Analysis of Integrity Index of Students in National Exams Based on Casual Loop Diagram Model

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Abstract

Student integrity is a problem that is widely discussed in Indonesia, especially since the government measures the school integrity index in national examinations. This article aims to analyze students' integrity problems with a casual loop diagram (CLD) model. CLD is a visual aid in systems thinking. In the perspective of systems thinking, each action creates feedback reinforcement or balancing each other; and between actions and consequences there is a time delay. The method used is library research. The results of the analysis show that: 1) Character education is feedback balancing on integrity issues. Strengthening character education can improve student integrity qualitatively. 2) Structure or system causes behavior. The National Examination System is a reinforment feedback on students' dishonesty. The Computer-Based National Examination can improve the integrity index quantitatively but also weakens the process of integrity education qualitatively. Therefore the national examination policy must be reviewed. 3) Self integrity can only be formed in one long process. This long process is a time delay. The delay process is getting longer because of the lack of role models who have integrity in the education stakeholders.

Keywords: national examination, integrity, system thinking, casual loop diagram

1. INTRODUCTION

Integrity in the context of the National Examination Integrity Index means honesty in working on national exam questions. This was measured by a valid instrument according to the Minister of Education and Culture, Mahatir Effendy to measure the level of honesty (Mendikbud, 2016). According to the Regional Education Balance-Ministry of Education and Culture, the level of honesty of junior high school children in Indonesia in working on the National Examination questions during 2016-2018 continues to increase starting from 72.16 in 2016 to 76.65 in 2017 and 87.38 in 2018.

This increase is in line with the increasing number of schools that hold Computer-Based National Exams online. With this system the chances of cheating are getting smaller. However, this system also triggered a greater effort to commit fraud with a new form as seen on youtube with the title: *"Wow, Begini Cara Curang UNBK 2018: Indonesian Hacher"* (Wow, Here's how to Computer-Based National Exams online 2018: Indonesian Hacher") Cheating. This

YouTube is one example that emphasizes that students tend not to apply honest in working on national exam questions.

This article aims to make an analysis of this problem with a casual loop diagram model or in the perspective of systems thinking. What is the variable balancing feedback, reinforcing feedback and delay feedback on academic dishonesty issues? With the library study method, the author will answer the questions above.

2. LITERATURE REVIEW RESULTS AND DISCUSSION

2.1 Students Integrity

The word integrity comes from Latin, which is "integer". Literally this word means an integer. People who have integrity according to M. Josephson are people who have a whole personality (complete and not divided). He always acts on the basis of clear and consistent principles (Dutta, 1997). In the Indonesian dictionary, this word means "quality, character, or condition that shows a complete unity so that it has the potential and ability that exudes authority; honesty " (Depdiknas, 2008). In line with this understanding, L. Schlessinger said that integrity means honest, sincere. People with integrity are people who always act honestly. Therefore he can always be trusted (Dutta, 1997).

The habit to always act honestly and sincerely makes a person has a sensitivity of conscience. He is always able to distinguish right from wrong and is always compelled to do what is right. People with integrity are people who are always obedient to their conscience that reflects a social ethos (Bieliauskait, 2014).

In the context of Indonesian education, especially in national examinations, school integrity is measured by the integrity index. The integrity index is an index that measures the percentage pattern of fraud in a school. If the integrity index of a school is 75%, it is concluded that there are 25% of students in the relevant school who are not honest in working on national exam questions. Anies Baswedan, Minister of Education and Culture said that this policy was made to restore character in the world of education. Honesty is very important. Fraud practices that often occur so far must be stopped (Baswedan, 2015).
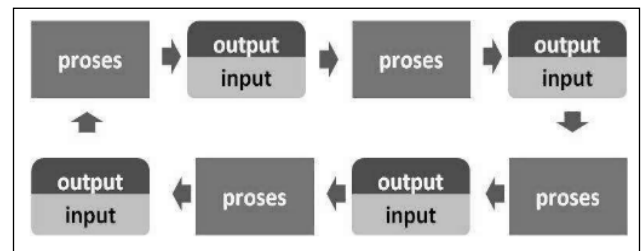
2.2 Casual Loop Diagram

Causality is one of the laws of thought that describes the influence of one variable on another. One variable becomes a cause and the other becomes a result. But in perpsepktif systems thinking; there is no linear causal relationship. True reality is not linear, but circular. Therefore we are often caught in serious mistakes when we understand reality in a linear manner. Senge confirmed this when he wrote: "Reality is made up of circles but we see straight lines" (Peter M. Senge, 1986). Thus the influence between variables always occurs reciprocally. This perspective is called system thinking.

Richmond says that system thinking is a way of looking at each problem as a reality that is complex in that there is interdependence between all components (Jagustović et al., 2019). According to Karz and Kahn, such views are based on system theory, they say that "system theory is basically concerned with problems of relationships, structures, and of interdependence, rather than the constant attributes of objects" (Peter M. Senge, 1986)

Human behavior in a system is influenced by structure. Each system has a feedback structure. The simplest structure of the system is an interconnection between input-process and output. The influence between input-process and output is not linear. Conversely, between the 3 components that occur, they affect each other. There is interdependence between the three. Input influences processes, processes affect output; output is also an input that affects the process and subsequent output. And so on so that a circle of reality is formed as described below (Hidayatno, 2013):

Figure 1 More Complex Feedback Structure

This concept gives birth to thinking tools called the Causal Loop Diagram (CLD). CLD is a visual aid in systems thinking to visualize the interdependence of various important variables in making decisions. The shape of the circle will be visible if the interdependence between components is represented by a curved arrow.

In each CDL there is a variable that becomes feedback balancing, reinforcement feedback and time deley (Peter M. Senge, 1986). Balancing feedback is the process of finding a source of stability and rejection. The balancing feedback process underlies all goal-oriented behavior. So as long as a feedback loop is goal-oriented, the variable is called feedback balancing. Conversely feedback that does not lead to the realization of the purpose of a system is called reinforcement feedback. Reinforcement feedback occurs when an action or solution taken on an issue can make an organization grow increasingly better or worse and form a circle. If the growth happens to be worse, the circle that is formed is a "vicious circle" or a circle of problems that has an impact that gets worse and worse. Time Deley is an interruption between actions and consequences. Deley occurs because of the actions and consequences of a process that requires a certain amount of time. When deley is unknown or not understood, people tend to do what is called Senge as "overshoot". Actions that exceed the limits needed to achieve the desired goal. Thus the action raises new problems.

3. ANALYSIS OF INTEGRITY OF STUDENTS WITH THE CAUSAL LOOP DIAGRAM MODEL

Integrity in the context of education is a variable that is influenced and affects many other variables. Based on various sources, researchers can describe mind maps about this as follows:

Figure 2 Interelement Association

Information:
A. I (Integrity)-I1: family integrity; I2: student integrity; I3: community integrity, I4: school integrity
B. G (Government)-G1 Government (governor, regent, head of the education office, etc.); G2: school supervisor; G3: national examination supervisor
C. S (Standard)-S1: Graduate Competency Standars; S2: Content standard; S3: Standard process; S4: Personel standards; S5: Infrastructure standards; S6:Management standards; S7 : Standard for education funding; S8 Assessment standards
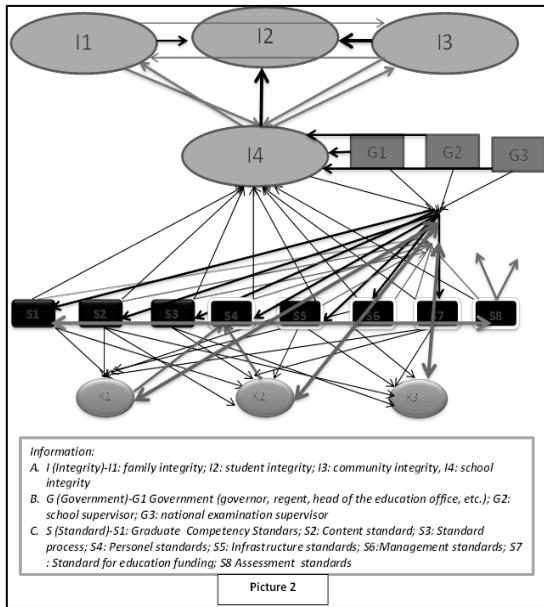
Picture 2

Figure 2 shows that the association of one element with another element directly or through an intermediate variable illustrated by an arrow indicates that education is a system in which there are many interrelated components. Therefore the problem of education must be seen in the perspective of systems thinking.

There are three major factors that affect the integrity of students in particular and generally schools are family, community and school factors. These three factors are influential because they play a role in forming student character. The integrity of the community and family is also influenced by the quality of the school because the school's output lives and becomes a member of the family and community. Family and community integrity strengthen each other. Families that have good integrity contribute positively to improving public integrity. On the contrary, good community integrity enables the integrity of the family to grow to become better.

School integrity is influenced by 8 educational standards. The eight educational standards do not stand alone as something separate from each other; but influence each other. School integrity and integrity of the National Examination are particularly influenced by the integrity of the examiners, school supervisors, education offices and regents / mayors and governors. They sometimes make the National Examination assessed as a picture of quality as an imaging tool.

The National Examination as part of the assessment standards is influenced and influences other standards, especially the standard process (curricular, cochurricular and extracurricular). Curricular, kokurikuler and extra-curricular activities are influenced and influence the National Examination, for example in relation to the allocation of policies, time, etc.

Character education contained in curricular, co-curricular and extra-curricular activities which is the content of process components influences and is influenced by 8 standards of education in general and specifically the National Examination as part of the assessment standards. This is illustrated by reciprocal long arrows that connect S1-S8. Many arrows point and are directed towards or from the National Examination. This shows that the National Examination is the biggest leverage point in shaping behavior in the system.

Based on Figure 2, it is wrong if the input, process and output relationships are seen linearly as shown in the following figure(Depdiknas, 2002):

Figure 3. Education inputs, processes, and outputs
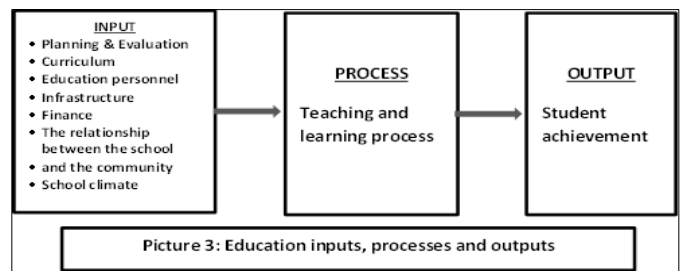

Picture 3: Education inputs, processes and outputs

Figure 3 shows that input as a component is a subsystem consisting of many components from planning to school climate. The teaching and learning process is also a system consisting of components of learning planning, implementation of learning, assessment of learning processes and results and supervision of the learning process (Permendikbud No.22, 2016). Learning outcomes assessments other than those conducted by educators and educational units, are also carried out by the government in the form of national examinations (Permendikbud No.23, 2016). The output component is also a subsystem that incorporates competency attitudes, knowledge and skills (Permendikbud No.20, 2016).

The direction of the arrow in figure 6 shows a linear effect. But the reality of education is not linear but circular. There is interdependence between all components as shown in Figure 4.

Based on Figure 4 and supported by the previous discussion, it can be identified that character education as one of the process component content is a feedback balancing variable; The National Examination as a reinforcement variable and time deley is the time needed to achieve competencies that become graduation standards including aspects of integrity.

Figure 4. Causal Loop Diagram

Picture 4: Causal Loop Diagram
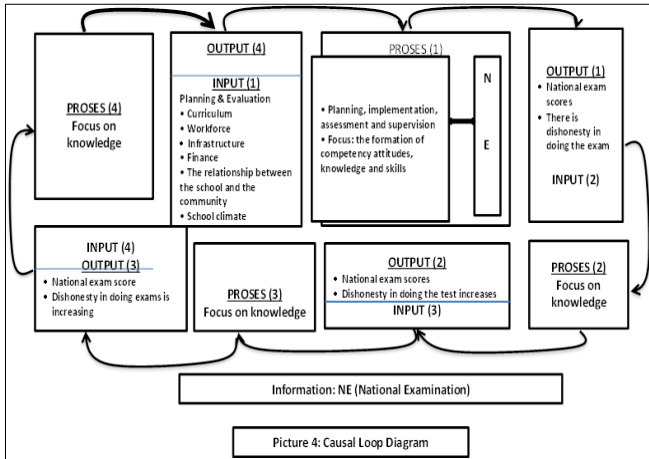
Some of these things can be explained as follows:
a. Character Education as Feedback Balancing
    Character education is a form of balancing feedback to build system stability; specifically addressing the problem of lack of integrity in students. The results of the study show that education is very important to improve the integrity of students. Thus academic dishonesty will be increasingly minimized (Bieliauskait, 2014). In line with this, another study in the Indonesian context recommends the importance of the government to seriously organize education oriented to the formation of integrity. One practical suggestion is that honesty canteens are provided in every school (Sihombing, 2018).
    The issue of integrity of students in working on the National Examination questions, must be understood in relation to character education in general. In reality there is often a gap between knowing and doing. Therefore, in character education, it is not enough for students to learn to know and understand; but it also continues with refraction and internalization so that it becomes a belief and is able to do it consistently. For this purpose, character education can be carried out with stratification, socialization, education (formal, informal and informal), civilization, empowerment and cooperation with all stakeholder components. (Dirjen Dikdas, 2011). Components responsible for character education are family, community and school.
b. National Examination as Reinforcement Feedback
    The National Examination according to the Decree of the Minister of Education Number 153 / U / 2003 aims to measure the achievement of student learning outcomes; measuring the quality of education at the national,

provincial, district / city level and education unit, taking responsibility for the delivery of education nationally, provincially, district / city and education units to the community. But it needs to be realized that the system or structure causes certain behaviors to grow. The National Examination Policy raises complex problems. He became a variable reinforcing feedback on efforts to overcome the problem of lack of integrity of students.

The existence of a National Examination that only measures aspects of knowledge causes all inputs and processes to be more oriented towards the National Examination. Great attention is given to aspects of knowledge especially relating to National Examination subjects. Aspects of attitudes and skills received less attention. As a result the integrity index may increase because the system minimizes the possibility of fraud. But the integrity of students qualitatively tends to get worse. The Computer-Based National Examination even raises a greater effort to commit fraud. Cheating is sometimes done systematically. The results of the study (case study) Solihin show this reality (Solihin, 2012). Principals, school supervisors, and the government (education office, regents and governors) want to build a self-image as a successful leader. National Exam Results are used as an indicator of their success. This is clearly counterproductive with the aim of character education that is being intensively implemented. So it is true that if the issue of education is not understood in a perceptive thinking system, a solution that will be taken today will be a source of problems for the future. This is what Senge refers to as one of the laws of system thinking, namely: *"Today's problems come from yesteday's solutions"* (Peter M. Senge, 1986). Thus the National Examination policy must be reviewed.

c. Time Deley
    The issue of student integrity cannot be solved by shortcuts. Character education is a process that requires a long time. The results are not immediately visible. This is the time delay of trying to overcome the problem of integrity of students. Time delay can be longer because of the lack of parity in parents, teachers and community leaders. For this last group, there are many examples. People with academic doctoral and master's degree backgrounds and become public officials such as the former chairman of the Constitutional Court, Chair and members of the House of Representatives, and others are currently in prison for cheating (dishonest). At this point, education activists will experience what is called Senge as a creative and emotional tension. The change is tense. There is tension because there is a gap between reality and purpose.

4. CONCLUSION

Education as a system consists of components of input, process and output. There is an interdependence between the three components. Therefore, education problems, including issues of student integrity should not be understood linearly. It must be seen in the perspective of systems thinking. CLD is

a tool to comprehend this problem comprehensively. The results of the analysis with the CLD model show that:

a. Character education is feedback balancing on integrity issues. Strengthening character education can improve student integrity qualitatively.

b. The structure or system causes or fosters certain behaviors in all people who live in the system. The National Examination System is a reinforment feedback on students' dishonesty. The Computer-Based National Examination can improve the integrity index quantitatively but also weakens the process of integrity education qualitatively. Therefore the national examination policy must be reviewed.

c. Self integrity can only be formed in one long process. This long process is a time delay. The delay process is getting longer because of the lack of role models who have integrity in the education stakeholders

The 21st century was marked as a century of openness or the age of globalization, meaning that human life in the 21st century experienced fundamental changes that were different from the order of life in the previous century. It is said that the 21st century is a century that demands quality in all efforts and results of human labor. By itself, the 21st century calls for quality human resources, which are produced by professionally managed institutions to produce superior results. The new demands demand various breakthroughs in thinking, drafting and actions.

In other words a new paradigm is needed in the face of new challenges, said philosopher Khun. According to philosopher Khun, if new challenges are faced by using the old paradigm, then all efforts will fail.

In the current era of globalization, almost all lines of life for organizations and individuals are based on information and communication technology. Learning has also been an ICT-based system. For example the development of ICT-based learning models for. The ability of important values and their significance for the world of education is now recognized. Thus, it is also appropriate to recognize the importance of information sensitivity. This will foster the importance of information literacy for the world of education in the present era.

Globalization, which is characterized by important advances in information and communication technology such as this, also drives changes in the world of education, especially the learning process. Teachers have not become the only source in learning, because with technology, now it is very possible for students to access a variety of learning resources and learn for themselves. In addition to becoming increasingly simple and practical the role of teaching staff in front of students, this kind of paradigm further strengthens the idea of the importance of information literacy. However, the flood of information and development of software and hardware has added to the treasures of extraordinary civilizations. Maximum utilization in the world of education will greatly help the change and transition of our educational civilization towards the world of education that is modern, globalized and competitive in the world market.

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