Research on Humanities and Social Sciences
ISSN 2224-5766 (Paper) ISSN 2225-0484 (Online)
Vol.7 No.24 2017
www.iiste.org

Neurodidactic-Based Learning on German Course (Deutsch) B1 Level

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Abstract
This research is a development study that develops German B1 level Neurodidactic-based learning design of Common European Framework of Reference for Languages (CEFR) for language study program in Indonesia. The development of Neurodidactic-based learning design is oriented to needs and adapted to current issues of innovative learning.The qualitative approach is used to answer the statement of the problems (1) how is the development process of German B1 level Neurodidactic-based learning design in German Language Education program, (2) how is the quality of learning design developed, and (3) what factors influence the learning outcomes of the implementation of German B1 level Neurodidactic-based learning design in German Language Education program. The instructional design used in this research is ADDIE design model applied in German Language Education Program, State University of Malang, State University of Surabaya, and Yogyakarta State University. This development study resulted in a learning design that includes a course syllabus, a semester program plan, a lesson plan, and a German B1 level (Deutsch B1-Zusatzmaterial für den Unterricht) course book which is oriented to neurodidactic principles for fourth semester students who take German course B1 level. The product of this research gives significant contribution in improving the quality of learning and students' ability in German Language Education program.
Keywords: Neurodidactic, learning German, instructional design, Deutsch course

1. Introduction

This research is a development study that develops German B1 level Neurodidactic-based learning design for German education courses in Indonesia. Neurodidactic is chosen as the basis for the development of instructional design based on the opinion that the post-use of communicative methods in the digital era, which has been used in the German Language Education Program , it is necessary to make use of learning methods that are influenced by constructivism approach. For that reason, Neurodidactic is used as one of the alternatives for the selection of learning methods required today.

The instructional design developed for the final B1 level German course is a learning design that refers to Neurodidactic principles for four language skills, listening, speaking, reading, and writing at B1 level (CEFR). The development of instructional design in this study aims to improve the quality of German learning through the development of German learning design based on Neurodidactic principles to solve students' problems in learning German in the undergraduate program in State University of Malang, State University of Surabaya, and state University of Yogyakarta.

The development of instructional design used in this research is the design of ADDIE for the product development in the form of course syllabus, semester program plan, lesson plan, and teaching materials. The development stages based on the ADDIE model consist of Analysis, Design, Development, Evaluation, and Implementation. The stages are in accordance with Kanuka's opinion (2006, p.3) which states that the design of learning includes the process of determining learning objectives, determining strategies and techniques, and learning media to achieve learning objectives. Furthermore, the application of learning design requires support from the institution, and its implementation should be based on needs analysis.

2. Neurodidactics Theory Based Foreign Language Learning and Teaching

According to Grein (2013, p.6-7), Neurodidactic is a relatively new field of interdisciplinary research, a blend of neuroscience, didactic, science education and psychology. The basis of the use of neurodidactic is that knowledge is actually constructed by the students themselves, so the student needs to understand the importance of learning. One of the most important facts in neurodidactics is that knowledge cannot be transferred; it must be newly created in their brain.

In the theory of cognitive psychology, it is mentioned that the activities done with self-awareness and emotion by students have a very important role. As stated by Arnold (2012) that good learning must follow the 12 principles of the learning process. These principles are as follows. (1) Students should have the opportunity to gain concrete experience in learning. (2) The learning process will be more effective when associated with social situations. (3) Learning process will be more effective if it considers the students' interest and idea. (4) The learning process will be more effective when utilizing the initial knowledge of the students. (5) The learning process will be more effective when the students' positive emotion affects learning. (6) Students can understand in detail when they connect all the things they have learned. (7) A good learning environment will make teaching and learning

activities more intense. (8) Learn to be better, if time is available for reflection. (9) Something will be easy to learn, if students can connect between information and their experiences. (10) Learning will be more effective, if the lecturer takes into account individual differences. (11) Students will learn better, if they are supported, motivated, and encouraged by the learning environment. (12) Learning will be more effective, if the talents and competencies of individual students are considered.

In relation to the creation of a pleasant learning environment, it is inseparable from the discussion of positive emotion. Sambanis (2013. p.50) stated that positive emotion is a pleasure the students have because of their desires fulfilled. In this case, something that plays a role to stimulate the brain so that someone feels happy is a brain transmitter (Neurotransmitter) called dopamine.

Wills (2010) provides some suggestions to stimulate learners' emotion and motivations so that learning becomes effective and learning objectives are achieved. Furthermore, the teacher (lecturer) should show every progress of learning, celebrate the success of students and get used to give praise. In addition, lecturers should give opportunity to students to convey their ideas and opinions with the aim that they are proud and satisfied with the learning progress obtained. Therefore, the process is considered more important than the end result.

Furthermore, Wills (2010) added that based on the results of research work of the brain, neurodidactic provide concrete suggestions for learning. The suggestions are as follows. (1) Learning should make students happy and learning activities should be done in a pleasant atmosphere. (2) Students should have the motivation to learn as early as possible. (3) Education must be oriented for the students' life and the real life. (4) The students must be able to solve their own problems, and they conduct experiments (if necessary). (5) Teaching materials should be presented in various forms. The suggestions above can be used by lecturers, compilers of teaching materials, and educational designers to prepare an interesting and effective education, so that the expected competencies can be achieved.

The development design consists of course syllabus, semester program plan, lesson plan , and Neurodidactic-based teaching materials for German courses B1 level. The prepared teaching materials are tailored to the principles of Neurodidactic -based learning. In the implementation stage, the experimental activities of Neurodidactic-based teaching design product have been developed. The small pilot project was conducted through a small group in the German Language Education Program in State University of Malang, while large group pilot project was conducted in German Education Language Program in State University of Malang, State University of Yogyakarta, and State University of Surabaya.

The teaching materials were developed using the concept of Neurodidactic-based learning collected from several expert opinions. Neurodidactic-based learning is based on the findings of neuroscience and psychological research. Associated with the results of field research of neuroscience, psychology and combined with Arnold's methodical didactic theory (2009, p.190) which formulate the principles of effective learning based on Neurodidaktik. These principles are as follows. (1) The student must have the opportunity to experience concretely the material being studied. (2) Learning is more effective, when it accommodates students' interest and opinion. (3) Learning is said to be effective when associated with social situations. (4) Learning will be more effective if the students' background knowledge is maximally utilized. (5) Learning will work more effectively if students get positive emotion during the learning process takes place. (6) Students will be able to understand the material in detail if they can connect information that has been studied. (7) Conducive atmosphere will make learning more effective. (8) Reflection is required in every lesson. (9) Learning will be more qualified if students can connect the information learned with their experience. (10) The learning process will be more effective if teacher pays attention learners differences. (11) Learning will be better if the students get support and motivation from their environment. (12) Effective learning is learning that takes into account individual talents and competencies.

2.1 Neurodidactic-based Learning for German Course B1 Level

In line with Arnold, Brand & Markowitsch (2009, p.81) stated some of the following Neurodidactic learning principles. It is better for students to learn not through coercion because pleasant feeling have an impact on increasing their concentration. It affects the focusing of attention and improvement of students' memory. If students learn happily and without coercion, they can focus on learning and can remember the material being studied for longer. Thus, it is expected that objectives learning can be achieved. The use of apperception to begin learning is also one of the principles of Neuroddidactic-based learning. Apperception gives students the opportunity to know what to learn, as well as serve as an effective reminder of what has been learned.

Brand et al (2009) added that students must construct their own material that has been studied. Lecturers can help through the questions asked. New learning materials should be linked to familiar themes. It is necessary to speed up the understanding of new information and make it easier for the brain to remember it. The relationship between old and new knowledge that occurs in each individual will strengthen and deepen the preparation of learning within the limbic system.

Roth (2009) also argues that the most important factor that can make an effective learning is the motivation and level of students' confidence to the lecturer. In addition, to create interesting learning, it is necessary to use

various forms of interaction. Movements made at the time the learning takes place will provide a positive stimulus to the brain and suppress stress hormones.

The German Course in this study is for German B1 level (CEFR). Glaboniat (2005) explains that the standard German language level of B1 CEFR is a capability that students must possess that includes receptive, productive, and interactive. These three skills can be seen from the four language skills, namely reading, writing, listening, and speaking.

In the Catalog of the German Language Education, Faculty of Letter (2015) explained that at the end of semester 4, students are required to follow and pass the B1 level language standard examination (CEFR). This means that every graduate of a German Language Education Program is also a candidate for German lecturers; therefore, it is required for them to have at least b1 level German proficiency of the CEFR standard. The standard of a person's German B1 level proficiency can be seen based on the standard European Language Framework of Reference for Languages (CEFR) which is divided into A1, A2, B1, B2, C1, and C2 language skills. In Indonesia, the standard of German ability is at least B1 level as evidenced by the possession of the B1 international certificate exam (Zertifikat Deutsch).

3. Research Result

The research findings were obtained from the results of the research analysis consisting of (1) the process of developing the instructional design, (2) the quality of Neurodidactic-based language learning products, and (3) the factors that influenced the success of the German Neurodidactic-based learning. The process of developing the instructional design in this research is done through five stages. The five stages are as follows: (1) analysis stage, (2) design stage, (3) development stage, (4) implementation stage, (5) evaluation stage.

Based on characteristics of the lecturers and students need analysis found the following matters, it is required to prepare of learning aids that accommodate current needs, such as the preparation of the latest B1 examination (Deutsch Zertifikat) equipped with the lesson plans and additional teaching materials as complementary Studio D B1 teaching materials along with the latest Deutsch Zertifikatexam exercises . The design of German teaching materials for Deutsch 4 courses (B1 level) is prepared based on the material presented in the syllabus and the semester program plan. The teaching materials contain competency standards, basic competencies, themes and materials relevant to the theme.

Development of learning syllabus is done based on the design of learning syllabus that has been prepared. The development of German B1 level Neurodidactic-based materials for Deutsch is based on observational findings of lecturer and student needs analysis as well as the average ZIDS test results over the past three years. The material is arranged through concept maps and product specifications carried out at the design stage.

In the implementation stage, the pilot project was conducted to small group and large group. Small group try-out was conducted in the Deutsch IV Offering A course for undergraduate students of batch 2015 German Language Education Program, State University of Malang. Large group try-out was conducted to undergraduate students of German Language Education Program of State University of Malang, State University of Surabaya, and State University of Yogyakarta.

Based on the observation the result of small group try-out, it revealed the following results: (1) some exercises needed to be revised because some sentences did not match the number of students. Therefore it is necessary to revise by adding the number of sentences to anticipate more than 25 students. (2) The audio used was not really clear, so the students have difficulty understanding the spoken texts being played. For that problem, the audio was repeated. (3) The classrooms are too narrow for students to move around during the group work. To overcome this problem, the lecturers and students rearrange the position of the chair so that the impression is wider and does not disturb the movement of students during the learning takes place. (4) The time required for group work is longer than planned. To anticipate this, the researchers added time allotment for the next try out. The findings of the small group try out become a reference for researchers to carry out further tests.

The try out is done based on lesson plan that has been prepared. Learning begins with an explanation of the learning objectives followed by the apperception stage. Language skills are taught in an integrated way with the use of various methods that are interesting and relevant to the needs. In the final stages of learning, students practice doing the German exam B1 Zertifikat Deutsch which consists of reading, listening, writing, and speaking skills.

The reflection stage is performed using several methods, namely Auswertungsgespräch in der Klasse (self evaluation on the learning) , Metaphernevaluation (evaluation), Mein Fazit (conclusion) , and SOFT-Analyse (SOFT analysis). Each group is given the opportunity to write down their impressions of the teaching and learning in the given cards.

The analysis phase includes several activities, namely (1) syllabus analysis, (2) semester program plan analysis, (3) lesson plan analysis, (4) lecturers needs analysis, and (5) students needs analysis. The analysis of quality of Neurodidactic-based German B1 level product includes 1) the validity of the product, 2) product effectiveness analysis, and 3) product practicality analysis. The analysis results of the product review indicate that all the required documents have been available in accordance with the needs of the course. However, the product

should be updated annually to adapt to current circumstances and needs.

3.1 Product Quality Learning Design German Level B1 Neurodidaktik Based

The analysis of quality of German B1 level Neurodidactic-based products includes 1) the validity of the product, 2) product effectiveness analysis, and 3) product practicality analysis. The analysis was conducted to find out the validity of the Neurodidactic-based design product, including the analysis of the validity of the course syllabus, the semester program plan, the lesson plan, and the teaching materials.

Based on the results of the expert validity, it can be concluded that the materials was good (with an average of 85%.) and need improvement in some aspects, for example (1) mention the source / reference for each text, (2) There are still many spelling errors, (3) There are still some unclear instructions (Arbeitsanweisung), and some even have no instructions, and (4) the consistency of the use of the term.

Based on the expert validation, the learning and teaching materials were evaluated as very practical (90%), but there are still some notes that need to be considered, namely, (1) the consistent use of colors in each unit, (2) the consistency of the order of presentation of each unit and (3) the source of each image should be stated.

The effectiveness of the use of Neurodidactic-based products can be seen through the try out for German B1 level tests (Deutsch Zertifikat) which include reading skills (lesen), listening (hôn ren), writing (schreiben), and speaking (sprechen) . The success rate of the Deutsch Zertifikat test results from four language skills is seen based on the passing grade for each of the language skills following the latest B1 (CEFR) exam standards from the Goethe Institute.

Based on the results of the Deutsch Zertifikat practice test, the highest mastery level was on writing skills (schreiben) with an average score of 66.05 The second place was speaking skills with an average score of 66. The score for reading skills reached the average 61.9 and the value for listening skills reached an average of 63.75. Overall, the average score for the German B1 level test (Zertifikat Deutsch) is 64.5 which categorizes as ‘fair’ to fit the B1 exam assessment criteria (Goethe Institute). Thus, although the average score does not indicate as ‘good’, but the product can still be said to be feasible to improve German proficiency level B1, since the average score is already above 60% of the value of 100 and is considered to pass for the B1 level test (CEFR) in accordance with Goethe Institute's review criteria.

The practicality criteria of using Neurodidactic-based B1 learning design based on 1) lecturers activity, 2) students activity, 3) obstacle faced by lecturers, and 3) obstacles experienced by the students. The result of observation shows that the activities conducted by the lecturer influence the students' activeness and motivation. Lecturers play important role in creating conducive learning atmosphere and provide students opportunities to think at the beginning of learning through apperception. In addition, lecturers motivate and activate students by giving students the opportunity to ask questions and answer questions. In the learning process the lecturer gives praise for the students’ answers and opinions.

Lecturers have responded positively to the students’ answers and opinions. Furthermore, they also play a role in helping students find solutions to the difficulties. The student-centered learning was done through the use of diverse and student-oriented techniques. At the stage of reflection and conclusion, the lecturers involve students to conclude and reflect on learning.

Students show their activeness in following the lectures. Through the apperception given by the lecturers, students responded by giving answers, opinions, and questions to lecturers. In group work, students demonstrated liveliness in working together to accomplish a given task. Students have initial knowledge on the themes discussed. It is shown through opinions and answers related learning materials discussed. Students are also actively involved in the conclusion and reflection stage.

Data on obstacles faced by lecturers in learning German B1-level in Undergraduate German Language Education Program at State University of Malang, State University of Surabaya, and State University of Yogyakarta obtained through an open questionnaire. The question was "what obstacles did the lecturer encounter during the implementation of German B1 level Neurodidactic-based learning?"

A lecturer from Malang State University said that in general, Neurodidactic-based learning is effective for learning German B1 level. Nonetheless, students still hesitated to ask questions if they get into trouble, so lecturer should always monitor student activities and provide guidance when needed.

The same question was posted to the lecturer of German B1 level subjects in German Language Education Program of State University of Surabaya. He explained that Neurodidactic-based learning that can be continually carried out because it can motivate students. Nevertheless, the time allotment for each exercise should be increased, especially for group work activities.

Meanwhile, the lecturer of German B1level in German Language Education Program in State University of Yogyakarta stated that the German Neurodidactic-based learning is very interesting, but it needs extra preparation especially in preparing group task. Therefore, the lecturer should prepare well all the materials and media needed in the learning process.

Questions posed to students relating to the obstacles encountered during the course of study are the same as

those posted to lecturers of German B1 level subjects. Based on the results of the students' answers from the three universities, it can be concluded that the obstacles experienced by the students during the implementation of the German B1 level learning include (1) the German vocabulary mastery constraint, (2) the constraints of afraid of making mistakes, (3) limited time constraints working in groups, (4) classy classroom constraints because each group is busy discussing so as to disturb other groups, (5) being unfamiliar with the methods used in Neurodidactic-based learning,

3.2. Factors Influencing Learning Outcomes of German level B1

Factors influencing the learning outcomes of the application of the German-based B1 neural-based language learning design were analyzed based on the results of interviews with Deutsch B1undergraduate students in the German language education program at the State University of Malang. Interviews include (1) internal factors that influence learning outcomes, including motivation, readiness to learn, and understanding of learning materials, and (2) external factors that influence learning outcomes include learning atmosphere and readiness of lecturers in presenting learning materials.

The interviews conducted on the students at the end of the learning revealed some data about the factors that influence the success of learning. Motivation is one of the factors that determine the success of learning. Motivation is often helped by situations and methods used by lecturers, and a conducive classroom atmosphere. In addition, motivation can be obtained from working in groups because it can provide a sense of comfort for students, so they are motivated in completing the task given. The use of exercise variation is also a motivation for students. Using various practices will avoid boredom for students. Working in groups can also make students active because it is more student-centered learning. Group work can lead to misunderstandings and sometimes take longer to complete tasks because many different ideas and are difficult to choose from, whereas working in groups not only can provide motivation and help but also facilitate the completion of tasks as they work together

Awareness of the importance of mastering the German B1level material is one of the factors that can help the success of learning. In addition, mastery of the themes discussed will help students understand one theme. Lack of spontaneous speech and discussion exercises cause students' difficulties in issuing opinions, asking questions and answering questions.

Material comprehension is one of the factors that influence the success of learning. Based on the interviews, it is known that the presentation of text with new vocabulary requires the right method, so that the reading activity can increase the vocabulary mastery that will be used actively by the students. In addition, the lack of mastery of German grammar is one of the barriers to the students following the German B1 level Neurodidactic-based learning . In relation to the introduction of the latest German test model, students are not familiar with the new-grade B1 (Zertifikat Deutsch) practice test material , so students still need repetitive exercise.

External factors relate to the atmosphere of learning and readiness of the lecturer. Based on the results of interviews with students, it can be concluded that the classroom atmosphere affect the atmosphere of learning. A narrow, hot and noisy state of the class affects the success of learning. The lecturer should be able to make the learning atmosphere fun. In addition to the selection of interesting teaching methods and media, lecturers' performance can influence the conducive learning atmosphere. Readiness learning can also be seen from the seating arrangements in the classroom. Seating arrangements become one of the factors that determine the learning atmosphere. The seating is arranged according to the needs and the state of the class. For example, if students work in groups, then the seating should be tailored to the student's activities.

Lecturers' readiness factor is also a determinant of the success of learning German B1 level. Based on the results of the interview can be summarized as follows. Interesting method, lecturers teach by using methods that are varied and interesting. Lecturers should correct and provide assistance needed by the students. Speech or Redemitte l as an aid in speaking. Other than that, correction is not from lecturers, but from peers, so it is expected that the errors can be corrected by the students themselves and can stimulate students' activeness in learning and completing the task given

4. Discussion

The discussion covers (1) the development process of German Neurodidactic- based learning in German B1 level (B1-CEFR) course in German Language Education Program, (2) the quality of German learning design which is appropriate with German B1 level (B1-CEFR) Neurodidactics-based leaning design in German Language Education Program, and (3) what factors influence learning outcomes from the application of German B1 level (B1-CEFR) Neurodidactic-based learning design in German Language Education Program?.

The process of developing a German Neurodidactic-based learning design includes stages (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The products produced in this research are syllabus, semester program plan, lesson plan, and teaching materials for Deutsch level B1 course. This teaching material was developed in response to the fact that additional material is required for students, especially to face the international standard German test of Deutsch Zertifikat which will be used from the even semester of

2017/2018. Deutsch course in State University of Malang, State University of Surabaya, and State Univeristy of Yogyakarta used studio book d B1. Based on the result of ZiDS B1 level test and the changing of the B1 standard exams into Zertifikat Deutsch B1 international level exam, the availability of German B1 level learning materials consisting of syllabus, semester program plan, lesson plan, and teaching materials is intended as a supporting material book that has been used in B1 German Course in Undergraduate Program in German Education Department in State University of Malang, State University of Surabaya, and State University of Yogyakarta. As Kanuka (2006, p.3) stated that instructional design includes the process of determining learning objectives, determining strategies and techniques, and learning media to achieve learning objectives. Application of a learning design requires support from the institution to implement and its implementation should be based on needs analysis.

4.1 Quality Learning Design German Based Neurodidactic-based Level B1 (CEFR)

The quality of the development design is based on (1) the level of validity (validity) of the German B1 level (B1-CEFR) of neurodidactic learning design in German B1 level courses in the German Language Education Program, (2) the effectiveness of German Neurodidactic-based learning design for German course, and (3) the practicality of the German Neurodidactic-based for German B1 level courses in the German Language Education Program, and (4) Factors that influence learning outcomes of implementation German B1 level Neurodidactic-based learning design.

The product of this research is the development of German B1 level Neurodidactic-based learning design. This product is expected to be a complement to the Deutsch course in German B1 level in Undergraduate German Language Education program in Indonesia. Based on the data analysis of the validation results of the experts, lecturers, and students as potential users, it can be concluded that the instructional design consisting of the syllabus of the lecture, the semester lecture plan, the lesson plan, and the teaching materials have met the appropriate criteria.

Based on the input from instructional design and learning material expert, the learning material for German B1 Level course namely Deutsch B1 (Zusatsmaterial f ü r den Unterrich), has been revised. According to Branch (2009, p.9), the main components of instructional design are as follows. (1) Learning Objectives (general and special) which is a translation of competencies that will be mastered by students. (2) Know the characteristics of students, initial ability and pre-requisites. (3) Learning Analysis is the process of analyzing the topics or materials to be studied. (4) Education Strategy can be done within one year or within one learning activity. Teaching Materials are the materials given to the students. (5) Assessment of Learning is about the measurement of capabilities or competencies that have been mastered or not.

Based on the input of the material expert, it should be at the end of each discussion of instructional materials presented in each chapter. Thus, the material that students learn becomes a model of tasks that must be done. Learning by using modeling is considered more effective than other methods because through modeling students are assisted to produce the same product as the model. The facts are in accordance with those of Muijs and Reynolds (2008: 49) that modeling is more effective than verbal explanations.

Based on the latest *Zertifikat Deutsch* (ZD) test results in three study programs, the undergraduate program in State University of Malang, State Univeristy of Surabaya, and State Univeristy of YogyakartaS-1 German Language Education Study Program, it was found that the average of students' writing skills (schreiben) was 66.05 The second place is the ability to speak with an average score reached 66. The score for reading skills reached an average of 61.9 and the score of skill heard reached an average of 63.75. The overall average score for B1 level German test (*Zertifikat Deutsch*) is 64.5 which is categorized as 'fair' following the criteria of B1 exam assessments from Goethe Institute. Thus, although the average score does not indicate the 'good' category, but the product can still be said to be feasible to improve German B1 level proficiency, since the average score is already above 60% out of 100%, it is considered to pass for the B1 level test (CEFR) in accordance with Goethe Institute's standard assessment criteria.

As an implication of curriculum enforcement that refers to Kerangka Kualifikasi Nasional Indonesia (National Qualification Framework Indonesia) or KKNI based Curriculum each study program should compete to produce graduates with qualifications according to the desired standards. It is as stated in PERPRESS 8/2012 (KKNI) that "nationally every similar study program should produce graduates with standardized competencies or learning outcomes , even though they are generated through different ways and educational activities".

From the above statement, it can be seen that the focus of learning in higher education is to produce graduates who have a standard competence. The standards are determined based on the needs and specificities of each course. Therefore, in order to optimize the achievement of these competencies, the Undergraduate program of German education in Indonesia sets the standard of student competence based on the standard European language competence, known as CEFR.

The above facts are reinforced by the statement in the German Literary Catalog of the State University of Malang in 2015 that the mastery of graduate students of German Literature State University of Malang is required to have at least a standard German language B1 (standard language applicable in Europe / CEFR).

Observation results also indicate that the activities undertaken by lecturers influence students' activeness and motivation. Lecturers play a role in conditioning a conducive learning atmosphere and give students the opportunity to think at the beginning of learning through apperception, motivate and activate students by giving students opportunities to ask questions and answer questions, give praise for answers and opinions from students, respond positively to student opinions and answers, helping students find solutions to difficulties experienced, and using diverse and student-oriented methods, and engaging students in the reflection phase.

The fact above is reinforced by the opinion of Brand et al (2009) that students must construct their own materials that have been studied. Lecturers can help through the questions asked. New learning materials should be linked to familiar themes. It is necessary to speed up the understanding of new information and make it easier for the brain to remember it. The relationship between old and new knowledge that occurs in each individual will strengthen and deepen the preparation of learning within the limbic system.

Furthermore, Brand et al suggests the use of project methods combined with group work and media usage that should not change frequently. Through group work, project tasks, and media usage there will be a modal effect that affects the reception and storage of new materials learned in the brain.

Brand et al argued that the success of Neurodidactic-based learning depends not only on the readiness of the students , but also on the readiness of the lecturer . The lecturer should show his enthusiasm in teaching, so it will affect students positively. The success of an education is influenced by a conducive and enjoyable learning atmosphere.

Student involvement in early learning or at apperception stage is also suggested by experts. Brand & Markowitsch (2009, p.81) states one of the principles of Neurodidactic-based learning is that learning is not through coercion, because learning without coercion can increase students' concentration. Learning without coercion will generate motivation from the students themselves, so they can focus on learning and can remember the material being studied for longer. In addition, the use of apperception is also one of the principles of Neurodidactic-based learning. Through apperception, students can know what will be learned, as well as remember what has been learned.

Based on the findings, the lecturer stated that there are still some students who are less actively asking if they get into trouble. Therefore, the lecturer should pay attention and give guidance especially to the less active and shy students to ask questions, and those who have difficulty in learning and also found problems when students work in groups. Group work activities in Neurodidactic-based learning take longer than planned and the need for additional time allocations for each exercise. The role of lecturers in learning affects students' learning motivation. As it is stated by Roth (2009), the most important factor that can make a learning to be effective is the motivation and level of students' confidence to the lecturer.

In light of the constraints faced by lecturers, Trinikova and Petlak (2015) stated that the role of lecturers greatly influences the success of education in their classes, as all options for improving the quality of learning are in their hands. In line with Trinikova and Petlak's opinion, Sambanis (2013. p.50) stated that positive emotions can motivate people to learn and impact on better learning outcomes. Positive emotions can be developed through the stimulus provided by the lecturer in the teaching and learning activities. Neurobiology research also shows that the preparation of a fun and conducive learning atmosphere affect the mood and readiness to learn. Likewise, if students can ask great questions, lecturers can also answer the questions greatly; it will create a positive educational atmosphere.

Based on the results of the students' answers from the three universities, it can be concluded that the obstacles experienced by the students during the implementation of the German B1 level Neurodidactic-based learning include (1) the German vocabulary mastery constraint, (2) the constraints of fear making mistakes, (3) limited time constraints working in groups, (4) classy classroom constraints because each group is busy discussing so as to disturb other groups, (5) students' unfamiliarity with the methods used in Neurodidactic-based learning, and (6) constraints on the use of German during the lesson.

Constraints faced by students is a problem that is often encountered in language learning. This is confirmed by Arnold (2012) that good learning should follow the principles of learning, such as. (1) A good learning environment will make teaching and learning activities more intensive. (2) Learning to be better, if time is available for reflection and (3) students will learn better, if they are supported, motivated, and encouraged by their learning environment. Arnold's opinion is reinforced by the results of brain studies which suggest that learning should be enjoyable, and is presented through appropriate and varied exercises.

4.2 Factors Influencing Learning Outcomes of the Implementation of German B1 level of Neurodactic-based on German Course

Based on the results of interviews with the students of S1 (undergraduate) of German Education, State University of Malang, State University of Surabaya, and State University of Yogyakarta, there are external and internal factors influencing the success of learning German B1 level Neurodidactic-based learning. Internal factors that affect learning outcomes are motivation, readiness to learn, and understanding of learning materials. It is in accordance

with Becker's & Roth's (2004) opinion that the brain combines the activities of cognitive thinking and emotional states. The brain will unconsciously assess whether information being learnt is relevant and interesting to learn. Thus, the brain will work faster and store the information it needs, if the information is considered relevant and interesting. In addition, learning activities should make students happy and learning activities should be done in a pleasant atmosphere.

External factors that influence learning outcomes consist of learning atmosphere and readiness of lecturers in presenting learning materials. As stated by Becker & Roth (2004), that learning should be oriented to the lives and everyday students, and. the student must be able to solve the problem independently. Therefore the material in the teaching materials should be presented with a variety of methods, so that learning becomes interesting and effective, and ultimately the expected competence can be achieved.

5. Conclusion

This study has demonstrated that German B1 level Neurodidactic-based learning can be provided in order to improve the quality and learning outcomes of German level B1 undergraduate students of the German Language Education Program in Indonesia. The developed German B1 level Neurodidactic-based learning design can be used, developed, and inspired to develop similar learning designs. Thus the learning tools relevant to the academic needs of students can be realized so that the students' German competence can be improved.

Neurodidactic-based learning can be developed in other subjects according to the needs and specificity of the courses in the German education for Undergraduate (S1) program in Indonesia. The results of this study provide several implications, among others: (1) the implications for the planning and development of learning aids for German courses in the German Language Education Program, Undergraduate (S1) program in Indonesia, (2) Development of Neurodidactic-based learning design refers to the curriculum applied in universities in Indonesia, namely KKNI based curriculum standard. As an implication of curriculum enforcement referring to KKNI, each study program should be able to produce graduates with qualifications according to the desired standards, (3) implications for the lecturer's perspective on students, (4) implications for the education of German teacher candidates, and (5) the implications for the efforts to improve the quality and learning outcomes of German course in German Language Education undergraduate (S1) program in Indonesia.

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Trníková, Jana. Waffle, Erich. (2015). Neuroscience as a Basis for Innovations in Education . Acta Technologica Dubnicae. Volume 2, Issue 2, 43-51, ISSN (Online) 1339-4363, DOI: 10.1515 / atd-2015-0059 , July 2015. Downloaded from https://www.degruyter.com/downloadpdf/j/atd.2012.2 .issue-2 / atd-2015-0059 / atd-2015-0059.xml.