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Strengthening Energy-Saving Culture Through the Implementation of State Defense

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Abstract

The energy crisis results from imbalanced demand and availability. The Government commits to addressing future energy challenges in Indonesia through a conservation movement. Accelerating anticipatory measures with public support is crucial. Recognizing energy conservation as a societal responsibility, including students as agents of change, the implementation of a state defense program in higher education, is crucial. This research identifies students' energy conservation knowledge, analyzes dominant factors influencing its success, and assesses efforts to strengthen the conservation culture. Findings show awareness levels, with attitude toward belief as a primary hindrance. Combining technical and behavioral approaches is necessary for sustainable energy culture.

Keywords:

Energy Conservation Culture, State Defense, Students, Polytechnic

Introduction

The ongoing global energy crisis, a serious global issue, has impacted Indonesia as well. The primary cause of this crisis is the depletion of fossil energy reserves, a major supplier of energy. Fossil energy, while being a primary energy source, significantly contributes to global warming, greenhouse gas effects, and environmental damage due to its high emission content. This energy crisis also results from the unbalanced growth of energy demand and its availability. In 2021, Indonesia's energy consumption reached 909.24 million barrels of oil equivalent (BOE), encompassing electricity, coal, natural gas, gasoline, solar, biodiesel, briquettes, LPG, biogas, and biomass. The top three sectors in energy consumption include transportation (42.72%), industry (34.93%), and households (16.39%).

Addressing this issue, energy conservation and transition become the government's commitment to anticipate future energy crises, maintain energy resilience, and achieve a green economy. This commitment is reflected in the Ministerial Regulation No. 12 of 2022 on the

Implementation of the Presidential Regulation No. 41 of 2016 concerning Procedures for Determining and Addressing Energy Crises and/or Energy Emergencies. However, significant

challenges accompany these efforts, requiring synergy among the Central Government, Local Government, and the community.

Anticipatory measures initiated by the government require full support from the public as energy consumers. Unfortunately, a considerable portion of the population remains unaware of the importance of energy conservation efforts in anticipating this energy crisis. Furthermore, the public lacks adequate knowledge about energy-saving measures.

According to the 2019 YLKI energy consumer survey, respondents acknowledge the necessity of energy-saving efforts, yet not all aspects are deemed "very important." While turning off unnecessary lights is considered crucial, aspects such as "renewable energy consumption," "reducing private vehicle usage," and "using energy-efficient appliances" receive limited attention. This illustrates the limited public knowledge regarding energy-saving efforts. Considering that energy conservation is the responsibility of all societal layers, the implementation of a state defense program is expected to address this issue. State defense education, as part of character development, functions as an effort toward a dignified and modern civil society. One manifestation of state defense can be seen in the implementation of energy-saving cultural education.

Energy-saving cultural education can be integrated into Indonesia's character education curriculum, not as a standalone subject but woven into various general mandatory courses and relevant extracurricular activities. Furthermore, Jakarta State Polytechnic supports the government's policies through the formal Introduction to State defense Education (PPBN) activities.

Given the aforementioned phenomenon, this research will analyze how energy-saving culture is strengthened through the implementation of state defense among Jakarta State Polytechnic students. The chosen title is "Strengthening Energy Conservation Culture through the Implementation of State defense among Jakarta State Polytechnic Students." The hope is that this research will provide recommendations for strengthening the energy-saving culture within the Jakarta State Polytechnic community.

In general, this research aims to understand, identify, process, and empirically analyze data regarding the strengthening of energy conservation culture through the implementation of state defense among Jakarta State Polytechnic students. The specific research objectives are as follows: Identify the level of knowledge among Jakarta State Polytechnic students regarding energy conservation efforts, Identify the dominant factors influencing the success of energy conservation implementation among Jakarta State Polytechnic students, Analyze the approach to strengthening the energy conservation culture through the implementation of state defense among Jakarta State Polytechnic students.

Literature Review

Energy conservation, also known as energy conservation, is the act of reducing energy consumption. This can be achieved by using energy efficiently, where the same benefits are obtained with less energy, or by reducing the consumption and activities that use energy (Mineral, 2023). Energy conservation can lead to cost savings and increased environmental value, national security, personal security, and environmental comfort (Indra, 2015).

Electricity conservation can be approached through two methods: technical and behavioral. Conceptually, power-saving implementation involves providing additional tools for automatic power savings or efficiency. The behavioral approach can be pursued through increased awareness and independence, including electricity conservation. Energy conservation

through a behavioral approach for efficiency and productivity is a policy statement stage (Choong Weng Wai, 2016).

Regulations supporting energy conservation need to be accelerated through socialization about wise and economical electricity consumption. This requires micro-level actions from the public to succeed in macro-level energy conservation agendas. These micro-level actions are expected to form a solid foundation for energy-saving actions.

To cultivate energy-saving behavior, knowledge is a crucial aspect to consider. Behavior derived from knowledge tends to be more enduring than behavior without it. Knowledge has several levels, namely: a. Awareness, meaning being aware and knowing in advance about an object. b. Interest, where a person starts to become interested in the object. Here, the subject's attitude begins to emerge. c. Evaluation, where a person evaluates the object's suitability for them. d. Trial, where a person starts to try doing something as desired. e. Adaption, meaning a person has behaved according to knowledge, awareness, and attitude (Notoatmodjo, 2012). Behavior without knowledge and awareness is unlikely to last. Energy-saving behavior is also categorized as one form of state defense implementation.

State defense is the determination, attitude, and behavior of citizens driven by their love for the Unitary State of the Republic of Indonesia based on Pancasila and the 1945 Constitution to ensure the nation and state's survival. The embodiment of state defense efforts includes citizens' readiness and willingness to sacrifice for preserving: the country's independence and sovereignty, national unity, territorial integrity and national jurisdiction, and the values of Pancasila and the 1945 Constitution.

The government's role (Gredinand, 2017) through a conceptual and strategic program policy to instill values/societal awareness improvement in state defense is through formal activities such as Introduction to State defense Education (PPBN). The implementation of state defense education has a legal basis in the 1945 Constitution Article 30, paragraph (1), stating the rights and obligations of every citizen to participate in state defense and security efforts.
The implementation of State defense Education in Higher Education through the curriculum includes benchmark/parameters for success in achieving goals and objectives, with five fundamental values: Love for the Homeland, Willingness to Sacrifice, National Awareness and Citizenship, Pancasila as the State Ideology, and Basic State defense Skills, both physically and non-physically. Indonesia's future threats, whether internal or external, short-term or long-term, which can impede government programs and disrupt the nation's life, necessitate swift, synchronized, serious, directed, and measured steps in all sectors/lines through various tangible activities directly involving the public.

The implementation of State defense Education among students provides a fitting solution to these threats. The recent collaboration between the Indonesian National Army (TNI AD) and several universities should be perceived as an acknowledgment of the current shifts in threats and challenges facing Indonesia.
Individual actions, in this case, attitudes and actions in state defense, are formed by three main components: behavioral beliefs, normative beliefs, and control beliefs: a. Attitude Toward Behavior (ATB) The attitude toward behavior, influenced by behavioral beliefs, is a positive or negative evaluation of a specific behavior. This is reflected in words such as right-wrong, agree-disagree, good-bad. A positive evaluation of state defense attitudes will increase the potential for state defense. b. Subjective Norm (SN) Subjective norms, influenced by subjective norms around individuals, expect the individual to behave in a certain way or not. Examples include religious norms (for religious individuals), social norms, family norms, or when important people

around an individual consider loving the homeland positive, increasing the potential for high state defense awareness. c. Control Belief (CB) Control beliefs, influenced by perceived behavior control, refer to the difficulty and ease of manifesting a behavior. This relates to the sources and opportunities to carry out that behavior. For example, an individual's environment with a strong/pervasive love for their country will increase the individual's potential for high state defense awareness (Fishbein, 1975).

Research Methods

This research employs a qualitative research design known as a case study. Various definitions of qualitative research have been proposed by experts, such as Bogdan and Taylor (1975:5) cited in (Meleong, 2012), who define qualitative research as a research procedure that produces descriptive data in the form of written or spoken words from people and observable behaviors. Another definition related to qualitative research is research aimed at understanding phenomena such as subjects' experiences, behaviors, perceptions, motivations, actions, etc., holistically and through descriptive means using words and language, within a specific natural context and utilizing various scientific methods (Meleong, 2012).

The approach used in this research involves utilizing a case study. The case study approach is deemed suitable because the research seeks to delve deeper by addressing "how and why" questions. Moreover, when researchers have limited control over the events they are focusing on, and the research is centered on real-life contemporary phenomena (Robert, 2012). The main research questions are formulated to study and answer the formulated research problems. A case study is chosen because the research's focus is constrained by the space and time in which it will explore how the reinforcement of energy-saving culture through the implementation of national defense occurs among students at Jakarta State Polytechnic.

In qualitative research, data analysis can be conducted concurrently with the data collection process and the writing of findings. Analysis can be performed during interviews, and the overall analysis can be documented in notes or memos. Not all collected data, whether written or spoken, needs to be included in the report, as this can complicate the analysis process (Creswell, 2016).

The commonly used analysis method is the interactive model by Miles & Huberman (2013). In this model, analysis is continuous until the data is saturated. This analysis consists of data collection, data reduction, data presentation, and drawing conclusions. The explanations for each stage are as follows:

1. Data Collection: In qualitative research, data analysis can be performed simultaneously with the data collection process and the writing of findings.
2. Data Reduction: Not all collected data needs to be included in the report. The focus is on core findings and themes relevant to the research. After reduction, the information gleaned from the data becomes clearer, serving as a reference for further analysis or additional data collection. Data reduction is done during the transcription of interviews by listening to recorded interviews.
3. Data Presentation: Data is presented based on conclusions derived from previously processed information. In qualitative research, data is presented in narrative form, explaining the relationships between pieces of information. This stage facilitates researchers' understanding of the field conditions and helps plan the next steps.
4. Drawing Conclusions: Drawing conclusions can be done multiple times. Initial conclusions during the early data collection stages are often provisional, subject to

change with more data and information analysis. However, if the initial conclusions are supported by valid and consistent evidence in line with field conditions, they can be considered final. Conclusions in qualitative research represent new findings that did not exist before. These findings may describe or illustrate an object that was previously unclear and became evident after research.

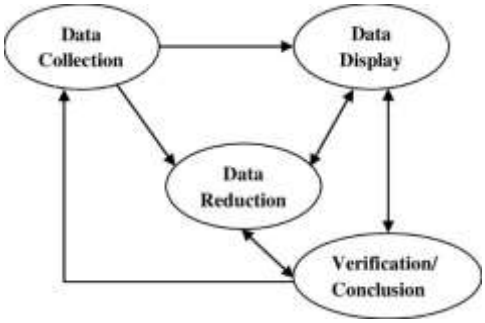

Table 1. the interactive model by Miles & Huberman

In this research, conclusions are drawn from the data presented in the data presentation stage. These conclusions are then cross-checked with the events and realities in the field by re-contacting the informants. This stage is also a data validity check, ensuring that the presented data is truly valid according to field conditions.

The validation or authenticity testing process in qualitative research involves examining the accuracy of the research results obtained (Creswell, 2016). The validation procedures used in this research include data triangulation. Triangulation is a technique for validating by using factors outside the data that will be used as a comparison (Meleong, 2012).

Several triangulation techniques include source triangulation, method triangulation, investigator triangulation, and theory triangulation (Meleong, 2012). The triangulation technique used in this research involves: Asking various variations of questions, checking from various different sources, Utilizing multiple methods to facilitate credibility checking.

Results and Discussion

Energy crisis stems from the growth in energy demand that is not aligned with the availability of energy sources. One of the contributors is household energy consumption, which has significant impacts and requires extraordinary measures to address the issue. To tackle this challenge, the government has launched energy-saving and energy transition movements as commitments to anticipate energy crises, maintain energy resilience, and promote sustainable economic development. This commitment is reflected in the Ministerial Regulation (Permen) ESDM Number 12 of 2022, which outlines the procedures for handling energy crises and emergencies. The emphasized energy conservation approach in this study is the micro-level (individual) electrical consumption behavior. Electrical consumption is viewed as a highly relevant social phenomenon with two main contexts: the rapid transformation of human life toward digital-centricity and the dominance of electricity in all aspects of life. Data collection for the study was conducted using random sampling techniques with a questionnaire involving a total of 157 respondents who are students from the Department of Electrical Engineering at the Jakarta State Polytechnic. This was followed by in-depth interviews and observations.

Students' Knowledge Levels Regarding Energy-Saving Efforts

To form energy-saving behavior, knowledge is a crucial domain that needs to be considered. Behavior stemming from knowledge tends to be more enduring than behavior without knowledge. Knowledge has several levels, namely:
1 Awareness: in this context, the level of knowledge can be assessed based on students' awareness of the importance of energy-saving culture.
2 Interest: when students start showing interest in energy-saving behavior due to understanding the causes and impacts.
3 Evaluation: at this stage, individuals begin to believe that energy-saving behavior has positive impacts on themselves.
4 Trial: there have been several attempts to engage in energy-saving behavior.
5 Adaption: individuals have considered every behavior with the concept of energy-saving (Notoatmodjo, 2012).
Based on the questionnaire results, it was found that the majority of respondents still have an awareness level, with the highest percentage at 32.5%, while 24.2% are at the interest level, 23.6% at the trial level, 11.5% at the interest level, and only 8.3% at the adaptation level. In essence, most Jakarta State Polytechnic (PNJ) students are still at the awareness level, where they are conscious that the energy-saving culture is important, but only a small fraction has reached the adaptation level, where energy-saving culture is considered in every behavior. This conclusion was drawn after conducting in-depth interviews with a sample of students who had filled out the questionnaire, in addition to observing energy-saving behavior within the campus environment.

Table 2. Energy-Saving Knowledge Levels

No	Levels	Implementation	Precentage
1	Awareness	It is asessed based on students' awareness of the importance of energy-saving culture	32,5%
2	Interest	When students start showing interest in energy-saving behavior due to understanding the causes and impacts	11,5%
3	Evaluation	Individuals begin to believe that energy-saving behavior has positive impacts on themselves.	24,2%
4	Trial	There have been several attempts to engage in energy-saving behavior	23,6%
5	Adaption	İndividuals have considered every behavior with the concept of energy-saving	8,3%

Source : processed by the author

Factors Influencing the Success of Energy-Saving Culture

Implementation An individual's actions, in this case, attitudes and actions toward energy-saving, are formed by three main components: behavioral beliefs, normative beliefs, and control beliefs:
1 Attitude Toward Behavior (ATB) In the context of energy-saving, this can be interpreted as an individual's conviction that energy-saving culture is essential.

2 Subjective Norm (SN) Subjective norm Influenced by subjective norms surrounding individuals who expect the individual to behave in a particular way or not. This can be supported by the existence of regulations mandating energy-saving culture.
3 Control Belief (CB) Perceived behavior control Influenced by the environment around individuals who engage in significant/easy energy-saving behavior, increasing the individual's intention to grow a high awareness of energy-saving. In this case, a supporting environment is necessary for the implementation of energy-saving culture (Fishbein, 1975).
From the questionnaire results distributed to respondents, it was found that the most dominant factor in the implementation of energy-saving culture is the Attitude Toward Behavior factor, as evidenced by a percentage of 60.5%. The second position is occupied by the control belief factor with a percentage of 35.7%. The last position is occupied by subjective norms, which have only 3.8%.

Table 3. Factors Influencing the Success of Energy-Saving Culture

No	Levels	Implementation	Precentage
1	Attitute toward behaviour	Individual's conviction that energy-saving culture is essential.	60,5%
2	Subjective norm	This can be supported by the existence of regulations mandating energy-saving culture.	3,8%
3	Control belief	a supporting environment is necessary for the implementation of energy-saving culture	35,7%

Source : processed by the author

Strengthening the Energy-Saving Culture Approach as a Form of National Defense
Implementation Electricity energy conservation is crucial in efforts to reduce energy consumption, environmental impacts, and costs. To achieve effective electricity energy conservation, it can be done through two different but complementary approaches. Electricity energy conservation can be achieved through two approaches, namely:
1 Technical Approach This can be done by adopting energy-efficient technologies and replacing conventional electrical devices with more efficient ones.
2 Behavioral Approach This can be done by changing consumer behavior in daily electricity usage, such as turning off unused devices, judiciously adjusting AC temperatures, and reducing energy waste.
The combination of these two approaches can help create significant electricity energy savings and support efforts to achieve energy sustainability. From the overall respondents, 63.7% of them believe that the technical approach is the most dominant approach in strengthening the energy-saving culture on campus. Meanwhile, the remaining 36.3% believe that the behavioral approach is equally important. In conclusion, the majority of respondents believe that the technical approach is the most effective.

Conclusions

Based on the research findings, it can be concluded that:

1. The majority of PNJ students are still at the awareness level, where they acknowledge the importance of energy-saving culture. However, only a small fraction has reached the adaptation level, incorporating energy-saving culture into their daily behavior.
2. According to the study results, among the three inhibiting factors, namely attitude toward belief, subjective norm, and control belief, it can be concluded that the attitude toward belief factor is the most dominant in implementing energy-saving practices among Jakarta State Polytechnic students.
3. The technical approach proves to be the most effective in reinforcing the energy-saving culture. However, a combination of both technical and behavioral approaches can significantly contribute to electricity energy savings and support efforts toward energy sustainability.

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