

Problems of Automotive Vocational Teaching-Learning Process for Students with Mild Intellectual Disability (MID)

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Abstract

Students with Mild Intellectual Disability is given automotive vocational training in the hopes that it will grow as a useful skill that will be beneficial for them in the future. This research was conducted to: (1) describe the problems in creating course outline for automotive practice for students with Mild Intellectual Disability (hereafter will be referred as MID), (2) describe the problems that arise in teaching automotive practice for students with MID, (3) describe the problems that arise in grading the students with MID. This research falls within the qualitative research category with case study design. The data were collected by way of observation, interview, and documentation study. Data trustworthiness was achieved by conducting triangulation. The data were analyzed by way of reducing data, presenting data, and drawing conclusion. The research results show that there are problems in the process of teaching automotive practice for students with MID. The problems are as follows: lesson plans of vocational automotive classes have not implemented K13 yet and the objectives of vocational automotive teaching in the syllabus are not specific as per ABCD model. The process of vocational teaching for students with MID still has a lot of issues, especially when it comes to the core of the teaching itself. Such issues arise due to the fact that job sheets are not yet available, along with the learning media as well as the correct strategies in teaching the students with MID. Additionally, the grading system for students with MID is still not authentic and is adjusted based on the characteristics of each student.

Keywords: *automotive practice, problems, teaching-learning process, grading, lesson plans, mild intellectual disability*

1. Introduction

People with disabilities often get discriminated and are still deeply stigmatized, including people with Intellectual Disability (also formerly termed Mental Retardation). They are considered as unproductive citizens who cannot carry out their tasks and responsibilities, and thus their rights are often times get ignored. As a result, they feel that they have very little access to education, vacancies, trainings, political participation and social life. All of this are the reason most of them live below the poverty line [1].

Automotive sector is known as the driving force for economic growth in virtually every country in the world. In the Indonesia alone, this industry sector accounts for roughly 3 million jobs in Automotive sector [2]. The high demand for manpower in automotive sector surely can be seen as an opportunity for people with Intellectual Disability to get a job.

The number of people with Intellectual Disability gets higher and higher every year. In Special Region of Yogyakarta, Indonesia, people with Intellectual Disability makes up for 1.855 out of 9.233 disabled citizens as of second semester in 2016. Meanwhile, in the second semester of 2017, the number rose quite significantly to 2.013/9.557 citizens. In the second semester of 2018, people with Intellectual Disability accounts for 2.151/9.599 of disabled citizens [3].

Mild Intellectual Disability (hereafter will be referred as MID) is an impairment in social skills, adaptive skills, and cognitive skills, often times caused by low Intelligence Quotient (IQ)

between 55 - 70 [4]. The physical symptoms of people with MID are late physical growth than kids their age and they cannot do their school works well. Despite being behind academically, but people with MID have the potentials to do practical jobs quite well [5].

In the effort to reduce the aforementioned issues, the Indonesian government instigated vocational teaching. Vocational education (VE) can be instigated in schools for people with special needs, also known as Extraordinary School (ES) [6]. VE is intended to nurture students developing certain skills that match with the jobs they hope to apply later on [7]. However, vocational education for people with MID go quite differently. For instance, the purpose of vocational education for people with MID is intended to strengthen and improve students with special needs or disabilities so that those skills can help them to become independent, and not dependent on other people. These skills can be useful for when they apply for a job in the future [8], [9]. Even though vocational education for people with MID is intended as a way to provide them with useful skills, but the whole system around it still needs to be evaluated deeply considering vocational education can open windows of opportunity for people with MID to get a job.

One of vocational skills that can be taught to students with MID in SMALB is automotive [9]. Automotive vocational learning for students with MID will provide skills in inspecting, maintenance, and repairing mild vehicles, especially motorcycles [10]. Add to that not all school works or assignments in automotive skills class can actually be taught like they are in regular vocational high schools. Only a few of them can fall within that category, including functional skills. This is because automotive vocational skills that are taught must be functional in the sense that they must be adjusted according to the objectives of the teaching-learning itself along with the characteristics of the students with MID [11].

The vocational learning process for students with MID is quite different with normal students who go to vocational schools. During practice teaching, students with MID must be guided individually and during on-the-job training [12]. Moreover, the learning process must also be adjusted according to the characteristics of each student along with the purpose of the teaching itself.

The process of vocational learning consists of the following things: lesson plans; actual teaching process; evaluation and grading; supervision. Lesson plans are the early step in the learning process. Planning includes creating a syllabus and lesson plan [also known as *Rencana Pelaksanaan Pembelajaran* (abbreviated as RPP in Bahasa Indonesia)]. The vocational teaching-learning process involves formulating lesson plans, conducting the teaching-learning activity in classes, grading of student evaluation, and supervision. Creating lesson plans is the early stage in the teaching-learning process. When planning teaching-learning activity, it usually includes: composing a syllabus and a lesson plan. Syllabi are the specification of content course instructions that list all the materials that will be taught to students for the semester. It is a useful tool to communicate with students about what they will learn for the semester [13]. The functions of syllabi are as a contract, a permanent record, as well as a learning tool [14]. Lesson plans, on the other hand, are the descendant of syllabi that are even more detailed than syllabi. A lesson plan is specific to what materials will be taught for students on that day, often times only covers one specific topic to be taught. This is to make the teaching-learning process even more effective [15]. Lesson planning encompasses 10 aspects. They are (1) lesson plan identity, (2) core competency, (3) basic competency, (4) indicator of competence, (5), teaching-learning objectives, (6) teaching materials, (7) teaching model or method, (8) learning media or learning tool and source of materials, (9) teaching and learning activity, (10) assessment, remedial, and enrichment [16].

Teaching activity for students with MID in SMALB can be conducted should the following requirements be fulfilled: (1) there should be at least 8 students in a classroom, (2) teachers' responsibilities include core duties such as creating lesson plans, teaching in a class, grading exams and assignments, supervising and training students, as well as giving extra credits, (3)

there should be textbooks and other learning media, and (4) class organizing. Diving deeper into that, the teaching-learning process is the direct implementation of the lesson plan. It involves introduction, core activity, and closing activity [17].

Grading for automotive practice classes is done in order to measure how far students are actually able to get from what they have learned [18]. For all intents and purposes, grading should be able to paint a full picture about the capability or aptitude of students with MID, starting from skills, knowledge, and behavior. Other kind of tests and evaluations are also needed in order to measure students' competencies as well. It is unjust that students who suffer from Mild Intellectual Disability are only being granted to sit in a test that measure their IQs. In reality, to grade students with MID in automotive practice classes, teachers can make use of performance tests, portfolios, true/false tests, one-on-one assessments, IEP-linked evidence of progress, and even checklists as well as multiple-choice tests that provide three optional answers [19], [17].

What is truly happening in the world, however, vocational teaching for students with MID still arise a few issues to the point that an investigation and/or research is needed. Researches related to vocational teaching for students with MID are as follows: Challenges for teachers to come up with appropriate and correct lesson plans and how to actually conduct classes for students with special needs, challenges in conducting horticulture vocational teaching for autistic students, and teaching outline for vocational training in making leather sandals for students with MID [20]. Out of all the existing studies, none of them has analyzed the problems of automotive vocational teaching for students with MID. There are no studies that describe the problems of conducting automotive vocational classes for students with MID nor are there studies that analyze the problems in grading automotive vocational classes for students with MID. Class supervision is not included as one of the purposes of this study due to the fact that supervision is done by the headmaster or other supervisors that do not directly involved in the teaching process between the instructor and the students in the car shop or laboratory.

2. Methodology

This study falls within the qualitative research category that employs case study design. This study took place in *Sekolah Luar Biasa Negeri (SLBN) Pembina Yogyakarta* in August 2019. The key informants were three students, both of whom suffer from Mild Intellectual Disability, from Grade 11 along with two instructors of automotive vocational training in one of SLBNs in the Special Region of Yogyakarta. The data were collected through interviews, observation, and documentation study. The researcher also employed triangulation to seek data validation. The data were then analyzed through data reduction, data presentation, and the drawing of conclusion.

3. Results and Analysis

After careful examination on the data and thorough study, data reduction took place by picking the most important data that match the certain components being analyzed. Only then conclusion was drawn. The conclusion results can be seen in Table 1.

Table 1. Displays the data about the obstacles in conducting automotive practice classes for students with Mild Intellectual Disability

No	Components Analyzed	Analysis Results
1.	Lesson Plans for Automotive Practice Classes for Students with Mild Intellectual Disability	a. Not all skills that the government recommends can be taught to students with Mild Intellectual Disability b. The teaching objectives are not specific
2.	The Teaching-learning Process of Automotive Practice Classes for Students with Mild Intellectual	a. There are no job sheets b. Students do not show interest in reading automotive textbooks

	Disability	<ul style="list-style-type: none"> c. Students still have difficulty to operate measuring tools d. Students still have difficulty to interpret the results from measuring tools e. Teachers are not able to manage lab works optimally f. They have very little learning media
3.	Grading of Students Evaluation in Automotive Practice Classes	<ul style="list-style-type: none"> a. The questions on the tests have been simplified. However, more pictures are needed to be added. b. Teachers have not implemented authentic grading yet

4. Discussion

4.1. Problems in Creating Lesson Plans for Automotive Practice Classes for Students with Mild Intellectual Disability

Creating lesson plans is the first step in teaching. When one creates a poor lesson plans, then rest assured that the output will also be bad. Many *Sekolah Luar Biasa* (schools for students with special needs) have implemented the 2013 Curriculum (K13) which encompasses a lot more competencies than its predecessor, also known as School Based Curriculum [referred as *Kurikulum Satuan Tingkat Pendidikan* (KTSP) in Indonesia language]. The only problem is automotive vocational classes still use KTSP instead of K13. This conclusion is drawn from the fact that students are still required to wash motorcycles during their lab works whereas such thing has been removed from K13, in Core Competency and Basic Automotive Competency to be exact [17].

The descendant of Core Competence and Basic Competence is a syllabus. The existing syllabi are complete. All subjects come with a syllabus. The syllabus design or content of the syllabus have also encompass all the components of the syllabus itself.

After syllabus, then springs lesson planning. Every syllabus has a lesson plan and pretty much contains complete components. However, the teaching-learning objectives still have not conformed to the conventional format of lesson planning, one of which is the ABCD model (Audience, Behavior, Condition, and Degree). When one uses the ABCD model, the teaching-learning objectives can be more clear and specific, not to mention measurable and observable [21].

Teaching-learning Objectives on Lesson Plan			
Students should be able to carry out maintenance process			
Students	be	able to break down the steps to take care of the battery	
Audience		Behavior	
Supposed Teaching-learning Objectives in Lesson Plan			
Students	be	able to break down the steps to take care of the battery	thoroughly after doing lab works
Audience		Behavior	Degree Condition

4.2. Problems in Automotive Practice Teaching-Learning Process for Students with Mild Intellectual Disability

As can be seen from Table 1, it is clear that there is 11.11% of vehicles that did not pass the emission test. There are several factors that contribute to this: putting the wrong type of fuel in the vehicles; and failure to do regular maintenance. The unmatched values of RON and compression ration caused the gasoline to get burnt by the temperature in the cylinder before it is ignited by the spark plugs in the gas engine [9]. Moreover, the cetane number that does not match the specification also increased opacity production [22]. To find out the correct type of fuel that the vehicle needs, one can read the brochure that comes when purchasing the vehicle.

Every activity mentioned in the lesson plan is carried out well. However, a few problems still arose when it came to the core of the teaching-learning itself. The problems in this teaching-

learning process are as follows: (a) there were no available job sheets, (b) students showed very little interest in reading automotive textbooks, (c) students still encountered difficulty when operating equipment and other measuring tools, (d) students still encountered difficulty to interpret the results of the measuring tools, (e) the teachers were not able to manage the lab works quite well, and (f) the teachers did not utilize learning media during the lab work.

The automotive vocational teaching-learning process did not employ any job sheet whatsoever. Instructor 1 stated that students with Mild Intellectual Disability were able to read, but they found it difficult to interpret the meaning. Furthermore, Student 2 claimed that job sheets had never been used even once during lab works. Job sheets are actually one of the most useful teaching aids in the lab works as they contain detailed instructions about what to obtain when operating a piece of equipment or some sort [23]. Moreover, automotive vocational teaching-learning process only repeat the steps to do certain things so that the students can be competent or skilled in using the tools or doing their jobs. Add to that, the teachers did not always thoroughly guide the students with MID, often times they only acted as a supervisor. Therefore, there should be a paradigm shift or innovation in order to improve job sheets so that students with MID will be able to understand the working procedures on the job sheets.

Automotive textbooks play a major role in the whole automotive vocational teaching-learning process. Teachers should not be the only learning source for students to get to know things. Manual handbooks or textbooks should be accessible for them as well. Unfortunately, the existing textbooks in the car shops are not specifically made for students with MID. Instructor 2 claimed that those textbooks are written using quite big words, not the kind of wordings that would be easily understood by students with MID. This causes students with MID to take quite a long time to catch the information in the books.

Other than that, the books contain black and white pictures instead of colored ones which are not interesting to them. Student 1 claimed that he refused to read the books because those books were hard to understand. The statements uttered by Instructor 2 and Student 3 are understandable considering students with MID in SMALB are indeed the same age as those who go regular vocational high school (also referred as SMK in Bahasa Indonesia). The only difference is that students with MID possess lower intellectual ability that could even be compared to four graders [8]. That is why, simplification of words and colored images in textbooks are needed.

The ability to operate measuring tools is the starting point to learn further level skills. When Student 1 was asked to repeat the work instructions shown to him for measuring the voltage in the motorcycle battery, he mistakenly turned the selector to 50 ACV position instead of turning it to 50 DCV position. Instructor 1 claimed that electrical system was indeed the most difficult part. Students were instructed to comprehend tangible things. This is very unfortunate considering the advancement in automotive now tend to go towards autotronic (automotive and electronic). If they were not able to master such basic skills as operating measuring tools, then it is not impossible to speculate that accident in the work place might occur, whether it befalls the students themselves, the tools or other lab work tools. Therefore, there should be more variation in the teaching-learning strategies.

Once the students were able to successfully operate the measuring tools, students were also expected to be able to read and interpret the results of the measurement as shown on the screen. Student 1 mistakenly read the results a few times, he always read the results of the measurement as 3 volt whereas the actual measuring result was 12 volt. Instructor 1 added that students needed to be very meticulous and go in detail when reading multimeter because there are a lot of measuring scales on the screen. It is true indeed, the measuring scales include DCV, ACV, DCmA as well as Ω . This could easily confuse students when trying to read those. Nevertheless, since one only needs to measure the voltage in the motorcycle battery, then it should not be hard for the students to be able to read multimeter in the 50 DCV position.

In addition, class management was not at best due to the fact that there were only two teachers available. They handled grade 10, 11, and 12 of the automotive study group. Furthermore,

Instructor 2 also said that subjects given by the automotive teachers were thematic. This means all the other subjects, such as science, citizenship, social science, math, Bahasa Indonesia, and all vocational skills, are connected to automotive one way or another. This resulted in many students not being able to focus in class and instead walking around idly. Thematic subjects could very well be meaningful should the teachers be able to manage them well and accordingly. That is why, teaching-learning strategies are badly needed along with the correct teaching-learning model so that the lesson objectives can be achieved efficiently.

The whole teaching-learning process can be effective when a variety of learning media are utilized. Varied learning media will increase learning effectiveness, perceptions of reality, knowledge, self-adequacy, and attitude [24]. Meanwhile, observation results show that the only available learning media are training objects, tools, and textbook materials. There are a total of five automotive vocational textbooks available, all of which contain pictures and texts. However, the pictures are in black and white and the wording of the texts are not simplified. Instructor 1 claimed that there were other learning media such as manual handbooks but students could not comprehend the books very well. This is the blatant proof of irony of the Indonesian education system, some teachers lack innovation to come up with new teaching method that suit their students' need. When teachers want to be perceived as being competent and expert, then they should be able to improve their teaching method, including coming up with new learning media. Moreover, existing training tools and objects can only be utilized correctly when teachers are supervising. Therefore, learning media are needed for students with MID to be able to learn the required steps during their lab works when needed. Learning media that can be useful for students with MID are multimedia, videos, graphics, and sound effects [25], [26].

4.3. Problems in Grading Student Evaluation of Automotive Practice Classes for Students with Mild Intellectual Disability

There are two problems that arise when it comes to grading student evaluation of automotive practice classes for students with MID. Firstly, the exam questions did not utilize pictures and the teachers had not implemented authentic assessments yet. The former often happens when creating tests. Instructor 2 thought that the sentences used on the tests were already simplified. That is true indeed, but images need to be added, especially images that help explain the questions like multiple choices so they will be clearer [27]. The problem with the latter, on the other hand, would only grade students with numbers. There should be a new grading system to grade students with MID in order to figure out their aptitude on the subjects. There should also be extra tests in order to find out students' behaviors. To assess this, the teachers can observe them, interview them, scale or inventory [9].

5. Conclusion

The lesson planning for vocational teaching-learning activity for students with Mild Intellectual Disability have indeed utilized all of the components from the syllabi and lesson plans. The only issue that still arises is that the syllabi need to adjust accordingly to what is currently being implemented in K13. The teaching-learning objectives also need to be more specific. The objectives need to implement the ABCD model. As for the teaching-learning process for students with MID itself, some issues are still present especially in the case of the core teaching-learning. Such issues ensue because there are no available job sheets, learning media, and the correct teaching-learning strategies. In addition to that, the grading of student evaluation for vocational teaching-learning process for students with MID have yet to implement the authentic assessments and adjust to students' characteristics.

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