# THE EFFECTIVENESS OF THE NETWORK MODEL IN BLENDED LEARNING OF UNIVERSITAS TERBUKA'S LMS

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**Abstract**

This research aims to evaluate the effectiveness of the network model in implementing blended learning in the Learning Management System (LMS) at the Open University. Blended learning, which combines face-to-face learning and online learning, has become an increasingly popular approach to distance education. The network model implemented in the LMS is expected to improve the quality of interaction and collaboration between students and lecturers, which is often a challenge in distance learning.

The research method used is qualitative with a survey approach. This approach was chosen to gain an in-depth understanding of the experiences and perceptions of LMS users. Data was collected through an open questionnaire distributed to students and lecturers who actively use LMS in their learning process. This questionnaire is designed to collect information about various aspects of LMS use, including ease of access, interaction, collaboration, and impact on learning outcomes.

The research results show that the network model implemented in the Open University LMS can increase interaction and collaboration between students and lecturers. Students report that they feel more connected to their lecturers and peers, despite being in various locations. In addition, this model also helps in overcoming geographic and time barriers that are often faced in distance learning. Students can access learning materials and communicate with lecturers anytime and anywhere, which increases flexibility and comfort in learning.

These findings suggest that the network model in blended learning can be an effective solution for improving the quality of education at the Open University. This model not only increases interaction and collaboration, but also provides the flexibility needed in distance learning. Recommendations for future research include further development of more adaptive network models and comparative studies with other institutions. Further research could also explore how these network models can be integrated with innovative technologies, such as artificial intelligence and learning analytics, to further enhance the student learning experience.

Keywords: Blended Learning, the Network Model, Universitas Terbuka's LMS

## 1 INTRODUCTION

In the modern educational landscape, Blended Learning has emerged as one of the most popular and effective approaches to improving the quality of learning (Fernando et al., 2024; Simonova et al., 2023). Blended Learning combines traditional face-to-face teaching with online learning activities, creating a more flexible, interactive and personalized learning environment (Prasetya

et al, 2020). This approach allows students to access course materials at their own pace and convenience while still benefiting from direct interaction with instructors and peers. However, despite the many advantages of Blended Learning, its implementation often faces challenges related to connectivity, collaboration, and resource optimization (Bervell & Arkorful, 2020).

Despite increasing interest in the Blended Learning approach and its potential to enhance the learning experience, there is still a significant gap in understanding how the frameworks contained within it, such as the Network Model, remain. Although the Network Model emphasizes the importance of connectivity and collaboration between various elements of the learning process, research exploring its effectiveness in the specific context of the Open University Learning Management System (LMS) is still limited.

Existing literature mainly focuses on the general application of Blended Learning and Network Models, and often in diverse learning process environments or with different technology platforms. This results in a lack of detailed insight into how the Network Model operates within the LMS. The Open University LMS, however, has unique challenges and opportunities due to its specific structure, including user demographics, and institutional goals. A detailed insight into how the Network Model operates in the Open University LMS makes for an interesting study.

Additionally, existing research often does not adequately address the practical implementation challenges and outcomes associated with integrating Network Models into Blended Learning environments. There is a need for research that investigates how this model influences various dimensions of student engagement, academic performance and satisfaction especially in the context of the Open University LMS.

Addressing this gap is critical to developing a differentiated understanding of how the Network Model can be applied effectively to enhance Blended Learning within the Open University LMS. This will also provide valuable insights for other institutions with similar LMS frameworks and educational goals.

The Network Model is a learning process framework that focuses on creating a dynamic and collaborative network between various elements involved in the learning process, including students, educators, content, and technology. By connecting all these elements into an integrated network, the Network Model facilitates more intensive and sustainable interactions, thereby encouraging more effective knowledge exchange and collaboration (Gislev, Thestrup,

& Elving, 2020). This model emphasizes the importance of connectivity and collaboration in creating richer and more meaningful learning experiences.

This study focuses on the effectiveness of the Network Model in the context of Blended Learning, aiming to evaluate how this model can improve the quality of education in various dimensions, such as student engagement, academic outcomes, and overall satisfaction with the learning process. Given that the Network Model seeks to strengthen connectivity in Blended Learning, this research will explore how the model can be implemented effectively and its impact on the overall learning experience.

This research is motivated by the increasing need for optimization of the Blended Learning model amidst the rapid progress of educational technology and the increasing need for a more flexible and adaptive learning environment. As student learning needs and preferences become increasingly diverse, it is important to assess how Network Model integration can offer more comprehensive and responsive solutions to the challenges faced in Blended Learning.

Therefore, this research aims not only to assess the effectiveness of the Network Model but also to provide practical insights and recommendations for educators and educational institutions in implementing a more connected and effective Blended Learning environment. It is hoped that the findings of this research can make a significant contribution to the development of more advanced and relevant learning methods to meet future educational needs.

The urgency of this research comes from several important factors that influence the educational landscape at the Open University. As more and more higher education institutions adopt Blended Learning models to improve learning outcomes and accommodate diverse student needs, understanding how specific frameworks, such as the Network Model, can optimize this approach is critical. Here are the benefits.

1. Institutional Relevance: The Open University, as a leading provider of distance education, faces unique challenges and opportunities in implementing Blended Learning. The effectiveness of the Network Model in its LMS can have a significant impact on an institution's ability to offer a more flexible, engaging and effective learning environment tailored to the needs of its students. This research addresses the urgent need to evaluate and refine teaching strategies that align with institutional goals and technological infrastructure.

2. Improve Learning Outcomes: There is increasing demand for educational models that not only provide flexibility but also increase student engagement and academic success. By examining how the Network Model can improve the Blended Learning experience in the Open University LMS, this research aims to provide actionable insights that can lead to better learning outcomes, higher student satisfaction, and more effective use of educational resources.
3. Adapt to Technological Advancements: The rapid evolution of educational technology requires continuous adaptation of learning models to effectively utilize new tools and platforms. Understanding how the Network Model integrates with the Open University LMS can help in adapting the Blended Learning approach to emerging technology trends, ensuring that the Open University remains at the forefront of educational innovation.
4. Meet the Diversity of Learner Needs: As student populations become increasingly diverse in terms of learning preferences, schedules, and geographic locations, it is important to develop and evaluate learning models that meet these diverse needs. This research discusses the importance of adapting Blended Learning strategies to better support students through models that emphasize connectivity and collaboration.
5. Inform Policy and Practice: The findings of this research will provide valuable information for educators and policy makers at the Open University and similar institutions. By demonstrating the effectiveness of the Network Model, this research will offer evidence-based recommendations for improving Blended Learning practices, which can influence institutional policies and improve the overall quality of education.

Research on "The Effectiveness of Network Models in the Open University's Blended Learning LMS" introduces several new elements that differentiate it from previous field research. By examining the effectiveness of the Network Model specifically in the context of the Open University LMS, this research offers a unique contribution to the existing body of knowledge. The following are the differences between this research and the five previous studies.

Application of Specific Contexts: Different from previous research (Cahyani, Suyitno, & Pujiastuti, 2022) which explored the Blended Learning Learning Model in Increasing Students' Creative Thinking Abilities and Curiosity in Learning Mathematics, this research focuses specifically on the Open University, a leading institution in distance education. This context-specific application provides insight into how Network Models in Blended Learning can be

adapted and optimized for unique learning environments that combine traditional and digital methodologies.

Network Model Integration with LMS: Although previous research may have examined the general implementation of Blended Learning or the effectiveness of LMS platforms (Fakhruddin et al., 2022), this research is new in the integration of Network Model with the Open University LMS. This approach allows detailed analysis of how a dynamic network of interactions and resources can enhance the Blended Learning experience within a specific technological framework.

Focus on Connectivity and Collaboration: Previous research has often discussed the effectiveness of Blended Learning in terms of flexibility and student outcomes (Rahayu et al., 2022), but this research places a unique emphasis on the role of connectivity and collaboration as facilitated by the Network Model. This research explores how creating a cohesive network between students, educators, and content can result in more intensive and meaningful interactions, which has not been thoroughly investigated in previous research.

The novelty of this research lies in its specific focus on the Open University LMS, the integration of the Network Model to improve connectivity and collaboration, and the detailed evaluation of student engagement, satisfaction, and personalized learning. These elements offer new insights and practical recommendations that go beyond the scope of previous research.

## 2 METHODOLOGY

This research is to identify, evaluate and synthesize relevant literature regarding Network Models in blended learning, especially in the context of the Open University LMS. This analysis aims to understand existing theoretical frameworks and best practices, as well as identify gaps in research that can serve as a basis for further research.

The references selected for this analysis were based on the following criteria: (i) relevance, that is, studies that directly discuss the Network Model in the context of blended learning or LMS; (ii) quality: publications appearing in leading journals or conferences; (iii) year of publication: focus on recent literature (last 5-10 years) to ensure that the analysis covers the latest developments in the field.

Data Collection Methods include: (i) Literature Search: use of academic databases such as Google Scholar and Research Gate to search for relevant articles, books and research reports. Keywords used include "network model", "blended learning", "LMS", and "Open University"; (ii) screening: after data collection, initial screening is carried out to eliminate references that

do not meet the relevance and quality criteria. The abstract and keywords of each article are analyzed to determine their suitability.

The selected references are then categorized into several main themes, namely: (i) Blended Learning Theory: references that discuss the basic concepts and theories underlying blended learning; (ii) Network Models in education: studies that explain the implementation of network models and their impact on learning; (iii) case studies: research showing the implementation of network models in LMS in educational institutions, including the Open University; (iv) challenges and limitations: articles that identify the problems and challenges faced in implementing network models.

Analysis and Synthesis are carried out in stages: (i) Qualitative Analysis: Each reference is analyzed to understand its contribution to the understanding of network models in blended learning. Aspects analyzed include the methodology used, key findings, and implications for educational practice; (ii) Synthesis: Integrating findings from various references to build a more holistic understanding. This synthesis also includes identifying gaps in existing literature, such as aspects of social interaction, the impact of technology, and the role of lecturers in the network model. To ensure the validity and reliability of reference analysis,: (i) triangulation: using various sources and types of literature to strengthen findings and conclusions; (ii) feedback: request input from colleagues who have knowledge in the fields of education and technology to improve the quality of the analysis.

## 3 FINDINGS AND DISCUSSION

### 3.1 Blended Learning

Blended Learning represents a contemporary educational approach that synthesizes face-to-face teaching in a webinar network with online learning activities, creating a hybrid model that enhances the learning experience (Abdullah, 2018). By integrating face-to-face methods in webinars and digital networks, Blended Learning offers a more flexible, interactive and personalized educational environment that meets various learning needs and preferences (Cahyani, Suyitno, & Pujiastuti, 2022).

1. Flexibility and Accessibility:

   One of the main advantages of Blended Learning is its inherent flexibility. Students can access course materials, lectures and assignments online at any time, allowing them to organize their study schedule based on their personal commitments and varying time zones. This flexibility is especially beneficial for students who may have busy work

schedules, family responsibilities, or who are studying remotely from different geographic locations. By removing the constraints of fixed schedules and physical classrooms, Blended Learning opens up educational opportunities to a wider range of students.

2. Increased Interaction and Engagement:

   Blended Learning creates a dynamic and interactive learning environment by combining the best aspects of face-to-face and online interactions. In class, students engage in real-time discussions, collaborative group projects, and hands-on activities that encourage active participation and immediate feedback. Online components, such as discussion forums, video lectures, and interactive simulations, further enrich the learning experience by allowing students to explore topics in depth and at their own pace. This combination of synchronous and asynchronous learning modalities increases student engagement and helps maintain motivation throughout the course.

3. Personalized Learning Experience:

   The integration of online resources in Blended Learning allows for a highly personalized learning experience. Students can customize their learning path by choosing from a variety of online resources and tools to suit their individual needs and learning style. Adaptive learning technology, which adjusts the difficulty and focus of content based on student performance, enables a customized educational experience that addresses each student's strengths and weaknesses. This personalization increases learning effectiveness by accommodating different learning speeds and preferences.

4. Improving the Quality of Education:

   Blended Learning contributes to improving the quality of education by utilizing a variety of teaching methods and technologies. The online platform provides access to a variety of multimedia resources, including interactive modules, educational videos, and virtual laboratories, that can complement and extend classroom learning. Educators can leverage these resources to create richer and more varied curricula that support deeper understanding and retention of course material. Additionally, the ability to continuously update online content ensures that students have access to the latest information and advances in their field of study.

5. Efficient Use of Resources:

Blended Learning also encourages more efficient use of educational resources. By incorporating digital materials, educators can reduce reliance on physical textbooks and printed handouts, which not only lowers costs but also reduces environmental impact. Online assessments and feedback mechanisms simplify the evaluation process, providing timely and actionable insights for both students and instructors. This efficient use of resources contributes to a more sustainable and cost-effective educational model.

6. Support for Diverse Learners:

   Blended Learning supports a wide range of learners by offering a variety of teaching and interaction modes. Students who benefit from visual aids, hands-on activities, or verbal explanations may find appropriate resources in a blended model. Additionally, the flexibility of the online component allows students to revisit challenging topics or undertake additional practice at their own pace, ensuring that all students can succeed.

Blended Learning represents a forward-thinking educational approach that combines the strengths of face-to-face classroom teaching with the advantages of digital learning tools (Susilawati, Yasin, & Hambali, 2020). UT applies the power of face-to-face classroom teaching in the webinar network. By providing a flexible, interactive and personalized learning experience, this model helps students achieve a balanced and effective educational experience, making it an increasingly popular choice in modern education.

### 3.2 Network Models

The Network Model is an educational framework that emphasizes the interconnectedness of various elements in the learning environment. This model harnesses the power of both digital and social networks to create a more dynamic and collaborative learning experience (Lavanya, Kumari, and Padmambika, 2024). In an educational context, the Network Model integrates various resources, technologies, and participants (such as students, educators, and content) into a cohesive system that encourages interaction, knowledge exchange, and collective learning (Networked Learning Editorial Collective, 2021).

The Network Model operates based on the principle that learning is not a linear process but a complex and interconnected network of relationships and experiences (Senk, et al., 2022). By leveraging digital platforms and social networks, this model enables seamless communication and collaboration between students and educators, breaking down traditional barriers in time and space. This allows for the sharing of diverse perspectives, co-creation of knowledge, and development of critical thinking skills through collaborative problem solving.

In an educational environment, the Network Model is very effective in facilitating a Blended Learning environment (Nikolopoulou, & Zacharis, 2023). It supports the integration of face-to-face learning activities in webinars and online networks, ensuring that students can engage with content and peers in a variety of formats. This approach not only increases the flexibility and accessibility of learning but also enriches the educational experience by combining real-time interactions and asynchronous exploration.

The Network Model's focus on connectivity and collaboration is in line with the needs of modern education, where students are increasingly required to navigate complex and information-rich environments (Saif, 2022). By embedding Network Model principles into Blended Learning, educators can create more responsive, interactive, and personalized learning experiences that meet students' diverse needs.

### 3.3 Network Models in Blended Learning

The combination of Network Model with Blended Learning represents a powerful educational paradigm that utilizes the strengths of both approaches to create a comprehensive and adaptive learning environment (Dziuban et al., 2018). Although Blended Learning combines traditional face-to-face teaching with digital learning activities to offer flexibility and personalization, the Network Model enhances this framework by embedding a deeper level of connectedness and collaboration into the learning experience (Johler, 2022).

In a Blended Learning environment, students engage in synchronous (real-time) and asynchronous (self-paced) learning activities. The Network Model reinforces this by ensuring that these activities are not isolated but are part of a larger, dynamic network of resources, interactions and feedback loops (Persada, et al., 2022). For example, in Blended Learning, students might participate in face-to-face discussions in a webinar network and then continue those conversations online through discussion forums, group chats, or collaborative projects. The Network Model facilitates this expanded interaction by providing the necessary infrastructure and platforms that seamlessly connect students, educators, and content (Hehir, 2021).

This synthesis creates a learning environment where knowledge is co-constructed rather than passively consumed. The Network Model’s emphasis on connectivity ensures that students can tap into a variety of resources ranging from peer insights to expert contributions and multimedia content at any time, making learning more engaging and relevant. By connecting various elements of the Blended Learning experience, the Network Model also encourages

continuous learning and reflection, allowing students to build their understanding progressively (Bouilheres, et al., 2020; Liu, & Wang, 2022).

In addition, the integration of the Network Model in Blended Learning supports differentiated teaching. The Network approach enables the use of adaptive learning technologies that adapt content and learning pathways to individual student needs. This personalization is further enriched by the network's ability to connect learners with similar interests or challenges, fostering peer support and collaborative problem solving. As a result, students not only learn at their own pace but also benefit from the collective knowledge and experiences of their peers.

In summary, the synthesis of Network Model and Blended Learning creates a flexible and interconnected educational ecosystem. It leverages the advantages of digital tools and social networks to enhance traditional learning methods, resulting in a more powerful, engaging and personalized learning experience. This integrated approach is well suited to the complexities of modern education, where students must navigate diverse learning pathways and develop the skills to collaborate and think critically in a connected world.

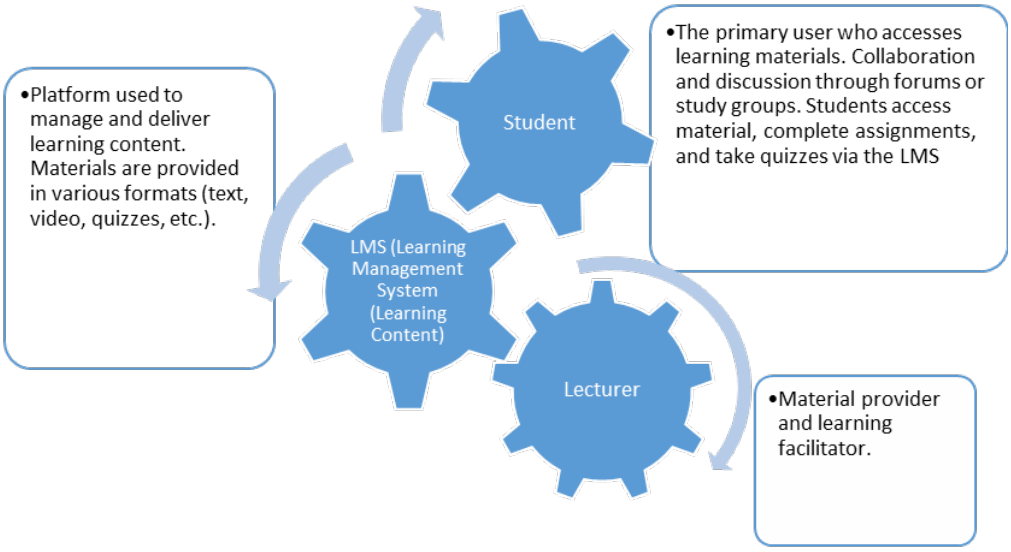


*Figure 1. The Relationship between the Performance of Lecturers, Students and LMS*

### 3.4 Network Model in Blended Learning at the Open University LMS

In the current digital era, blended learning has become an increasingly popular learning method, especially in higher education institutions. The Open University, as one of the distance

education institutions in Indonesia, integrates technology through the Learning Management System (LMS) to facilitate more flexible learning. One interesting approach in this context is the network model, which offers a new way to increase interaction and collaboration between students.

The network model focuses on collaborative learning, where students can interact with each other and with lecturers in a digital ecosystem. In the Open University LMS, this model allows students to build stronger connections and networks, which in turn can increase their understanding and engagement in the learning material. Through discussion forums, study groups, and project collaboration, students are encouraged to share knowledge and experiences, creating a more dynamic learning environment.

The effectiveness of the network model in blended learning can be seen from increasing student participation in learning activities. By utilizing LMS features, such as discussion forums and video conferencing, students feel more involved and motivated to contribute. It also provides an opportunity for students to learn from each other, making the learning process more interactive and collaborative. Research shows that learning that involves social interaction can improve understanding and retention of information.

However, implementing network models is not without challenges. One of the main obstacles is the difference in digital skill levels among students. Some students may find it difficult to adapt to the technology used in the LMS, which may hinder their participation. Therefore, it is important for the Open University to provide adequate training and technical support so that all students can exploit the full potential of this network model.

Apart from that, the success of the network model also depends on the role of the lecturer as a facilitator. Lecturers need to be active in encouraging interaction and discussion among students, as well as providing constructive feedback. With the right approach, lecturers can create an inclusive learning atmosphere and support effective collaboration. This is important so that students feel appreciated and motivated to participate in learning activities.

Furthermore, the results of implementing the network model in blended learning in the Open University LMS show an increase in student satisfaction with their learning experience. Many students report that they feel more connected to fellow students and lecturers, and more confident in expressing opinions and ideas. This creates a strong learning community, where students can support each other in achieving their academic goals.

Overall, the application of the network model in blended learning in the Open University LMS provides many benefits, both for students and institutions. By facilitating better interaction and collaboration, this model can improve students' learning experiences and academic outcomes. Going forward, it is important for the Open University to continue to evaluate and develop strategies that support the effectiveness of the network model, to ensure that all students can benefit from this integrated learning.

## 4 CHALLENGES AND RECOMMENDATIONS

### 4.1 Challenges

Although overall positive results were seen from implementing the Network Model in the Open University LMS, several challenges emerged during the research. These challenges impact students and instructors and require careful consideration for future improvements.

#### *4.1.1 Technical Issues*

One of the main challenges faced was the technical difficulties associated with the integration of the Network Model in the LMS. Issues such as platform crashes, slow loading times, and occasional system outages impact the smooth running of a networked learning environment. These technical problems disrupt the continuity of learning activities and cause frustration among users.

#### *4.1.2 Initial Resistance to Adoption*

Another significant challenge was the initial resistance from students and instructors to the implementation of the new Network Model. Many users are used to the traditional Blended Learning approach and are hesitant to accept the changes introduced by this new model. This resistance was partly due to a lack of understanding of the new tools and the complexity of the Network Model.

#### *4.1.3 Learning Curve*

Network Model introduces a variety of new features and functions that require users to adapt their learning and teaching methods. Both students and instructors face a learning curve in understanding how to use new collaborative tools and networking resources effectively. This adjustment period causes a temporary decline in engagement and effectiveness as users adapt to the new system.

#### *4.1.4 Resource Constraints*

This study also highlights several obstacles regarding the resources available for implementing the Network Model. Limited technical support and inadequate training resources for students and instructors were identified as barriers to successful implementation and optimal use of the model. Inadequate support systems impact users' ability to fully utilize new features and resolve issues promptly.

## 4.2 Recommendation

To overcome these challenges and increase the effectiveness of the Network Model, several recommendations are proposed:

### *4.2.1 Improve Technical Support*

To mitigate technical problems, strengthening technical support infrastructure is essential. Providing a dedicated technical support team and establishing clear channels for reporting and resolving issues will ensure that technical issues can be resolved quickly. Regular system maintenance and updates should be scheduled to minimize disruptions and improve overall platform reliability.

### *4.2.2 Provide Comprehensive Training*

To overcome resistance and facilitate implementation of the Network Model, a comprehensive training program must be implemented for both students and instructors. This training program should include practical workshops, tutorials, and user guides that cover the use of new tools and features. By familiarizing users with the functions and benefits of the Network Model, resistance to change can be reduced, and users can transition to the new system more smoothly.

### *4.2.3 Support Continuous Learning and Adaptation*

Recognizing the learning curve associated with the Network Model, it is important to provide ongoing support and resources for ongoing learning and adaptation. This can include regular refresher courses, access to online resources, and opportunities for users to seek help and share experiences. Encouraging a culture of continuous improvement and adaptation will help users become more adept at using new models over time.

#### *4.2.4 Optimize Resource Allocation*

Overcoming resource constraints involves optimizing the allocation of technical and training resources. Ensuring that sufficient resources are allocated to support the implementation and maintenance of the Network Model is critical to its success. This includes investing in a strong technical infrastructure, expanding support services, and providing adequate training materials.

#### *4.2.5 Cultivate a Supportive Community*

Building a community that supports the Network Model can increase its effectiveness. Encouraging collaboration between users, creating forums to share best practices, and promoting peer support can help users overcome challenges and harness the power of the model. Building a community of practice will provide ongoing encouragement and assistance, facilitating a more positive and productive learning environment.

## CONCLUSION

In conclusion, although the Network Model has demonstrated significant benefits in enhancing Blended Learning at the Open University, addressing the identified challenges is critical to optimizing its effectiveness. By improving technical support, providing comprehensive training, supporting continuous learning, optimizing resource allocation, and cultivating a supportive community, the Network Model can be more effectively integrated into the LMS, resulting in improved learning outcomes and greater satisfaction among users. Implementing these recommendations will contribute to smoother and more successful adoption of the Network Model, which will ultimately benefit the broader education community.

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