THE DESIGN PROPER NEEDS ANALYSIS
IS THE KEY TO SUCCESS TOWARDS LEARNING SUCCESS

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ABSTRACT

The aim of the study is to determine the strategies for conducting needs analysis for instructional purposes. This study will explore the concept of needs analysis and its urgency for successful learning while also guiding effective procedures for conducting a needs analysis. Needs in the context of learning, from a systems perspective, can be divided into four categories: input, process, output, and outcome. The method used in this study is the Delphi Method. The steps in formulating needs using the Delphi method are Problem Definition, Identification of Analysis Subjects, Identification of Trends, Development of Interview Items, Implementation of Interviews, Administration of Interview Results, Use of First Round Data, Second Round, Use of Second Round Data. In conclusion, needs analysis is a crucial and fundamental activity when starting any program, especially in education. The success of the learning process is highly dependent on how effectively a teacher or lecturer conducts a needs analysis.

Keywords: *Proper Needs, Key Success, Learning Success.*

1. INTRODUCTION

The process of analysis is always the first focus that must be undertaken by every instructional developer. Burton and Merrill as cited in Gentry (1994) stated that one of the analysis activities that initiates other analyses in the development of instructional models is needs analysis. According to Gentry (1994), needs analysis is a process in which the needs and goals of the system are identified, and then the priorities for fulfilling them are determined. Essentially, needs arise from a gap between what is expected and the reality. Here, two different conditions exist: the current condition and the ideal condition as expected. This gap is referred to as a problem. The problem itself becomes a need. Wilson and Wilson as cited in Gentry (1994) explained that a problem arises when someone desires something but does not immediately know how to achieve it.

Anthony and Cook in Gentry (1994) and Kaufman (1981) refer to it as "What is" to describe the current condition and "What should be" to describe the ideal condition. Pidarta (1990) illustrates needs as shown in the following diagram:
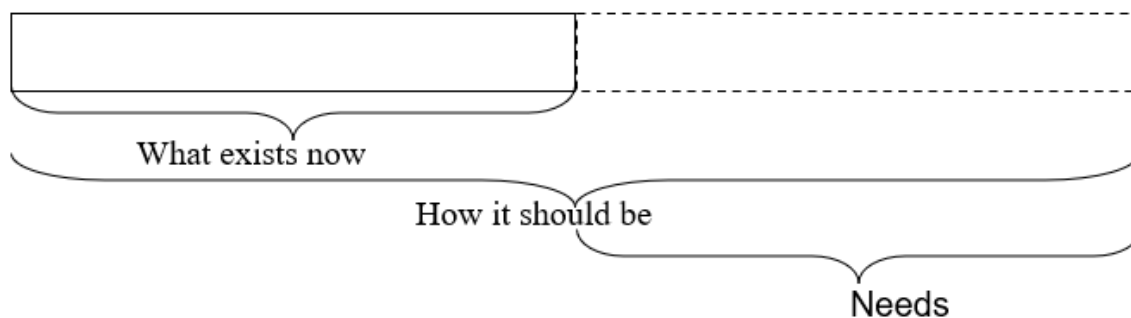

Figure 1. Illustration of a Problem as a Need (Pidarta, 1990)

Dick, Carey, and Carey (2004) stated that the condition of a gap is a problem that must be immediately addressed, and it represents a need in designing instruction. Cook, as cited in Gentry (1994), added that a problem is a need that must be identified, analyzed, and solved. A need is a desire or future expectation related to solving a problem. The existence of a need triggers efforts to fulfill that need.

So, what are the strategies for conducting needs analysis for instructional purposes? This article will explore the concept of needs analysis and its urgency for successful learning while also guiding effective procedures for conducting a needs analysis.

2. LITERATURE REVIEW

2.1 Understanding the Theory of Needs

Regarding the concept of needs, there are several underlying theories. It is challenging to find a standalone theory of needs. The theory of needs is often associated with motivation. This is understandable because needs are merely the starting point of a very complex chain of actions and reactions, not as simple as described above, as human needs are not singular and sometimes contradictory. The theories of needs discussed in this article include: The Theory of Needs by Abraham Maslow as cited in Ikwukananne and Udechukwu (2009) and The Theory of Needs by David McClelland (1987).

1) **Maslow's Hierarchy of Needs Theory.** Maslow viewed humans as "Wanting Beings" who continuously strive to fulfill their various needs. Human needs can be organized into a hierarchy based on their importance, starting from the lower-level needs to the highest. When the most basic needs are fulfilled, individuals move on to the next level of needs. The sequence of needs includes:

    a) **Physiological Needs.** Physiological needs are the requirements necessary to sustain human life, such as food, water, clothing, shelter, and sexual satisfaction. These needs are primary and fundamental because they exist and are felt from the moment a person is born. Maslow stated that if these needs are not fulfilled, other needs will not motivate a person to act. Therefore, as the most basic needs in human life, they must be addressed first.

    b) **The Need for Safety.** Regarding safety needs, Koontz et al. (1990) added that this level of need involves freedom from physical harm and the fear of losing one's job, possessions, food, clothing, or shelter.

    c) **The Need for Love.** This need relates to affection and affiliation. As social beings, humans require interaction with others and acceptance as part of a group. Luthans (1986) referred to this need as "belongingness."

    d) **The Need for Esteem.** This is the need to gain recognition and respect. According to Maslow, once individuals begin to satisfy their social needs, they tend to desire self-worth and acknowledgment from others. This type of need brings satisfaction through power, prestige, and self-confidence.

    e) **The Need for Self-Actualization.** Maslow identified this as the highest need in the hierarchy. It is the need to become what one aspires to be and feels capable of achieving by developing one's mental capacity to turn potential into reality.

2) **David McClelland's Needs Theory.** David McClelland (1987) categorized human needs into three types:

    a) **Need for Achievement.** The need to achieve success, measured against personal standards of excellence. This need is closely related to work and drives behavior toward accomplishing specific achievements.

    b) **Need for Affiliation.** The need for warmth and support in relationships with others. This need encourages close relationships with others to feel liked, accepted, or forgiven.

    c) **Need for Power.** The need to dominate and influence others. This need may lead individuals to be less concerned about others' feelings.

2.2. Needs in the Context of Learning

Needs in the context of learning, from a systems perspective, can be divided into four categories: input, process, output, and outcome. Input refers to the resources that will and can be used to implement the learning program. These resources include students, curriculum, textbooks, learning media, educators, educational staff, the environment, and so on. The process involves the activities of teaching and learning or the services provided to meet the students' learning needs. This is realized through teaching practices using specific teaching methods. Output refers to the amount of learning activity or service that has been conducted or produced, such as the number of students passing a particular course. Outcome refers to the tangible

impact on students during or after completing the learning program.

The need for learning outcomes in education is not limited to the achievement of output, such as grades or final results, but also includes significant long-term impacts on the students' lives. Effective learning outcomes should reflect students' ability to apply the knowledge, skills, and attitudes gained during the learning process to their social lives. This includes the ability to solve problems, adapt to change, collaborate with others, and contribute positively to society. Therefore, the success of learning is not only measured by theoretical understanding but also by how students can apply these competencies in real-world contexts, both in professional and personal environments. These types of needs can be explained as follows:
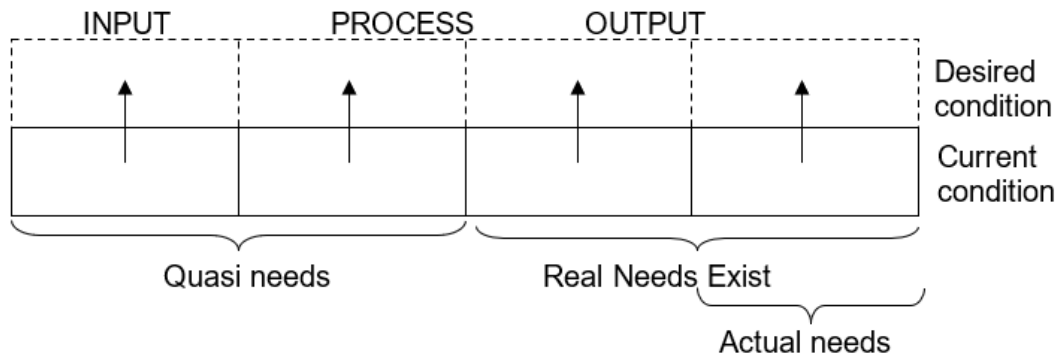

Figure 2. "Types of Needs in the Context of Learning" modifies the thinking of Kaufman (1981) and Pidarta (1990)

The first two types of needs are referred to as quasi-needs because these needs are not yet actual needs; they are merely part of the process to prepare the learning outcomes. The input and process in the learning activities have not yet directly benefited the social environment that is concerned with the learning results that have been carried out. Meanwhile, the last two types of needs, namely output and outcome, are real needs that exist. Of the two, the one that represents the actual need is the outcome need.

How do the types of needs relate in the system's dimension? The relationship between input, process, output, and outcome can be described as follows:
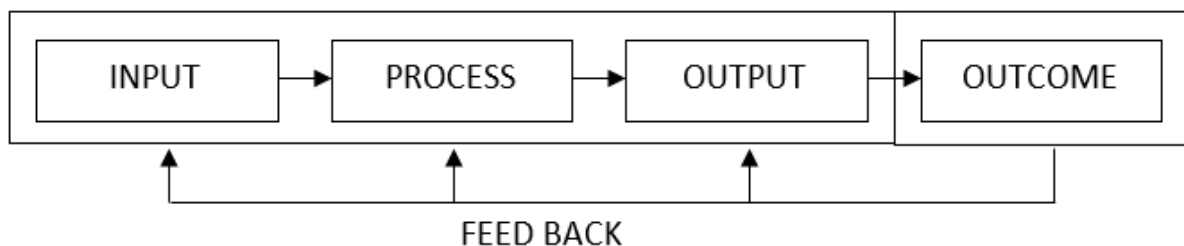

Figure 3. The Relationship between Input, Process, Output, and Outcome

As a system, the elements of input, process, output, and outcome are interconnected as a unity. This unity functions to achieve goals, producing observable and recognizable results. In learning, which always emphasizes the importance of outcomes, the quality of input, process, and output will always be considered, ensuring that the outcome is also of high quality. From a systemic perspective, there are two types of systems: closed systems and open systems. A system is said to be closed if it isolates itself from its environment. Conversely, it is considered open if the system interacts with its environment. This means the system components are constantly in contact or relationship with their environment because they greatly depend on it. A learning system that is outcome-oriented always adopts an open system.

As previously mentioned, an outcome is the tangible impact or benefit/changes experienced by learners during or after participating in a learning program. The deeper meaning of an outcome is articulated by the National Endowment for the Arts (NEA, 2000) as follows: "Outcome is the benefit or positive impact obtained by participants from a program. An outcome represents changes in

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behavior, abilities, knowledge, attitudes, status, or life conditions of participants as a result of a program." McNamara (1999) further elaborates: "An outcome is a tangible impact/benefit/change for participants during or after following a program. These changes or outcomes are typically manifested in terms of knowledge and skills (often called intermediate-term outcomes), values, conditions, and status (often referred to as long-term outcomes)."

Therefore, in learning, the outcome is the expected learning result, also referred to as "learning outcomes." Gagne, in Gagne, Briggs, and Wager (1988), defines the forms of learning outcomes as learning capabilities to be achieved. According to Gagne, capabilities are divided into five types: Intellectual Skills, Cognitive Strategies, Verbal Information, Motor Skills, and Attitudes. Three of these five capabilities—intellectual skills, cognitive strategies, and verbal information—are included in the cognitive domain. Meanwhile, motor skills are part of the psychomotor domain, and attitudes are part of the affective domain.

Intellectual Skills are the abilities that allow learners to use symbols to organize and interact with their environment. There are two common forms of symbols used: language and numbers. These symbols can be used in various activities such as reading, writing, distinguishing, combining, classifying, forming concepts and rules, as well as solving problems, resulting in intellectual skills. Furthermore, intellectual skills can be further developed into five categories arranged using prerequisite learning relationships, namely: discrimination, concrete concepts, abstract concepts, rules, and higher-level rules (problem-solving).

Cognitive Strategies are abilities in which learners are able to manage their internal processes. Learners are capable of developing ways to enhance the effectiveness and efficiency of their thinking and learning processes. Learners can study independently, discover, and solve new problems. An example of cognitive strategies is when learners analyze complex and intricate problems into detailed and easily solvable parts, summarize or synthesize the content of textbooks, etc. Verbal Information is the ability of learners to recall actual information stored in memory, such as names, single facts, sequences of memory, and organized information. Indicators of this ability include, for example, learners being able to mention or write down information such as names, sentences, reasons, arguments, propositions, or a set of related propositions. Motor Skills are the abilities where learners can perform movements in every action in an organized manner. In this case, learners can display physical movements using the appropriate materials and procedures. Examples include driving a car, cycling, throwing a ball.

Attitude is the ability where learners have a mental state or tendency that influences their personal action choices. Learners have consistent attitudes in all situations and conditions. Examples include learners liking keroncong music, learners always keeping promises, etc.

Unlike Gagne, another expert named Sanghi (2005) refers to learning outcomes as competencies. According to Sanghi (2005), competencies are divided into five types of characteristics, including: motive, personality (trait), self-concept (including attitude and values), knowledge, and skills. Competency, according to Sanghi, can be described as follows:
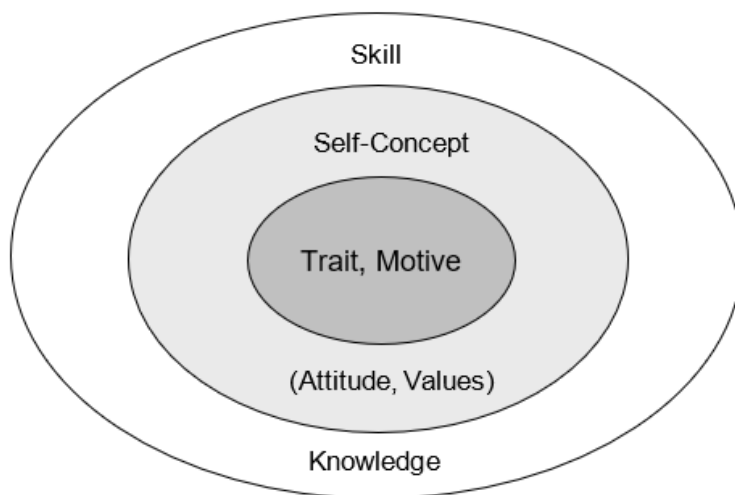

Figure 4. The outer and core structure of competencies according to Sanghi (2005).

Regarding learning outcomes, Benjamin S. Bloom, et al. (together with M.D. Engelhart, E.J. Furst, W.H. Hill, and D.R. Krathwohl) in 1956, in their book *The Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook 1: Cognitive Domain*, successfully developed the cognitive domain, which includes: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. In 1964, Krathwohl, et al. formulated the affective domain in their book *Taxonomy of Educational Objectives, Affective Domain*. The affective domain they formulated consists of: Receiving, Responding, Valuing, Organization, and Characterization by a value or value complex. Subsequently, E. Simpson, in 1967, developed a categorization in the psychomotor domain, which consists of: Perception, Set, Guided Response, Mechanical Response, Complex Response, Adjustment, and Creativity.

In 2001, Anderson & Krathwohl (2001) successfully refined the cognitive domain from Bloom, et al., into: remembering, understanding, applying, analyzing, evaluating, and creating. Meanwhile, the affective and psychomotor domains have not been refined. To facilitate understanding, Anderson and Krathwohl developed a taxonomy framework called the "taxonomy table," which includes two interrelated dimensions: the knowledge dimension and the cognitive process dimension. The knowledge dimension consists of: factual, conceptual, procedural, and metacognitive. The cognitive process dimension includes: remembering, understanding, applying, analyzing, evaluating, and creating. The knowledge dimension indicates the type of knowledge, while the cognitive process dimension indicates the level at which that type of knowledge is mastered. The taxonomy table can be explained as follows:

Table 1. Anderson & Krathwohl Taxonomy Table (2001)

Knowledge Dimension	Cognitive Process Dimensions					
	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
Factual						
Conceptual						
Procedural						
Metacognitive						

The changes in the cognitive domain from the old Bloom's taxonomy to the revised taxonomy by Anderson & Krathwohl can be illustrated as follows:
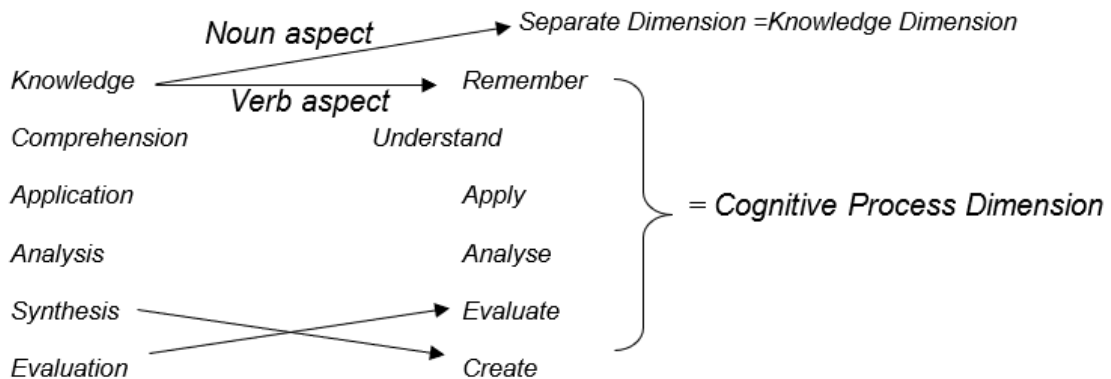

Figure 5. Schema of the refinement of Bloom's cognitive domain by Anderson & Krathwohl (2001)

Here is the matrix mapping the similarities and relationships between Bloom's revised taxonomy, Sanghi's competencies, and Gagne's learning capabilities as follows:

Table 2. Similarities and Relationships between Bloom's Taxonomy (Revised), Sanghi's Competencies, and Gagne's Learning Capabilities.

TYPE	BLOOM'S TAXONOMY DOMAINS Anderson & Krathwohl (Revised Bloom) (2001), Krathwohl et al. (1964), and Simpson (1967)	COMPETENCIES Sanghi (2005)	LEARNING CAPABILITIES Gagne (in Gagne, Briggs, and Wager, 1992)
KOGNITIVE ⟹	• Remember • Understand • Apply • Analyze • Evaluate • Create	• Knowledge	• Verbal Information • Intellectual Skills <hr>• Cognitive Strategy
AFFECTIVE ⟹	• Receiving • Participation • Attitude Valuation • Organization • Formation of General Patterns	• Self-Concept • Personality • Motive	• Attitude
PSYCOMOTOR ⟹	• Perception • Readiness • Guided Movement • Habitual Movement • Complex Movement • Movement Pattern Adjustment • Creativity	-Skills	• Motor Skills

It can be concluded that learning outcomes can be divided into three domains: Cognitive, Affective, and Psychomotor. In psychology, this division of personality aspects forms the basis for categorizing observable types of behavior. Based on these types of behavior, a taxonomy of learning objectives was subsequently developed.

2.3 Methods and Procedure for Needs Analysis

What learning outcomes are desired from a learning process as a need? To identify, classify, and then formulate the desired learning outcomes, collaboration between developers and other participants is necessary to conduct a needs analysis. One of the approach methods that can be used is the Delphi method.

According to Cunningham (1982), the Delphi method is a systematic approach to seeking, collecting, evaluating, and independently tabulating expert opinions without discussion, so that consensus is reached based on relevant information. Neil et al. (2001) state that the purpose of applying the Delphi method is to obtain reliable creative ideas or generate accurate data for decision-making. In the Delphi method, no discussions take place in order to avoid and minimize the possibility of direct confrontation that may occur among the experts.

Delphi is named after a valley in Ancient Greece, guarded by the Apollo Dragon, which was believed to predict the future (Flowes, 1984). This name was later immortalized by the Rand Corporation, led by Norman Delkey and Olaf Helmer in the 1950s, as the name of a method to organize expert opinions and share predictions about the future (Within, 1984). According to Dalkey and Helmer (1963), the Delphi method has been used extensively for thousands of projects where a need is efficiently collected in the form of evaluative information and a consensus around that evaluation is established.

Swiegert, Ray, and Schabacker (1974) state that the application of the Delphi method results in four advantages: (1) narrowing of judgments that increase with each round, with the best narrowing occurring in the second round, (2) a minimum of two rounds is needed for narrowing, (3) a high level of reliability (trust) in the objectives can be achieved through Delphi, (4) feedback from participants on their final answers tends to reduce the narrowing of opinions or views. The results of the consensus can then be used as a foundation for formulating the expected learning outcomes.

Neill (2001) and Manninen (2003) argue that the Delphi method can be applied in research that

uses a qualitative approach. Neill and Manninen's view is supported by Edward (2003), who mentions that many researchers today have applied a qualitative approach in the Delphi method, which was previously dominated by a quantitative approach. Brill, Bishop, Walker, and Andrew (2004) state that instructional developers have increasingly used the Delphi method to formulate competencies and characteristics of needs. This shows that the qualitative approach in the Delphi method has been widely applied by researchers, developers, and instructional designers to formulate learning needs.

Data for needs analysis is obtained through interviews using open-ended qualitative questions with the subjects of the needs analysis, conducted separately, with no communication or interaction between them. Afterward, structured interviews are conducted. The data from the interviews are then presented in a matrix format to facilitate analysis.

The procedure in the Delphi method follows a combination of steps tailored to the needs based on references from Within (1984), Cunningham (1982), Delbecq (1986), Linstone and Turoff (1975), with the following steps:
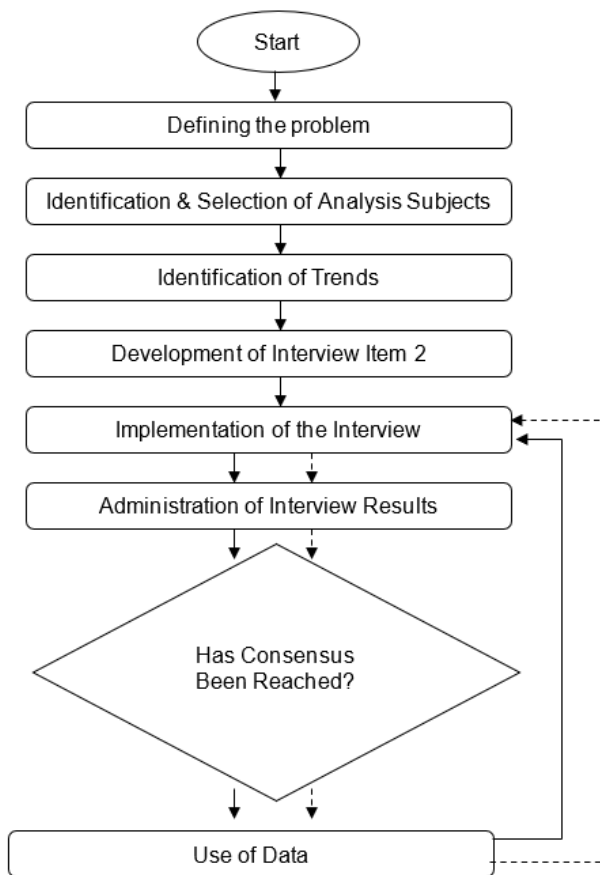

Figure 6. Needs analysis procedure using the Delphi method

3. RESULT AND DISCUSSION

The steps in formulating needs using the Delphi method are as follows:

a. **Problem Definition.** The first step in this technique assumes that the problem originates from unclear objectives of a system. Based on this assumption, the question is developed: "What is the main problem of the learning program designed to prepare students to have the competencies required according to the established educational objectives?"

b. **Identification of Analysis Subjects.** The second step of the Delphi method is the identification of analysis subjects as experts related to obtaining statements and consensus. They all form a participatory team who are considered to understand the competencies required as the expected learning outcomes. They are all considered "The Knowledgeable People," who are thought to know about their own needs and the needs of their organizations. They will all participate in the needs identification process for learning.

c. **Identification of Trends.** Trend identification is the activity of predicting trends related to learning outcomes or competencies expected to be achieved by learners through the learning program in the courses they take. This step is an extension of the problem definition activity formulated at the early stage of the Delphi method. The results of trend identification are then formulated into an initial draft of the required competency standards. This initial draft of the required competency standards can always change and evolve along with the rounds in the implementation stages of the Delphi method.

d. **Development of Interview Items.** The interview guide is developed based on the initial draft of competency standards obtained from trend identification. The questions in the interview items are structured to ensure that the analysis focus is directed. These interview items are then used as a guide when going into the field to conduct in-depth interviews with the analysis subjects.

e. **Implementation of Interviews.** Interviews are conducted by going directly into the field through person-to-person interviews to gather more in-depth information and reach agreements among the experts (analysis subjects) about the learning outcomes expected after learners complete the course program in light of the current and future needs. Field notes are made to record the information or data gathered, supported by other recording tools.

f. **Administration of Interview Results.** After conducting a series of interviews, the results are administrated and the agreements are

mapped in the form of a matrix to facilitate the analysis and classification of the expected competency needs, as well as to synthesize the relationships between the competency items needed.

g. **Use of First Round Data.** The data obtained from the first round is used to identify the trend of competency needs expected to be achieved by learners after completing the course program. The result is the initial draft of a competency map that is considered provisional.

h. **Second Round.** The initial draft of the competency map obtained from the first round is sent back to the analysis subjects to reach a consensus on the competencies expected after learners complete the course program, aligned with the achievement of educational goals. The second round is expected to provide further input from the experts for the refinement of the initial draft of the competency map.

i. **Use of Second Round Data.** Once consensus is reached in the second round, the consensus results can be used to formulate the competency standards expected to be achieved by learners after completing the learning program, aligned with the achievement of educational goals. The consensus results

from the second round will be used to finalize the formulation of the competency standards expected to be achieved by learners.

3.1 Results of Needs Analysis

The results of the needs analysis are presented gradually, with data obtained from each stage of the Delphi method, with the intention of identifying meaningful patterns and providing the possibility of drawing conclusions and taking action. The developers aim to find the meaning in the data collected to draw conclusions, which will describe the required competencies needed by the learners.

From the results of the needs analysis, the main learning impacts as well as accompanying impacts are then described, which will serve as a reference for the next steps in the development of the learning model. In the context of a systems approach, the results of the needs analysis, in the form of competency standards, will influence the interactions and transformations of the subsystems within the learning model development system.

The results of the needs analysis, which include the competency items, competency standards, and the main and accompanying impacts of learning, are presented in a table format on the formulation of competency standards, as follows:

Table 3. Competency and Material Format

NO	COMPETENCY	SUB-COMPETENCY
1		
2		
3		
4		
5		

4. CONCLUSION

In conclusion, needs analysis is a crucial and fundamental activity when starting any program, especially in education. The success of the learning process is highly dependent on how effectively a teacher or lecturer conducts a needs analysis. By accurately identifying the needs of students, educators can design and implement teaching strategies that are more relevant and impactful. A well-conducted needs analysis ensures that the learning objectives align with the competencies required by students. This process also allows for continuous improvement, adapting to the changing demands of the learners and the educational environment. Therefore, conducting a thorough needs analysis is key to achieving effective and meaningful learning outcomes.

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