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# Problem Solving based Assessment

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## Abstract

College graduates are required to have the ability to solve problems creatively in order to face the global market of this decade. To evaluate the problem-solving skills of the graduates, there is a need to develop problem solving based assessment. This study aims to produce a problem solving based assessment to test the competence of the Department of Indonesian language and literature education graduates. The design of the study is research and development using the Delphi method; the steps of which are: (1) establishing a team of panelists from a collaborative team to share the graduates standard assessment blueprint (2) discussing the assessment blueprint in terms forms and types (3) formulating the findings, (4) developing the product in the form of assessment packages, and (5) validating the product. The results of experts validation claim that this research has produced a problem solving based assessment to test the competence of the Department of Indonesian language and literature education graduates. The test has various forms and is suitable to measure high level competence. Due to the wide and deep coverage of the materials, the assessment is appropriate to measure the general competence of pre-service teacher candidates.

**Keywords:** test, competence test, graduates, problem solving

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## 1. Introduction

Various attempts were made to increase the quality of university graduates in order to exceed the standard of graduates that have been implemented. Teacher Training Institution should also be upgraded so that the graduates, i.e., pre-service teachers, are truly those who adequately qualify as teachers. The Regulation on Teachers and Lecturers, Act 14 of 2005, Article 8, states that teachers are required to have academic qualifications, competence, teaching certificate, physically and mentally healthy, and have the ability to carry out the goal of national education (Depdiknas, 2005).

Academic qualifications referred to in Article 8 can be obtained through higher education degree (bachelor degree) or diploma four program, while the teacher's competence, as stated in Article 8, consists of pedagogical, professional, personal, and social competences obtained through professional education (Regulation No. 14 of 2005 Article 9 and 10).

Academic qualifications for graduates, especially for Indonesian Language and Literature Education graduates as specified in the graduates standards and are formulated

in the learning achievement of Indonesian Language and Literature Education Program (bachelor degree), is as beginner teachers having the following competencies: (1) master theoretical concepts of Indonesian linguistics and literature in order to support the profession as educators, (2) have adequate skills in Indonesian language and literature, (3) apply the knowledge of Indonesian language and literature to appropriately solve teaching and learning problems in primary and secondary education, and (4) analyze problems in the field of Indonesian language and literature as well as its teaching and learning process to make acccurate and appropriate class-room decissions (JSI, 2013).

The possession of academic qualifications as described above is one of the determining factors for the accomplishment of the implemented teaching and learning process. Therefore, to ensure that Indonesian Language and Literature Education graduates have achieved academic qualifications that are stated in the graduate standard, it is necessary to create a competency test, which serves as an achievement test to guarantee that the standard graduate has been achieved. Such tests should be able to measure and evaluate the academic qualifications of Indonesian Language and Literature Education graduates. The test is expected to be just as important as English test for graduates (TOEFL), for the graduate of EFL program.

Currently, *Badan Pengembangan dan Pembinaan Bahasa/*Board of Language Planning and Development*,* the Ministry of Education and Culture  has developed Indonesian language tests called *Uji Ketrampilan Bahasa Indonesia* (*UKBI*) or Indonesian Language Proficiency Test (ILPT). Officially, the test is a language proficiency test intended to evaluate one's proficiency in the Indonesian language, both written and spoken [11]. In spite of the fact that the test includes the four language skills: listening, speaking, reading, and writing [11], it is not, however, fit for teacher candidates.

A study by [9], stated that the rules in ILPT/UKBI's responding rule skills are less relevant to the theory of pragmatics and communicative assessment. The material being tested allows for diversity of capabilities based on the background of the test participants. The multiple choice questionsin ILPT/*UKBI* is one of the weaknesses of this test instrument.

ILPT/*UKBI* developed by Board of Language Planning and Development*,* the Ministry of Education and Culture is only concerned with language proficiency without any pedagogical aspects of the Indonesian Language and Literature. Thus, it can be stated that the national standardized test that can be used to test the competence (qualification) of the graduates of the Indonesian Language and Literature Education Program (ILLEP) who are then designed to be teacher candidate is, at present, still not available. Therefore, this research is intended to develop a test to assess the competence of Indonesian Language and Literature Education graduates in accordance with graduate standard.

Aside from ILPT/UKBI, the Government has also launched *Uji Kompetensi Guru* (*UKG*) or Teacher Competency Test (TCT) to measure the teachers' competencies as the basis

for ongoing professional development as well as map out the teachers' competence on the implementation of all standards of competence. The teachers whose TCT/*UKG* score have yet to meet the minimum standards must continue to learn through a variety of training to achieve the required standard of TCT/*UKG*.

From the above description, it seems clear that the test of competence of Indonesian Language and Literature Education graduates has different characteristics and purposes from the Teacher Competency Test (TCT/*UKG*) that has usually been used. This test serves as an achievement test to measure the achievement of graduate standard. The test will be developed to assess and evaluate academic qualifications of Indonesian Language and Literature Education graduates.

The development of Indonesian Language and Literature Education graduate competency test, at the early stages, is done in collaboration with the Indonesia Language and Literature Studies Program, State University of Surabaya. By involving language and literature education program from other universities, the product of this research is expected to be thoroughly tested and efficient and can help in producing graduates who are nationally and globally competitive.

The competency test is one of the tools used to measure the competence of Indonesian Language and Literature Program graduates. This test will be used as a graduation requirement for all students of Indonesian Language and Literature Program. With this requirement, the quality of graduates will be standardized and they will be ready to work according to their competence. To develop a standardized test is not easy. Therefore, the role/involvement of all specialists in Indonesian Language and Literature Education is indispensable in the development of this product. This product will become a source of reference in improving the quality of the graduates as assets of the nation to build and create national competitiveness.

The competency test for Indonesian Language and Literature Education graduates is developed to test their literacy skills. The ability to solve problems or achieve goals in the real world is attained by using text as the main tool [8]. The use of the text as the main tool is one of the reasons why literacy is often interpreted as discourse proficiency and the main focus of which is on the ability to think critically. In [2] states that literacy is an integration of listening, speaking, writing, reading, and critical thinking skills. In [1], who used the term critical literacy, states that critical literacy is critical and analytical skills necessary to understand and interpret texts and written speech, which can be used to solve the problems of life in the community, both academically and socially.

The ability to reason critically – to understand and interpret texts, both spoken and written, used to solve problems in life – is the essence of literacy skills. Literacy skill has become the center of attention; it even has become a crucial issue for the literacy skills that is associated with the development of future human resources [6]. This is

due to the fact that literacy is the key to a successful study in school and the key to be successful in active participation in the workforce, society, and politics [3].

The product developed is also problem-solving based. Product that promotes higher-level thinking skills is expected to be used to creatively respond to new situations that keep on changing and evolving. The global market of this decade requires young people to have the ability to solve problems creatively. Young people who do not have high-level thinking skills to solve problems creatively will face difficulties in getting a good job when he grows up [7]. Those who get difficulty to adapt to the unfamiliar new situation would have difficulty in getting 'better' jobs amid the current global economic development and technology.

The main products developed in this study is a problem-solving based competence test for Indonesian Language and Literature Education graduates; one of the assessment tools commonly used to measure the competence of the university graduates including the Indonesian Language and Literature Education.

## 2. Method

In accordance to the research objective, which is described above, this research is of research and development design. To develop products, agreement with the collaborative team is essential. The agreement consists of these following aspects: (1) agreement on Graduates Standards of Indonesian Language and Literature Program in Indonesia, (2) agreement on test's blueprint in accordance to the graduate standard, (3) agreement on the form and type of test, (4) agreement on the model and form of the test. Due to the above condition the method used in the study is adapted from the development of the Delphi method [4].

Delphi method requires that the development of products is made with the interaction between experts in a panel discussion (interactive panel of experts). The research team will invite some experts from the Indonesian Language and Literature Program from State University of Malang and State University of Surabaya (UNESA). They will be asked to share their thoughts related to the four consensuses: standard graduate, test blueprint, forms and types of tests, model and form of the test. They will have to present a paper containing opinions and responses to the questions posed by teams of researchers.

Based on the thoughts, opinions, and comments in a panel discussion, a team of researchers will formulate a draft consensus/recommendation related to the graduate standards, tests blueprint, forms and types of tests, model and form of the test. Since This is because the purpose of the panel discussion is to obtain a broad insight from different viewpoints about the project developed by the research team, there no obligation for the attendants of a team of panelists and participants of the panel discussion to agree to the consensus/recommendation made by the research team.

The research data is in the form of qualitative data in the forms of comments, criticisms, suggestions, and assessment made by a team of experts, practitioners and prospective users of the product. Researcher acts as the key instrument in the collection, analysis, and interpretation of data supported by research instruments, such as field notes, product study guides, and questionnaires. Data analysis was executed gradually, starting from data analysis of product's tryout to the data analysis of expert/practitioner. The results of data analysis are used to upgrade the product.

## 3. Findings and Discussion

The product developed in this research is the problem-solving based Standardized Competence Test for Indonesian Language and Literature Education graduates. The test intended to measure the competence of Indonesian Language and Literature Education graduates.

There are 60 test items in the competence test for the graduates with different degree of difficulty ranging from medium to difficult. It employs a taxonomy developed by [7], namely: (1) explore and understand, (2) represent and formulate, (3) design and implement, and (4) monitor and reflect.

Each of the above mentioned taxonomy is further developed into sub competences: *explore and understand* covers problem-solving ability which includes observing, interacting, searching for information, finding obstacles, and demonstrating and understanding findings; *represent and formulate* involves the ability to use tables, graphic symbols or words to describe the problem, formulate hypothetical conclusions based on the factors relevant to the problem or situation; *design and implement* which is the ability to design a strategy to be implemented to solve the problem covering the competences of clarifying objectives and designing the sub-sub-objectives; and finally *monitor and reflect* involves the ability to monitor progress, to react, to provide feedback, and to reflect appropriate solutions to the problem or the chosen strategy.

The test items have been validated and discussed by two experts, of the related field coming from the Indonesian Language and Literature Education Program, Faculty of Letters, Universitas Negeri Malang (UM) and the Indonesian Language and Literature Education Program, Faculty of Language and Arts, Universitas Negeri Surabaya (UNESA).

The results of expert validation are used as references to revise the developed products. This means that the input from an expert team is used to revise the blueprint item and test items. The revisions cover: first, the addition of test items related to the use of practical Indonesian so that learners can solve language problems that occur; second, revision is made to test items that are not clear on what are being asked, for example, students were asked to rate or just make a choice; third, revision is made to

improve the answer choices to make the distracters more effective; last but not least is the revision of diction, spelling, and punctuation.

The competence test for Indonesian Language and Literature Education Program (ILLEP) graduate is problem-solving based. As such, the focus of the test is to measure the ability of learners to solve problems of the language in the context of real communication. Problem solving skills in literary and language problems is important for the ILLEP graduates since they are ultimately designed to become language teachers as well as the model of correct and appropriate Indonesian language users. They may even be problem-solving agents related to the use and development of the Indonesian language and literature.

Problem is a situation which needs solution, to find a solution requires high level thinking skills. These high-level thinking skills, among others, involve the ability to understand the problem well, then using the knowledge to find ideas to solve problems, and conduct experiments to try out the most appropriate solution.

The competence test for PBSI graduates is developed based on the graduate standard of the LLE program. The coverage of the standard embraces all basic competencies and indicators necessary to fulfill the general competence of pre-service Indonesian teachers namely: (1) mastering the theoretical concepts of the field of linguistics (phonology, morphology, syntax, semantics, pragmatics/discourse), (2) having the language skills (listening, reading, writing, and speaking), (3) mastering the theoretical concepts of literature (poetry, prose fiction, drama), (4) having the skills to compose (appreciation, history, and literary criticism), (5) applying the field of language and solving problems in language learning (planning, implementation, and evaluation of language learning), (6) applying the field of literature and solve problems in literature learning (planning, implementation, and evaluation of literature learning), (7) analyzing problems of language, language learning (research in the field of language and learning), and (8) analyzing the problems in Indonesian literature and their learning problems (research in field of literature and its learning).

The competence test for ILLEP graduates is designed to accommodate a large number of participants, and in the next stage, the scoring process will be computer-based. Therefore, the test will be in the form of multiple choice, true-false, and short answer. This kinds of tests are possible to be checked with the help of a computer, so that the test results can be seen quickly.

## 4. Conclusions and Suggestions

This output product of the research is a problem-solving based competence test for Indonesian Language and Literature Education graduates. The product has several advantages, including problem-solving based ability to measure the high level of competence although still limited to the cognitive aspect, various test forms, appropriately

deep and wide coverage of the materials, and the ability to measure the general competence of pre-service teachers. However, this product has not been tested to the potential subjects that the product is intended for. Therefore, this study should be continued with a try out stage to prospective intended subjects to see the reliability and other validity such as construct validity in order to guarantee the characteristics of a good test. In addition, this product should be made into computer-based test that can be used to test the competence of graduates in large numbers with rapid processing.

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