

## **DIGITAL ECOSYSTEM OF FOREIGN LANGUAGE LEARNING: PEDAGOGY, ANDRAGOGY, AND HEUTAGOGY**

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### **ABSTRACT**

This study examines the digital ecosystem of foreign language learning by using pedagogy, andragogy, and heutagogy as an integrated paradigmatic framework. The research focuses on how these three approaches shape a learning system that adapts to the students' level of autonomy. Through a literature study, data were obtained from various relevant sources. The results show that pedagogy positions the teacher as the center of learning with full control through structured systems such as Learning Management System (LMS), making it effective for beginners. Andragogy emphasizes independent adult learners, experience-based learning, and is supported by strategies such as online discussions and problem-based learning. Meanwhile, heutagogy positions learners as the primary drivers of the learning process through digital exploration, open learning, and Personal Learning Environment (PLE), thereby promoting learner autonomy in foreign language learning.

**Keywords:** Digital Ecosystem, Foreign Language Learning, Pedagogy, Andragogy, Heutagogy.

### **1) INTRODUCTION**

**T**he development of digital technology in the 21st century has fundamentally transformed the global education landscape, including in foreign language learning. This transformation not only introduces new media and platforms but also shapes a complex, interactive, and open digital learning ecosystem. In this context, learning Arabic and English is no longer limited to conventional classrooms but occurs within digital networks that enable interaction across space and time. The use of technology such as e-learning platforms, mobile applications, and artificial intelligence has fostered the creation of a more

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flexible, adaptive, and learner-centered learning environment (Aristia Juniarti & Rika Sulastika, 2025, Yumesri, Rusmini, & Ahmad Syukri, 2024) Along with these changes, the learning paradigm has also experienced a significant shift from traditional approaches towards more dynamic and participatory approaches. In the theoretical framework, this transformation can be understood through the spectrum of pedagogy, andragogy, and heutagogy, which forms a conceptual continuity in learning theory (Uday Y, 2019). Pedagogy, which is teacher-oriented, gradually evolves into andragogy, which emphasizes adult learner independence, and ultimately into heutagogy, which positions the learner as the main subject who determines their own learning direction and strategies.

In foreign language learning, this paradigm shift becomes highly relevant considering the nature of language as a tool for communication that requires contextual practice, social interaction, and metacognitive reflection. Pedagogical approaches tend to place the teacher at the center in mastering language structures, while andragogy begins to open space for learners' learning experiences. Furthermore, heutagogy allows learners to independently determine their language needs, choose learning resources, and develop communicative competence continuously in various digital contexts (Hiryanto, 2017) The digital ecosystem for foreign language learning essentially not only provides learning resources but also creates a learning environment that supports collaboration, personalization, and global connectivity. From this perspective, the concepts of cybergogy and network-based learning become integral parts of heutagogy development, where interactions between learners, technology, and content create a more authentic and meaningful learning experience (Sumarsono, 2020). This indicates that language learning in a digital ecosystem is no longer linear, but adaptive and experience-based.

Furthermore, the integration of technologies such as mobile learning and artificial intelligence has strengthened the implementation of the heutagogical approach in language learning. The combination of heutagogy, mobile learning, and digital technology can create a sustainable and future-oriented language learning framework (Amiruddin et al., 2023). In this context, learners are not only consumers of information but also active producers of knowledge in constructing language understanding through digital interaction (Zihan Zilfina,

Dian Hidayati, & Muhammad Zuhaery, 2025). However, the implementation of a digital ecosystem in foreign language learning also faces various challenges, particularly related to pedagogical readiness, learning culture, and technological capacity (Mutiara Sofa, 2023). In the context of learning Arabic or English as a foreign language (AFL/EFL), for example, there is still a tendency for teacher-centered learning, which hinders the optimal application of a heutagogical approach. Therefore, a comprehensive scientific study is needed to bridge the gap between theory and practice in the development of a digital learning ecosystem.

Based on this explanation, this study is presented as a scientific effort to thoroughly examine how the digital ecosystem of foreign language learning can be constructed through the integration of pedagogy, andragogy, and heutagogy. This research is expected to provide both conceptual and practical contributions in the development of language learning models that are adaptive to technological advancements, while also enriching the body of knowledge in the field of language education. Thus, the results of this study are not only relevant for the development of Arabic and English language learning but also serve as a foundation for language learning innovations in an increasingly complex and dynamic digital era.

## **2) METHODS**

This study uses a qualitative approach with a literature research type, which aims to examine in depth the concept of a digital ecosystem in foreign language learning through the perspectives of pedagogy, andragogy, and heutagogy (Abdurrahman, 2024). Research data were collected from various relevant literature sources, such as scientific journal articles, reference books, proceedings, and other academic publications that are directly related to the research topic. The selection of sources was carried out selectively by considering credibility, relevance, and theoretical contribution to the development of the study. In this context, literature research allows the researcher to conduct a comprehensive conceptual exploration of various learning theories and digital transformation in education. This approach also provides space for critical analysis of the relationship between technology and learning paradigms. The collected data consists of concepts, theories, and previous research findings, which are then organized systematically. Thus, this research does not focus on empirical field

data, but rather on knowledge construction based on scientific literature. This is in line with the nature of qualitative research, which emphasizes understanding and interpretation of the phenomena being studied.

The data analysis process in this study refers to the qualitative analysis model developed by Matthew B. Miles and A. Michael Huberman, which includes three main stages: data reduction, data display, and conclusion drawing. The data reduction stage is carried out by selecting, focusing, and simplifying the information obtained from various literature so that only data relevant to the research focus are retained. This process aims to organize the data to be more directed and easier to analyze. Next, the reduced data are presented in the form of systematic descriptive narratives to facilitate understanding of the patterns, relationships, and tendencies that emerge in the study. Data presentation becomes an important step because it allows researchers to see the relationships between concepts more clearly. The final stage is drawing conclusions, which is carried out gradually and continuously verified based on the data that has been analyzed (Basuki, 2019). In qualitative research, conclusions are not final from the beginning, but rather develop as the analysis process progresses. This analysis model emphasizes that reduction, presentation, and drawing conclusions are processes that interact simultaneously in producing findings that are valid and scientifically accountable.

### 3) RESULTS

#### *Digital Learning Ecosystem for Foreign Languages in the Pedagogical Context*

The digital ecosystem for foreign language learning in the pedagogical context shows strong characteristics in structure, control, and the central role of the teacher as the main guide of the learning process. In this approach, digital technology, especially the Learning Management System (LMS), does not eliminate the teacher's pedagogical dominance, but rather strengthens it through a more organized and documented system. The teacher remains the main actor who determines the learning objectives, materials, methods, and evaluation, while learners act as recipients who follow the learning flow systematically.

In the development of a pedagogy-based digital ecosystem, the LMS functions as the learning control center that integrates various components such as materials, assignments,

discussion forums, and evaluations within a single platform (Yumesri, Rusmini, & Ahmad Syukri, 2024). The LMS is designed to manage the distribution of learning content in a structured manner, allowing teachers to fully control the learning process. This aligns with the LMS's character as software used to create, organize, and systematically distribute learning content in a digital environment.

The pedagogical approach in the digital ecosystem is also evident in how teachers design linear and gradual learning flows (Amiruddin et al., 2023). In foreign language learning, especially for beginners, this structure is very important because it helps learners understand the basics of the language such as vocabulary, grammar, and pronunciation in a sequential manner. LMS allows teachers to organize materials from basic to advanced levels in the form of organized modules, so the language acquisition process takes place systematically and directed. In addition, LMS provides space for teachers to control learning interactions through features such as discussion forums, quizzes, and assignments. Although it appears interactive, the interaction still remains within a framework controlled by the teacher. The teacher determines the discussion topics, types of assignments, and assessment criteria, thus ensuring that every learning activity remains aligned with the instructional objectives that have been previously set. In this way, the digital ecosystem does not change the essence of pedagogy, but expands the scope of its implementation in a virtual form.

In the context of learning English as well as Arabic, LMS has been proven capable of increasing students' engagement and learning motivation through the use of multimedia and task-based activities (Ramdani, Neifa, & Nayola, 2025). However, this improvement still remains within a structured pedagogical framework, where teachers direct the use of media and activities according to learning needs. This shows that technology functions as a pedagogical aid, not as a substitute for the role of teachers. Another advantage of a pedagogy-based digital ecosystem is its ability to provide continuous and measurable evaluation. LMS allows teachers to conduct both formative and summative assessments through various instruments such as online quizzes, written assignments, and language practice recordings.

Moreover, the analytical data generated by the LMS can be used to monitor learners' learning progress in real-time, enabling teachers to provide quick and targeted feedback.

In beginner-level foreign language learning, strong pedagogical control actually becomes a key factor for success. Learners at the early stages generally still need intensive guidance in understanding language structure and vocabulary usage. Therefore, a pedagogy approach integrated into an LMS provides a clear learning framework and reduces confusion that may arise in an overly free learning environment. Furthermore, a user-friendly and structured LMS design also supports the effectiveness of language learning. Research shows that learners tend to understand the material more easily when the LMS provides clear navigation, directed instructions, and well-organized materials. (Yumesri, Rusmini, & Syukri, 2024, Aziz, Widiyanto, & Purwanto, 2024) This strengthens the argument that in the context of pedagogy, structure and order are important elements in creating an effective learning experience.

Nevertheless, the implementation of a pedagogy-based digital ecosystem is not without challenges, particularly regarding teachers' readiness to manage technology and design effective digital learning. Teachers are required not only to master language material but also to have digital competence to utilize LMS optimally. Without this readiness, the potential of LMS as a pedagogical tool may not be maximally utilized (Mufliva & Permana, 2024). Additionally, dependence on teacher control can also limit students' learning independence if not balanced with the right strategies. In some cases, the use of an overly structured LMS can make learners passive and merely follow instructions without developing their own learning initiative (Ruiperez, 2002). Therefore, a balance is needed between pedagogical control and providing space for learning exploration. Nevertheless, in the context of foreign language learning for beginners, a pedagogical approach within a digital ecosystem remains relevant and effective. Clear structure, strong control, and intensive guidance from teachers help learners build a solid language foundation before moving on to more independent approaches such as andragogy or heutagogy. In other words, pedagogy becomes a crucial initial stage in the journey of language learning.

Thus, the results of this study indicate that the digital ecosystem for foreign language learning in the context of pedagogy is an integrated, structured system centered on the teacher. The LMS serves as the main instrument that enables the effective implementation of pedagogy in a digital environment (Ruiperez, 2002). The scientific contribution of these findings lies in the understanding that digital transformation does not eliminate the role of pedagogy, but rather adapts it into a new form that is more systematic, measurable, and aligned with the needs of foreign language learning in the digital era.

### ***Digital Learning Ecosystem for Foreign Languages in the Andragogical Context***

The digital ecosystem for foreign language learning in the context of andragogy shows a paradigm shift from teacher-centered learning to adult learner-centered learning. In this approach, digital technology no longer functions merely as a material distribution tool, but as an interactive space that allows learners to manage their learning process independently. Andragogy as a theory of adult learning emphasizes that adult individuals have the need to control their own learning, so the design of the digital ecosystem must provide flexibility, autonomy, and contextual relevance (Norasyikin Osman, Norhayati Che Hat, Mohd Shahrizal Nasir, Mohd Ala-Uddin Othman, & Mohd Firdaus Yahaya, 2025)

In the development of a digital ecosystem based on andragogy, adult learners are positioned as active subjects who have responsibility for the learning process. They not only follow instructions but also determine goals, strategies, and learning resources that suit their needs. This aligns with the principles of self-directed learning, which is a key characteristic of andragogy, where learners have control over the planning, implementation, and evaluation of their own learning. The digital ecosystem in this context is usually built through flexible platforms such as Learning Management Systems (LMS), Massive Open Online Courses (MOOCs), and language learning applications that allow learning personalization (Abdul Aziz, Febri Widiyanto, & Agung Purwanto, 2024) Unlike the strictly structured pedagogical approach, LMS in the context of andragogy is designed to be more open, providing learners with the opportunity to choose materials, manage their learning pace, and explore additional learning resources according to their needs.

The main characteristic of andragogy, which emphasizes experience as a source of learning, also has a significant impact on the design of digital ecosystems. Adult learners bring life and professional experiences that serve as important capital in understanding foreign languages. Therefore, digital ecosystems are designed to accommodate the exchange of experiences through discussion forums, online collaboration, and experience-based reflection. These experiences enrich the learning process and allow for the construction of deeper meaning (Sayida Khoiratun Nisak & Khusnul Yatima, 2025). Online discussion strategy becomes one of the important components in a digital ecosystem based on andragogy. Discussion not only functions as a means of communication but also as a medium to share perspectives, test understanding, and build knowledge collaboratively. In foreign language learning, online discussion allows learners to practice language skills in real contexts, such as expressing opinions, engaging in dialogue, and responding to others' arguments authentically.

In addition, problem-based learning becomes a key strategy in the andragogy approach. Adult learners tend to be more interested in learning that is relevant to real life and oriented towards problem-solving. Therefore, the digital ecosystem is designed to present case-based tasks, communication simulations, and practical scenarios that require the contextual use of language. This approach helps learners connect language knowledge with their real needs. In the context of learning Arabic or English, the andragogy approach allows learners to focus on specific needs, such as language for academic, professional, or everyday communication purposes. The digital ecosystem provides various authentic resources such as videos, podcasts, articles, and global forums that can be chosen according to the learner's goals (Yuzhi Lai, Nadira Saab, & Wilfried Admiraal, 2022). This creates a learning experience that is more relevant and meaningful compared to a uniform approach. The role of educators in the digital ecosystem based on andragogy has also undergone significant transformation. Educators no longer serve as the center of information, but as facilitators who guide, motivate, and provide feedback. Educators help learners identify learning needs, recommend learning resources, and facilitate discussions and reflections (Sayida Khoiratun Nisak & Khusnul Yatima, 2025). Thus, the relationship between educators and learners becomes more collaborative and dialogical.

Digital technology also enables the implementation of reflective learning in the context of andragogy (Amiruddin et. al., 2023). Through features such as online journals, digital portfolios, and reflection forums, learners can evaluate their learning process and outcomes independently. This reflection is important in language learning because it helps learners understand their strengths and weaknesses, as well as design more effective improvement strategies. Nevertheless, the development of a digital ecosystem based on andragogy also faces challenges, especially regarding learners' readiness to manage learning independently (Karina Rose Mahan, 2020). Not all adult learners have the same level of independence, so support in the form of digital scaffolding, learning guides, and adequate facilitation is needed. Without such support, learners may experience difficulties in determining the direction of their learning.

The digital ecosystem for foreign language learning in the context of andragogy is a flexible, participatory, and experience-based system. This approach emphasizes learner independence, the relevance of learning to real life, and the use of strategies such as online discussions and problem-based learning. The scientific contribution of these findings lies in reinforcing the concept that digital transformation not only changes the learning media but also demands a paradigm shift toward more autonomous, reflective, and contextual learning for adult learners (Chacko, 2018).

### ***Digital Learning Ecosystem for Foreign Languages in the Heutagogical Context***

The digital ecosystem for foreign language learning in the context of heutagogy shows the most radical transformation in the learning paradigm, where learners are no longer merely participants but become the main drivers in the entire learning process. Heutagogy, as a learning theory oriented toward self-determined learning, positions learners as agents who actively determine their own learning goals, strategies, and evaluations (Saepudin & Salam, 2025). In this context, digital technology functions as an open exploration space that allows learning to occur flexibly, non-linearly, and based on individual needs. The development of a digital ecosystem based on heutagogy is marked by the loss of full control by the instructor over the learning process. Unlike pedagogy and andragogy, heutagogy gives students full autonomy to determine what they want to learn, how to learn, and the learning resources used

(Chacko, 2018). Students become the main actors who construct knowledge through experience and digital exploration, while instructors only serve as facilitators providing minimal support as needed.

In foreign language learning, the heutagogical approach allows learners to tailor the learning process to personal goals, such as academic, professional, or global communication needs (Raju Panta, 2025). The digital ecosystem provides access to a variety of authentic sources such as videos, podcasts, international forums, and social media, allowing learners to choose relevant materials themselves. This creates a more contextual and meaningful learning experience, while also increasing intrinsic motivation in language learning (Ramdani, Neifa, & Nayola, 2025). One of the key elements in a heutagogy-based digital ecosystem is open digital exploration. Learners no longer rely on a single platform or specific curriculum, but can access various learning resources from different digital ecosystems (Panta, 2025, Mufliva & Permana, 2024).

This process allows for learner-driven learning, where learners actively search for, evaluate, and integrate information from various sources to build their language competencies. In addition, the concept of open learning becomes an important foundation in developing a heutagogy ecosystem. Learning is no longer limited by institutions or formal curricula, but occurs in an open global network. Learners can study through open online courses, international language communities, as well as collaborative platforms that allow cross-cultural interaction. This environment enriches the language learning experience with real and authentic contexts. The development of Personal Learning Environment (PLE) has become a key feature of the heutagogical ecosystem. PLE allows learners to organize their own tools, resources, and learning activities according to their needs. PLE is not merely technology, but a system that encompasses various tools, connections, and learning experiences used individually to support the learning process. Thus, each learner has a unique and personal learning ecosystem (Saepudin & Salam, 2025). In the context of foreign language learning, PLE allows learners to integrate various platforms such as language applications, social media, blogs, and discussion forums into a personalized learning ecosystem. This strengthens learners'

ability to manage learning independently, while also developing metacognitive skills such as planning, monitoring, and learning reflection. PLE also enables the integration of formal and informal learning into a cohesive whole (Situmorang, Sitompul, & Tuty, 2024)

A digital ecosystem based on heutagogy also emphasizes the importance of reflection and metacognition in the learning process. Learners not only learn a language but also learn how to learn a language. Reflection becomes an integral part of this process, where learners evaluate their learning experiences, identify weaknesses, and design improvement strategies. This aligns with the principles of heutagogy, which emphasize the development of capability, not just competence (Siswanto, 2026), (Chacko, 2018). Furthermore, the heutagogical approach in foreign language learning encourages the formation of lifelong learners. With high autonomy, learners are able to continuously develop their language abilities independently even after the formal learning process ends (Chacko, 2018). An open and dynamic digital ecosystem supports the sustainability of this learning through unlimited access to global learning resources. However, the development of a heutagogical ecosystem also faces challenges, particularly related to learners' readiness to manage learning autonomy. Not all learners have adequate self-regulation skills, so support in the form of digital literacy, critical thinking abilities, and learning management skills is necessary. Without this readiness, freedom in heutagogy can cause disorientation in the learning process (Panta, 2025).

The digital ecosystem for foreign language learning in the context of heutagogy is an open, flexible system, centered on learners as the primary agents of learning. Through digital exploration, open learning, and the development of PLE, this approach encourages autonomy, reflection, and lifelong learning ability (Situmorang, Sitompul, & Tuty, 2024). The scientific contribution of these findings lies in reinforcing the paradigm that foreign language learning in the digital era is no longer merely a process of knowledge transfer, but a process of knowledge construction fully controlled by learners within a dynamic and globally connected ecosystem.

#### **4) DISCUSSION**

The digital ecosystem of foreign language learning cannot be understood partially, but must be placed within the framework of a pedagogy–andragogy–heutagogy continuum that is evolutionary. At the pedagogy stage, teacher dominance remains the main characteristic, even when digital technologies such as LMS are used as a learning medium. This emphasizes that digital transformation does not automatically displace pedagogical authority, but rather strengthens instructional control through a more structured system. From a theoretical perspective, this condition aligns with the concept that pedagogy is at the end of the spectrum oriented towards full control by the teacher. Thus, LMS functions not as a tool for democratizing learning, but as an instrument for reproducing pedagogical structures in a digital format (Ruiperez, 2002) This finding confirms that digitization at the early stages of language learning still requires a structured framework. Therefore, digital pedagogy remains relevant, especially in building a systematic linguistic foundation. Its important implication is that technology does not eliminate the hierarchy of learning, but optimizes it.

Furthermore, a strong structure in the digital pedagogy ecosystem indicates a correlation between instructional control and the effectiveness of language learning at the basic level. Linear and gradual learning allows learners to build language competence cumulatively. This is important because language, as a symbolic system, requires a tiered understanding of vocabulary, grammar, and pronunciation. In this context, LMS becomes a medium that enables the systematic and documented orchestration of learning (Aziz, Widiyanto, & Purwanto, 2024) Nonetheless, the dominance of teachers also has the potential to limit students' room for exploration if it is not balanced with adaptive learning strategies. Therefore, although the pedagogical approach is effective in the initial stages, it cannot be the sole paradigm in language learning in the digital era. The transition towards a more autonomous approach becomes an inevitability. Thus, pedagogy can be positioned as a foundation, not as an ultimate goal. This opens up space for a shift towards andragogy.

At the andragogy stage, research results indicate a significant transformation in the relationship between instructors, learners, and technology. Learning is no longer entirely

controlled by the teacher, but shifts to a more participatory and self-directed model. Adult learners are given space to determine their goals, strategies, and learning resources according to their needs. These findings are in line with the principle of self-directed learning, which is central to andragogy, where learners have control over their own learning process. Within the continuum framework, andragogy occupies a middle position that balances structure and autonomy. (Osman, Hat, Nasir, Othman, & Yahaya, 2025) Thus, digital technology functions as a facilitator that provides flexibility and personalization in learning. LMS and other digital platforms are no longer control tools, but become spaces for negotiating meaning (Ruiperez, 2002). This indicates that digitalization is beginning to shift the paradigm from teacher-centered to learner-centered. Consequently, the role of the teacher changes to that of a dialogical facilitator.

In addition, the integration of experience as a source of learning in andragogy enriches the dimensions of foreign language learning. Adult learners not only receive material but also construct knowledge through life experiences and social interactions. Online discussions, problem-based learning, and reflection become important elements in this ecosystem. This process allows language learning to take place contextually and authentically, thereby increasing relevance and learning motivation. However, the level of learner independence becomes a determining factor in the success of this approach. Not all learners are prepared to manage learning independently, so adequate scaffolding is necessary. (Karina Rose Mahan, 2020) Thus, andragogy does not completely eliminate the role of the teacher, but transforms it. The teacher remains present as a guide who provides direction without dominating. This emphasizes that the paradigm shift is not dichotomous, but gradual. Therefore, andragogy becomes a bridge towards more autonomous learning.

The most radical transformation is seen at the heutagogy stage, where learners become the full center of the learning process. Research results show that in this ecosystem, learners not only manage learning but also independently determine the direction, objectives, and evaluation of learning. This aligns with the concept of self-determined learning, which emphasizes autonomy, reflection, and capability as the core of learning. Digital technology in

this context functions as an open space that allows unlimited exploration. Students can access various global resources and build a personal and dynamic PLE. The learning process becomes non-linear and based on individual needs. Thus, language learning is no longer tied to a formal curriculum but develops within an open global network (Deny Hadi Siswanto, 2026). An important implication is the emergence of lifelong learners who are adaptive to change. Heutagogy represents the peak of learning evolution in the digital era.

Nevertheless, the heutagogy approach also presents serious challenges, particularly related to students' metacognitive readiness and digital literacy. High freedom without self-regulation ability can lead to learning disorientation. Therefore, even though heutagogy offers maximum autonomy, its implementation still requires a strong foundation in pedagogy and andragogy (Saepudin & Salam, 2025). This indicates that these three approaches are not substitutive, but rather complementary within a single learning spectrum. The literature also emphasizes that pedagogy, andragogy, and heutagogy can interact dynamically according to the context and the learners' needs. Therefore, the digital ecosystem for foreign language learning must be designed flexibly by considering the learners' readiness level. An approach that moves too quickly towards heutagogy without an adequate foundation can actually be counterproductive. Hence, the integration of the three paradigms becomes key in modern learning design. This reinforces the idea that digital transformation is a transformation of paradigms, not merely technology.

The results of this study affirm that the digital ecosystem for foreign language learning represents an epistemological journey from control to autonomy. Pedagogy provides the basic structure, andragogy presents guided independence, and heutagogy fosters full autonomy in learning (Osman, Hat, Nasir, Othman, & Yahaya, 2025). The three form a conceptual continuity that is not separate but complementary in building a holistic learning experience. Digital technology acts as a catalyst that accelerates this paradigm shift. However, the success of implementation highly depends on the readiness of the learning actors, both teachers and students. Therefore, the design of the digital ecosystem must consider a balance between structure and freedom. An adaptive and contextual approach becomes key in facing the

complexities of language learning in the digital era. Thus, the main contribution of this research lies in strengthening the theoretical framework on learning as a dynamic spectrum.

## **5) CONCLUSION**

The digital ecosystem of foreign language learning should be understood as a dynamic spectrum that moves from pedagogy to heutagogy through the transitional stage of andragogy. Pedagogy serves as the initial foundation that emphasizes structure, instructional control, and the systematic development of linguistic competence, which remains relevant in the digital context. Subsequently, andragogy presents a shift towards learning autonomy by utilizing technology as a dialogic and flexible space that allows for more contextual and participatory learning. This transformation reaches its peak in heutagogy, where learners become the main actors who independently determine the direction, process, and evaluation of learning within an open network ecosystem. However, the effectiveness of this approach greatly depends on learners' metacognitive readiness and digital literacy, so it cannot be separated from a strong foundation of pedagogy and andragogy. Therefore, these three paradigms are not substitutive, but rather complementary in shaping adaptive and contextual learning designs. Thus, digital transformation in language learning is essentially an epistemological transformation from control to integrated autonomy.

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