the difficulty of learning biology is a concept. Research to analyze the factors of learning difficulties in biology in retarded students has not been done much.

Difficulty learning for mentally retarded students is a complex problem, not only about cognitive limitations, but also about mental-psychological limitations [18]. The difficulty of learning in this study is the difficulty of the concept. Factors causing learning difficulties for mentally retarded students, first internal factors namely interest and motivation, readiness and attention. the two external factors are the school environment [19]. Motivation is the drive to do something that comes from within the individual and from outside [20]. Internal motivation is stronger than external motivation because it is not influenced by anything outside of him [18]. When mentally retarded students feel comfortable and facilitated with the environment, it will have good learning motivation [21]. Learning readiness can be interpreted as an attitude of being ready to receive material, so students before starting learning have prepared both the material and the learning equipment. Attention is defined as focus when learning takes place, while mentally retarded students find it difficult to focus on one point. School environment, including the learning process, teachers, peers and other environments [5].

II. METHOD

The sample of this study were 7 mentally retarded students, and 1 teacher. Students come from Indramayu district with an age range of 17-18 years, of which 4 students are female and 3 male students. IQ samples of mentally retarded students at the "mild" and "moderate" levels who are able to be educated. Sampling technique with "purposive sampling" with the aim of getting retarded students who have homogeneous IQ levels, so that it can describe the difficulties experienced by one category. The teacher used as the research sample is a mentally retarded classroom teacher. The sample used in this study is small in size, but for qualitative research sample size is not a problem because the rule of sampling

becomes sufficient when data saturation is achieved through repetition of themes, issues, and stories from the interviewees [22].

In this study we used instruments, the first observation sheet was used to observe students during the learning process. This observation sheet contains 6 statements about the factors of student learning difficulties. The researcher acts directly as an observer during the study, with the aim of being able to add questions if needed [23]. To validate the data, the researcher added a second instrument, which was a questionnaire in the form of an open questionnaire and was given to the teacher. Questionnaire refers to the measurement scale according to Likert. In addition, the researcher also uses the interview sheet as the third instrument. Interview sheets that are used are structured types, in which questions have been prepared by researchers [22]. During the research, the researcher recorded important events through field notes. And the field notes are used as the fourth instrument in the study. The use of diverse instruments as a research effort to ensure the validity and reliability of research data. Instrument triangulation can increase the credibility of research data [23].

This research is included in qualitative research with case study method [22]. analyze the factors of learning disability biology for mentally disabled students in schools for students with special needs in Indramayu, Indonesia. Difficulty factors analyzed are internal factors consisting of motivation, learning readiness and attention. External factors such as school environment [19]. The study was conducted for 1 month. At school researchers observe the state of the school, social interaction, and the learning process. Observations in class, researchers observe during two meetings, researchers act as observers. Teachers conduct learning management as usual, without interference from researchers, so students do not feel being observed by strangers. After learning is finished, students and teachers will be interviewed separately by researchers to ask the same questions. And teachers will also be asked to fill out questionnaires as data reinforcement. During the research, the researcher must have the sharpness of the analysis of extraordinary events in the school related to the focus of the study, then he made a field note.

Data in this study were analyzed using descriptive statistics in the form of scoring and percentage. Data visualization uses Diagrams and Tables to facilitate interpretation.

III. RESULTS AND DISCUSSION

The learning difficulties of retarded students are not only due to intelligence factors, but also other factors such as motivation, learning readiness and the environment [1]. The results of the study that illustrate these factors are explained in Figure 1 and Table I.

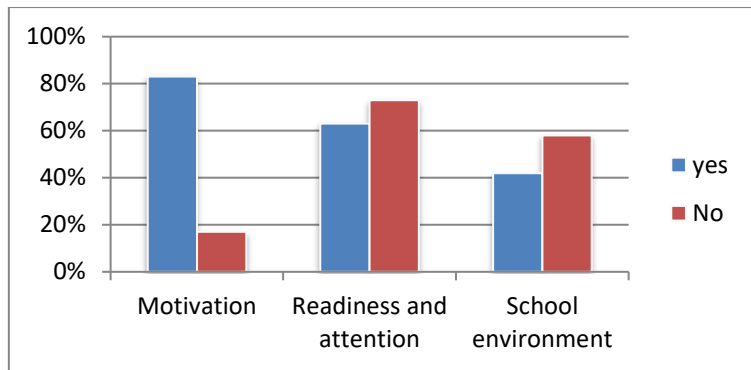


Fig. 1. Observation Results of Learning Difficulties in Biology of Students with Developmental Disabilities

TABLE I. RESULTS OF QUESTIONNAIRE DIFFICULTIES IN LEARNING BIOLOGY

No	Indicators	Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree
1	Motivation	75%	12,50%	4,17%	8,33%
2	Readiness and attention	33,33%	16,67%	38,89%	11,11%
3	School Environment	44,44%	22,22%	11,11%	22,22%

Figure 1 explains that internal factors do not affect learning difficulties, while external factors vice versa. The percentage of motivation of 83% shows that retarded students have high motivation during biology learning. Thus motivation does not affect the learning difficulties of mentally disabled students [8]. Motivation is defined as

intentional involvement in cognitive activities which play an important part in the learning process, determine what part we choose to study, and how well we study the information provided [20]. The percentage of motivation is explained in more detail through Figure 1.

TABLE II. OBSERVATION RESULTS LEARNING DIFFICULTIES ASPECTS OF INTEREST AND MOTIVATION

No	Question	Percentage
1	Always pay attention to the teacher during learning	67%
2	already in class before learning starts (on time)	100%

The motivational data in Table II states 67% in the question 1. always pay attention during learning and 100% on the question 2. already in class before learning starts (on time). This was confirmed by the results of the teacher's questionnaire which stated 75% strongly agreed with the positive statement. During the learning process not all students focus on the teacher's explanation, because mentally disabled students cannot focus on one incident / event [7]. 33% of mentally disabled students do their own activities. Mental students are capable of educating, are more easily directed and guided while learning, therefore their motivation is quite high [15].

Student learning is driven by mental strength. Mental strength is in the form of desires and attention, sometimes there are desires that activate, move, channel and direct

the attitudes and behavior of individuals in learning [24]. Discipline of students, timeliness of class entry is very good, this is due to supporting factors from parents. The role of parents as a factor in the learning environment is very large for mentally retarded students because they need help and motivation from them more than students in general [25]. Developmental retardation students' motivation in biology is relatively low, the teacher stated through interviews. Biology is a thematic subject so it is rarely given separately in class. The intensity of a student's motivation will determine the level of learning achievement [18]. Even so, as the research progressed, researchers noticed that there was a high level of curiosity that students showed when learning biology.

TABLE III. OBSERVATION RESULTS LEARNING DIFFICULTIES IN THE ASPECT OF READINESS AND ATTENTION

No	Question	Percentage
1	Difficulty in understanding the material while learning (Cannot answer when the teacher asks about the material)	25%
2	Already preparing for learning tools in class	100%

Student readiness and attention are important for the learning process [26]. 63% is a high score, meaning aspects of readiness and attention do not affect learning difficulties. Students in general have good learning readiness. The condition of students who are ready to receive lessons will try to respond to questions given by the teacher. Readiness is the overall condition of the individual that makes him ready to respond or answer in a certain way towards the situation [2].

The limited intelligence causes mental retardation students have difficulty when receiving material and answering questions from the teacher. [27] stated that with

good learning readiness, students can actively participate in learning and easily absorb lessons delivered when in the learning process. For learning readiness that is assisted by parents, retarded students get high scores while those relating to intelligence and themselves have low scores. This is consistent with the results of the teacher questionnaire that is 38.89% did not agree to the positive statement that was asked. Learning readiness without the help of parents has an influence on student learning difficulties but will have no effect if assisted by parents. Learning assistance from parents is needed for the successful learning of mentally retarded students [25].

TABLE IV. OBSERVATION RESULTS OF LEARNING DIFFICULTIES ASPECTS OF SCHOOL ENVIRONMENT

No	Question	Percentage
1	Interact with other students during breaks	83%
2	Bring textbooks	0%

The learning environment is a medium for gaining knowledge, understanding, skills and values that lead to maturity [28]. While the school environment itself is the second place of education after the family, where a child will get a lot of new things that are not obtained in the family environment, such as the ability to communicate with teachers and other friends while in school [5]. The school environment is one of the factors affecting the learning difficulties of retarded students which is stated by 42%, and the results of the questionnaire teachers who responded strongly agreed to a positive statement of 44.44%. Even so, for statements about socialization and interaction with others, a high score of 83% means that mentally disabled students interact well.

The characteristics of retarded students who differ from one student to another make their interaction abilities different. At school, students socialize with other students at rest, however the vocabulary of words that cause less is only among students who can understand it [3]. Based on Table 4, it was found that schools did not prepare biology books for mentally retarded students. The interview results stated that the book has an important role for mentally retarded students for their learning process. The development of students' skills and knowledge can be optimized through the textbook handbook. Textbooks are considered as the heart of educational activities [29]. Short-term memory skills possessed by retarded students cause students to forget, it is in agreement with [2] saying that mentally retarded people are mentally retarded, have a lower intelligence development (IQ) and experience difficulties in the learning process and social adaptation, lower development (IQ) causes subjects to find it difficult to remember something that is abstract and non-repetitive. So the book has a positive role for mentally retarded students.

IV. CONCLUSION

The learning difficulties of retarded students are influenced by internal factors in the form of aspects of learning readiness and attention that is not with the help of parents. As for learning readiness and attention that relies on the help of parents and aspects of motivation and

interest are not included in the factors of student learning difficulties. External factors, the school environment is a factor that affects the learning difficulties of retarded students.

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