A Preliminary Design: "assessment as learning" to accelerate students' achievements

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Abstract— **Assessment is a part of educational process. One of the assessment roles is "assessment as learning" (AaL). The study aims to introduce a preliminary design for implementing AaL. The research, as developmental research, has been in a design step. The design was developed based on the genetic of AaL viewing the way to assess is the way to learn. Also, literature review was the one used to determine stages of the design. The preliminary design of AaL consisted of eight stages involving Orienting Assignment, Discussing Criteria, Completing Assignment, Doing Self-Assessment, Revising Assignment I, Doing Peer-Assessment, Revising Assignment II and Evaluating. In other words, the design will force students to learn through how they will be assessed.**

Keywords— *preliminary design; assessment as learning; development*

I. INTRODUCTION

Educational processes are identic to teaching and learning processes. There are three components having to be synchronized each other, namely learning outcomes, instructional activities, and assessment [1], as pictured in Figure 1.
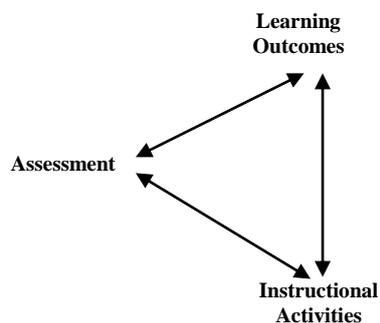

Fig. 1. Aligning learning outcomes, instructional activities, and assessment [1]

Learning outcomes are representing goals of teaching [2]. Then, instructional activities are a system or procedures to develop education or training [3]. The tool to evaluate the achievement of goals is assessment. That is the majority perspective for viewing the role of assessment. However, currently assessment is able to be used as a basic criteria for designing instructional activities.

Arguably, assessment is a way to promote students' learning. It is not an educator's expectation, but students often refuse teachings and lay little attention on it. However, if they expect to pass their courses, they have to give more attention to the way how they will be successful to pass the courses. At least, the students will participate in the assessment processes provided by the educators. That is the reason that the educators has to design their assessment promoting the students' learning rather than only checking the students' achievement.

As cited in [4], assessment has three roles in education. The traditional role viewed assessment is as "assessment of learning". In addition, the assessment is also placed as "assessment for learning". Another role is "assessment as learning". Each role has contribution for teaching and learning activities. On the other hand, educators has to consider how far the roles will be able to contribute for guiding students into successful performers.

The first role is assessment of learning (AoL). This perspective views the assessment is a tool to measure the quality of product conducted by educators. The definition is in line with Reference [5] explaining, that assessment is utilized for checking how well the students' performance at the middle and the end of semester. In other words, the AoL only contributes to inform the students about their achievements. The students will lack of experience in terms of self-assessment. As a consequence, the awareness of what their capabilities are and what the class expect will disobey by the students.

The second role is assessment for learning (AfL). Experts revealed that the through the assessment, educators are able to give advice to the students to improve their learning based on what they have achieved [6],[7],[8]. Educators will provide feed-back to the students' works for promoting their learning and informing how to revise their works into better level. Arguably, the paradigm of assessment will lead the educators to give positive impacts for the students' learning through the assessment. The argumentation is in line with the findings of research in Reference [9], [10], and [11] explaining the AfL affected positively for the students' performance in higher

education. Therefore, the educators should consider the implementation of AfL in terms of the influence on learning.

The third role is assessment as learning (AaL). The assessment will be a foundation for the educators to construct teaching and learning activities. Reference [12] explained that the AaL occurs when the students manage and evaluate their own learning, and use the feed-back from their own managing and evaluating activities to determine what they have to do. In other words, the AaL is able to stimulate meaningful learning. The meaningful occurs when the students are actively engaged to their learning [13],[14]. In addition, the students will experience for doing self-assessment. As cited in Reference [15], self-assessment has been more beneficial than teacher assessment in terms of enhancing learning, Preparing them for a democratic society, providing self-control toward their assignments, developing students' metacognitive, promoting active learning, forcing thoughtfulness on assignment, increasing students' understanding on assignments, decreasing conflicts between student–teacher, and enhancing students' intellectual and social competencies. Also, the students will learn through the assessment, when the educators implement AaL. As a consequence, they will work their assignments on what the educators expect.

The implementation of third role also has challenges. As cited in Reference [16], teachers were comfort to view assessment as AoL. It was probably because they got difficulties to implement the AaL. They needed an operational design to implement the AaL. Therefore, the shifting paradigm will occur. It is in line with Reference [17]. It claimed that in order to promote students' learning, shifting from traditional to alternative view has to be conducted by the teachers.

Based on the explanation above, the third role of assessment has the most tremendous power to promote students' learning. The issue has driven to design how to implement AaL operationally. The research aims to introduce the design and the rationale of the design.

II. METHODS

The type of research is developmental research. The design of the research followed the stages developing by Plomp and Nieveen [18]. The stages for developing model consisted of three stages involving preliminary research, prototyping phase, and assessment phase. They are visualized in Figure 2.
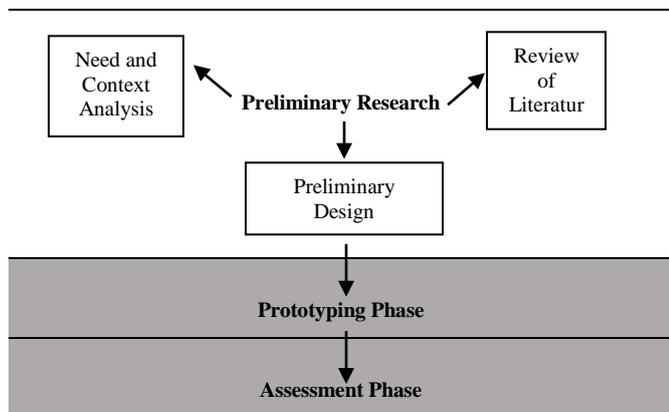
Fig. 2. Stages of developmental design

The study was bordered in the preliminary research stage. The goal of the stage was a preliminary design to implement the AaL operationally. Before constructing the design, the aspect of need and context analysis was concerned. Also, the review of literature had to be considered. Therefore, the results and discussion part has been divided into the three points, namely need and context analysis; review of literature; and preliminary design.

III. RESULTS AND DISCUSSION

This part is provided to introduce the preliminary design of how to implement AaL operationally. Before constructing the design, it was conducted need and context analysis, then literature review. The last part of this section presented the design and point of views of authors. Each section will be explained in more detail below.

A. Need and Context Analysis

The preliminary research was conducted in Science Department, Mathematics and Natural Sciences, Universitas Negeri Surabaya (Unesa). The department has been preparing prospective science teachers for junior high school level. Each student in the department has been studying educational courses. One of the courses has been assessment. In the course, the students has been constructing assessment for junior high school. The students have to be educated how to view and construct assessment being able to promote students' learning. Therefore, the implementation of AaL is an essential need for the prospective science teachers.

In addition, the lecturers there have to begin to shift paradigm, from AoL to AaL They have to assess their students every semester, so that assessment is an important component in their task. As a consequence, they have to concern to construct an assessment way promoting students' learning.

The curriculum also consisted of courses requiring the students to produce products, such as Research Methodology Course and Science, Environment, Technology, and Society (SETS) Course. The product of Research Methodology Course was a research proposal. Then, the students had to present their proposal. For SETS Course, each group of the students got a complex task. The students were forced to create an innovative product integrated science, environment, technology, and society components. Before they produce innovative products, they were provided a chance to propose a research grand. The two courses pointed performance based assessment. Therefore, learning through assessment will be more beneficial for increasing the students' performance.

Moreover, if the implementation of AaL is necessary, the operational design to implement AaL has to be created. Assessment as learning is not culture yet in the department, so that the implementation was very limited. Therefore, the department need to introduce the design for implementing AaL operationally.

B. Literature Review

There were two main views underpinning for constructing a preliminary design of AaL. The first is what the requirements

for occurring the AaL are and the second is the principles of assessment.

1) First view underpinning

Reference [12] explained that the AaL occurs when the students manage and evaluate their own learning, and use the feed-back from their own managing and evaluating activities to determine what they have to do. In other words, the AaL forces the students to learn through assessment.

2) Second view underpinning

Reference [19] mentioned the principles of assessment. There are nine principles for constructing assessment, involving: (1) assessment is designed to promote students' performance, (2) assessment is synchronized to students' learning, (3) assessment should be assessing and representing the whole performances of students, (4) assessment should has access to parents for informing their students' achievement, (5) assessment contains clarity of purpose, goals, standards and criteria, (6) assessment does not consist of a single measurement, (7) assessment has to be be valid and reliable, (8) assessment concerns to both products and processes, (9) assessment conducted periodically is better than episodic.

C. Preliminary Design

By considering the need and context analysis and reference underpinning, the further step is constructing the preliminary design. That is the path of developmental research as cited in Reference [18]. The design is a conceptual design consisting of eight steps for implementing AaL operationally, as presented in Figure 3.
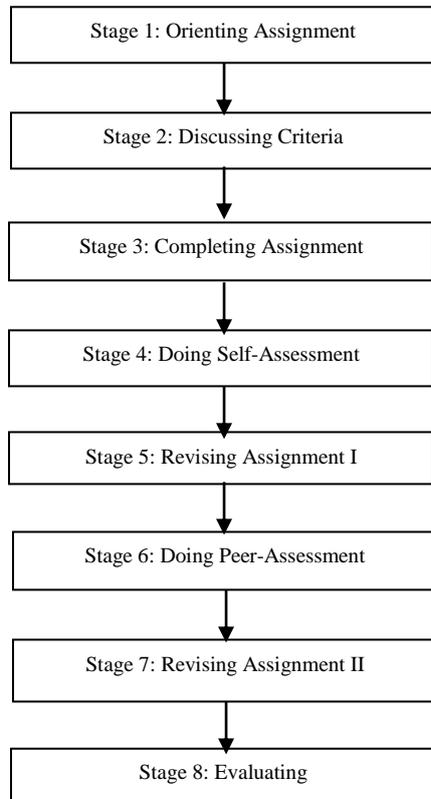

Fig. 3. Preliminary design of AaL

The Figure 1 will help educators to implement AaL following the steps. Each stage is explained in more detail as written on Table 1.

TABLE I.   EXPLANATION OF AAL IMPLEMENTATION STEPS STYLES

Stage	Explanation	Reflection on 1st view underpinning	Manifestation of 2nd view underpinning
1: Orienting Assignment	In the first meeting, the educators inform the task. They have to confirm that the students understand what they have to do for the course. Greeter feelings will produce more positive emotional responses to the task, deeper processing, greater persistence, better remembering, and higher achievement [20],[21],[22]. This stage is also to avoid students' confusing abaout their tasks.	Required	Requiring Principle 3, 5, 6, and 8
2: Discussing Criteria	The educators have to explain the rubric of assessment involving the criteria and standard to achieve the best performance. Then, the students are provided opportunities to ask and discuss the each criteria of assignment. The stage is important because the active learning associates to the students' understanding [23],[24].	Required	Requiring Principle 5, 6, and 7
3: Completing Assignment	The stage is provided for the students to do their project, task, or assignment.	Required	Requiring Principle 2, 3, and 6
4: Doing Self-Assessment	The educators has to facilitate the students to assess and reflect their own-task based on the criteria. Reference [25] revealed that the students will have better comprehension, when they are success to analyse their behaviour. Boud, Lawson, and Thompson [26] suggested that	Required	Requiring Principle 1, 2, 7, 8, and 9

Stage	Explanation	Reflection on 1st view underpinning	Manifestation of 2nd view underpinning
	incability of students to judge their own work will be an obstacle for the students to be effective learners.		
5: Revising Assignment I	After the students have assessed their own work, they have to revise their work. The stage is allowed to be ignored, if there is no revision. The stage is also called *first revision*.	Required	Requiring Principle 1, 2, and 8
6: Doing Peer-Assessment	The educator ask the students to give their works to their friends (one task-one friend). The purpose of the stage is to assess and give feed-back the students' work through their friends' perspectives. The purpose is supported by Falchikov and Goldfinch [27]. Also, Reference [28] and [29] stated that peer-assessment is able to force variety and interest, activity and interactivity, identification and bonding, self-confidence, and empathy with others.	Required	Requiring Principle 1, 2, 7, 8, and 9
7: Revising Assignment II	After getting feed-back from peer-assessment stage, the students have to revise their work. The stage is also called *second revision*.	Required	Requiring Principle 1, 2, and 8
8: Evaluating	The last step is the time of the educators to assess their students' work based on the citeria used by the students.	Required	Requiring Principle 1, 2, 7, 8, and 9

The Table 1 also contains literature review presented in the column of explanation. The purpose is to strengthen the stage and its rationale.

IV. CONCLUSION

The preliminary design of AaL consisted of eight stages involving Orienting Assignment, Discussing Criteria, Completing Assignment, Doing Self-Assessment, Revising Assignment I, Doing Peer-Assessment, Revising Assignment II and Evaluating. For the further research, the study will continue to prototyping phase.

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