

CONTEXTUAL CHEMISTRY LEARNING MODEL BASED ON ENVIRONMENT TO IMPROVE LEARNING OUTCOMES AND ACADEMIC HONESTY OF JUNIOR HIGH SCHOOL

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ABSTRACT

Contextual chemistry learning model based environment (PKKBL) to improve learning outcomes and academic honesty junior high school students. This study aims to determine the steps the development, validity, practicality and effectiveness of the model PKKBL through the measurement of learning outcomes and academic honesty junior high school students. PKKBL models equipped learning tools that help teachers and students make the learning process so that the learning outcomes of chemical and academic honesty students can be better than before. This research is the development of a model refers to the Borg and Gall (1983) that modified into seven steps. Subject of research is the students of SMPN 30 Makassar VII₆ class. Data collection tool uses observation sheets, questionnaires, worksheets, and achievement test sheet which has been validated. Data analysis techniques performed by descriptive qualitative and quantitative descriptive percentages. The result showed that: (1) PKKBL models can be developed through three stages of development, namely stages: (a) the initial study, (b) a limited test phase, and (c) the testing phase is extended, (2) the model PKKBL which has been developed showing: (a) instruments are valid models (4.3) and reliable (0.85), (b) the device is practically used (1.6) and (c) because the effectiveness may improve learning outcomes (82,28) and the student's academic honesty belonging to adequate category (72.0).

Key words: *teaching chemical model, contextual, environment, learning outcomes, academic honesty.*

INTRODUCTION

Chemistry learning process both at the level of junior high school and senior high, even in college, in general, have not implemented student-centered learning (student center) to explore their own learning experiences as the basis for gaining knowledge, so that students tend to have difficulty studying chemistry moreover only through reading textbooks. This situation brings students become less interested in chemistry lessons filled with symbols, the symbol of the element, and the chemical formula is considered very difficult for students. On the other hand students are required to obtain a value that meets the minimum criteria (KKM) that has been set every school. Students who consider

themselves unable to meet the KKM take shortcuts to meet these demands with cheating in examinations as cheating got help answer from the outside, or view notes. Even in this way has become a culture for many students, which resulted in students less confident and less able to compete for better performance.

Education curriculum (KTSP) is a solution delivering the curriculum the student reaches a predetermined KKM cause learning basic principles and objectives of the curriculum that is student-centered learning that gives the freedom to explore the potential of development, needs, and interests of the students (learners) and the environment (Muslich, 2011:48). Meaning of directing student learning means learning through competency development attitude (attitude), skills (skills) and knowledge (knowledge) that

can be done in the form of group and individual learning. The third competency applied comprehensively to improve the quality of learning and teaching in schools or universities (Ericson in Dennis, et al (2008: 2). This is in line with the direction of the learning objectives through contextual approach based environment is able to facilitate it based on the state of the school environment and support the teacher as learning implementation partners. As emphasized by (Depdiknas 2006: 6) that curriculum in junior high school science (Biology, Physics, and Chemistry), in addition to teaching the theory also do the corresponding practical learning.

Results of surveys and interviews with teachers and students towards feasibility chemical chemistry learning in junior 30 obtained information that the chemical has not been as mandated learning of KTSP, chemistry teacher still needs input to adjust the chemical subject matter with appropriate learning models. Second, have limited time and opportunities teachers have to arrange their own handbook teacher, student guide books and worksheets are aligned and structured according to the characteristics and the characteristics of students' chemistry lesson. Thirdly, it is recognized that the time was focused on the learning outcomes of cognitive aspects of products. Fourth, the use of sources and media of learning and science lab facilities that are around the school was still verbal. Fifth, learning is limited to the chemical during implemented in the classroom. Sixth, the device used chemistry teachers have not developed their own corresponding characteristic chemistry student and subject matter. Seventh, chemistry student learning outcomes on average is still very low (35-40% completed), and the planting of academic honesty not been applied. Results of a student's academic honesty observations during the pretest work is also very low (approximately 20%) only. Academic honesty describe intelligent culture that accompanied the life of the character, giving rise to various gaps and irregularities (Priyatno and Manullang, 2010: 37). Therefore academic honesty is one of the values of character education can be built through teaching (Zuriah, 2008: 5). Aspects of academic

honesty that can be applied to chemistry (integration) through habituation in the learning process, namely; (1) submit the results of learning, (2) care in cooperation, and (3) no cheating in the exam.

Some research such as: Suastera (1998) and Sudria (2000) found that knowledge of the basic concepts of chemistry junior high school students is still very low. Simanora & Redhana (2006) found students had misconceptions about the chemical because of the fault of the teacher. (Deen, 2006) on chemistry learning with contextual approach, it takes a long time (21-30 years) and continuous. Steenberg and Bradley (2011): "Study of chemical material not suitable by speech to students, but it takes patience teachers lead students to spell it letter by letter to the mention of a symbol that is always different between the emblem with the name of the element". Jones and Barke in Steenberg (2011): "... some chemical material suitable learned by through experiments to improve the ability of students to find a concept through the test results, Murdock (2006):" the three main things students academically dishonest behavior, namely: do not know learning objectives, not sure of his ability, and no sanctions ". Zuchdi (2010): ... "category honesty of character education is an effective and comprehensive approach involving parents, schools as well as elements that are integrated into the field of study".

PKKBL models to enable students to learn and develop their potential foster students' personal confidence to establish an honest and moral, willing to cooperate with friends, not individualized and even ashamed to commit fraud such as cheating. Thus, students determine the ability of himself, believes the limits of the capabilities, and foster social attitudes in cooperation and tolerance among friends.

Based on the above, the authors have great hopes to achieve learning outcomes and student academic honesty is better to cooperate with the chemistry teacher to carry out chemistry learning using contextual learning model-based chemical environment (PKKBL) and the planned integration of academic honesty in a chemistry lesson using learning tools such as syllabi, lesson plans, teachers' handbooks, guidebooks students, and

worksheets, which is based on student characteristics and chemical subjects. So the purpose of this study was (1) to develop a model learning environment based contextual chemical valid, practical and effective on several stages, (2) the model is valid, practical and effective chemical can improve learning outcomes and academic honesty junior high school students.

RESEARCH METHODS

This type of research is the development of research which is located in SMPN 30 Makassar with research subjects were students of class VII. The model refers to a model of development Borg and Gall (1983), which consists of 10 steps. But in this study held up in seven steps with the consideration that through the seven steps has shown improved results in the form of the instrument is valid, the model is practical and effective. The seventh step is further divided into three major stages at once became one of the research objectives, namely: Phase I in the form of: a preliminary study (gathering information), planning, developing the initial format of products such as models of learning and learning tools (lesson plans, teacher guide, student guide, LKS, instrument models and evaluation tools). All the instruments and learning tools that have been developed, further validation by submitting the instruments and devices to three people validator experts who have educational disciplines and chemical education. In other words, at this stage I produced a draft initial model (I) are valid and reliable based on the results of expert validation.

Phase II consists of: initial field test (limited trial) and the revision of the main product. The stages include testing is limited to one class to 14 students aiming to obtain a first assessment of the qualitative evaluation (an initial qualitative evaluation) of the product to be produced (Borg & Gall, 1983), namely the first model PKKBL. At this evaluation is more emphasis on the aspect of a product, namely whether the charge device model and qualitatively better arranged so that it can be applied in accordance with the scope and subject matter. Stages limited trial was conducted by researchers together with

chemistry teachers in grade VII on the subject smaller using PKKBL model design consisting of design tools and instruments feasibility and management, observation of affective, psychomotor, and academic honesty. Implementation of limited testing twice meeting to discuss the matter of determining the chemical nature of acids, bases, and salts. At the end of each meet accompanied by a revision based on observations that are important in improving the model PKKBL. The final result is called a draft revision than the main model (II) used in the trial was expanded to determine the practicality and effectiveness of the model PKKBL operationally.

Phase III consists of the main field test (test expanded) and operationally product revision. At this stage of the test the main field (main field testing), which aims to determine whether the product you want is produced meet the goal (the product's objectives) is a model PKKBL practical and effective so that it can be used in chemistry learning to improve student learning outcomes and academic honesty. Application of expanded testing using a model of the early PKKBL on the subject that more than 42 students of class VII SMPN 30 Makassar. Implementation of the pilot expanded to models earlier than PKKBL models and devices is done by using the frequency of meetings four times and test piloted all instruments and devices as well as other evaluation tools related. During the learning process (in the classroom, outside the classroom and in the laboratory IPA), an observer along with the chemistry teacher conduct authentic assessment primarily on the ability of students in terms of affective and psychomotor abilities and academic honesty, and Courant and format models that still need to be completed. It is very important, because in the test phase followed by a revision expanded operational PKKBL models that determine the final quality PKKBL models as well as a major product research and development.

The collection of data through observation instruments, questionnaires and tests. All the instruments used to measure validity, practicality and effectiveness of the model PKKBL. Practically data were collected through observation practicality models using

instrument models, the effectiveness of data models through observation using instruments activity, the ability of teachers to manage learning, student questionnaire responses against PKKBL models, and authentic assessment of learning outcomes in the form of the affective and psychomotor student obtained through observation and learning outcomes Cognitive collected through the provision of multiple-choice test at the end of the lesson. Academic honesty is collected through observation. Data were analyzed using descriptive qualitative analysis of the process of observation and quantitative descriptive analysis of the observations and

- g -high Value ($\langle g \rangle$) $\geq 0,7$
- g-medium Value $0,3 \leq (\langle g \rangle) < 0,7$
- g-low Value ($\langle g \rangle$) $< 0,3$

the results of cognitive tests is to determine the practicality and effectiveness of the model PKKBL. To determine the validity and reliability of the model using the percentage of agreement, with the formulation:

$$\text{Percentage of Agreement (R)} = \frac{\text{Agreements (A)}}{\text{Disagreements (D) + Agreements (A)}} \times 100\%$$

Criteria observation sheet accomplished learning model said to be reliable if the reliability (R) ≥ 0.75 . Category enforceability of any aspect or all of the aspects of the model PKKBL defined as follows:

- 1.5 $\leq M \leq 2.0$ implemented entirely
- 0.5 $\leq M \leq 1.5$ implemented in part
- 0.0 $\leq M \leq 0.5$ does not materialize

The analysis of the effectiveness of the model PKKBL supported by the results of the data analysis of the effectiveness of the four components, namely (1) the activity of students. If 70% of activity is at the ideal time interval, both for each meeting as well as the overall (Hobri, 2009), then the model is said PKKBL effective.

The formula is:
$$\text{PWI} = \frac{(\text{Time for each component of student activity})}{(\text{Time Overall Student Activities component})} \times 100\%.$$

(2) management of learning (KG) with a model that analyzed descriptively PKKBL was

subsequently confirmed by the interval categories:

- KG < 1.5 means very low
- $1.5 \leq \text{KG} < 2.5$ means low
- $2.5 \leq \text{KG} < 3.5$ means sufficient / moderate
- $3.5 \leq \text{KG} < 4.5$ means high
- $4.5 \leq \text{KG}$ means very high

(3) The students' response to learning PKKBL models, and (4) the results of student learning and the academic honesty. Category scale was analyzed through observations and effectiveness of the model is analyzed through observation and calculation formula N-Gain:

$$\text{N-Gain} = \frac{(\text{value of the pretest} - \text{posttest})}{(\text{maximum value} - \text{the value of pretest})}$$
 with scale category

RESULTS AND DISCUSSION

Develop a model PKKBL. PKKBL model development results obtained through three stages, namely: (1) the stage of initial research and information gathering, planning, and developing the initial format, (2) the initial field test phase (limited trial) and the revision of major products, (3) Field Test The main (wider test) and product revision operationally.

Results of activity in model development PKKBL above, there are three main types of outcomes, namely: (1) the results of the drafting PKKBL models, (2) the results of the planning models and their PKKBL learning device and, (3) the results of the development of the instrument. The third result of this development then validate by three experts in the field of science education and science of chemistry education. Results of the validation tools and instruments as in Table 1.

Table 1. Summary of Results Validation Instrument Research

No.	Name Of Instruments	Validity	information
1.	PKKBL model of assessment instruments	4,3	SV
2.	RPP assessment instruments	4,5	SV
3.	Teacher assessment instruments book	4,9	SV
4.	Student assessment instruments book	4,9	SV
5.	LKS assessment instruments	4,9	SV
6.	Assessment multiple-choice assessment instruments	5,0	SV
7.	Feasibility assessment instrument models PKKBL	4,3	SV
8.	Learning management assessment instruments	4,4	SV
9.	Student activity assessment instruments	4,3	SV
10.	Teacher assessment instruments response to the learning model PKKBL	4,8	SV
11.	Response assessment instrument teachers to guide teachers	4,7	SV
12.	Assessment instrument teacher response to student guide book	4,4	SV
13.	Teacher assessment instrument response against LKS	4,6	SV
14.	Assessment instrument students' response to learning model PKKBL	4,7	SV
15.	Assessment instrument students' response to the student book	4,8	SV
16.	Student responses to assessment instruments LKS	4,8	SV

Results of the validation instrument PKKBL models gained an average of 4.7 percentage of agreement with the value obtained was 0.78, which means instruments and devices PKKBL models including the valid and reliable so it can be used to perform a limited trial. Assessment sheet used is validated by three experts and practitioners. Results of the analysis of the instrument showed that all the instruments declared invalid in accordance with the criteria of validity ($4,2 \leq \bar{V} \leq 5,0$).

However, there are suggestions from some validator against to the teacher and the student handbook be enlarged of the letter, the images in the book is enlarged and clarified the color according to the original color. Another suggestion for syntax advised operationally include the intended learning environment that the classroom environment, outside the classroom and in the science lab. The amount of activity in the LKS suggested reducing the number of activities consisting of 5-6 to 2-3 meeting each activity. The high overall revision types including minor

revisions, and do not need to make changes in the application of the model PKKBL, so that the instrument can be used for their designated purpose. Thus instruments PKKBL models and learning tools that have been developed can be used to determine the practicality and effectiveness of the model PKKBL in improving learning outcomes and academic honesty junior high school students.

1. The validity, practicability and effectiveness of the model PKKBL

Validity of instruments and devices PKKBL models as shown in Table 1 indicate that the initial draft PKKBL models can be used in subsequent trials so that the quality of the model PKKBL form PKKBL practicality and effectiveness of the model can be determined.

Practicality PKKBL models obtained through observation of the feasibility study through limited trials (Table 2) and expanded trials (Table 3).

Table 2. Observations of accomplished of PKKBL Model Test Limited

aspects Observations	The mean	Agreement	Disagreement	Category
Syntax	1,4	9	5	Done partially
Social system	1,4	3	11	Done partially
Reaction principle	1,3	3	5	Done partially
Support system	1,8	17	1	Done partially
The mean total	1,5	32	22	Done partially

Table 3. Observations materialize PKKBL Model Testing Expanded

aspects Observations	The mean	Agreement	Disagreement	Category
Syntax	1,9	24	0	Done entirely
Social system	1,7	25	3	Done entirely
Reaction principle	2,0	26	2	Done entirely
Support system	1,9	36	1	Done entirely
The mean total	1,9	111	6	Done entirely

In the limited testing done only support system entirely, which means that the teachers have been able to use the devices developed especially RPP. In contrast to the overall expanded trials carried out in those perfect aspect. This fact is evidenced during the learning process, that all the students happy, enthusiastic and motivated learning experience with well PKKBL models of learning in the classroom, outside the classroom, especially during laboratory experiments. Often students do not want to stop experimenting so that the allocation was not enough time.

The effectiveness of the model PKKBL said to be effective if: (1) the activity

of the students are in the ideal time interval (2) the ability of teachers to manage learning in the high category, (3) the response of teachers and students is quite minimal, and (4) the results of learning achieve completeness criteria and honesty are in the category of academic enough. Observation activities of students studying in limited testing is not performed since the frequency of meetings is only performed for two times only. But the trial was expanded frequencies to discuss the meeting more thoroughly defined basic competencies. The results of student activity observation trials expanded as shown in Table 4.

Table 4. Average Percentage of Time Activity Students of SMPN 30

Category	Percentage of time (%) Meeting				Average Percentage of time (%)	Interval tolerance (%)
	I	II	III	IV		
1	6.67	6.67	6.67	6.67	6.67	3.25 - 9.25
2	6.67	5.33	6.67	6.67	6.34	0.00 - 6.75
3	8.00	6.67	6.67	8.00	7.34	5.75 - 11.75
4	16.67	16.67	16.00	15.00	16.09	15.75 - 21.75
5	37.33	44.00	42.00	40.00	40.83	40.75 - 46.75
6	9.00	11.00	10.00	13.33	10.83	9.5 - 15.5
7	14.67	8.67	9.33	9.33	10.50	3.25 - 9.25
8	1.33	1.33	2.67	1.33	1.67	0 - 3.00
Total	100	100	100	100	100	

Based on the results of data analysis of student activity at the top, of 8 types of activity was observed, only the activity concluded that the material has been studied (seven activities) are not eligible ideal time. Students are still having trouble making conclusions with his own word, students have difficulty concentrating and tend to lack confidence. This situation is understandable

because the seventh grade junior high school students are still in the stage of mental development are at the transition between childhood and adolescence that need praise, encouragement and guidance and still use their mother tongue. Observations learning management based on the phases of the syntax that has been designed in the RPP. Observations on limited testing, as in Table 5.

Table. 5. Learning Management Model PKKBL on a Limited Trial

No	Learning Management Description	On average Observations	classification
1	Connecting phase	3.0	enough
2	phase Organizing	3.7	high
3	Phase Excavation Experience	3.2	enough
4	Phase Application of Knowledge	3.2	enough
5	Phase Thinking Back	3.0	enough
6	Knowledge Utilization phase	3.1	enough
7	Atmosphere Learning	3.2	enough
mean Total		3.2	enough

The ability of teachers to manage learning chemistry on limited trial is in the category enough ($2,5 \leq KG < 3,5$). This result is understandable because this application

including the early practitioners trials to assess weaknesses or deficiencies instrument that has been validated.

Table 6. On Trial Expanded Learning Management

No	Learning Management Description	average	Category
1	Relating phase	4.3	good
2	phase Organizing	4,3	good
3	Experiencing phase	4.1	good
4	Applying phase	4,1	good
5	phase Reflection	4.0	good
6	phase Transferring	4.1	good
7	Atmosphere Class	4,4	good
Mean total		4,2	good

If consulted with the price of KG for the price, $4 \leq KG < 5$ meets the criteria of the teacher's ability to manage learning in both categories. This shows that learning with contextual may learned by well teachers, and all student welcomed with enthusiasm as evidenced by the attitude and psychomotor

and cognitive learning outcomes of students, the better. Due to the better student learning outcomes, have a positive influence on the behavior of a student's academic honesty increasing from very poor category (pretest) into the category enough (posttest). It is seen that the three aspects of academic honesty

enough category. These results are very encouraging because the integration of the new academic honesty on one subject matter (chemistry), but has shown significant improvement.

Response student / teacher to the application of the model PKKBL consists of three aspects, can be seen in Table 7.

Table 7. Response Against Student Learning, Student Books, and LKS

No	Description	Learning	Student Book	LKS
1	Average	4.01	4.19	4.13
2	median	3.90	4.20	4.10
3	Modus	3.90	4.20	4.10
4	standard Deviation	0.42	0.35	0.46
5	Minimum value	3.00	2,40	2.50
6	Maximum value	4.90	5.00	5.00
7	number of respondents	42	42	42

Results of student responses to the three devices above shows the results including both categories. Students were delighted to learn chemistry by using all three of these devices under the pretext that these devices support each other and complement each other so that what is learned both concepts and theories and very relevant facts. This fact makes the students feel at home study and interpret his lesson well.

Results of the study were treated authentic assessment consists of four aspects, namely: cognitive product and cognitive processes (LKS), psychomotor abilities and affective abilities. Results of cognitive assessment in trials expanded product descriptively presented in Table 8.

Table 8. Values descriptive statistics Tests Student Results

No.	Statistics	Pretest	Posttest
1.	The Highest Score	82	94
2.	lowest Rated	18	47
3.	The maximum value	100	100
4.	Average value	58	76
5.	standard Deviation	17,43	12,39

If the pretest and posttest values are then compared based on criteria grouped completeness of student learning outcomes, frequency and percentage of completeness of student learning outcomes at 82.28%.

Results of the assessment of cognitive processes (LKS) is in the category enough that is equal to 87.61%. Assessment process as psychomotor abilities and affective abilities are in the good category and category enough. This can be seen in Table 9 and Table 10.

Table 9. Categories Psychomotor Ability Assessment

No	aspect of observation	Average (%)	Category
1	perception	84,76	good
2	readiness	87,30	good
3	Guided movement	70,74	enough
4	Mechanical movement	69,06	enough
5	Complex motion response	52,38	poorly
6	Adjustment of motion patterns	66,09	enough
mean total		71, 72	enough

Table 10. Results of the observation ability Affective

No	aspect of observation	Average	Category
1	Receiving	87,81	good
2	Responding	65,20	enough
3	Evaluating	71,04	enough
4	Organizing	73,79	enough
5	Characterization	80,70	good
Mean Total		75,71	good

Results of the assessment of affective abilities of students in both categories (75.71). This situation is shown during the learning process both in the classroom, outside the classroom or in laboratory science, most students still difficult to understand especially correctly answer what is asked, difficult students organize themselves into groups to learn and often make mistakes in interpreting the study results obtained based on the concept or theory. This situation naturally occurs because of a learning outcomes will be settled if the new emerging learning outcomes (temporary). This condition will modify the behavior and eventually become permanent (Olson, 2009: 4-5).

Results of academic honesty observation data analysis as shown in Table 11, with a mean gain of 72,00 including the category enough.

Table 11. Observations Academic Honesty

No	aspect of the rated	average	Category
1	Asking actual learning outcomes	63,38	Enough
2	Care in cooperation	73,70	Enough
3	Not do cheating in examinations	80,95	good
The mean total		72,00	Enough

The average total academic honesty observations by 72,00 are in the category enough. The second aspect (cooperation term) are still in the category enough. One item of this aspect that criticized the opinion of friends, students experience fear and looked nervous if you want to criticize the opinion of friends as it is not uncommon in the learning process earlier.

CONCLUSION

Through the process of model development PKKBL which refers to the model of development Borg and Gall (1983) concluded that:

1. Development of PKKBL models implemented by referring to the model of Borg and Gall (1983) through a seven-step simplified into three stages of development, namely: (a) prepare the stage PKKBL models, (b) a limited test phase, and (3) the test phase expanded.
2. The validity of the model PKKBL obtained through validating the draft models PKKBL which consists of three steps: research and initial data collection, planning, and development of the initial format. Results of the validation referred PKKBL model design is ready to be tested
3. Practicality PKKBL models obtained through observation feasibility study which was done entirely on the category.
4. Affectivity of PKKBL models obtained by four components have qualified effectiveness and effective, namely:
 - a. Student activity observed has met the ideal time.
 - b. Teachers were able to manage learning appropriate learning syntax.
 - c. The response of teachers and students to PKKBL models are at good and excellent categories.
 - d. Learning outcomes and increasing student academic honesty

Suggestion

Based on the research results and conclusions, put forward some suggestions include: To facilitate learning science chemistry model is expected to have power PKKBL laboratory managers and teachers

who prepare lab materials before students enter the lab. Learning science chemistry with PKKBL models are expected to be taken into consideration in learning science, especially chemistry Classification material substance to enhance students' understanding and academic honesty. To the other researchers who want to do further research on learning with PKKBL models, you should choose another subject matter by combining a variety of strategies or methods of learning so that research on the wider PKKBL models.

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