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The Development of Student Worksheet (LKM) Based on Interpersonal Intelligence to Improve Social Competence

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Abstract This research is a development research based on Four D model. This development research aims to produce a valid Student Worksheet for basic statistics course based on Interpersonal Intelligence to improve students' social competence. Students that become the subjects of this research are freshmen of mathematics education major in the second semester 2018/2019 academic year. This type of Four D model research consists of four stages: (1) defining stage, (2) designing stage, (3) development stage, (4) dissemination stage. The research has reached the development stage. Research data is collected and judged by validation experts. The result shows that the Student Worksheet passes the valid criteria.

Keywords: *learning device development, student worksheet, interpersonal intelligence*

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1. Introduction

Learning system in basic statistics course has combined teacher-centered and student-centered approach. Based on the authors' experience in teaching basic statistics, there are similar problems found in each student generation. The problems include less activeness in the classroom, less capable to prepare learning materials, fear to ask the lecturer, less confident to join discussions, and less preparation in group discussions. These conditions occur due to students' less confident and they are still in the transition process from high school to university where the students are required to be more active in learning process.

Mathematics education students are prospective mathematics teachers. So it's important to train and help students, as prospective teachers, to get used to being active in communicating, explaining learning materials well using easy to understand language, and understanding their respective (future) students' character. These abilities are known as social competences.

The act of Republic of Indonesia number 14 of 2005 on Teacher and Lecturer and Government Regulation number 19 of 2005 on National Education Standards state that teachers' competencies include personality, pedagogical, professional, and social competence [1]. Teachers are not only required to be intellectually smart but also required to be skilled in socializing and understanding others. In this sense, teachers are required to be skilled in socializing and understanding others. These are considered as social competencies. The appropriate learning system to improve social competence is learning systems based on interpersonal intelligence.

Khadija [2] stated that the development of interpersonal intelligence starting from an early age is beneficial for someone to be able to solve various problems in life and be able to produce goods or services that are useful in various aspects of life. So, if the intelligence does not develop at an early age, it will arise various problems for the future. Advani [3] stated that interpersonal intelligence involves the intelligence to understand and process through interaction with them. Yaumi [4] also adds that teacher is one type of appropriate works for people with high interpersonal intelligence. Therefore, it is very important to train students to improve their ability to communicate and associate with others (social skills). This can be done by providing interpersonal intelligence-based learning systems in each subject to provide provision for prospective teachers to produce a good generation and become professional teachers. One of the learning devices that presents interpersonal intelligence-based learning activities concretely and in detail is the Student Worksheet (LKM) based on RPS. According to prabowo in Ambarita [5], student Worksheet is a printed material in the form of sheets of paper containing materials, summaries, and instructions on the implementation of learning tasks to be done students, which refers to the basic competencies that must be achieved.

The explanation above emphasizes the importance to train students, as prospective teachers, with a learning system that requires activeness in the classroom so that it could develop students' social competence. This study

aims to develop Student Worksheets (LKM) based on interpersonal intelligence to develop students' social skills.

2. Literature

Gardner states [6] that interpersonal intelligence shows one's ability to sense others' feeling. This type of intelligence is often referred as social intelligence (social skills). Furthermore, Gardner states that interpersonal intelligence relates to the ability of someone to understand, interact, and associate with others. Interpersonal intelligence can be seen when someone communicates and interacts with others. Interpersonal intelligence is also seen as the ability shown by a person when the person works in a group or team. The capacity to understand and to interact effectively with others is also classified as interpersonal intelligence.

Mork [4] emphasizes four important elements of interpersonal intelligence that are needed to be used to communicate. These elements include (1) reading social cues. (2) giving empathy, (3) controlling emotion, and (4) expressing emotions appropriately.

Uno [7] difines interpersonal intelligence refers to the ability to awake and make a difference in mood, intent, motivation, and feeling about other people. This includes sensitivity, facial expression, voice and body language (Uno, 2012).

Armstrong in [8] defines interpersonal intelligence as the ability to understand oneself and act based on that understanding. Interpersonal intelligence or social intelligence is defined as one's ability and skills in creating relations, building relations and maintaining social relations so that both parties are in a situation of mutual benefit.

Based on some of the definitions above, it can be concluded that interpersonal intelligence is the ability to interact with others and to understand the condition of others well. People with high interpersonal intelligence also have a high social spirit, more sensitive, sympathetic and empathetic.

3. Method

3.1. Research Approach

This research is a research and development research. The development model used in this study refers to the 4-D model (four D model). The stages in developing the 4-D model learning device are outlined as follows:

3.1.1. Defining Stage

The purpose of the defining stage is to determine the conditions needed in the process of developing learning device. The activities in this stage are: (1) curriculum analysis, (2) student analysis, (3) concept analysis, (4) task analysis, and (5) specifications of learning objectives.

3.1.2. Designing Stage

The purpose of the designing stage is to produce a learning device prototype, namely LKM.

3.1.3. Development Stage

The purpose of the development stage is to produce the final form of learning device. At this stage, expert validation (content validation) was carried out through the Makassar State University's validity institution (LP3MP). Validity is obtained by calculating the average value of all validators, which is then confirmed with the interval of the validation criteria of learning device as follows:

Table 1. The Validation Criteria of Learning Device

Value	Criteria
$3,5 \leq M \leq 4$	Very Valid
$2,5 \leq M < 3,5$	Valid
$1,5 \leq M < 2,5$	Fairly Valid
$M < 1,5$	Invalid

The criterion that is used to determine if the learning device has an adequate degree of validity is the average value of validity of all aspects is at least in fairly valid category and validity value of each aspect is at least in valid category. If these criteria don't meet, it's necessary to revise the learning device based on validators' advice or by reviewing the aspect with less validity value.

3.2. Research Instruments

The instruments designed by researchers to complement LKM are: (1) validation sheet of learning device, (2) observation sheets of students' activities, (3) observation sheets of social skills development, (4) student response questionnaires, and (4) achievement test to measure students' mastery.

4. Result and Discussion

In this section, the results of the research are described in the form of learning device products in accordance with the research objectives described in the introduction. The results of the research at each stage are as follows:

4.1. Results of Defining Stage

Activities carried out in this stage are curriculum analysis, student analysis, material analysis, task analysis, and specification of learning objectives. These activities are initial steps, the basis, for stepping into the next stages of development. The results of each activity at the defining stage are described as follows:

a. Curriculum Analysis Results

The curriculum used in the institution refers to the Indonesian National Qualifications Framework (INQF). INQF can be interpreted as several tiered or gradual competency qualifications based on learning outcomes (LO) as an attempt to improve the quality of human resources. In LO, some competence qualifications are explained and become the reference. It means the students must have those qualifications, especially during their education in each study program. LO contains targets for material achievement that must be mastered by students for a certain subject, in this case Basic Statistics. The formulation of LO is arranged in four elements, namely attitudes and values, working ability, mastery of knowledge, and authority and responsibility. INQF contains references that guide students to maintain their attitude, mastery of

the material, and to establish good relationships with others. So it is very helpful for students to improve their social skills. The learning materials made by the lecturer are the determinants of students' social skills.

b. Results of Student Analysis

The subjects of this study are the second semester students of Mathematics Education Study Program in 2018/2019 academic year. In student analysis, authors haven't got much information regarding students' character and attitude because basic statistics is taught to the freshman of 2018/2019 academic year in the second semester. According to the data collected by Campus Life Committee (PKKMB), freshmen come from several districts in West Sulawesi and outside West Sulawesi. It means that the vast majority of students are mandarese, but many of them are buginese or other ethnic groups that are immigrants who settled in West Sulawesi. Although these freshmen come from different ethnic groups or backgrounds, they use the same language to communicate one another which is Indonesian language. Some students even seemed to start showing their activeness in leading groups or speaking in Campus Life Committee activities.

The "freshman" status, surely, indicates that the student is still adjusting to the campus environment. This causes students tend to be passive and limit their conversation. The 2018/2019 freshman's background is different: some come from regular High School (SMA), while some others come from National Madrasah Aliyah (MAN) and Vocational High School (SMK). The different background of them indicates that their prior knowledge is different, especially regarding the material that will be learnt, basic statistics. Students from social science major in high school and vocational high school are known as having low mathematics ability compared to those from science major in high school. Because the learning device that is produced here based on interpersonal intelligence, learning strategy with cooperative elements is required.

c. Results of Concept Analysis

Activities carried out at this stage are identifying, detailing, and arranging series of activities in the LKM systematically based on three learning methods in the RPS, namely group learning strategies, peer tutor, and JIGSAW.

d. Results of Analysis of Learning Objective Specifications

This activity aims to formulate learning objectives to be achieved when studying basic Statistics courses. This goal then becomes a reference for designing learning device. Based on the material analysis that is done before, the formulation of the learning objectives of the Basic Statistics courses are:

Students have conceptual understanding and skill to prepare data by demonstrating religious, discipline, tolerant, cooperative, and responsibility attitudes.

(1) Students have conceptual understanding and skill to describe data by demonstrating religious, discipline, tolerant, cooperative, and responsibility attitudes.
(2) Students have conceptual understanding and skill to analyze data by demonstrating religious, discipline, tolerant, cooperative, and responsibility attitudes.
(3) Students have conceptual understanding and skill to test hypothesis by demonstrating religious, discipline, tolerant, cooperative, and responsibility attitudes.

4.2. Results of Designing Stage

This stage aims to design a learning device prototype. This stage produces learning device in the form of LKM. The results of the designing stage of the device are described as follows:

a. Format selection results

Selecting format or the form of the reference is an activity that must be done in order to develop learning device. This activity aims to design or form the learning design format. The contents of the learning device are arranged based on the steps of interpersonal intelligence-based learning methods that are integrated with social skills. The format of the learning device is LKM which is developed by containing the learning outcomes of each material for each meeting. The learning device also presents the steps of the activities that will be done by students during the learning process in the classroom.

b. Preliminary Design Results

The results of the preliminary design after format selection are draft of the learning device, LKM. The draft resulted in this preliminary design is called prototype. Then this prototype is developed to be validated and revised in general. The results of this preliminary design are described as follows:

(1) LKM

LKM is designed for 13 meetings. In general, LKM contains these components:

a. Learning outcomes, based on the material learned at each meeting.
b. Procedure of learning activities, based on predetermined learning methods.

(2) Research instruments

In addition to the LKM, the authors also develop instruments that will be used in the validation and trial stages. The instruments include learning device validation sheet, student activity observation sheet, social skills development observation sheet, student response questionnaire, and student mastery test.

4.3. Results of Development Stage

In this stage, the instruments are validated by experts called validators. Validators who conduct the validation are lecturers of Mathematics Department of University of Makassar (UNM). The assessment for the LKM is based on: format, language, content, illustration and benefit / use contained in the instrument of the learning device validation sheet. During the device validation process, there are several revisions until they are finally given a final assessment.

The following is a summary of the results of the validator's assessment of the learning device:

Table 2. Description of the results of expert assessment of the learning device

Device	Indicator	Validity Value
LKM	Format	3,7
	Language	3,7
	Technical	3,6
	Content	3,7
	Mean	3,7

Based on the validity criteria of the learning devices previously stated, it can be concluded that the devices are in the "very valid" category. The expert assessment (validation), criticism, some corrections, and constructive suggestions are obtained and used to revise the learning devices. The results of the revision of the learning devices are described as follows:

MFI revision results

(1) Learning outcomes is included.
(2) In learning activities procedure, language is fixed to be easier to understand.

5. Conclusion

Based on the discussion above, it can be concluded that Interpersonal Intelligence-based LKM to develop social competence in learning basic statistics passes valid criteria in terms of format, language, technical, and content; and is recommended to try it out in the classroom to see the practicality and effectiveness of the developed device.

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