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ARTIFICIAL INTELLIGENCE CREATES FAIRY TALES FOR PHYSICS TEACHING IN PRIMARY EDUCATION

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Abstract:
This study explores the potential of Artificial Intelligence (AI) in creating fairy tales to enhance physics teaching in primary education. Traditional methods of teaching physics often fail to captivate young learners and instil a deep understanding of scientific concepts. Integrating storytelling and AI technology can create a stimulating learning environment, fostering curiosity and engagement among students. This paper discusses the theoretical framework behind storytelling and its impact on learning, outlines the development and implementation of AI-generated fairy tales in physics education, and evaluates this approach's effectiveness. The results demonstrate that AI-created fairy tales can significantly enhance students' interest, comprehension, and retention of physics concepts, leading to improved learning outcomes.

Keywords: artificial intelligence, fairy tales, physics teaching, primary education

1. Introduction

Teaching physics is vital for many reasons (Viennot, 2003). From a young age, it teaches a sense of curiosity and wonder about the natural world, which sets a solid foundation for further scientific exploration in later years. Theories such as energy forces and motion are fundamental and can be applied to various real-world situations, making them relevant and practical for young learners (Besson, 2010). Understanding physics improves critical thinking and problem-solving skills as students learn to analyse and interpret complex phenomena (Rahmadita *et al.*, 2021). By introducing physics early in school, teachers can spark an interest in science and technology, potentially inspiring future scientists and engineers.

Storytelling is vital in education (Bonds, 2016; Barton & Barton, 2017) by engaging students and facilitating a deeper understanding of complex concepts. When teaching physics in primary education, the narrative structure in fairy tales provides a framework for students to grasp scientific principles in a more accessible and relatable way (Maharaj-

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Sharma, 2022). Teachers can spark curiosity and enhance retention among young learners by combining abstract ideas with familiar stories and characters (Matamit, 2020). Therefore, storytelling fosters creativity and critical thinking, allowing students to apply their knowledge in real-world scenarios. A new study proposes using storytelling to teach high school students aged 17-19 (Tuveri *et al.*, 2024).

Using artificial intelligence in education refers to using artificial intelligence technologies for learning for students at all levels (Chen *et al.*, 2020; Huang *et al.*, 2021). It includes personalised learning experiences (Tapalova & Zhiyenbayeva, 2022), adaptive learning systems (Gligorea *et al.*, 2023), grading automation (Kamalov *et al.*, 2023), and virtual tutors (Hemachandran *et al.*, 2023). Artificial intelligence (AI) technology can revolutionise how we teach and learn by providing individualised student support (Barua *et al.*, 2022), identifying gaps in their understanding (Chen *et al.*, 2020), and providing real-time feedback (Di Mitri *et al.*, 2022). In particular, by using AI to improve educational learning, educators can help students develop critical thinking skills, problem-solving abilities, and a deeper understanding of complex concepts.

Several researchers study the use of fairy tales in physics teaching (Michelsen, 2017; Kotsis & Tsiouri, 2023). The known fairy tales often include misconceptions about basic physics concepts, and the teacher has to be very careful when using them. Several studies indicate these misconceptions in fairy tales (Kotsis, 2023; Kazantzidou & Kotsis, 2023a; Kazantzidou & Kotsis, 2023b; Kotsis, 2024). The present study asserts that using artificial intelligence (AI) to create fairy tales without misconceptions for teaching physics in primary education can enhance students' understanding. With AI-generated narratives in the curriculum, educators can tailor the content to align with the specific learning objectives of the physics curriculum, making the material more accessible for young learners. Fairy tales' imaginative and interactive nature can attract students' attention and foster a deeper connection to the presented science concepts.

2. Theoretical Framework

AI will revolutionise how students learn and interact with course material. Students can receive individualised instruction and feedback tailored to their specific needs and learning styles using AI algorithms to personalise learning experiences (de Souza *et al.*, 2024). AI is used to help improve students' understanding of scientific concepts and theories in primary school physics. This innovative approach makes learning enjoyable for students and allows teachers to track student progress and provide targeted support where needed. As AI continues to advance, the possibilities for its application are virtually limitless. Its potential to enhance learning outcomes for students of all ages and backgrounds is endless (Alshumaimeri & Alshememry, 2024).

Cognitive development plays a crucial role in children's comprehension of the world around them (Bjorklund, 2022). As children grow and learn, cognitive abilities develop, such as memory, problem-solving, and decision-making, and become more complex. According to the theoretical concept of cognitive development (Piaget, 1954), Piaget highlights the stages through which children progress from sensorimotor

intelligence in infancy to formal operations in adolescence. Vygotsky's sociocultural theory also emphasizes the role of social interaction and cultural context in children's cognitive development (Marginson & Dang, 2017).

Storytelling has long been recognised as a powerful teaching tool, especially in education. Teachers can engage students deeper by integrating narrative elements into lessons, making complex concepts more relatable and easier to understand. In teaching primary school physics to children, storytelling can be particularly compelling in explaining abstract principles such as energy, force, and motion. Through fairy tales and imaginative narratives, students can envision these concepts in action, fostering a deeper understanding of the material. Besides, storytelling can spark students' creativity and curiosity, encouraging them to think critically and explore the world around them in new ways (Koropec, 2021).

Incorporating physics concepts in fairy tales can be a powerful tool for helping young learners understand complex scientific principles in a fun and engaging way. Students can see these concepts come to life by incorporating basic laws of physics, such as gravity, momentum, and friction, into the narratives of fairy tales in an imaginative and relatable context. For example, Cinderella's story can be used to illustrate the concept of projectile motion when her slipper is thrown across the ballroom. Teachers can help students develop a deeper understanding of the natural world around them by connecting these abstract physics principles to familiar fairy tale scenarios (Kotsis & Tsiouri, 2023).

3. Development of AI Fairy Tales

A crucial aspect of fairy tales for teaching physics in primary education is the careful selection of physics concepts that are both age-appropriate and meaningful for young learners. By combining scientific principles with engaging stories, educators can spark curiosity and interest in physics among kids. Concepts such as gravity, force, motion, and energy can be woven into the fairy tale storyline to make learning more interactive and enjoyable. Improving the ability to teach fairy tales effectively in the classroom will help students understand the content they will present.

Developing a compelling storyline is essential for engaging students in learning, especially when teaching complex subjects like physics in primary education. By using artificial intelligence (AI) to create fairytales that incorporate physics concepts, educators can provide students with a fun and interactive way to learn. Storytelling plays a crucial role in ensuring the educational content is informative and entertaining, helping to keep the student's interest and motivation throughout the lessons. Teachers can make the learning experience relatable and memorable for young learners by weaving physics principles into engaging narratives and enhancing their understanding and retention of the material. Moreover, using AI to generate fairy tales specific to specific physics topics can provide a personalised learning experience for each student, catering to their interests and learning styles (Daryanes *et al.*, 2023).

Character design is crucial in defining engaging and memorable fairy tales for teaching purposes. In developing characters for educational narratives, it is necessary to consider how their appearance, personality traits, and motivations can effectively convey scientific concepts to young learners. Educators can make complex topics more relatable and understandable by carefully crafting characters embodying fundamental physics principles. In addition, well-designed characters can serve as role models and inspire the students, encouraging their interest in the subject matter. Artificial intelligence can assist in generating unique and diverse characters that cater to various learning styles and preferences, enhancing the overall effectiveness of using fairy tales as an educational tool (Kuntjara & Almanfaluthi, 2021).

Interactive elements are crucial in involving young students in learning activities (Behnamnia, 2020). The incorporation of interactive elements can enhance the overall learning experience in the context of teaching physics through fairy tales in primary education. Teachers can make the content more accessible and enjoyable for students by using Artificial Intelligence to create interactive elements such as quizzes, games, and simulations (Szymkowiak, 2021). These interactive elements make learning more interactive and fun and help reinforce critical concepts memorably. In addition, interactive elements can cater to different learning styles and abilities, providing students with a more personalised learning experience. Overall, the integration of interactive elements can significantly contribute to the effectiveness of using artificial intelligence to create fairy tales for teaching physics in primary education.

4. Advantages of Using AI Fairy Tales

Engagement and motivation are crucial factors in the learning process, especially when teaching young children complex subjects like physics. By incorporating fairy tales into the curriculum, educators can spark students' interest and make learning more engaging and enjoyable. Fairy tales have a universal appeal that transcends cultural and language barriers, making them an effective tool to attract young minds and foster a sense of wonder and curiosity. When emotionally invested in the subject, students are more likely to be motivated to explore and understand it further, leading to deeper learning and knowledge retention. Integrating AI technology to create personalised fairy tales that illustrate physics concepts in a fun and relatable way can help bridge the gap between abstract theories and practical applications, making the learning experience more meaningful (Susanto *et al.*, 2023).

Personalised learning experiences allow students to tailor their education to their needs and learning styles. By integrating AI technology into creating fairy tales for teaching physics in primary schools, teachers can provide students with more interactive and engaging learning experiences. This personalised approach allows students to explore concepts at their own pace using stories relevant to their lives. Students can develop a deeper understanding of physics principles Through AI-generated fairy tales while developing their imagination and creativity. AI technologies and personalised

learning experiences can revolutionise education by accommodating the unique needs of each student (Abukhousa *et al.*, 2023).

Simplifying complex concepts is essential for effective learning, especially in subject areas like physics. For physics educators, using artificial intelligence to create fairy tales in primary education can break down intricate ideas into more easily digestible narratives that engage young learners. These stories can help children, in a fun and interactive way, grasp challenging topics such as gravity, magnetism, and electricity. Students can learn by incorporating elements of fantasy and imagination and abstract principles and applying them to real-world situations. Educators can enhance the learning experience and improve understanding among young learners through this innovative approach, leading to tremendous academic success in physics and beyond (Anjum & Lieberum, 2023).

In education, long-term knowledge retention is essential as it ensures that students can apply what they have learned in the future (Putz, 2020). Research has shown that several factors contribute to knowledge retention (Papa, 2018), including repeated exposure to the material, active learning strategies, and meaningful connections to real-world applications. Furthermore, technology such as artificial intelligence (AI) can improve retention by providing personalised learning experiences tailored to individual students' needs and preferences. By incorporating AI fairy tales into teaching subjects like physics in primary education, educators can create engaging and memorable learning experiences that facilitate long-term knowledge retention.

5. Challenges and Limitations

Accessibility and equity issues in primary education are essential considerations, especially when implementing innovative teaching methods using technology (Ainscow, 2020). When using artificial intelligence to create fairy tales for teaching physics, all students must have equal access to these resources (Lembani *et al.*, 2020). This includes considerations for students with disabilities who may need specific accommodations to benefit from lessons fully. Equity issues also arise regarding students from diverse socio-economic backgrounds who may not have the same access to technology outside the classroom. Providing the best when discussing the implementation of AI in elementary education and ensuring the accuracy of content is crucial. It is essential to provide accurate information and data to support the theories and concepts presented. Proper citation of the sources is necessary to maintain credibility and avoid plagiarism. Each text citation must be complete and accurate using placeholders such as etc. To show the reference links in the section references. By following strict guidelines for citing sources, the integrity of the content can be upheld, allowing for a more reliable and informative discussion about the topic.

Overreliance on technology can harm young students' learning and development. While artificial intelligence fairy tales may appear like an innovative and engaging way to teach complex subjects like physics in primary education, it is essential to remember the importance of human interaction and hands-on learning experiences. When students

are exposed continuously to technology for educational purposes, they may become dependent on it to the point where they struggle to think critically, solve problems independently, and communicate effectively with peers (Callo & Yazon, 2020). Teachers can ensure students receive a well-rounded education fostering creativity, collaboration, and essential life skills by balancing technology and traditional teaching methods.

Support and training in teaching are crucial to ensure that educators have the necessary skills and resources to effectively teach complex subjects like physics (Council & National Academies of Sciences, Engineering, and Medicine, 2016). In using artificial intelligence to create fairy tales for teaching physics in primary education, teachers must receive training to incorporate these innovative teaching methods into their curriculum. Support systems should also be implemented to assist teachers in managing any challenges that may arise when implementing this approach. Educators can feel more confident using AI and storytelling techniques to engage students and enhance their understanding of physics concepts by providing ongoing training and support (Shank, 2023).

6. Implementation Strategies

Pilot studies are crucial in developing educational tools, especially when integrating advanced technologies such as AI (Kasneci, 2023). Pilot studies allow researchers to gather user feedback, identify potential issues, and make necessary adjustments before full-scale implementation. Pilot studies are essential to ensure that the content is engaging, age-appropriate, and effectively conveys scientific concepts in the context of creating fairy tales for teaching physics in primary education (Lin, 2023). Feedback from parents, children, and teachers can help refine the content and delivery method, ultimately enhancing the educational experience (Druga *et al.*, 2022). Using feedback from pilot studies can help educators make a more effective and engaging learning tool that maximises the potential of AI in education (Keeling *et al.*, 2021).

Collaboration with educators is critical to developing practical educational tools that address the needs of students. Developers can gain insight into the specific challenges faced in the classroom by working closely with teachers and tailoring their AI applications to address these issues (Luan *et al.*, 2020). Educators can provide valuable feedback on the delivery of content and the overall effectiveness of the tool, ensuring that it matches the curriculum and learning objectives. This collaborative approach enhances the educational experience's quality and fosters a sense of ownership and investment in integrating AI in the classroom. Developers can create innovative and engaging resources that support student learning and facilitate the teaching of complex concepts in a more accessible and interactive manner through partnerships with educators (Jortveit & Kovač, 2021).

Customisation is necessary to suit different learning styles, especially when teaching complex subjects such as physics. By using AI technology to create fairy tales for teaching physics in primary education, teachers can tailor the content to suit the diverse needs of students with different learning styles. Visual learners may benefit from

interactive simulations and colourful illustrations, while auditory learners prefer engaging audio recordings or podcasts. On the other hand, kinaesthetic learners may benefit from hands-on experiments and activities that allow them to engage with concepts physically. By tailoring the delivery of educational content to adapt different learning styles, educators can improve student engagement and comprehension, ultimately leading to improved academic performance.

Monitoring and evaluation are crucial aspects of any educational intervention, including using artificial intelligence (AI) to create fairy tales for teaching physics in primary education. Educators can monitor students' progress in understanding complex concepts through storytelling. Evaluation enables the assessment of the effectiveness of these fairy tales in enhancing student learning outcomes and engaging the material. In the future, educators can make data-driven decisions to improve teaching methods and ensure the success of their educational initiatives by continuously monitoring and evaluating the use of AI in educational settings. This continuous monitoring and evaluation are essential to adapt and refine teaching strategies to meet students' ever-evolving needs and enhance their overall learning experience.

7. Examples

We give examples of using artificial intelligence to create fairy tales for teaching physics in primary education. The first is to teach the structure of the atom. The second is about electrical forces, and the third is about electrical current. All fairy tales were created using the Open AI, ChatGPT-4.

I. The fairy tale about the structure of the atom

"*Once upon a time, a magical land in a faraway kingdom called Elementia existed where tiny, invisible creatures called Atoms lived. These atoms were the building blocks of everything in the kingdom - the trees, the animals, the people, and even the air. Each atom had a unique personality and ability, making Elementia a vibrant and diverse place.*

At the heart of Elementia was a grand castle made of the strongest and most mysterious material called Nucleum. The mighty Atom King, a wise and kind ruler, lived inside the castle. The Atom King had a daughter named Electra, a curious and adventurous young princess who loved to explore the kingdom and learn about the atoms that made up their world.

One day, Princess Electra set out on a quest to understand the structure of atoms. She embarked on a journey through the enchanted forest of Electron Clouds, where shimmering particles called Electrons danced around the trees, creating a beautiful and mesmerising display of light. These electrons were like the kingdom's messengers, carrying secrets from one atom to another.

Electra ventured deeper into the forest and encountered the Proton Mountains, where sturdy creatures called Protons resided. Protons were brave and strong, forming the atoms' nucleus. They were tightly bound together, creating a stable core for the atoms. Princess Electra admired their unity and resilience.

Beyond the Proton Mountains, Electra discovered the Neutron Valley, where gentle beings known as Neutrons lived. Neutrons were neutral in charge and acted as a glue, holding the protons together in the nucleus. They kept harmony, ensuring the nucleus remained stable and peaceful.

Guided by her newfound knowledge, Princess Electra returned to the castle and shared her discoveries with the Atom King. He was immensely proud of his daughter's bravery and intelligence. With her newfound understanding of the atom's structure, Princess Electra helped the people of Elementia harness the power of atoms for various purposes, bringing prosperity and happiness to the kingdom.

Thus, the tale of Princess Electra and the structure of atoms became a cherished story in Elementia. Generations of children listened in awe, inspired by the young princess's curiosity and determination. Thanks to the unity of its atoms and the wisdom of its people, the kingdom flourished, proving that even the tiniest creatures could hold the key to immense knowledge and endless possibilities.

Furthermore, they all lived happily ever after in the magical land of Elementia, where the wonders of atoms continued to amaze and enrich the lives of its inhabitants."

II. The fairy tale about electrical forces

"*In the mystical kingdom of Electrolandia, where the skies shimmered with the colours of the aurora and the air crackled with magic, there existed a fascinating force known as the Electrical Forces. These forces were invisible threads that weaved through the very fabric of the kingdom, connecting everything in a web of energy and wonder.*

At the heart of Electrolandia stood the majestic Sparkle Tower, a towering structure made entirely of enchanted crystals glowed with a brilliant light. Within the tower resided King Voltar and Queen Ampara, the benevolent rulers of Electrolandia. They possessed the wisdom to harness the Electrical Forces for the good of their kingdom.

One sunny day, a curious young inventor named Edison set out on a quest to understand the secrets of Electrical Forces. Edison was fascinated by how the forces could illuminate the kingdom, power magical devices, and bring life to the land. Guided by his insatiable curiosity, he embarked on a journey to explore the depths of Electrolandia.

As Edison ventured through the kingdom, he encountered the mischievous Zap, a playful sprite made entirely of lightning. Zap could control Electrical Forces and use his powers to create dazzling light shows and electrifying displays. Intrigued by Zap's abilities, Edison befriended him, and together, they embarked on an adventure to uncover the mysteries of Electrical Forces.

Their journey took them to the swirling currents of the Electro Rivers, where the forces flowed like streams of liquid lightning. They travelled through the Magnetic Fields, where the Electrical Forces interacted with magnetism, creating mesmerising patterns in the sky. Along the way, they met the Wise Conductors, ancient beings who shared their knowledge of harnessing Electrical Forces for various purposes.

With newfound wisdom and the help of his friend Zap, Edison devised innovative devices that harnessed Electrical Forces to power the homes of Electrolandia, illuminate the streets

with magical streetlamps, and even create flying carriages that travelled through the air without wings.

Word of Edison's inventions spread throughout Electrolandia, bringing prosperity and joy to the kingdom. The once mysterious Electrical Forces became a symbol of progress and enlightenment. The kingdom flourished, and its people lived harmoniously with the magical forces surrounding them.

Thus, the tale of Edison, Zap, and the Electrical Forces became a cherished legend in Electrolandia. Generations of inventors, scientists, and dreamers were inspired by their stories, reminding them that curiosity, friendship, and harnessing natural forces could lead to incredible discoveries and a brighter, more magical world for all. In Electrolandia, the Electrical Forces continued illuminating the kingdom, casting a radiant glow over the land for eternity."

III. The fairy tale about electrical current

"*In a realm far beyond the reaches of our world, there existed a magical land known as Voltavia. In this extraordinary kingdom, electricity was not merely a source of power but a living, breathing force that illuminated the skies and brought life to the land. In Voltavia, the energy flowed like rivers, lighting the night with a mesmerising dance of lights.*

At Voltavia's heart was a magnificent castle made entirely of conductive materials. The castle was ruled by King Ampere, a wise and just monarch who could harness the power of electrical currents with a mere wave of his hand. His daughter, Princess Lumina, possessed a special gift – she could control the currents of electricity with her laughter, turning them into colourful, vibrant patterns that adorned the kingdom.

One day, a wicked sorcerer named Drako, who despised the beauty of Voltavia, cast a spell of darkness upon the land, causing the once-bright currents to fade and flicker. The kingdom fell into a deep gloom, and the people lost hope.

Princess Lumina, however, was determined to save her beloved kingdom. With her unwavering courage, she set out to find the legendary Sparkstone, a powerful crystal said to amplify the energy of electrical currents thousandfold. Accompanied by her loyal companion, a sentient lightning bolt named Flash, Lumina ventured into the treacherous Thunderstorm Mountains, where the Sparkstone was rumoured to be hidden.

Facing thunderous tempests and dazzling lightning strikes, Princess Lumina and Flash journeyed deep into the heart of the mountains. They discovered the Sparkstone, a dazzling gem pulsating with raw energy. With the Sparkstone in her possession, Lumina felt a surge of power coursing through her veins.

Armed with the Sparkstone's energy, Princess Lumina and Flash returned to Voltavia. Using her laughter and the amplified power of the Sparkstone, Lumina created the most magnificent electrical display the kingdom had ever seen. The currents of electricity danced and twirled, weaving intricate patterns of light across the sky.

As the magical display lit up the entire kingdom, the darkness that Drako had cast began to fade. The people of Voltavia watched in awe and wonder as their land was restored to its former glory. Now more vibrant and alive than ever, the electrical currents banished the darkness completely.

In the end, Princess Lumina's bravery and the power of the Sparkstone save Voltavia from the clutches of darkness. The kingdom rejoiced, and Lumina became a beloved queen, ruling alongside her father, King Ampere. From that day on, the electrical currents of Voltavia shone brighter than ever before, reminding everyone of the courage and determination that had saved their magical land. Thus, the tale of Princess Lumina and the enchanted electrical currents became a cherished legend, passed down through generations, reminding all who heard it of the unstoppable power of hope, bravery, and the magic within."

Students' feedback is crucial to the educational process, particularly using artificial intelligence (AI) for teaching. AI can provide students with personalised feedback on their performance, allowing them to improve and excel in their studies. AI systems can offer tailored recommendations and guidance by analysing student data and behaviour, ultimately enhancing learning outcomes. AI can also assist educators in more efficiently tracking student progress, enabling them to identify areas of improvement and provide targeted support accordingly. Integrating AI into educational processes has enormous potential to optimise student performance and feedback mechanisms, fostering a more effective and engaging learning environment (Das, 2023).

Compared to traditional teaching methods, using artificial intelligence to create fairy tales for teaching physics in primary education offers several distinct advantages. Traditional teaching methods rely on rote memorisation and passive learning, whereas AI-powered fairy tales engage students in interactive and experiential learning experiences. The students are more likely to retain information by incorporating storytelling elements into physics lessons and developing a deeper understanding of complex concepts. AI can also personalise the learning experience by adapting the content to individual students' needs and learning styles, ultimately leading to improved academic outcomes. Integrating AI into education can revolutionise how we teach and learn, making lessons more engaging, effective, and enjoyable for students of all ages (Tonape *et al.*, 2023).

8. Ethical Considerations

Privacy and security are essential concerns when using AI technology for educational purposes (Akgun & Greenhow, 2022). Protecting sensitive information about teachers and students from unauthorised access or data breaches is essential (Vincent-Lancrin & van der Vlies, 2020). Strong encryption methods, secure storage practices, and strict access controls are required to protect data. Further clear policies and guidelines should be implemented to ensure that data is used ethically and complies with privacy regulations. In the case of AI-driven educational initiatives, schools can build trust with stakeholders and create a safe learning environment for everyone involved by integrating data privacy and security (Cate & Dockery, 2021).

AI algorithms have become increasingly influential in shaping various aspects of society, becoming a significant issue in the last few years (Mittelstadt *et al.*, 2016). AI

algorithms are not immune to reflecting inherent biases in the data they are trained on. They can perpetuate and even exacerbate inequalities if not carefully designed and monitored, whether it be racial, gender, or socioeconomic bias.

Transparency and accountability are crucial to any educational system, especially when new technologies (AI) are introduced in classrooms (Chan, 2023). Teachers can build trust and foster collaboration by ensuring transparency in decision-making and making data accessible to all stakeholders (Shewbridge *et al.*, 2019). Moreover, the decision of all involved to hold the responsible parties accountable helps maintain ethical standards and ensures that educational goals are met effectively. Transparency about the algorithms used and accountability for the content generated is essential to ensure that students receive accurate and unbiased information in using AI to create fairy tales for teaching physics in primary education. Without these principles, there is a risk of bias and misinformation throughout the educational environment (Marian, 2023).

9. Further Research

The AI fairy tales make it possible to simplify complex scientific information and make it more accessible to young learners. Furthermore, using narratives customised to each student's learning style and interests could lead to higher retention rates and overall academic performance in physics. The findings suggest that integrating AI technology with traditional teaching methods can enhance the learning experience and improve educational outcomes in primary education settings.

The educational practice for AI fairy tales is to help students engage and understand complex concepts in primary education. Educators can create a more interactive and immersive learning environment that caters to diverse learning styles and preferences by integrating scientific principles with stories. Additionally, artificial intelligence can help teachers personalise learning materials to meet individual student needs, ultimately fostering a more personalised and practical learning experience. As technologies progress, AI emerges as a potential vehicle for improving the quality of education.

Further research using artificial intelligence to create fairy tales for teaching physics should focus on exploring the effectiveness of different storytelling techniques on student engagement and learning outcomes. The existence of longitudinal studies to assess the long-term impact of integrating AI-generated fairy tales into the curriculum would provide valuable insights into the sustainability of this approach. The ability to produce personalised fairy tales based on student's preferences and learning styles could further improve the adaptability of AI-generated fairy tales in the classroom. By addressing these research gaps, educators can make informed decisions about integrating AI technology in primary education to improve students' understanding of complex scientific concepts through engaging and interactive storytelling experiences.

10. Conclusion

The use of artificial intelligence to create fairy tales for teaching physics in primary education shows excellent promise in engaging young learners and making complex scientific concepts more accessible. Teachers can inspire a new generation of budding scientists and engineers by harnessing the power of storytelling and co-incorporating it with advanced technology. However, it is essential to note that AI cannot replace humans entirely and should be utilised to enhance the learning experience. Further research and development are needed to optimise the effectiveness of AI-generated fairy tales in the classroom. Is integrating AI in education potentially revolutionising how we teach and learn, paving the way for a more innovative and engaging education experience for students of all ages?

Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

Konstantinos T. Kotsis, from 1981 to 2000, served as a Faculty Member specialising in solid-state physics and x-ray diffraction at the University of Ioannina's Physics Department. Since 2000, he has been a Faculty Member at the Department of Primary Education at the University of Ioannina, and in 2012, he was a Full Professor specialising in Physics Education. He has experience teaching in many University Departments, such as Physics, Chemistry, Informatics, Biological Applications & Technology, and Primary Education at the University of Ioannina and Aristotle University of Thessaloniki, Greece. His team designed the new Greek curriculum for science teaching in primary education. He participated in many conferences in Greece and abroad. His articles have been published in scientific International and Greek journals.

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