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Assessing The Impact of Blended Learning on Early Childhood Education Teachers' Professional Development in Akinyele Local Government

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Abstract. This paper investigated the extent of access to blended learning platforms, effects of blended learning on pedagogical and instructional competencies of early childhood education (ECE) teachers, as well as the interconnection between participation in blended learning and attitudes towards using technology among ECE teachers in Akinyele Local Government. The study was conducted with four research questions and four purposes.

The research design employed was the descriptive survey research design where the population was made up of all ECE teachers in Akinyele Local Government. The sample population was also stratified with the help of the random sampling technique thus including 100 ECE teachers in the sample population by including a representative of both the public and private institutions. Data collection took place on the basis of a structured questionnaire, which was verified by experts, and evaluated with respect to reliability on the basis of pilot test where the Cronbach alpha coefficient was found to be 0.8. The analysis of quantitative data was based on descriptive statistics (frequency, percentage, mean, and standard deviation) and Pearson correlation to study relationships. Open ended responses were analyzed through thematic analysis to offer more in-depth analysis.

The results showed a low accessibility of blended learning platforms by ECE teachers and the importance of blended learning in enhancing the pedagogical and instructional skills. The

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participants in blended learning and attitude of the teachers towards technology integration were found to have moderate positive relationship. The major unfriendly issues were lack of proper infrastructure, training and unwillingness to adopt new practices.

This study proposed that it should invest in sound technological infrastructure, partner with NGOs and international bodies to finance digital learning materials, and conduct periodic education to ECE teachers. It was recommended that teacher training colleges should include blended learning in their programs, and the policymakers were also called to come up with clear recommendations on how it should be adopted in schools.

Keywords: blended learning, early childhood education, access, pedagogical skills, technology integration, barriers

Introduction

Blended learning is one of the innovations that have revolutionized the teaching and learning process as it incorporates the advantages of both traditional classroom and online learning in the form of flexibility and accessibility. The approach has been a good alternative of professional development programme delivery system, which ensures that teachers are given the opportunity to learn new skills and knowledge and still have time to address the issues of the tight schedules. When considering early childhood education, in which teachers become particularly important, in terms of developing the developmental and learning preconditions of young children, the necessity in the constant professional development becomes crucial. Blended learning does not only improve the talents of teaching but also provides the educators with the latest methodologies that help them cope with the changing trend in their field. Through a combination of technology and traditional forms of training, blended learning can be used to bring about innovation, enhance the way teaching is being done and the results are that, the learning process among the young children can be enriched and the teaching of the lesson can be interesting and easy to the early childhood education teacher.

Early childhood education teachers are teachers who are specialists in teaching and taking care of children between ages of birth and their most critical years before about eight years. They are concerned with the cognitive, social, emotional, and physical development by using age-related, teaching techniques and tasks. The early childhood education teachers are people who teach and care about children aged between birth to around eight years which is seen to be the most crucial age in terms of developmental milestones. Such educators are crucial in developing children in terms of cognitive, social, emotional and physical development by using interesting and age relevant teaching methods and activities. Gmercyu (2024) believes that early childhood educators are primarily concerned not only with taking care of young children, but also with further promoting their overall development by involving them in activities aimed at developing their cognitive abilities, attitudes, and problem-solving skills. Their role goes a step further to ensuring

that the learning environment is stimulating to ensure every child grows holistically to establish a sound foundation in lifetime learning. To do that, lifelong learning, professional growth, and adjustment to new learning techniques are essential parts of the professional growth of early childhood education teachers.

Professional development is a life-long learning and support program aimed at equipping early childhood educators with the skills to provide nursery and education to young children as well as increasing their capacity to collaborate with families (NAEYC, 2024). It plays a critical role in enhancing knowledge, skills, practices as well as attitudes of educators which will in the end benefit the teachers and the children to whom they are of service. Professional development is associated with one of the most important advantages, namely the improvement of teaching methods. It provides teachers with new approaches and practices that will address the different needs of the youth (Alozie, 2024). The teachers could promote their teaching techniques and techniques, and they could better interact with students as well as constructing enriching learning environments through workshops, seminars, and collective training. Also, the performance of students directly depends on professional development. The teachers who undergo training regularly are in a better position to support different learning behaviors, keep up with the changing requirements of the curriculum, and undertake evidence-based actions that facilitate academic performance and overall growth in children (Amanda et al., 2024).

In the field of education that is dynamic it is always important to be updated on the new research and trends in the field. Professional development provides entry point to new knowledge, active tools, and new area of best practices so that the teacher can be an effective and relevant practitioner (AlAli and Wardat, 2024). Moreover, it promotes a teamwork culture since it offers networking and teamwork among the educators, administrators, and other stakeholders. This teamwork culture stimulates the sharing of ideas, peer support, and the development of a collective desire to improve continuously and student success (FARHAT et al., 2024). Personal and career growth also relates to professional development which enables educators to acquire new skills, obtain certifications and build their professional network which subsequently results in career growth and even higher levels of job satisfaction (Alozie, 2024). Blended learning has become a paradigm shift in professional development that integrates the strengths of online learning with the interaction of traditional approaches to provide customized, convenient, and efficient learning opportunities to early childhood teachers (Amanda et al., 2024).

Blended learning is a new method of teaching, which combines traditional face to face learning and online learning elements producing a flexible and successful learning environment. Combining the advantages of the two modalities, it will meet the central concerns of education, including accessibility and the lack of resources, and provide students with a more interactive and interesting experience. The main feature of the approach is the perfect integration of offline and online learning experience, which enables wholesome educational experience. As Amanda et al.

(2024) note, blended learning involves strategic planning, careful curriculum design, and the choice of the right online platforms that can maximize the profitability. Blended learning is a combination of different teaching techniques as well as technology, and in-person interactions to provide a viable learning experience. Hybrid or mixed-mode course, as it is also called, is a combination of conventional classroom learning and an online learning platform, which is a replacement of a part of the face-to-face sessions with the use of a web-based course. This model optimizes the use of classroom time on interactive activities and provides a flexible multimedia rich online material which can be accessed any time, as long as one has access to the internet. Research indicates that blended learning increases the learning outcomes and retention rate of the students. Essentially, it involves the combination of various methodologies, technology and face-to-face teaching so as to maximize learning experiences (Ezekoka and Anum, 2019).

The research on the benefits of blended learning is thoroughly documented, and the evidence shows its capacity to increase student engagement and improve their performance. As an example of this, Amanda et al. (2024) and Sari and Kriswandani (2024) note that it has been successful in applied fields like in fashion design where students have been able to showcase better outcomes. Additionally, blended learning will give the flexibility required to conduct continuous assessment and it will allow teachers to change their teaching methods to suit the needs of different learners (AlAli and Wardat, 2024).

Nevertheless, there are difficulties with the successful implementation of blended learning. Facilitators need comprehensive training to be adopted successfully, enough technological resources should be provided, and evaluation has to be conducted on a regular basis to solve practical problems (FARHAT et al., 2024; AlAli and Wardat, 2024). Although the advantages of this approach are numerous, issues of differences in access to technology are still a concern. Other teachers claim that the discrepancies might only increase the educational disparity of poor learners, especially those who belong to underserved groups. Nevertheless, blended learning is a potential in the educational process despite the above challenges because it can change the teaching and learning process when applied in a refined and inclusive manner.

According to Linton (2018), such models as rotation (station, lab, flipped classroom, individual), flex, a la carte, and enriched virtual are effective to consider blended learning in the field of early childhood education. Tucker, Wycoff, and Green (2017) also draw attention to the elementary classroom strategies, claiming that blended learning could be helpful in enhancing the early learning process.

This practice is supported by other studies, such as those by Fisher, Perenyi, and Birdthistle (2018), which demonstrated that flipping the classroom increased learners engagement, or Kocour (2019) which demonstrated that blended classes increased participation in inclusive preschools, particularly when repeated small group tasks were involved. The results of these studies highlight

the need to embrace blended learning as a way of improving the quality of early childhood education in Nigeria (Lawal, Gbenga- Akanmu & Amoo,2023).

The, Lawal, Gbenga- Akanmu and Amoo (2023) also found out that the proportion of teachers who have been using blended learning as a teaching strategy in the state of Ondo is the highest percentage. This result is in line with those of Saeed (2020) who discovered that teachers embraced blended learning as a pedagogical approach because they started with the incorporation of a station rotation and flipped classroom instructional approach as a novice in adopting blended learning as a teaching method. It also gives validation to the results of Turner, Young-Lowe and Newton (2018) who discovered in their research that teachers acknowledged the necessity and benefits of blended learning as teachers and they have augmented their application of blended learning in delivering instruction and students learning results. It also goes in line with Khoza, Zlotnikova, Bada and Kalegele (2016) who also reported that the knowledge of technology among teachers has grown and this affects their adoption of blended learning as a pedagogical approach.

As Tong, Uyen, and Ngan noted (2022), the use of blended learning in the lessons on coordinates in the plane enhanced the quality of learning activities among students significantly. Such a strategy would promote more active participation of students in the process of interaction with teachers by means of enhanced communication support in the form of online platforms, classroom activities, and social media platforms. Moreover, most students also mentioned that their independent learning skills have significantly improved as they were left to study online with assistance in both self-directed and teacher-guided learning. The paper has also mentioned the effectiveness of blended learning in improving the ability of the students to think independently and solve problems creatively.

The availability of blended learning platforms to teachers working in the Early Childhood Education (ECE) is predetermined by such factors as technological preparedness, teacher education, and resources integration. A study by Prayetno et al. (2022) showed that teachers are turning to the use of Learning Management Systems (LMS) such as GL 4.0 to compile and present materials. Hayati et al. (2022) outlined that the use of technologies, particularly in the pandemic, is an indispensable condition of cognitive learning, but proper training and collaboration with parents are necessary.

Blended learning provides the ECE teachers with more skills as it integrates both traditional and online learning, which give them the opportunity to offer personalized instructions. According to Andreyeva (2019), it promotes learner-centered pedagogies, which are active learning and critical thinking. Niemi et al. (2024) and Chekour et al. (2024) noted that it can equip teachers with digital skills and enable them to grow professionally and assist in such competencies as collaboration and reflective practice.

Such attitudes toward blended learning are associated with such factors as ICT self-efficacy and organizational support. According to Ye et al. (2022), the more teachers have a high ICT self-efficacy, the more blended learning is implemented successfully. Nevertheless, experience does not necessarily go hand in hand with technology usage, with motivation and access being of greater significance in this case (Mallick and Salam, 2024).

Such barriers are a lack of infrastructure, resistance to change, ambiguous policies, and insufficient training (Antwi-Boampong, 2021; Ali, 2024). Workload and resource scarcity increase among teachers, yet blended learning with specific assistance and policy guidelines would help change the teaching and learning results of ECE to a significant degree.

Statement of the Problem

Blended learning that combines the conventional techniques with digital means of teaching has come to be crucial in enhancing teaching practice and learning performance across the world. Its adoption however is dependent on various factors, including technological preparedness, the training of teachers and institutional support.

The use of blended learning in early childhood education (ECE) in Nigeria has not been widespread yet. Some of the problems encountered by many teachers include poor access to technology, lack of education and infrastructural shortages especially in rural places like Akinyele Local Government. This leads to the prevalence of traditional methods of teaching with little inclusion of blended learning methods.

Though the global studies have noted the advantages of blended learning, majority of them have been done in secondary and higher education and the ECE area remains under-researched. The main gaps are the lack of knowledge concerning the access of ECE teachers to blended learning platforms, ways of how it enhances the pedagogical skills of the teachers, the correlation between the involvement in blended learning and the attitude to the technology integration. Moreover, the barriers that the Nigerian ECE teachers in particular experience are poorly recorded.

The paper seeks to fill these gaps by exploring the areas of access, skill development, teacher attitudes, and obstacles to the implementation of blended learning in ECE. The results will be used to understand how teaching can be improved and help make policies that will improve early childhood education in Nigeria.

Objectives of the Study

The study seeks to:

Evaluate the level of access ECE teachers in Akinyele Local Government have to blended learning resources.

Examine the influence of blended learning on teachers' pedagogical skills and instructional strategies.

Assess the impact of blended learning on teachers' attitudes towards technology integration in early childhood classrooms.

Determine the challenges ECE teachers face in adopting blended learning and suggest strategies to overcome them.

Research Questions

What is the level of access to blended learning platforms among ECE teachers in Akinyele Local Government?

How does blended learning improve ECE teachers' pedagogical and instructional skills?

What is the relationship between blended learning participation and teachers' attitudes towards technology integration?

What are the barriers to effective adoption of blended learning among ECE teachers?

Research Methodology

Research Design

This study employed a mixed-method research design, which combines both quantitative and qualitative approaches to provide a comprehensive understanding of the research objectives.

Population of the Study

The population for this study comprised all ECE teachers in Akinyele Local Government. This included teachers in public and private early childhood education centers who used, or were expected to use, blended learning platforms in their instructional practices.

Sample and Sampling Techniques

A stratified random sampling technique was used to ensure representation across public and private institutions. From the total population of ECE teachers, **100 teachers** were selected as respondents. Stratification was based on factors such as teaching experience and school type, ensuring diverse perspectives were captured.

Research Instrument

The primary instrument for data collection was a **structured questionnaire**, complemented by a few open-ended items for qualitative insights. The questionnaire was divided into the following sections:

Access to Blended Learning Platforms: Questions on availability, frequency of use, and ease of access to blended learning resources.

Pedagogical and Instructional Skills: Items to assess how blended learning influenced teaching strategies, engagement methods, and instructional flexibility.

Attitudes Toward Technology Integration: Likert-scale items to measure teachers' self-efficacy, confidence, and willingness to use technology in teaching.

Barriers to Blended Learning: Questions addressing challenges such as infrastructure, training, and institutional policies.

Validity of the Instrument

The content and construct validity of the questionnaire were established through expert review by two education technology specialists and one ECE expert. Necessary revisions were made based on their feedback.

Reliability of the Instrument

The reliability of the questionnaire was assessed using a pilot test with 15 ECE teachers from a neighboring local government. The Cronbach's alpha coefficient was calculated to determine internal consistency, and a threshold of 0.8 was achieved, indicating acceptable reliability.

Method of Data Analysis

Quantitative data were analyzed using **descriptive statistics** (frequency, percentage, mean, and standard deviation) to address access, skills improvement, and barriers. Inferential statistics, specifically **Pearson correlation**, were used to examine the relationship between blended learning participation and attitudes toward technology integration. Open-ended responses were analyzed thematically to identify recurring themes and provide deeper insights.

Results

The results are presented based on the analysis of quantitative data using descriptive and inferential statistics, as well as thematic analysis for open-ended responses. The findings reflect the situation of blended learning adoption among Early Childhood Education (ECE) teachers in Akinyele Local Government, Nigeria.

Table 1: Level of Access to Blended Learning Platforms among ECE Teachers

Access Indicators	Frequency (n)	Percentage (%)	Mean	Standard Deviation
Access to reliable internet	20	40%	2.4	0.8
Use of Learning Management Systems (LMS)	25	50%	2.7	0.9
Availability of necessary digital resources	18	36%	2.2	0.7
Participation in blended learning training	15	30%	1.8	0.6

Interpretation

Descriptive statistics reveal limited access to blended learning platforms among ECE teachers in Akinyele Local Government. The mean score for access to reliable internet was 2.4 (SD = 0.8), indicating moderate access but with variability. Participation in training recorded the lowest mean score of 1.8 (SD = 0.6), highlighting a gap in professional development. This underscores the urgent need to improve access to resources and training for effective blended learning adoption.

Table 2: Improvement in Pedagogical and Instructional Skills Through Blended Learning

Pedagogical Skill Indicators	Mean	Standard Deviation	Interpretation
Personalized instruction for individual students	4.2	0.5	High
Confidence in using technology for teaching	4.0	0.6	High
Enhanced student engagement	3.8	0.7	Moderate
Integration of digital and traditional methods	3.5	0.8	Moderate

Interpretation

Blended learning significantly improved ECE teachers' pedagogical and instructional skills. Teachers scored highly in their ability to personalize instruction (M = 4.2, SD = 0.5) and their confidence in using technology (M = 4.0, SD = 0.6). However, moderate scores for student engagement (M = 3.8, SD = 0.7) and integration of digital and traditional methods (M = 3.5, SD = 0.8) suggest room for improvement in applying blended learning effectively across diverse instructional settings.

Table 3: Relationship Between Blended Learning Participation and Attitudes Toward Technology Integration Variable Correlation Coefficient (r) Significance (p-value) Interpretation Blended learning participation 0.56 0.01 Moderate positive correlation Attitudes toward technology

Table 3: Relationship between Blended Learning Participation and Attitudes Toward Technology Integration

Variable	Correlation Coefficient (r)	Significance (p-value)	Interpretation
Blended learning participation	0.56	0.01	Moderate positive correlation
Attitudes toward technology	0.56	0.01	Positive relationship indicated

Interpretation

The results show a **moderate positive correlation** (r = 0.56, p = 0.01) between blended learning participation and attitudes toward technology integration among ECE teachers. This means that as teachers engage more in blended learning, their attitudes toward using technology in teaching improve significantly. These findings underline the need for professional development opportunities to sustain and enhance this positive relationship.

Table 4: Barriers to Effective Adoption of Blended Learning

Barriers	Frequency (n)	Percentage (%)	Mean	Standard Deviation
Poor internet connectivity	40	80%	4.5	0.5
Lack of adequate training	35	70%	4.2	0.6
Limited access to digital tools	30	60%	3.8	0.7
Additional workload	28	56%	3.5	0.8
Resistance to new teaching methods	20	40%	2.9	0.9

Interpretation

Table 4 shows that the most significant barrier to blended learning adoption was poor internet connectivity (M = 4.5, SD = 0.5), affecting 80% of respondents. Lack of training (M = 4.2, SD = 0.6) and limited access to digital tools (M = 3.8, SD = 0.7) were also major challenges. Additional workload (M = 3.5, SD = 0.8) and resistance to new methods (M = 2.9, SD = 0.9) were less significant but still notable. Addressing these issues is critical for improving blended learning adoption among teachers.

Thematic Analysis of Open-Ended Responses

Key themes from the open-ended responses include:

Collaboration Needs: Teachers emphasized the importance of collaboration with peers and parents to maximize the benefits of blended learning.

Policy and Infrastructure: Respondents highlighted the lack of clear policies and inadequate infrastructure as barriers to blended learning.

Desire for Professional Development: Many teachers expressed a willingness to undergo additional training to better integrate technology into their teaching.

These themes align with the quantitative findings, emphasizing the need for systemic changes to enable the successful implementation of blended learning.

Discussion of Findings

Access to Blended Learning Platforms

The study found that ECE teachers in Akinyele Local Government had moderate access to blended learning platforms, with challenges such as inadequate infrastructure and limited digital tools. This aligns with Prayetno et al. (2022), who highlighted the readiness of teachers to engage with Learning Management Systems (LMS) like GL 4.0, but noted similar challenges in accessing resources. In the Nigerian context, this finding is significant as it reflects the broader issue of infrastructural deficits in schools, which mirrors global trends in under-resourced educational systems. Despite technological advancements, the uneven distribution of resources

limits equitable learning opportunities, as Ali (2024) noted that variability in digital tool access can lead to inequitable experiences for learners.

Improvement in Pedagogical and Instructional Skills

Blended learning was found to enhance ECE teachers' pedagogical skills by promoting personalized and interactive teaching methods. This finding is consistent with Andreyeva (2019), who observed that blended learning encourages the use of pupil-centered pedagogies, fostering active learning and critical thinking. Similarly, Chekour et al. (2024) explained that teachers acquire essential digital skills through blended learning, enabling them to integrate technology effectively. In Nigeria, where traditional rote learning methods dominate, the adoption of blended learning presents an opportunity to transition to more innovative and interactive instructional practices, as supported by Niemi et al. (2024).

Relationship between Blended Learning Participation and Attitudes Toward Technology Integration

A moderate positive correlation was observed between blended learning participation and teachers' attitudes toward technology integration. This aligns with Ye et al. (2022), who found that ICT self-efficacy significantly influences teachers' engagement with blended learning. Teachers with higher participation levels developed more positive attitudes, demonstrating that consistent exposure to blended learning fosters confidence in integrating technology. However, Chaiban and Oweini (2024) noted that years of experience do not necessarily translate into higher technology usage, suggesting that training and access play a more critical role than experience. This is evident in Nigeria, where training opportunities for ECE teachers are limited, despite their willingness to adopt new teaching methodologies.

Barriers to Effective Adoption of Blended Learning

The findings revealed several barriers to blended learning adoption, including inadequate training, lack of technical support, resistance to change, and increased workload. These findings align with Antwi-Boampong (2021), who identified similar challenges, particularly inadequate technological infrastructure. Additionally, Ali (2024) emphasized that the absence of clear institutional policies exacerbates confusion among educators, hindering the consistent implementation of blended learning. In the Nigerian context, these barriers reflect systemic issues in the education sector, including insufficient funding and limited teacher professional development programs. While these obstacles are significant, they also highlight the need for targeted interventions, as some teachers view blended learning as an opportunity for innovation and improved student engagement.

In conclusion, the findings of this study align with existing literature, emphasizing the potential of blended learning to improve ECE teaching practices. However, they also underscore the urgent

need to address infrastructural, policy, and training gaps to ensure the successful implementation of blended learning in Nigeria.

Summary of Findings

This study explored the level of access to blended learning platforms, its impact on early childhood education (ECE) teachers' pedagogical skills, the relationship between blended learning participation and attitudes toward technology integration, and the barriers to its adoption in Akinyele Local Government. The key findings are summarized below:

Access to Blended Learning Platforms
Most ECE teachers had moderate access to blended learning platforms. However, access was hindered by inadequate infrastructure, unreliable internet connectivity, and limited availability of digital tools in schools.

Improvement in Pedagogical and Instructional Skills
Blended learning positively impacted ECE teachers' instructional skills by fostering personalized learning, encouraging interactive teaching methods, and improving the integration of digital tools into lesson delivery.

Relationship between Blended Learning Participation and Attitudes Toward Technology Integration
A moderate positive correlation was found between blended learning participation and teachers' attitudes toward technology integration. Teachers with higher participation in blended learning showed more positive attitudes toward using technology in the classroom.

Barriers to Effective Adoption of Blended Learning
Key barriers identified included a lack of teacher training, inadequate technical support, resistance to change, increased workload, and unclear institutional policies regarding blended learning implementation.

A descriptive research design was adopted, and both quantitative and qualitative methods were employed. A structured questionnaire and semi-structured interviews were used for data collection. Quantitative data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Pearson correlation), while qualitative responses were thematically analyzed.

The findings revealed that access to blended learning platforms was moderate, hindered by infrastructural deficits and inadequate training. Blended learning significantly enhanced teachers' instructional skills by promoting personalized and interactive teaching approaches. A moderate positive relationship was observed between blended learning participation and attitudes toward technology integration. However, barriers such as lack of infrastructure, resistance to change, and

increased workload were identified as major impediments to the effective adoption of blended learning.

Conclusion

Blended learning holds significant potential for improving Early Childhood Education in Nigeria by fostering innovation and enhancing teachers' pedagogical skills. However, its effective implementation is constrained by infrastructural challenges, insufficient training, and institutional policy gaps. Despite these challenges, ECE teachers demonstrated a willingness to adopt blended learning if provided with the necessary resources and support. The study concludes that addressing these challenges can lead to a more robust and equitable education system that leverages technology for quality learning experiences.

Recommendations

The government and private stakeholders should invest in providing reliable technological infrastructure, such as internet connectivity and digital devices, in schools.

Schools should collaborate with NGOs and international organizations to secure funding for digital learning resources.

Regular and comprehensive training programs should be organized to equip ECE teachers with the skills needed to integrate blended learning into their classrooms effectively.

Teacher training colleges should incorporate blended learning methodologies into their curriculum to prepare pre-service teachers for technology-integrated teaching.

Educational policymakers should develop clear guidelines and frameworks for blended learning adoption in schools.

Institutions should establish support systems, including technical assistance and mentorship programs, to help teachers navigate the challenges of blended learning.

Schools should create incentives, such as recognition and rewards, to motivate teachers to adopt and effectively utilize blended learning approaches.

Collaborative workshops and peer-learning platforms can be introduced to enhance teacher confidence and foster a positive attitude toward technology integration.

Schools should reduce teachers’ workload by employing additional staff to balance online and offline teaching responsibilities.

Regular evaluations should be conducted to identify and address barriers to blended learning, ensuring continuous improvement.

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