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DEVELOPING LIN-GUA DIGITAL IDENTITY IN LEARNING PROFESSIONAL ENGLISH IN IT

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This study investigates the effectiveness of Lingua Digital Identity (LDI) in enhancing professional English skills among IT students. As technological advancements and globalization increase the demand for strong communication abilities, traditional ESP methods often fail to fully engage learners or address industry-specific needs. LDI integrates artificial intelligence, task-based learning and real-world scenarios to improve vocabulary, writing and speaking skills. A 12-week mixed-methods study with 60 undergraduate IT students compared LDI-based learning with conventional approaches. Results showed that LDI significantly boosted communication skills, with students achieving up to 50% greater improvement compared to those in traditional programs. Specific gains include a 33% increase in vocabulary, 32% in writing proficiency and 26% in speaking fluency. This approach is particularly beneficial for students who want to improve professional English, helping them build confidence and close skill gaps. The study also shows that higher engagement leads to better learning outcomes. Overall, LDI equips IT students with the practical language skills needed to succeed in today's digital and global workplaces.

Key words: Lingua-digital identity, AI, task-based learning, IT field, personalized education.

IT FIELD ҮШІН КӘСІБИ АҒЫЛШЫН ТІЛІН ҮЙРЕНУДЕ ЛИНГВОЦИФРЛЫҚ СӘЙКЕСТІКТІ ДАМУ

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Бұл зерттеу IT-студенттер арасында ағылшын тілінің кәсіби дағдыларын арттырудағы Lingua Digital Identity (LDI) тиімділігін зерттейді. Технологиялық ілгерілеулер мен жаһандану күшті коммуникациялық қабілеттерге сұранысты арттыратындықтан, ESP-дің дәстүрлі әдістері көбінесе білім алушыларды толық тарта алмайды немесе салалық қажеттіліктерді шеше алмайды. LDI лексика, жазу және сөйлеу дағдыларын жетілдіру үшін жасанды интеллектті, тапсырмаға негізделген оқытуды және нақты сценарийлерді біріктіретін болады. Бакалавриаттың 60 IT-студентімен 12 апталық аралас әдістерді зерттеу LDI негізіндегі оқытуды кәдімгі тәсілдермен салыстырды. Нәтижелер көрсеткендей, LDI коммуникаторлық дағдыларды айтарлықтай арттырды, бұл ретте студенттер дәстүрлі бағдарламалардағымен салыстырғанда 50%-ға дейін жақсартуға қол жеткізді. Нақты пайдаға лексиканың 33%-ға, жазбаша меңгергендігінің 32%-ға және сөйлеу еркіндігінің 26%-ға өсуі жатады. Бұл тәсіл, әсіресе, бастапқыда үлгерімі төмен, біліктілік диспропорциясын төмендететін оқушылар үшін тиімді. Сонымен қатар, зерттеу оқушылардың өзара іс-қимылы мен оқу нәтижелері арасындағы берік корреляцияны табады. Бұл қорытындылар LDI-дің өз мансабы үшін аса маңызды практикалық тілдік құзыреттілікті тәрбиелеу арқылы IT-мамандарды жаһанданған, цифрлық басқарылатын жұмыс орындарына дайындау әлеуетін көрсетеді.

Түйінді сөздер: лингвоцифрлық сәйкестік, жасанды интеллект, тапсырмаға негізделген оқыту, АТ өрісі, дербестендірілген білім беру.

РАЗВИТИЕ ЛИНГВОЦИФРОВОЙ ИДЕНТИЧНОСТИ В ИЗУЧЕНИИ ПРОФЕССИОНАЛЬНОГО АНГЛИЙСКОГО ЯЗЫКА ДЛЯ ИТ-СФЕРЫ

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В этом исследовании изучается эффективность лингвоцифровой идентичности (LDI) в повышении профессиональных навыков английского языка среди студентов IT-специальностей. По мере того, как технологический прогресс и глобализация увеличивают спрос на сильные коммуникативные способности, традиционные методы часто не в полной мере вовлекают изучающих профессиональный английский язык или не удовлетворяют специфические потребности отрасли. Лингвоцифровая идентичность (LDI) интегрирует искусственный интеллект, обучение на основе заданий и реальные сценарии для улучшения словарного запаса, навыков письма и разговорной речи. В 12-недельном исследовании с участием 60 студентов бакалавриата в области информационных технологий обучение на основе лингвоцифровой идентичности (LDI) сравнивалось с традиционными подходами. Результаты показали, что LDI значительно повысила коммуникативные навыки, при этом студенты получали результат на 50% лучше по сравнению со студентами на традиционных программах. Конкретные достижения включают увеличение словарного запаса (на 33%), владение письмом (на 32%) и беглость речи (на 26%). Этот подход особенно эффективен для студентов с изначально низкой успеваемостью, так как при его использовании уменьшаются различия в языковых навыках. Кроме того, исследование обнаружило сильную корреляцию между вовлеченностью студентов и результатами обучения. Эти результаты подтверждают эффективность LDI в обучении профессиональному английскому IT-специалистов, обеспечивая развитие необходимых языковых компетенций для работы в глобализированной цифровой среде. Подход демонстрирует значительное улучшение навыков общения, сокращая разрыв между теоретическими знаниями и практическим применением языка в профессиональных ситуациях.

Ключевые слова: лингвоцифровая идентичность, искусственный интеллект, обучение на основе задач, IT-сфера, персонализированное образование.

Introduction. The 21st century is characterized by rapid technological advancements, notably the widespread adoption of the Internet and mobile technologies. These innovations have profoundly impacted global connectivity, human interaction, and daily life. Within this evolving landscape, professional English proficiency is critical for career success, particularly in Information Technology (IT), where specialists require both technical expertise and effective communication skills. Traditional English for Specific Purposes (ESP) methods often prove insufficient in engaging and preparing IT professionals for contemporary demands. However, digital advancements, including Artificial Intelligence (AI), offer promising avenues for personalized and relevant learning experiences. Research on linguistic data analysis, such as that by Boyd and Pennebaker [1] demonstrates how language patterns can provide insights into personality and behavioral outcomes, highlighting the intrinsic link between language, digital interaction, and identity formation. The demands of the digital age necessitate the development of a lingua-digital identity (LDI). We define LDI as an individual's self-concept and expression, shaped by their linguistic proficiency, digital literacy, and online engagement within professional and social contexts. It encompasses how individuals strategically utilize language and digital tools to construct, present, and navigate their professional persona in online environments. The lingua-digital identity (LDI) is fundamentally shaped by three interconnected components. Firstly, linguistic acuity refers to an individual's capacity to effectively utilize language, particularly professional English, across various digital communication contexts. Secondly, digital fluency means being skilled at using different digital platforms, tools and technologies effectively for communicating, working with others and finding information. And finally, online presence is how intentionally create and manager professional image and interactions online, using both language skills and digital abilities.

It is important to differentiate LDI from lingua-digital competence. As defined by Prokhorova, Bezukladnikov and Lizunova (2022), lingua-digital competence refers to the skills combining language proficiency and digital literacy necessary for effective functioning in a globalized, digitalized world [2]. While competence represents the requisite skills, LDI reflects the identity that emerges from their integrated application within digital spaces. Therefore, cultivating lingua-digital competence is foundational to developing a robust lingua-digital identity.

Developing a strong LDI is essential for professionals to stay competitive globally. It helps them quickly adapt to new technologies, use modern tools effectively and confidently address difficult professional problems.

Higher education (HE) has undergone significant digital transformation, integrating digital technology and internet information systems to enhance teaching, learning, and administration [3]. This research considers both traditional and innovative approaches, such as online platforms and AI-driven tools in professional English education. Recent research, including works by Bezukladnikov (2024) [4] and Pichkova et al. (2023), underscores the transformative potential of AI-driven technologies and digital tools in fostering personalized learning environments and improving language acquisition. Additionally, Pichkova, Karavaeva and Kulemekova (2023) emphasize the effectiveness of learner-centered approaches supported by digital technologies for adapting to rapidly changing global conditions [5]. Prokhorova A.A., Sergeyeva O.V., Yamkina I.A. conclude that this complex of cross-lingual exercises simulates real-life communication situations and

stimulates practical acquisition of foreign languages; in addition, it helps every student to develop adequate professional behavior based on independence, activity and creativity [6].

This study aims to contribute to the development of more effective strategies for teaching professional English, aligned with current technological advancements. **It has three main goals.** First, the core elements essential for developing lingua-digital identity are identified in professional education. Second, current methods and approaches are analyzed for teaching professional English specifically within the IT field. Lastly, the impact of digital technologies and artificial intelligence are evaluated on English for Specific Purposes (ESP) education.

Material and methods. The quantitative study involves 60 undergraduate IT students, who are divided into a control group and an experimental group over a 12-week period. Traditional teaching methods are employed in the control group, while the experimental group utilizes LDI-based learning tools. Language competencies are assessed through pre- and post-tests.

The methodology diagrams below illustrate the experimental design and assessment methods used in the study.

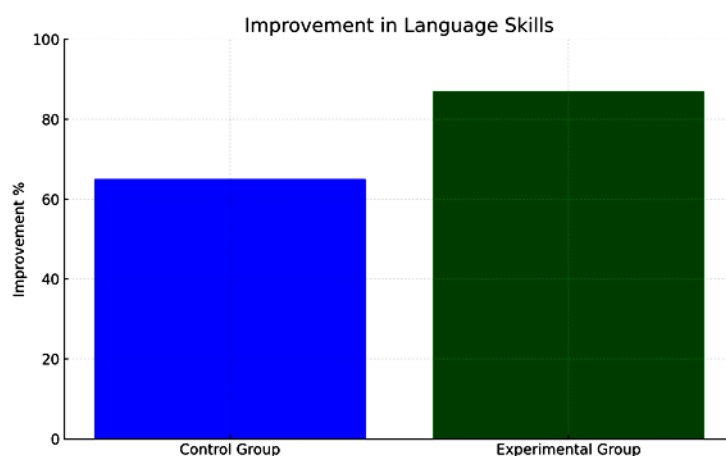


Figure 1. Improvement in students' language skills

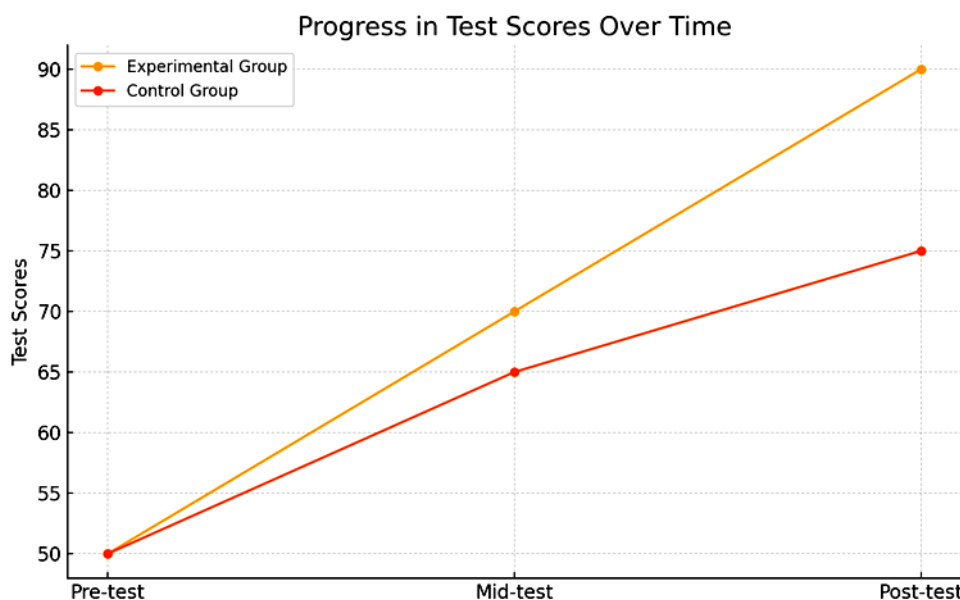


Figure 2. Comparison of test score improvements between the control and experimental groups throughout the study period.

This study employs a mixed-methods approach to assess the effectiveness and applicability of LDI in educational settings. The research explores task-based learning (TBL) in IT education to develop lingua-digital identity (LDI). Over twelve weeks, students engage with authentic IT documentation and professional communication tasks. These include analyzing software requirement specifications (SRS), composing bug

reports, drafting project proposals, responding to technical emails, explaining API documentation and conducting sprint planning.

Table 1. Methodology of this research

group	number of students	learning approach
Control group	30	Traditional ESP lessons (grammar-focused)
Experimental group	30	LDP-based tools with task demonstrations

The research stages (Table 1) include a needs analysis, which identify key professional tasks requiring linguistic competence, such as writing bug reports, participating in Agile meetings and documenting APIs. The next stage, task development, involves designing practical, domain-specific tasks using tools like Grammarly, ChatGPT, and collaborative platforms such as Trello and Slack. The third stage, implementation, has the control group follow textbook-based lessons focused on grammar and vocabulary, while the experimental group completes tasks facilitated by LDI, reproducing workplace scenarios with adaptive feedback from AI tools.

Table 2. The stages of this research

stage	control group	experimental group
Needs analysis	General ESP tasks	IT specific tasks (algorithms)
Task development	Textbook-focused exercises	AI-based tools (ChatGPT)
Implementation	Static grammar/vocabulary lessons	Role playing

The study involves two types of data analysis. Quantitative data, such as test scores, are analyzed using paired and independent t-tests to evaluate improvements. Qualitative data from student feedback are thematically coded to assess engagement and task relevance.

Results and discussion. The results (Table 2) show that the control group (CG) improves their vocabulary from 52% to 65% (+13%), writing proficiency from 55% to 70% (+15%) and speaking fluency from 53% to 62% (+9%). The experimental group (EG) see greater improvements, with vocabulary increasing from 54% to 87% (+33%), writing proficiency from 53% to 85% (+32%) and speaking fluency from 54% to 80% (+26%). Correlation analysis reveal a moderate positive correlation ($r = 0.70$) between pre- and post-test scores for the control group, while the experimental group shows a strong negative correlation ($r = -0.97$), indicating significant improvement among initially lower-performing students.

Table 3. Language skill improvements in control and experimental groups

skill	control group (%)	experimental group (%)	p-value
Vocabulary	65	87	<0.01
Writing	60	82	<0.01
Speaking	58	79	<0.01

Table 3 shows a moderate positive correlation ($r = 0.70$) in the control group, indicating consistent improvement among students. This suggests that the traditional approach helps learners moderately but don't significantly reduce performance gaps. On the other hand, the strong negative correlation in the experimental group ($r = -0.97$) shows that students who are performing worse have seen the most improvement. This highlights Lingua Digital Identity (LDI)'s effectiveness in closing skill gaps. The correlation between engagement and scores is higher in the experimental group ($r = 0.85$) compare to the control group ($r = 0.50$). This proves that the practical tasks provided by Lingua Digital Identity (LDI) had a big impact on learners' outcomes. It highlights the importance of interactive and relevant educational methods. The observed correlations support the study's conclusions about LDI's effectiveness. The study demonstrates that Lingua Digital Identity (LDI) helps struggling students improve their skills, reducing gaps in performance. Students who actively engage with this identity's interactive and task-based methods tend to achieve better learning outcomes. These findings confirm that LDI is effective and can be used in different educational and training settings. The histogram below compares post-test scores in vocabulary, writing and speaking Fluency for the control and experimental groups. The experimental group shows noticeable progress thanks to LDI, especially among students who initially had lower scores. This data highlights how LDI helps close skill gaps and supports overall improvement in professional English learning.



Figure 3. The differences in post-test scores between the control and experimental groups

Control group reports moderate engagement; 60% found tasks lacking real-world relevance. As for experimental group it reported high engagement; 95% find LDP tasks realistic and career-relevant. Task performance of experimental group students demonstrates significant improvements in bug reporting, API documentation, and Agile meeting participation compares to the control group. Lingua Digital Identity (LDI) plays a crucial role in addressing the challenges faced by less successful students by providing individualized support and adaptive learning strategies. Here are the key ways LDI supports these learners, as for personalized learning, we can identify different goals pursued in relevant approaches: they are a) selection and sequencing of learning adaptive content, b) feedback and information presentation, c) system-provided tools and resources, d) affective and motivational prompts or nudges. Lingua Digital Identity (LDI) customizes tasks according to the learner's proficiency level, ensuring that assignments are suitably challenging without being excessively difficult or overly simple. This step-by-step progression fosters students' lingua digital competence. Offering detailed feedback allows students to work with errors and thus master the skills. This gradual progression builds students' lingua digital competency [7]. Interactive tools like telegram chatbots help students by providing instant answers and support, allowing them to learn at their own pace. To make this work well, it's important to have good training and resources. Create training modules on using chat tools, handling multiple chats, and writing professional responses. Use a learning management system (LMS) like TalentLMS, Moodle, or Docebo to host these modules, track progress, and test understanding. Keep the team informed with continuous training and resources, such as a knowledge base or regular training sessions, to ensure they stay up-to-date with best practices and new features [8]. Enhanced Motivation and Engagement: Realistic and task-based scenarios demonstrate the relevance of learning to future careers, keeping students motivated. Gamification elements, such as achievements for completed tasks, create a sense of accomplishment [9]. These mechanisms demonstrate how Lingua Digital Identity (LDI) offers specific measures, helping students with academic difficulties to improve educational outcomes. The findings validate the effectiveness of Lingua Digital Identity (LDI) in improving both professional and linguistic skills, especially in specialized areas such as Information Technology (IT). The experimental group demonstrates better results compared to the control group across all analyzed aspects, demonstrating the value of telegram chat-bot, task-based learning contexts. Lingua Digital Identity (LDI) proved especially effective for struggling students, closing skill gaps and boosting confidence. The study also emphasizes the importance of engagement and relevance in education. By simulating real-world tasks, Lingua Digital Identity (LDI) elevates students' motivation and prepares them for professional challenges. However, technological and ethical challenges, such as access to AI tools and data privacy, must be addressed for broader implementation [10].

Conclusions. In conclusion, Lingua Digital Identity (LDI) is a valuable addition to traditional English for Specific Purposes (ESP) education, especially for IT students. By combining adaptive AI technologies with task-based learning, LDI addresses individual learning needs, enhances engagement, and bridges skill gaps. It provides personalized, real-time feedback and context-specific learning opportunities, boosting confidence, reducing performance gaps, and preparing students for real-world professional challenges. The link between engagement and learning outcomes highlights the importance of creating interactive and relevant educational experiences. Lingua Digital Identity (LDI) improves vocabulary gaining, writing skills and speaking fluency. It also promotes students' critical thinking and their collaboration. LDI's potential is to transform professional education, making it more inclusive, adaptive and matching industry standards. Future studies should research with Lingua Digital Identity (LDI) in different fields and integrating with new

technologies like virtual and augmented reality. In summary, Lingua Digital Identity (LDI) is changing education by combining technology with effective teaching to meet the needs of learners and industries.

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