



Infrastructure Governance Study at UPTD Graha Teknologi Sriwijaya South Sumatra Province

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ABSTRACT

Science education infrastructure is an important component in the development of community science literacy and improving the quality of human resources. Infrastructure governance is a key factor in ensuring the sustainability of the use of public facilities, especially in non-formal education institutions based on science and technology. This study aims to analyze infrastructure governance at UPTD Graha Teknologi Sriwijaya South Sumatra Province as an experiential science learning center. The research uses a qualitative approach with a case study method. Data collection techniques are carried out through in-depth interviews, observations, and documentation studies. Data analysis is carried out through the process of data reduction, data presentation, and conclusion drawn. The results of the study show that infrastructure governance at UPTD Graha Teknologi Sriwijaya is influenced by several main aspects, namely facility management policies, institutional capacity, availability of human resources, and budget and technology support. Although infrastructure facilities are available, optimizing their utilization still faces various obstacles such as limited facility maintenance, inter-agency coordination, and limited program innovation.

INTRODUCTION

Public infrastructure is one of the important components in supporting national development and improving the quality of services to the community. Infrastructure is not only related to physical development such as roads, bridges, and buildings, but also includes educational, research, and learning facilities that can encourage the improvement of the quality of human resources. The existence of effectively managed infrastructure will make a significant contribution to improving community welfare and sustainable regional development (World Bank, 2017). From the perspective of public administration, infrastructure management does not only focus on physical development, but also on how the governance process is carried out effectively, transparently, and accountably. The concept of infrastructure governance is an important aspect in ensuring that public assets can be used optimally and provide long-term benefits to society (OECD, 2020).

Infrastructure governance emphasizes the importance of the process of planning, managing, maintaining, and evaluating public facilities owned by the government. Without a good governance system, the infrastructure that has been built has the potential to not be utilized optimally and can even experience a decrease in function within a certain period of time (Grigg, 2010). In the context of human resource development, education infrastructure has a very strategic role. The educational infrastructure includes not only schools and universities, but also various non-formal learning facilities that can support the lifelong learning process.

One form of non-formal education infrastructure that is developing in various countries is a science and technology demonstration center or science center. The facility is designed as an interactive learning space that allows the public to understand science and technology concepts through a hands-on experience approach (Falk & Dierking, 2013). Science centers have an important function in improving people's science literacy. Through various interactive demonstration and experiment media, people can gain a better understanding of scientific phenomena and technological developments that occur in their surroundings. In recent decades, many countries have made science centers part of their science communication strategies to the public. This approach aims to expand public access to knowledge and increase the interest of the younger generation in the field of science and technology. Indonesia has also begun to develop various experiential science learning facilities as part of efforts to improve the quality of education and national innovation. The development of these facilities is expected to support a more creative, interactive, and applicable learning process for the community.

One form of implementation of the policy is the construction of Graha Teknologi Sriwijaya in South Sumatra Province. This facility is designed as a science and technology education center that can be used by students, students, and the general public as a means of non-formal learning. Graha Teknologi Sriwijaya is managed by the Regional Technical Implementation Unit (UPTD) which is under the local government. As a public institution, the management of

this facility requires an effective governance system so that all available infrastructure can be used optimally.

The management of public facilities such as Graha Teknologi Sriwijaya is inseparable from various challenges related to institutional aspects, human resources, and budget support. Without a good governance system, the existence of these facilities has the potential to not provide maximum benefits to the community. In public administration theory, the concept of governance is used to explain how various actors interact in the process of managing public resources. Governance not only involves the government as the main actor, but also involves the community, the private sector, and various other organizations in the decision-making process (Rhodes, 1996).

The concept of governance also emphasizes the importance of the principles of transparency, accountability, participation, and effectiveness in the implementation of public services. These principles are an important foundation in ensuring that the management of public facilities can be carried out professionally and sustainably (United Nations Development Programme, 2015). In the context of public infrastructure management, good governance will determine the success of a development program. Infrastructure that is built at a large cost requires a management system that is able to ensure the sustainability of its use in the long term. However, in practice, the management of public infrastructure often faces various obstacles. Some of the obstacles that often arise include budget limitations, lack of professionals, and low coordination between government agencies. These conditions can also affect the effectiveness of the use of non-formal educational facilities such as science centers. Without a proper management strategy, the available facilities cannot be utilized optimally by the community.

Therefore, a governance approach is needed that is able to integrate various aspects such as facility management, educational program development, and capacity building of human resources managers. A collaborative governance approach is believed to increase the effectiveness of public facility management. Through collaboration between the government, educational institutions, and the community, various educational programs can be developed in a more innovative and sustainable manner. In addition, strengthening governance can also increase accountability in the use of the budget and strengthen public trust in public institutions that manage these facilities.

In the context of Graha Teknologi Sriwijaya, the existence of science and technology demonstration facilities has great potential to become a public education center that supports the improvement of community science literacy. However, this potential can only be realized if it is supported by an effective governance system, both in terms of institutions, facility management, and educational program development.

The management of experiential science education facilities also requires continuous innovation in order to attract public interest to visit and utilize the available facilities. In addition, policy support from the local government is also an important factor in ensuring the sustainability of the management of these facilities.

Research on the governance of science education infrastructure at the regional level is still relatively limited, especially related to the management of science and technology demonstration centers. Therefore, academic studies on infrastructure governance at Graha Teknologi Sriwijaya are important to understand how the management process of public facilities is carried out and the factors that affect its effectiveness.

Through this research, it is hoped that a more comprehensive understanding can be obtained of the practice of science education infrastructure governance at the regional level and its contribution to improving community science literacy. In addition, the results of this study are also expected to provide policy recommendations for local governments in developing a more effective, innovative, and sustainable model of science education infrastructure governance.

LITERATURE REVIEW

The Concept of Governance in Public Administration

Governance is a concept that has developed in the study of public administration to explain the change in the role of the government in managing public affairs. In contrast to the traditional public administration approach that places the government as the main actor in decision-making, governance emphasizes the involvement of various actors in the process of implementing government. Rhodes (1996) explained that governance is a management process that involves a network of actors who interact with each other in formulating and implementing public policies.

The concept of governance also emphasizes the importance of the principles of transparency, accountability, participation, and effectiveness in the administration of government. These principles are the basis for the creation of good governance that is able to improve the quality of public services and strengthen the legitimacy of the government in the eyes of the public (United Nations Development Programme, 2015).

In subsequent developments, the concept of governance is also associated with a collaborative approach that involves various stakeholders in the decision-making process. Ansell and Gash (2008) explained that collaborative governance is a decision-making process that involves government agencies and non-government actors together in formulating and implementing public policies.

The governance approach is also important in the management of public resources, including in infrastructure management. Good governance will ensure that public resources can be managed efficiently, effectively, and sustainably.

Infrastructure Governance

Infrastructure governance refers to the system of regulating, managing, and supervising the development and utilization of public infrastructure. The OECD (2020) defines infrastructure governance as a policy, institutional, and decision-making process framework used to ensure that public infrastructure can optimally benefit society.

Infrastructure governance includes several important aspects such as development planning, operational management, facility maintenance, and evaluation of infrastructure performance. A well-managed infrastructure will contribute to improving the quality of public services and supporting economic and social development.

Grigg (2010) explained that the success of infrastructure management is highly dependent on the organization's ability to integrate technical, managerial, and public policy aspects. Infrastructure built without a good management system has the potential to experience a decrease in function or even cannot be utilized optimally by the community.

In the context of local government, infrastructure management also requires good coordination between various government agencies and support from the community. This is important to ensure that the available infrastructure can be utilized effectively and sustainably.

Science and Technology Education Infrastructure

One form of public infrastructure that has an important role in human resource development is science and technology education infrastructure. This infrastructure includes not only formal educational facilities such as schools and universities, but also various non-formal learning facilities that can improve people's science literacy.

Science centers or science and technology demonstration centers are a form of non-formal educational infrastructure designed to provide an interactive learning experience to the community. Falk and Dierking (2013) explained that the science center functions as a learning space that allows visitors to understand scientific concepts through experimentation and direct interaction with various demonstration media.

The existence of the science center has a strategic role in increasing public interest in the field of science and technology. In addition, this facility can also be a means of effective science communication between scientists, the government, and the public.

In the context of regional development, the management of science centers requires a governance system that is able to integrate various aspects such as facility management, educational program development, and collaboration with educational institutions and the science community.

METHODOLOGY

This study uses a qualitative approach with a case study method to analyze infrastructure governance at UPTD Graha Teknologi Sriwijaya South Sumatra Province. The qualitative approach was chosen because this research aims to understand in depth the phenomenon of infrastructure governance and the factors that influence it in the context of public organizations. The case study method was used to gain a comprehensive understanding of infrastructure management practices in the institution. Through this approach, researchers can examine various aspects related to organizational governance, facility management, and the use of infrastructure as a means of public education.

The data collection technique in this study was carried out through several methods, namely in-depth interviews, observations, and documentation studies. Interviews were conducted with institutional managers, operational staff, and parties involved in the management of Graha Teknologi Sriwijaya facilities. Observations were carried out to directly observe the condition of the facilities and educational activities that took place at the research site. Meanwhile, the documentation study was carried out by examining various official documents such as activity reports, management policies, and visitor statistics. To ensure the validity of the data, this study uses source triangulation techniques and method triangulation. Source triangulation is carried out by comparing information obtained from various informants, while method triangulation is carried out by comparing data from interviews, observations, and documentation.

RESEARCH RESULTS

The results of the study show that infrastructure governance at UPTD Graha Teknologi Sriwijaya South Sumatra Province is influenced by several main aspects related to institutional structure, management of infrastructure facilities, human resource capacity, as well as policy and budget support from local governments. These four aspects are interrelated and together determine the effectiveness of the use of Graha Teknologi Sriwijaya facilities as a center for science and technology education for the community.

From an institutional aspect, the management of Graha Teknologi Sriwijaya is under the Regional Technical Implementation Unit (UPTD) which has responsibility for managing the institution's operations and ensuring that the available facilities can be used optimally by the community. The organizational structure owned by the UPTD shows that there is a fairly clear division of duties between leaders, administrative staff, and educators who are in charge of providing educational services to visitors. The division of tasks has basically provided an organizational framework that allows the facility management process to run systematically. However, in practice, there are still some limitations in terms of coordination between parts of the organization, especially in terms of the development of educational programs and the maintenance of available infrastructure facilities.

In addition to the institutional aspect, the results of the study also show that the availability of infrastructure facilities is an important factor in supporting the function of Graha Teknologi Sriwijaya as an experiential science learning center. The facilities available at the institute consist of a variety of science props designed to explain scientific concepts through an interactive approach. The various demonstration media include props related to the principles of physics, technology, energy, and other scientific phenomena that can be learned directly by visitors. The existence of these teaching aids provides an opportunity for students and the public to understand scientific concepts more concretely through direct experience. Thus, these facilities have great potential to increase people's interest in learning and science literacy.

However, this study also found that not all available facilities can be used optimally. Some props require regular maintenance and maintenance to keep

them functioning properly. The limited budget allocated for facility maintenance is one of the obstacles faced by institutional managers in maintaining the sustainability of the infrastructure function. In some cases, damage to the props causes the facility to be unusable by visitors, thus reducing the quality of the learning experience provided by the institution.

From the aspect of human resources, this study shows that managers and educators have a very important role in determining the quality of educational services provided to visitors. The educator is tasked with explaining various scientific concepts contained in the teaching aids and providing guidance to visitors in conducting simple experiments. The existence of competent educators can improve the quality of visitors' learning experience and help them understand science concepts more deeply. However, the study also found that the number of educators available is still relatively limited when compared to the number of visitors who come at certain times, especially when there are visits from large groups of students. This condition causes the process of educational assistance to visitors to not be carried out optimally.

In addition to the limited number of educators, the aspect of increasing the capacity of human resources is also an important concern in the management of this institution. The management of the institution realizes that the very rapid development of science and technology requires an increase in competence for educators to be able to provide relevant and interesting information to visitors. Therefore, the development of human resource capacity through training and competency improvement activities is one of the important needs in an effort to improve the quality of educational services at Graha Teknologi Sriwijaya.

Another aspect that also affects infrastructure governance in this institution is policy and budget support from local governments. As an institution under the local government, the operations of Graha Teknologi Sriwijaya are highly dependent on the budget allocation provided by the government. The budget is used for various purposes such as facility maintenance, development of educational programs, and the implementation of various activities aimed at increasing public interest in science and technology. Policy support from local governments also has an important role in determining the direction of the development of this institution in the future.

In practice, the policy support provided by the local government has provided a strong enough basis for the management of Graha Teknologi Sriwijaya as a science education center. However, the development of this institution still requires greater support, especially in terms of improving the quality of facilities and developing more innovative educational programs. Strengthening policies that support the development of science education centers can provide opportunities for these institutions to expand the range of services and increase their contribution to improving community science literacy.

The results of the study also show that the use of Graha Teknologi Sriwijaya facilities by the community is quite diverse. Visitors to this institution come not only from elementary and secondary school students, but also from students, teachers, and the general public who have an interest in science and technology. The diversity of visitors' backgrounds shows that Graha Teknologi Sriwijaya has

the potential to become a public learning space that can be accessed by various community groups.

Apart from being a means of learning, Graha Teknologi Sriwijaya also functions as an interaction space between the community and science and technology. Through various educational activities held, this institution seeks to increase public awareness about the importance of science in daily life. These activities include scientific demonstrations, technology exhibitions, as well as various educational programs designed to increase interest in learning science among the younger generation.

Overall, the results of the study show that Graha Teknologi Sriwijaya has great potential as a science education infrastructure that can support the improvement of community science literacy in South Sumatra Province. However, this potential still needs to be supported by a stronger governance system, especially in terms of facility management, human resource development, and policy and budget support from local governments. Without strengthening these aspects, the use of available infrastructure has the potential to not provide optimal benefits for the community.

DISCUSSION

Research findings on infrastructure governance at UPTD Graha Teknologi Sriwijaya South Sumatra Province show that the management of experiential science education facilities is not only influenced by the existence of physical infrastructure, but also by the organizational governance system that regulates how the facilities are planned, utilized, and developed sustainably. From a public administration perspective, infrastructure governance is a process that involves various organizational elements, including institutional policies, human resource management, and budget support and local government policies. The results of this study show that although Graha Teknologi Sriwijaya already has adequate science demonstration facilities, the effectiveness of its use is still influenced by institutional capacity in managing and optimizing the infrastructure as a means of public education.

From a governance perspective, public infrastructure management requires a good coordination system between various actors involved in the process of providing public services. Rhodes (1996) explained that the concept of governance emphasizes the importance of networking relationships between various actors in the process of managing public resources. In the context of Graha Teknologi Sriwijaya, actors involved in infrastructure governance are not only limited to institutional managers, but also include local governments as policy authority holders as well as educational institutions that utilize these facilities as a means of learning. The interaction between these various actors is an important factor in determining the effectiveness of the management of the institution as a center for science education for the community.

The results of the study show that the institutional structure of UPTD Graha Teknologi Sriwijaya has provided an organizational framework that allows the facility management process to run administratively. However, the existence of this organizational structure has not been fully able to answer the need for the

development of more innovative and sustainable educational programs. This shows that organizational governance not only requires a formal structure, but also requires a managerial capacity that is able to encourage innovation in the delivery of public services. Osborne (2010) explained that in the new public governance paradigm, public organizations are required to develop a more flexible and collaborative approach in managing public services in order to be able to adapt to the evolving needs of society.

In addition to the institutional aspect, the results of the study also show that the management of infrastructure facilities is an important factor in determining the quality of educational services provided by Graha Teknologi Sriwijaya. The infrastructure available at this institution basically has great potential to support the experiential science learning process. However, some facilities require regular maintenance and maintenance to remain optimally usable by visitors. This condition shows that infrastructure management is not only related to the construction of physical facilities, but also includes aspects of maintenance and sustainability of the use of these facilities. Grigg (2010) emphasized that the success of infrastructure management is highly dependent on the ability of the organization to integrate technical, managerial, and policy aspects in the management process of public facilities.

The findings of this study also show that budget limitations are one of the main obstacles in the management of Graha Teknologi Sriwijaya facilities. Budget constraints not only affect the institution's ability to maintain facilities, but also limit space for the development of more innovative educational programs. In the context of public administration, the availability of financial resources is an important factor that affects the performance of public organizations in providing services to the community. Therefore, budget support from local governments is a very important element in ensuring the sustainability of the institution's operations as a science education center.

In addition to the budget factor, the capacity of human resources is also a very decisive aspect in the governance of Graha Teknologi Sriwijaya's infrastructure. Educators have a very important role in bridging the interaction between visitors and the various science demonstration media available at the institution. Educators are not only in charge of explaining the scientific concepts contained in the props, but also act as learning facilitators who help visitors understand scientific phenomena through direct experience. Falk and Dierking (2013) explained that the learning experience at a science center is greatly influenced by the interaction between visitors and the learning environment as well as the support of competent assistants.

However, the results of the study show that the number of educators available is still relatively limited when compared to the need for educational services that must be provided to visitors. This condition can affect the quality of the learning experience that visitors get, especially when the number of visitors increases significantly at certain times such as school group visits. Therefore, increasing the capacity of human resources through training and competency development is one of the important strategies that need to be carried out by institutional managers to improve the quality of educational services.

In addition to the internal aspects of the organization, strengthening the governance of Graha Teknologi Sriwijaya also requires support from various parties outside the organization. The collaborative governance approach can be an effective strategy in increasing the use of Graha Teknologi Sriwijaya facilities as a science education center. Ansell and Gash (2008) explained that collaborative governance is a decision-making process that involves various actors from the government and non-government sectors in formulating and implementing public policies. In the context of Graha Teknologi Sriwijaya, collaboration with educational institutions, the science community, and the private sector can open up opportunities for the development of more innovative and sustainable educational programs.

Collaboration with educational institutions, for example, can be done through the implementation of educational visit-based learning programs that are integrated with the formal education curriculum. This kind of program can not only increase the number of visitors, but also strengthen the function of Graha Teknologi Sriwijaya as a means of supporting science learning for students. In addition, cooperation with the science and technology community can also contribute to the development of educational activities such as workshops, technology exhibitions, and scientific demonstrations that can attract public interest to visit.

The results of this study also show that Graha Teknologi Sriwijaya has great potential to become a public learning space that can improve community science literacy. Science literacy is the ability of people to understand scientific concepts and use this knowledge in their daily lives. UNESCO (2017) emphasizes that science centers and science museums have an important role in improving people's science literacy through an interactive and experiential learning approach.

In the context of regional development, increasing community science literacy has very important implications for human resource development. People who have a good understanding of science and technology will be better prepared to face various challenges of technological development in the future. Therefore, the development of science education facilities such as Graha Teknologi Sriwijaya can be part of the local government's strategy in improving the quality of human resources.

Overall, the results of this study show that the infrastructure governance of Graha Teknologi Sriwijaya has great potential to be developed as a model for the management of science education centers at the regional level. However, strengthening organizational governance, increasing the capacity of human resources, as well as policy and budget support from local governments are key factors that need to be considered so that the use of available infrastructure can provide optimal benefits for the community.

Thus, the development of Graha Teknologi Sriwijaya as a science education center not only requires investment in the development of physical infrastructure, but also requires a governance approach that is able to integrate various aspects of organization, policies, and collaboration between stakeholders. The comprehensive governance approach is expected to increase the effectiveness of

the use of facilities and strengthen the role of Graha Teknologi Sriwijaya as a means of learning science for the community in South Sumatra Province.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research on infrastructure governance at UPTD Graha Teknologi Sriwijaya South Sumatra Province, it can be concluded that the existence of the science education facility has considerable potential to support the improvement of community science and technology literacy. The available infrastructure in the form of various scientific demonstration media and interactive learning facilities is able to provide an interesting learning experience for visitors, especially for students. However, the effectiveness of the use of these facilities is greatly influenced by the governance system implemented by the management institution. The results of the study show that infrastructure governance at Graha Teknologi Sriwijaya is influenced by several main factors, namely institutional aspects, facility management, human resource capacity, and policy and budget support from local governments. These four aspects are closely related in determining the success of the management of the institution as an experiential science education center.

From an institutional aspect, the organizational structure owned by UPTD Graha Teknologi Sriwijaya has basically provided a framework that allows the facility management process to run administratively. However, strengthening internal organizational coordination is still needed to increase the effectiveness of the implementation of educational programs and the management of available facilities. In addition, the management of infrastructure facilities also requires greater attention, especially in terms of the maintenance of teaching aids and the development of educational facilities that can keep up with the development of science and technology. Without a continuous maintenance system, the available facilities have the potential to experience a decrease in function so that they cannot provide optimal benefits to the community.

The human resource aspect is also an important factor in the governance of Graha Teknologi Sriwijaya's infrastructure. Educators have a strategic role in bridging the interaction between visitors and the various available science demonstration media. Therefore, increasing the capacity of human resources through training and competency development is very important to improve the quality of educational services provided to the community. In addition, the number of educators also needs to be adjusted to the needs of the service so that the process of educational assistance to visitors can be carried out more effectively.

In addition to internal organizational factors, policy and budget support from the local government is also a very important element in the development of Graha Teknologi Sriwijaya as a science education center. Strong policy support can provide a clear direction for the development of the institution, while adequate budget support will enable managers to maintain facilities and develop innovative and attractive educational programs for the community.

Based on the findings of the study, several recommendations can be submitted to improve the effectiveness of infrastructure governance at Graha Teknologi Sriwijaya. First, local governments need to strengthen the

organizational governance system through increasing managerial capacity and strengthening coordination between departments within the institution. Second, institution managers need to develop a more planned and sustainable facility maintenance system so that the available science teaching aids can continue to be used optimally by visitors. Third, increasing the capacity of human resources needs to be carried out in a sustainable manner through training, workshops, and cooperation with educational institutions and the science community. Fourth, strengthening collaboration with various parties such as schools, universities, science communities, and the private sector also needs to be done to develop more innovative educational programs and increase the number of visitors.

With the strengthening of these various aspects, Graha Teknologi Sriwijaya is expected to develop into a science education center that not only functions as an educational recreation place, but also as a public learning space that is able to increase people's science literacy. The development of effective and sustainable infrastructure governance will make a significant contribution to improving the quality of human resources and supporting regional development based on science and technology.

ADVANCED RESEARCH

Further research can examine the model of collaboration between local governments, educational institutions, and the private sector in the development of science centers as part of a strategy to increase community science literacy.

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REFERENCES

- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543-571.
- Falk, J. H., & Dierking, L. D. (2013). *The Museum Experience Revisited*. Routledge.
- Grigg, N. S. (2010). *Infrastructure Engineering and Management*. John Wiley & Sons.
- OECD. (2020). *Infrastructure Governance Review: Strengthening Infrastructure Governance for Better Outcomes*. OECD Publishing.
- Osborne, S. P. (2010). *The New Public Governance? Emerging Perspectives on the Theory and Practice of Public Governance*. Routledge.
- Rhodes, R. A. W. (1996). The New Governance: Governing without Government. *Political Studies*, 44, 652-667.
- UNESCO. (2017). *Science Centres and Science Museums: Catalysts for Science Learning*. UNESCO Publishing.
- United Nations Development Programme. (2015). *Governance for Sustainable Development: Integrating Governance in the Post-2015 Development Framework*.
- World Bank. (2017). *Infrastructure Governance Framework*.