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Deliverable 1.3
Research report

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Introduction

Erasmus+ programs emphasize educational innovation and the development of key competencies for lifelong learning. In line with these objectives, AdoptID is an initiative designed to bridge the gap between education and business. It aims to cultivate creativity, innovation, and problem-solving abilities among primary school children by immersing them in real-world business challenges. This research report explores the impact of AdoptID on educational refinement, focusing on learning effects, the development of soft skills, and the enhancement of students' digital competencies. The study delves into how AdoptID fosters collaborative learning, professional learning communities, knowledge exchange, and the integration of technology in education. Furthermore, it examines the role of design thinking in fostering creativity and entrepreneurship from an early age and assesses the broader societal impact of the initiative.

Deliverables

In the face of rapid technological advancements and evolving societal needs, education systems must adapt to equip students with the skills necessary to thrive in a dynamic world. Two critical areas of focus in this transformation are fostering learning effects and soft skills and enhancing digital skills among students. AdoptID, an innovative educational initiative, addresses these priorities by integrating creative problem-solving, real-world applications, and 21st-century competencies into its framework. This dual effort not only prepares students for academic success but also ensures their readiness to navigate the complexities of future professional and personal challenges. The *D1.3 Research report underlying the educational refinement focused on learning effects and soft-skills* delves into the educational refinements underlying learning effects and soft skills development within AdoptID. It highlights how the program fosters creativity, collaboration, communication, adaptability, and executive function skills through hands-on projects and interactions with local businesses. These experiences enable students to develop critical soft skills that are essential for success in both academic and professional environments. Complementing this focus on soft skills, the *D1.4 Report on how to improve the digital skills of students - related to AdoptID* explores strategies to improve digital skills among students. Recognizing the increasing importance of technology across all sectors, AdoptID emphasizes early exposure to IT tools and design-based learning approaches. By integrating technology into the curriculum and fostering collaboration between schools and businesses, the program ensures that students not only acquire technical proficiency but also understand its relevance across disciplines. Together, these reports underscore AdoptID's commitment to preparing students for a rapidly changing world. By fostering creativity, promoting digital literacy, and aligning its efforts with global priorities such as the Sustainable Development Goals (SDGs), AdoptID serves as a model for future-focused education that bridges the gap between traditional learning and modern demands.

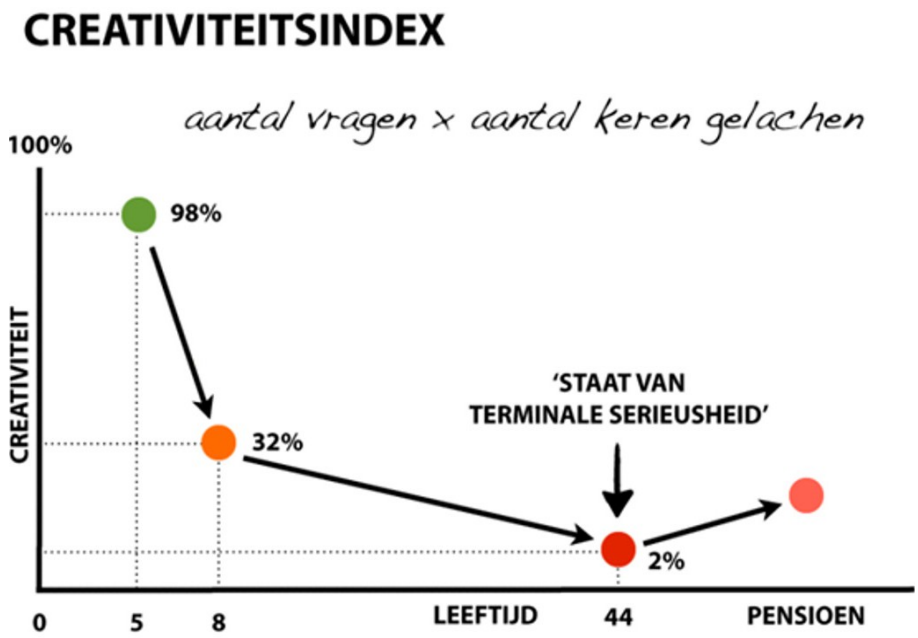
D1.3 Research report underlying the educational refinement focused on learning effects and soft-skills.

As the world undergoes rapid technological, economic, and social transformations, the role of education must evolve to prepare students for an uncertain future. Traditional educational models, which often emphasize rote memorization and standardized testing, are no longer sufficient to equip students with the skills they need to thrive in the 21st century. Instead, there is a growing demand for educational programs that prioritize creativity, innovation, adaptability, collaboration, and other critical soft skills. AdoptID stands at the forefront of this shift, offering an innovative framework that combines hands-on learning experiences with a

focus on both academic and personal development.This report explores the foundational components of AdoptID's approach to education. Specifically, it examines how the program fosters creativity and innovation, develops essential 21st-century skills, and prepares students for future employment through the cultivation of soft skills. By integrating real-world problem-solving opportunities with pedagogical principles rooted in collaboration and inclusivity, AdoptID provides students with a holistic educational experience that extends beyond the classroom.

Creativity Index: Measuring Engagement Through Smiles and Questions

Creativity is a cornerstone of AdoptID's methodology. Drawing inspiration from Professor Paul Iske's concept of the **Creativity Index**, the program emphasizes the importance of maintaining high levels of creativity in daily educational activities. Iske suggests that creativity can be measured through simple yet profound indicators: the number of smiles and questions asked each day. These metrics reflect a learner's engagement, curiosity, and willingness to explore new ideas. AdoptID integrates this philosophy into its curriculum by fostering an environment where curiosity is celebrated, and playful learning is encouraged. Activities are designed to spark joy and intellectual engagement, ensuring that students remain motivated and open to exploring unconventional solutions. By prioritizing these elements, AdoptID not only nurtures creativity but also helps students develop a positive attitude toward learning.



In addition to fostering creativity, AdoptID introduces students to the innovation process through hands-on projects in collaboration with local businesses. This approach allows students to engage directly with real-world challenges, offering them a practical understanding of product development and problem-solving.Students participate in all stages of the innovation process—from brainstorming ideas to prototyping solutions—while working alongside professionals from various industries. This exposure helps them grasp the complexities involved in bringing a concept to life while also developing critical thinking skills.

By engaging with authentic problems faced by businesses, students learn how to apply theoretical knowledge in practical contexts, preparing them for future roles as innovators and entrepreneurs.

21st Century Skills Development

In today's digital age, technological proficiency is no longer optional—it is essential. AdoptID places significant emphasis on developing digital literacy, ensuring that students are equipped with the skills needed to navigate an increasingly tech-driven world. The program incorporates tools such as collaborative software platforms, coding exercises, and digital design applications into its curriculum. By engaging with these technologies from an early age, students become comfortable using digital tools for communication, research, problem-solving, and creative expression. Moreover, they develop an understanding of computational thinking—a skill that enables them to break down complex problems into manageable components.

AdoptID goes beyond traditional classroom instruction by promoting a mindset of lifelong learning. Through practical activities such as project-based learning and community engagement initiatives, students are encouraged to seek knowledge independently and continuously improve their skills. This approach aligns with research showing that lifelong learners are better equipped to adapt to changing circumstances and seize new opportunities. By instilling this mindset early on, AdoptID ensures that students remain curious and motivated long after they leave formal education settings.

Impact on Future Employment

The World Economic Forum estimates that 65% of children entering grade school today will work in jobs that do not yet exist. This startling statistic underscores the importance of preparing students for an unpredictable future job market. AdoptID addresses this challenge by emphasizing traits such as adaptability, initiative, and creative problem-solving. Through its focus on real-world applications of knowledge, AdoptID equips students with transferable skills that can be applied across various industries. Whether they pursue careers in

technology, business, healthcare, or other fields yet to emerge, graduates of the program will possess the confidence and flexibility needed to succeed.

Development of Soft Skills

Collaboration and Teamwork: Learning Through Group Projects

One of AdoptID's key strategies for fostering soft skills is its emphasis on collaboration. Students regularly work in groups to tackle real business challenges posed by local entrepreneurs or community organizations. These group projects require them to share responsibilities, communicate effectively, and coordinate their efforts toward achieving a common goal. By participating in collaborative activities, students learn how to navigate interpersonal dynamics—a critical skill in any professional setting. They also develop an appreciation for diverse perspectives as they work alongside peers from different backgrounds.

Communication Skills: Presenting Ideas with Confidence

Effective communication is another essential soft skill emphasized by AdoptID. As part of their group projects, students present their solutions to real entrepreneurs or community stakeholders. These presentations provide valuable opportunities for them to practice public speaking, refine their arguments, and respond thoughtfully to feedback. By honing their communication skills, students gain confidence in expressing their ideas clearly and persuasively—an ability that will serve them well in both academic and professional contexts.

Executive Function Skills: Planning and Organizing for Success

AdoptID places a strong emphasis on developing executive function skills, which include metacognition (thinking about one's thinking), planning, organization, and self-regulation. Students are encouraged to reflect on their learning processes by setting goals for themselves at the beginning of each project and evaluating their progress along the way. Managing complex projects also requires students to develop strong organizational skills—such as breaking tasks into smaller steps, prioritizing responsibilities effectively, and meeting deadlines consistently.

Social Cohesion: Fostering Inclusivity and community Engagement

By working closely with local entrepreneurs during their projects, students not only gain practical insights but also build valuable social skills. These interactions help them understand the importance of networking while fostering a sense of community engagement.

Promoting Inclusiveness: Ensuring Equal Opportunities for All

AdoptID is committed to creating an inclusive learning environment where all students—regardless of background or ability—feel valued and supported. The program ensures equal access to resources while encouraging diverse perspectives within group activities. This emphasis on inclusivity helps cultivate empathy among participants while demonstrating how diversity can lead to richer problem-solving outcomes.

D1.4 Report on how to improve the digital skills of students - related to AdoptID

In an increasingly digital world, the ability to navigate technology effectively is no longer just a valuable asset; it is a fundamental requirement for success in virtually every profession. As we stand on the brink of a new era in education, it becomes imperative to equip students with the necessary digital skills that will enable them to thrive in this dynamic landscape. The D1.4 Report focuses on how AdoptID is addressing this critical need by enhancing the digital skills of students through innovative and engaging approaches.

Early IT Exposure

AdoptID recognizes that early exposure to information technology (IT) is crucial for developing comfort and proficiency with digital tools. By introducing children to IT concepts and applications at a young age, AdoptID ensures that they are not only familiar with technology but also confident in using it as an integral part of their learning process. This early engagement is vital as technology continues to permeate all aspects of life and work. The program employs hands-on experiences to reinforce learning, allowing students to engage directly with digital tools and applications. Through interactive projects and collaborative activities, learners can apply theoretical knowledge in practical scenarios, bridging the gap between classroom learning and real-world application. This experiential learning approach not only enhances understanding but also fosters critical thinking and problem-solving skills essential for navigating complex digital environments. Furthermore, AdoptID utilizes design-based learning principles, particularly design thinking, as a framework for teaching digital skills. This methodology encourages students to engage in creative problem-solving while developing their technical competencies. By emphasizing the application of knowledge in innovative ways, students are empowered to think critically about how technology can be leveraged to address challenges and create solutions.As we delve deeper into this report, we will explore how these strategies contribute to improving the digital skills of students within the AdoptID framework. By fostering a culture of innovation and adaptability, AdoptID prepares young learners not only for academic success but also for meaningful participation in an increasingly interconnected and technology-driven world.

Pedagogical Foundation and Design Thinking Methodology

AdoptID is founded on pedagogical principles that prioritize interactive, student-centered learning. Central to its approach is the concept of collaborative learning, where teachers and students actively engage with one another to exchange knowledge, ideas, and strategies for solving problems. Research has demonstrated that this type of learning fosters knowledge construction while simultaneously strengthening communication skills, equipping students with the ability to navigate complex professional environments. Integral to AdoptID's framework are Professional Learning Communities (PLCs), which provide educators with a collaborative platform to share best practices, refine instructional methodologies, and continuously develop their professional competencies. Studies highlight that PLCs not only enhance teaching effectiveness but also contribute to improved student learning outcomes by cultivating an environment of continuous adaptation and innovation. The initiative is closely aligned with the theory of knowledge construction, which asserts that meaningful learning emerges from active engagement and reflective thinking. By promoting the co-

creation of lesson materials between teachers and students, AdoptID fosters a dynamic and interactive educational experience. The integration of digital technology further strengthens these processes, offering seamless avenues for communication, resource sharing, and feedback. Research underscores the importance of digital tools in professional learning settings, emphasizing their capacity to amplify teacher development and student engagement when applied in a pedagogically responsible manner. A distinctive feature of AdoptID is its adoption of design thinking as a structured problem-solving methodology. This approach has been widely recognized for its effectiveness in fostering innovation and creative thinking, particularly in educational contexts. A study by Scheer (2012) demonstrated that integrating design thinking significantly enhances students' problem-solving abilities and stimulates creativity. The program acknowledges the innate creativity of children, an aspect supported by longitudinal research conducted by Land and Jarman (1992), which revealed that 98% of five-year-olds exhibited genius-level divergent thinking; however, this figure dramatically declined to 12% by age 15, highlighting the necessity of sustained creative stimulation throughout childhood and adolescence. AdoptID embraces a unique perspective on creativity, associating it with the frequency of laughter and questioning. This concept finds validation in the work of Ziv (1976), who established a link between humor and creative thinking. Additionally, research by Dyer and Gregersen (2011) affirms that highly innovative entrepreneurs exhibit a markedly higher tendency to ask questions compared to their less innovative counterparts, further supporting the program’s emphasis on curiosity-driven learning. Beyond fostering creativity, AdoptID is dedicated to cultivating entrepreneurial skills from an early age. Research by Obschonka et al. (2011) affirms that early exposure to entrepreneurial activities significantly impacts the development of future entrepreneurial competencies and aspirations. The collaboration between schools and businesses within the framework of AdoptID aligns closely with the concept of authentic learning. According to research conducted by Herrington et al. (2014), engaging students in real-world problem-solving leads to deeper learning experiences and better preparation for the evolving job market. While AdoptID does not explicitly reference scientific literature, its approach is firmly grounded in well-established educational research on creativity, innovation, and teaching methodologies. The didactic application of design thinking within education is extensively supported by academic research. Li and Zhan (2022) conducted a review of 44 studies examining the effects of design thinking in educational settings, concluding that students who engage in this methodology develop proficiency in problem-solving while also experiencing growth in emotional, social, and professional dimensions. Their research highlights significant improvements in creative thinking, critical analysis, and the ability to tackle complex challenges. Further reinforcing these findings, Rens and Lans (2022) investigated the impact of authentic assignments, including design thinking, in secondary vocational education. Although they could not establish definitive causal relationships, their study suggests that such methodologies contribute positively to developing diverse skill sets, particularly in fostering adaptability and problem-solving abilities. Additionally, research by Tracey et al. (2014) explored implementing design thinking in higher education, emphasizing its interdisciplinary nature and iterative refinement process involved in developing innovative solutions. Dorst (2011) expanded on the applicability of design thinking beyond traditional educational contexts, highlighting its relevance in addressing complex real-world challenges. His work underscores the importance of this methodology in cultivating a problem-solving mindset adaptable across various domains. Complementing this perspective, Cross (2011) provided a theoretical foundation for design thinking's role in educational settings, stressing

the critical importance of understanding user needs within the design process to create meaningful and effective solutions. Taken together, these research findings provide strong empirical support for integrating design thinking into educational frameworks such as AdoptID. By emphasizing creativity, problem-solving, and entrepreneurial skill development, AdoptID equips students with tools necessary for academic success while preparing them to navigate and contribute to an increasingly complex and innovation-driven world.

Broader Impact

AdoptID seamlessly integrates technological education into the broader educational curriculum by embedding technology and digital literacy across various subjects. This alignment ensures that students recognize the relevance of digital skills not only in IT classes but also in disciplines such as mathematics, science, arts, and humanities. By contextualizing technology within different fields of study, AdoptID reinforces the idea that digital literacy is a foundational skill that enhances learning outcomes across the board.

Regional Innovation and Economic Growth

A key feature of AdoptID is its commitment to fostering regional innovation and economic growth through strategic partnerships between schools and local businesses. By connecting educational institutions with industry leaders, the program provides students with invaluable insights into local industries while allowing businesses to benefit from fresh ideas and creative solutions generated by young minds. This collaboration not only enriches students' learning experiences but also contributes to a more vibrant local economy by nurturing a skilled workforce ready to meet industry demands.

Sustainable Development Goals (SDGs)

AdoptID actively contributes to several Sustainable Development Goals (SDGs) set forth by the United Nations, including quality education, decent work, economic growth, reduced inequalities, and sustainable communities. By aligning its objectives with these global goals, AdoptID underscores its broader impact on society. The program not only prepares students for individual success but also fosters a sense of social responsibility and awareness of global challenges among young learners.

Stakeholder Benefits

For Educators:

- Integrate design-based learning into the curriculum to foster creativity and problem-solving skills.
- Encourage collaborative projects involving real-world challenges to enhance student engagement and learning outcomes.

For Policymakers:

- Support programs like AdoptID that bridge the gap between education and industry.
- Invest in digital literacy initiatives to prepare students for future technological advancements.

For Businesses:

- Partner with educational institutions to provide students with practical experience and

mentorship.
- Embrace collaboration with young minds to drive innovation and gain fresh perspectives on business challenges.

By fostering a collaborative environment where education and business intersect, AdoptID exemplifies a model for future educational initiatives—ensuring students are well-prepared for the challenges and opportunities of the 21st century.

Drivers and Opportunities

AdoptID presents several key drivers that support its replication across diverse educational environments:

- **Alignment with Global Educational Trends:** The program aligns with the increasing emphasis on 21st-century skills, such as creativity, collaboration, and digital literacy. This ensures its continued relevance in an evolving educational landscape.
- **Community Engagement:** By involving local businesses in the learning process, AdoptID fosters a sense of shared responsibility for education. This not only enriches student experiences but also strengthens relationships between schools and local industries.
- **Funding Opportunities:** Financial support from initiatives like Erasmus+ provides essential resources for expanding and sustaining innovative programs like AdoptID.

Inhibitors and Challenges

Despite these strengths, the replication of AdoptID comes with several challenges:

- **Resource Constraints:** Implementing hands-on, real-world projects requires significant financial and human resources, particularly for integrating technology and industry expertise.
- **Curriculum Integration:** Many educational structures are rigid, and introducing new methodologies can be challenging, especially if educators are unfamiliar with innovative approaches.
- **Sustainability:** Ensuring the program's long-term viability beyond initial funding cycles requires continuous support from stakeholders.
- **Scalability:** While effective in smaller settings, scaling up AdoptID while maintaining quality is complex due to logistical factors, such as securing enough business partners for student engagement.

Strategies and Recommendations

To effectively address these challenges and support successful replication, the following strategies are recommended:

- **Develop Strategic Partnerships:** Strengthening collaborations with local businesses ensures continuous engagement and support in educational activities.
- **Provide Teacher Training:** Comprehensive training in design thinking methodologies, collaborative learning strategies, and digital tools integration can facilitate smoother adoption.
- **Secure Long-Term Funding:** Engaging policymakers and private-sector sponsors who value future-ready skills development can enhance financial sustainability beyond initial grants.

- Monitor and Evaluate Progress: Regular assessments using creativity indexes, student feedback, and performance metrics can help refine strategies based on data-driven insights.
- Promote Community Engagement Beyond Schools: Hosting public showcases of student projects and achievements can raise awareness and support for future-focused education initiatives.

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