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Development of a Learning Style Diagnostic Assessment Instrument Based on Experiential Learning Theory

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Abstract

Assessment is one of the important things to do, especially in differential learning in the independent curriculum currently implemented. Non-cognitive diagnostic assessment is an assessment that is still rarely researched. This research aimed to develop a non-cognitive diagnostic assessment (learning style) at the high school level. The method used in this research is development, or Research and Development (R&D). The model used in this research is the ADDIE model. The model consists of five stages, namely the analysis, design, development, implementation, and evaluation stages. This research sample involved all class X students, totaling 30 students. Based on research that has been conducted, shows that non-cognitive diagnostic instruments based on experiential learning theory can be used to determine student learning styles. It is known that students tend to have a learning style. Reflective observational elements have the highest percentage of 76.44% and abstract conceptual elements have the lowest percentage of 71.89%.

Keywords: Assessment, Instrument, Diagnostic, Experiential Learning Theory

INTRODUCTION

All elements of society always view education as the center of attention in life (Suryana, 2020); this is because the quality of education is one of the benchmarks for a nation's progress (Rasyid, 2015). This agrees with Salsabila & Firdaus (2018), who state that education is one aspect that supports the development of a country and is a systematic process to improve human dignity holistically. Education is an actualization of the human dimension, which consists of cognitive, psychomotor, and affective aspects. The cognitive domain encompasses intellectual abilities such as critical thinking, problem-solving, and creativity. The psychomotor domain pertains to physical skills and manual dexterity. The affective domain involves emotional, social, and moral development, including values, attitudes, and beliefs. Educational goals like this can be achieved with a good learning process. Various educational policies and programs are always rolled out, and efforts are made to continue to develop and improve the education sector (Alawiyah, 2017). An example of a form of follow-up to all the foundations above is the Independent Curriculum Implementation Policy, which was launched in early 2022 in several schools (Nurhasanah et al., 2022). This policy has certainly influenced the learning and assessment activities that need to be carried out by teachers so that teachers are encouraged to have competencies that are relevant to this policy.

An important note that teachers need to pay attention to is the learning principles inherent in the independent curriculum, namely learning with teaching at the right level

approach (Mulyani et al., 2023), a teaching approach that is centered on students' learning readiness and not just at their level, just class (McTighe et al., 2017). Teachers need to consider learning plans, especially the development stage and level of achievement of each student, so that learning is carried out following each student's learning needs and reflects the characteristics and development of diverse students (Tomlinson et al., 2003; Hanim et al., 2020). Students within the same developmental phase may exhibit varying levels of cognitive and affective readiness. Consequently, a differentiated instructional approach is necessary to provide appropriate learning experiences tailored to each student's unique needs. According to Hati (2021), the implementation of the 'teaching at the right level' approach typically entails a three-stage learning process., namely: 1) carrying out diagnostic assessments of students; 2) planning the learning process; 3) implementing learning.

Assessment in the learning process (instructional) is a process of collecting information about students and classes to make instructional decisions (Triyoso & Sorong, 2013). When deciding where to place planning and learning processes, assessment plays a crucial role. According to Nitko (2010), "poor testing materials can lead to decisions about student progress and mastery and may render an otherwise useful instructional program ineffective." Effective evaluation is crucial since it aims to identify discrepancies between what students and teachers anticipate from their education. Assessment can function to monitor student development (Rodrigues & Oliveira, 2014). Assessments can be carried out before learning, during learning, and at the end of learning (Yani et al., 2022; Mathew & Poehner, 2013).

The assessment carried out at the beginning of the learning design process is called a diagnostic assessment (Iskak et al., 2023). Diagnostic assessments aim to diagnose students' basic abilities and determine students' initial conditions (Kurniawan et al., 2021). According to Warasini (2021), a diagnostic assessment is an assessment before carrying out learning to find out what students are having difficulties with so that teachers can provide effective learning guidance assistance in improving students' abilities according to their level. Diagnostic tests are designed to determine deficiencies in learning in certain subjects or lessons (Ebell, Robert L. & Friesbie, 1991). Diagnostic assessments themselves are divided into two types, namely cognitive and non-cognitive assessments (Ayuni et al., 2023). The student's initial conditions, which are known to be both cognitive and non-cognitive, give teachers hope that they can carry out learning no longer based on the achievements of the majority of students in their class, but teachers are expected to be able to facilitate learning according to each student's initial conditions more familiarly, this learning is called

differentiated learning. According to Nurhasanah et al. (2023), it requires non-cognitive diagnostic assessment instruments.

Several studies have been conducted on the application of diagnostic analysis to learning. The results of research conducted by Djayadin *et al.* (2021) found that there were learning concentration problems experienced by participants. Based on the research results, recommendations were made to intervene in the learning process related to student concentration in learning. Diagnostic assessments in the form of tests and non-tests are believed to be able to improve learning outcomes in schools. Based on the results of diagnostic assessments, it make it easier for teachers to design future learning (Darmiyati, 2007). Diagnostic assessments provide an opportunity to reflect on a student's thinking, strengths, and weaknesses. These assessments can provide useful insights into student learning, although interpreting the resulting information requires professional competence on the part of the teacher, as there are many reasons why students may answer questions in different ways (Kay *et al.,* 2021).

To date, empirical research on non-cognitive skills remains limited. Furthermore, the absence of accurate assessment tools hinders the precise measurement of these skills (Cahyadi *et al.,* 2022). Students' non-cognitive skills or abilities are aspects that are difficult to measure (Conley, 2010). Then it must be there, the problem solver. The development of non-cognitive diagnostic assessments presents a significant challenge for educators, as these assessments must be precisely tailored to the diverse learning needs of individual students within a specific classroom context. Non-cognitive abilities that can be diagnosed before the learning process include emotional, psychological, and social well-being, talents, interests, motivation, family background, learning styles, etc. These things can arise based on students' learning experiences. The importance of the role of experience in learning, education, and psychology experts have developed Experiential Learning Theory.

While a specialized learning style prioritizes one or two learning modes, limiting its effectiveness in diverse situations, learning flexibility reflects a more well-rounded learning approach. This concept builds on the idea that systematic variation in response to different learning contexts suggests a higher level of development. Kolb & Kolb (2009) propose that such adaptability signifies the use of higher-order decision-making strategies or metacognition to guide learning behavior. This connection between learning flexibility and advanced development is supported by research (Kolb, 2014).

David A. Kolb and Roger Fray (Kolb, 2012; Kolb, 1984) developed the experiential theory further by dividing learning experiences into two separate learning activities, absorbing

and processing information. They also added two more elements, namely abstract conceptualization and active experimentation. If in critical reflection we ask questions about our experiences that are linked to past experiences, then in abstract conceptualization we try to find the answers. We generalize, make some conclusions, and post hypotheses about the experience. The active experimentation phase entails the empirical testing of formulated hypotheses. The integration of concrete experience, reflective observation, abstract conceptualization, and active experimentation constitutes the experiential learning cycle. Referring to the existing dynamics, the author developed a Non-Cognitive Diagnostic Assessment Instrument (Learning Style) Based on Experiential Learning Theory with the proposed problem formulation, namely "How to develop a non-cognitive diagnostic assessment in the Independent Curriculum at a Senior High School in Tangerang Regency?"

PISA's reading assessment focuses on 15-year-olds' ability to use their learning in real-life situations (OECD, 1999, 2006). It serves as a suitable case study for this research for several reasons. Firstly, PISA offers a balanced approach to non-cognitive diagnostic assessment compared to other methods. Secondly, research suggests PISA tasks can be used for diagnostic purposes despite not being explicitly designed for that (Alderson & Huhta, 2011; Kirsch & Mosenthal, 1990; Lumley *et al.,* 2009). Each PISA item is assigned a specific reading skill level and difficulty. Thirdly, PISA aims to inform education policy by identifying students' strengths and weaknesses (OECD, 2004, 2013). This information, while not directly given to teachers or students, can guide reforms in curriculum, standards, and teaching methods. Finally, PISA results focus on comprehension skills in the main language of instruction, eliminating the need to consider factors related to second language acquisition (SLA). Due to these reasons, PISA's reading assessment is chosen as a model for adapting non-cognitive-diagnostic reading assessment. Publicly available PISA test items also exist (OECD, 2006).

METHOD

Development research that is used in education can use various models as long as they can be adjusted for specific subjects and contexts. In this R&D research, the instrument development concept used is the ADDIE (Analyze, Design, Development, Implementation, Evaluation) model. The ADDIE model is utilized due to its robust evaluation framework, which encompasses both formative evaluation, an ongoing process of assessment to inform instructional decisions, and summative evaluation, a final assessment to measure overall learning outcomes. Apart from that, this model is quite simple and easy to apply for developing learning media in education because the philosophy of the ADDIE concept is as a

tool used to develop an educational product that is student-centered, innovative, authentic, and inspirational (Branch, 2009). The research steps are shown in Figure 1.

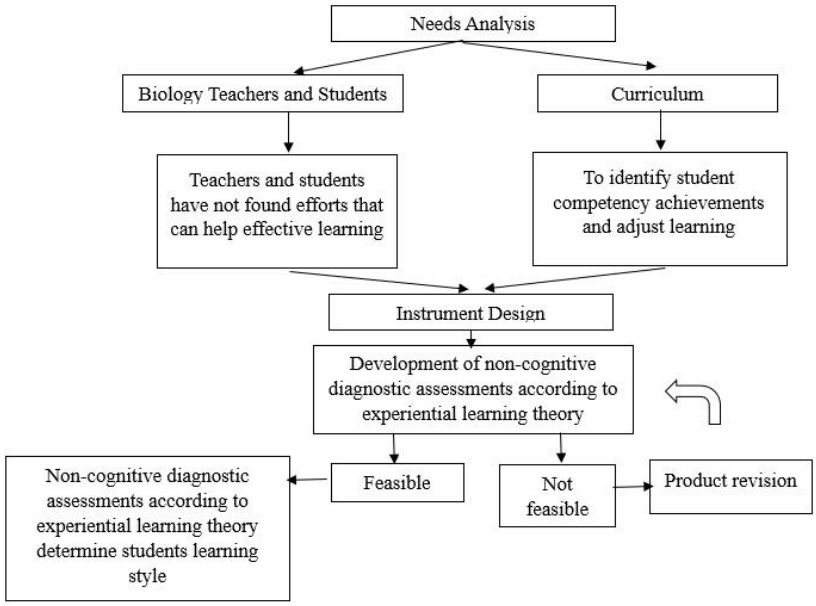

Figure 1. Steps for using research and development (R&D) methods

The ADDIE development model consists of five stages, as the name suggests, namely (1) analysis (analyze), (2) design (design), (3) development (develop), (4) implementation (implement), and (5) evaluation (evaluate) (Branch, 2009). At each stage, a formative evaluation will be carried out to be able to proceed to the next stage, and the stage will end after the summative evaluation stage. The illustration of the ADDIE model framework can be seen in Figure 2 (Rusdi, 2018).

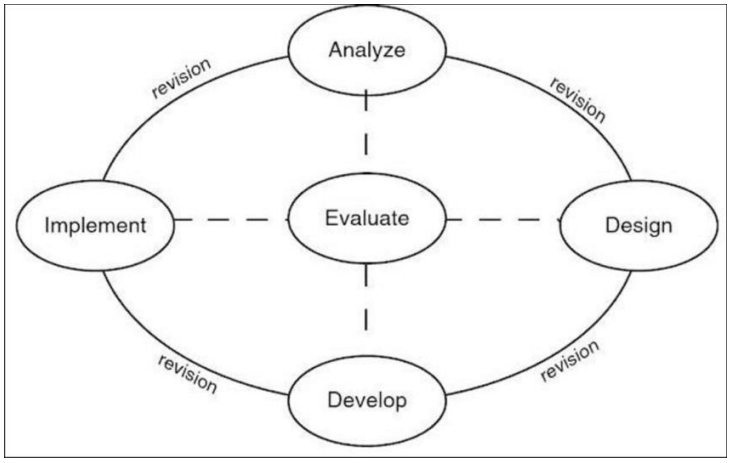

Figure 2. ADDIE Model Framework

1. Analyze

The Analysis Stage includes several initial activities regarding the need for data sources that will be used as a basis for development, namely: a) Curriculum analysis, namely by

analyzing the competencies expected of students from the independent curriculum; b) analyzing student characteristics related to good learning from the teacher's point of view and the student's own point of view. This stage includes determining instructional objectives and analyzing the needs of teachers and students.

2. Design

At the Design Stage, questions were asked to design an assessment instrument with a framework that refers to four important elements in learning design, namely students, objectives, methods, and evaluation. In designing the instrument at this stage, it is based on experiential learning theory (Kolb, 1984).

3. Development

The development stage carried out after the design is carried out is the development of an assessment instrument that produces an initial product in the form of a prototype. At this stage, it is an activity to translate points and questions according to the design into instrument form and prepare a formative evaluation instrument for the prototype. The prototype that has been created is validated by experts as a formative evaluation. The prototype is tested for suitability by experts.

4. Implementation

In the Implementation Stage, there is a small group trial, the results of the development of the assessment instrument are applied to learning activities to determine their effect on the quality of learning. The instrument was implemented at a Senior High School in Tangerang Regency. The product that has been developed is distributed to 30 students. In this study, the instrument used was the Likert scale which can be seen in (Table 1).

Table 1. Non-cognitive diagnostic assessment quality assessment scores

Rating Level	Score
Strongly agree	1
agree	2
Unrated	3
Disagree	4
Strongly disagree	5

(National Educational Standard Board, 2014)

Then the results of the respondents obtained from both media and language experts are calculated, and after the quality scores are obtained, the feasibility of the non-cognitive diagnostic assessment can be determined based on the interpretation of the feasibility test scores from the adaptation of Ratumanan & Laurens (2011). The interpretation table of feasibility test values can be seen in Table 2.

Table 2. Non-cognitive diagnostic assessment feasibility test scale

Interval	Category	Criteria Description

3,25 x 4,00	Very valid	Can be used without revision
2,50 x 3,25	Valid	Can be used with minor revisions
1,75 x 2,50	Less valid	Can be used with multiple revisions
1,00 x 1,75	Invalid	It cannot be used yet and requires consultation

(Ratumanan & Laurens, 2011)

5. Evaluation

The culminating stage involves a comprehensive evaluation process comprising formative and summative assessments. Formative assessment is employed iteratively to optimize the development process. Upon completion, a summative assessment is conducted to determine the product's efficacy in facilitating student learning.

RESULTS AND DISCUSSION

The data analysis technique used in the ADDIE model consists of five stages, namely analyzing, designing, developing, implementing, and evaluating. The first stage is analysis. Through the analysis stage, there are 2 stages, namely needs assessment and front-end analysis.

The first stage is analysis; this stage is carried out to determine needs, which are used as a basis for product development in the form of assessment instruments. Data was obtained through analysis of the competencies expected of students and analysis of student characteristics related to learning, namely obtained through observing field conditions (class X). Through these observations, several aspects need to be analyzed more deeply, namely the school environment, teachers, students, and the education system. To understand environmental conditions well, researchers conducted interviews with teachers teaching biology subjects. Based on the results of interviews with teachers, it can be seen that students take part in learning with a focus on biological ability values. Meanwhile, teachers hope that the material taught can be understood well by students.

The needs desired by teachers are also in line with the curriculum used in Indonesia. We know that Indonesia is using the Independent Curriculum now. The concept of Independent Curriculum emphasizes student-centered learning, fostering critical thinking, creativity, and character development. The diagnostic non-cognitive, which focuses on evaluating non-cognitive factors such as social-emotional skills, motivation, persistence, collaboration, and self-regulation, plays a crucial role in supporting Independent Curriculum goals as the used curriculum (Shore & Fisher, 2015; Pane *et. al.,* 2015). These assessments are aligned with the goals of Independent Curriculum, which seeks to create a more flexible, student-centered, and inclusive education system like the different instructional. Then, those values, both cognitive and non-cognitive aspects of student development, will be reached.

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The second stage of ADDIE is design. In this research, two things need to be considered, namely the preparation of the assessment instrument and the collection of supporting materials in making the instrument. The preparation of the instrument was validated by the PPG teacher as an expert validator. With several improvements, the instrument design stage can be carried out. The first is to design an instrument that will later be filled in by students. The results of the design are submitted to the validator for improvement before being presented to students in the form of a form link and will be shared via a Google form link. The distribution of the Google From link is filled in by students after participating in the lesson. Before the link was shared, the researcher explained how to fill out the instrument, and the filling process is guided by researchers, so it can reduce accurate filling. This self-assessment instrument has four main points (indicators) that serve as benchmarks in non-cognitive diagnostic assessments, namely concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984).

Concrete experience is when learning through direct involvement in an experience, where the learner actively participates in an activity. Reflective observation is when learning through reflection on experiences, focusing on understanding and making sense of the experiences after they have occurred. Abstract Conceptualization is learning through the formation of theories, models, or generalizations based on the reflections from previous experiences. Active experimentation is learning through the application of theories and ideas in practical situations to test their validity and usefulness. The last David A. Kolb's Experiential Learning Theory (ELT) is one of the most well-known frameworks in educational psychology, and it has been extensively researched and applied in both educational and professional settings. In the design of non-cognitive diagnostic assessment products based on the behavioral indicators of David A. Kolb's experimental learning theory in Table 3.

Table 3. Non-Cognitive Diagnostic Assessment Instruments (Learning Styles) Based on behavioral indicators of David A. Kolb's Experiential Learning Theory

Learning Elements	Behavioral Indicators
Concrete Experience	Seeing things as they are, in gross detail

Learning Elements	Behavioral Indicators
	Learn from specific experiences and empirical data.
	Sensitive to feelings and people
Reflective Observation	Carefully observe before making a decision
	Look at issues from various perspectives.
	Look at issues from various perspectives.
Abstract Conceptualization	Seeing everything as concepts and ideas that need to be analyzed logically
	Create systematic planning
	Act based on an intellectual understanding of the situation.
Active Experimentation	Demonstrate the ability to take action.
	Dare to face risks
	Influence others through action.

The indicators for the four behavioral learning elements of David A. Kolb's experimental learning theory were developed in instrument form. Kolb identifies four key behavioral learning elements (also called learning styles or modes of learning), which represent the way individuals approach learning and the learning process itself. The instrument takes the form of a statement that can represent students' learning styles to determine effective learning in the classroom. The Table 4 explains the non-cognitive diagnostic assessment instruments to determine students' learning styles.

Table 4. Non-Cognitive Diagnostic Assessment Instruments (Learning Styles) Based on David A. Kolb's Experiential Learning Theory

No.	Statement
1	I prefer to study in the laboratory using laboratory equipment directly
2	I feel disturbed if I make small mistakes during laboratory tests.
3	I believe more in knowledge obtained from subject teachers or other sources such as books and research.
4	I rely on direct experience to make decisions or take certain steps.
5	I like the process of learning biology in class.
6	I tend to understand biology material when I'm in a group.
7	I tend to observe a situation or environment before making important decisions.
8	I tend to plan certain steps to complete assignments as a group.
9	I prefer to discuss with people who have different views or experiences to gain a broader understanding of biology learning.
10	I tend to consider differences of opinion with friends when I face biological problems

The non-cognitive diagnostic assessment instrument above covers four learning elements and all learning behaviors following experiential theory. After developing the instrument, the assessment process continues with the validator before the assessment instrument link is distributed to students. Developing this instrument requires testing the language aspect. The language appropriateness test instrument is used to obtain input regarding the use of letters and the suitability of good and correct language use the Indonesian Dictionary. The language feasibility test instrument grid can be seen in Table 5.

Table 5. Components of the Linguist Eligibility Test Assessment

No.	Rated aspect	Score
1.	Accuracy of sentence structure in diagnostic assessment	
2.	The effectiveness of language in diagnostic assessment	
3.	The language used in the language diagnostic assessment is standard and does not have a double meaning.	
4.	The diagnostic assessment formulation uses communicative sentences.	
5.	The language used can motivate students.	
6.	Diagnostic assessment questions can encourage students to think critically.	
7.	Diagnostic assessments are following students' intellectual development material.	
8.	Good and correct spelling accuracy in diagnostic assessments	
Amount		
Score (%)		

Developing this instrument also requires testing the material aspect. The material suitability test instrument is used to obtain input regarding the suitability of the material in products developed using experiential learning theory. The material feasibility test instrument grid can be seen in Table 6.

Table 6. Material Expert Feasibility Test Assessment Components

No.	Rated Aspect	Score
1.	The topics included in the diagnostic assessment questions are following the dimensions of experiential learning theory	
2.	The questions are designed according to the diagnostic assessment material presented.	
3.	The material presented is easy to understand	
4.	The quality of the questions can make students interested in working on the questions.	

5.	The material in diagnostic assessments can help students think critically and make conclusions about the knowledge they have built.	
6.	Completeness and clarity of the content of the material with the questions presented	
7.	Clarity of instructions for the use of diagnostic assessments	
Amount		
Score (%)		

Developing this instrument also requires testing the question aspect. The question feasibility test instrument is used to get input regarding the appearance, instructions, and content of the questions, which can make it easier for students to work on the instrument. The material feasibility test instrument grid can be seen in Table 7.

Table 7. Components of Feasibility Test Assessment Questions

No.	Rated Aspect	Score
1.	The display of the questions developed is clear and easy for students to understand	
2.	The instructions for working on the questions developed are easy to understand	
3.	Diagnostic assessment questions are developed following experimental learning theory	
4.	The diagnostic assessment questions developed can help teachers find out students' personalities.	
5.	The diagnostic assessment questions developed can help teachers find out students' learning styles	
6.	The diagnostic assessment questions developed are very useful for teachers to improve the quality of learning	
Amount		
Score (%)		

Developing this instrument also requires testing aspects of classroom teacher practicality data. Instruments with practical data are used to obtain input regarding the ease of determining students' learning styles. The practicality data instrument grid can be seen in Table 8.

Table 8. Diagnostic Assessment Class Teacher Practicality Data

No.	Rated Aspect	Score
1.	Diagnostic assessments make it easy to find out students' personalities during the initial learning process.	
2.	Diagnostic assessment questions relate to students' learning styles	
3.	Diagnostic assessment questions use language that is easy to understand	
4.	The diagnostic assessment questions presented are following experimental learning theory and clear question instructions	

No.	Rated Aspect	Score
5.	Make it easier for teachers in terms of time and implementation of the learning process	
Amount		
Score (%)		

The third stage is the development stage; at this stage, the researcher creates a non-cognitive assessment instrument as a medium for collecting data for small group trial materials during the non-cognitive assessment of students in class X biology subjects at a Senior High School in Tangerang Regency using Google Form as a data collection tool. Distributed in the form of a Google Form link for students. Class X of a Senior High School in Tangerang Regency is the population in this study. Then class F is a sample taken randomly. After all sample students have filled in the link provided, it can be seen that the total sample of students in this study is 30 people. The Google Form display for determining student learning styles, which can be seen in Figure 3.

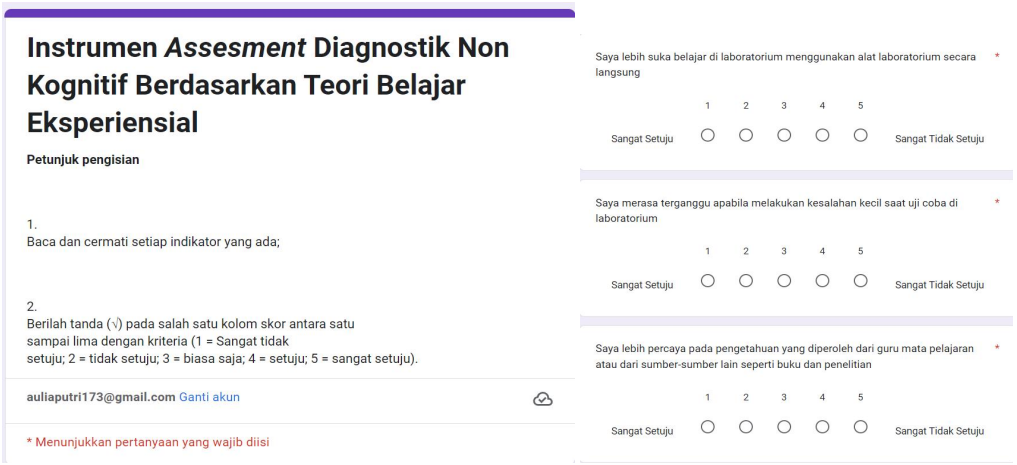

Figure 3. Google form display of non-cognitive diagnostic assessment instrument based on experiential learning theory

As we know, Independent Curriculum also manages it, and it is adopted for senior high schools in Indonesia. So, non-cognitive assessments are crucial for senior high school students, particularly those adopting the Independent Curriculum, as they align with the curriculum's emphasis on holistic, student-centered education. Non-cognitive skills have been shown to significantly influence academic performance and long-term life outcomes, complementing cognitive abilities (Heckman & Kautz, 2012). By integrating non-cognitive diagnostic assessment at a senior high school inTangerang Regency, we can better identify students' unique strengths and challenges, enabling tailored interventions that foster their personal and professional growth, ultimately supporting their learning. At this stage, the product is working.

The fourth stage is the implementation stage. At this stage, 30 people were carried out using data that had been determined by the researcher as a trial sample for use. This was done by researchers by distributing links to non-cognitive assessment instruments. Testing the instrument in small groups by 30 students, namely by providing the instrument in the form of a Google form. Based on the results obtained, it is known that the reflective observational element has the highest percentage of 76.44% and the abstract conceptual element has the lowest percentage of 71.89%. The following are the results of small group product trials, which can be seen in Figure 4.

A high score in the aspect of reflective observation can provide information that students at a Senior High School in Tangerang Regency have a strong enthusiasm for learning through observation. In addition, students also enjoy viewing issues or problems from various perspectives. The opposite value shown in the aspect of abstract conceptualization may indicate that students at Senior High School in Tangerang Regency find it difficult to understand lessons that have abstract concepts. They will find it difficult to explain a theory without seeing the event directly or visualized. Then it would be better for biology students to conduct practicals more often in the laboratory or the wild. For example, if it is indeed not possible, there are currently many digital learning media that can help visualize and invite students to explore by observing objects in the learning media (Lam & Tong, 2012; Hamka, 2015). What should be avoided is the traditional learning method, which generally tends to apply classical learning methods (Subaryana, 2005).

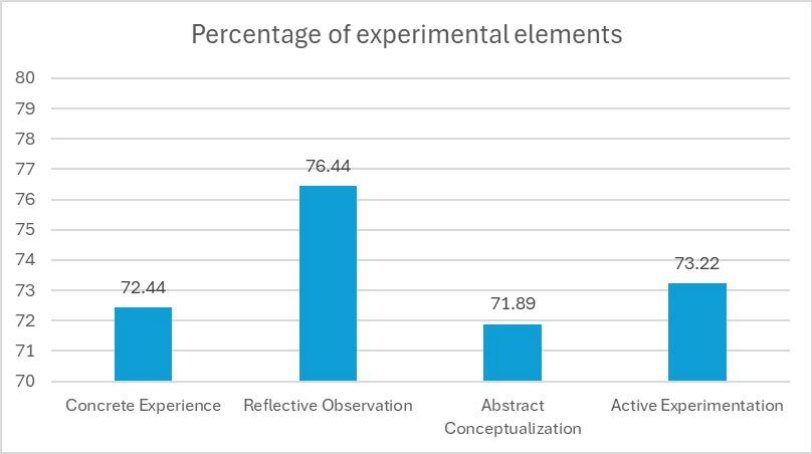

Figure 4. Results of small group product trials

Based on the implementation results, the average percentage of students in the Concrete Experience element was 72.44%. Students who have the highest percentage in this element are 83.33%, while students who have the smallest percentage are 46.67%. This percentage is obtained from three indicators in this element, which are averaged and then multiplied by

100%. Students who have a high percentage score on this element tend to be interested in learning from experience.

The percentage result of the average student in the reflective observation element is 76.44%. Students who have the highest percentage in this element are 100%, while students who have the smallest percentage are 53.33%. This percentage is obtained from three indicators in this element, which are averaged and then multiplied by 100%. Students who have a high percentage score on this element tend to have an interest in learning from experience.

The percentage result of the average student who tends to abstract conceptualization elements is 86.67%. Students who have the highest percentage in this element are 83.33%, while students who have the lowest percentage are 60%. This percentage is obtained from three indicators in this element, which are averaged and then multiplied by 100%. Students who have a high percentage score on this element tend to have an interest in learning by absorption.

The percentage result of the average student who tends to active experimentation elements is 73.22%. Students who have the highest percentage in this element are 86.67%, while students who have the lowest percentage are 60%. This percentage is obtained from three indicators in this element, which are averaged and then multiplied by 100%. Students who have a high percentage score on this element tend to have an interest in learning from processing.

In the non-diagnostic assessment feasibility test carried out by the validator, namely the biology subject teacher in Class, this instrument can be said to be suitable for use in determining students' learning styles. The following are the results of expert validation in assessing the feasibility of non-cognitive diagnostic assessment instruments, which can be seen in Table 10.

Table 10. Expert Validation Results

No.	Validation	Average	Category
1	Language	3.625	Very Valid
2	Material	3.71	Very Valid
3	Question	3.83	Very Valid
4	Practically data	3.8	Very Valid

The fifth stage is the evaluation stage. At this stage, development results are managed and conclusions are drawn. Based on the results of obtaining questionnaire scores from experts, it can be concluded that the development of this instrument can become a means and tool in helping students. Through non-cognitive diagnostic instruments, it is possible to determine the learning style of each student, especially at a senior high school in Tangerang

Regency. In this research, each instrument that has been created is distributed and filled in by respondents using a Google form. This can be a differentiator from other research. This is based on current developments in the era of digitalization. Another advantage is environmental care by reducing paper use.

CONCLUSION

Based on the discussion and research results of the development of non-cognitive diagnostic assessment instruments (learning styles) based on the experiential learning theory that was developed, namely referring to the type of development (research and development) using the ADDIE model, it can be concluded that five stages need to be carried out, namely the analysis, design, development, implementation, and evaluation stages. All stages of this research have been carried out coherently to obtain appropriate and maximum research results. The feasibility results, which include the validity and practicality of this instrument, show that the results obtained through validation tests carried out on experts are very valid and that the instrument can be used to determine student learning styles. At a Senior High School in Tangerang Regency, it is known that students tend to have a learning style. Reflective observational elements have the highest percentage of 76.44% and abstract conceptual elements have the lowest percentage of 71.89%.

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