Inland Norway University of Applied Sciences

LUP – Faculty of Education

Even Hammer

Master's Thesis

ChatGPT in the Classroom: The Teacher's Challenges and Opportunities in an AI Revolution

5-year Lecturer Education in Language and Literature

Spring 2024

Acknowledgements

Abstract

This master's thesis explores the integration of artificial intelligence, particularly ChatGPT, into English language teaching with the objective of enhancing student learning. The study delves into how this technology can be employed to complement traditional teaching and provide personalized support, while assessing implications for privacy and the preservation of core educational values. The research question is twofold; it aims to identify methods for effective AI integration in English teaching, as well as address ethical and practical considerations associated with AI usage. Issues of data privacy, student autonomy, and the maintenance of critical thinking and individual learning processes are central to this investigation. Through interviews with educators and a review of existing literature, the thesis highlights several key themes. Among these are the importance of the teacher's role in guiding and moderating AI usage, the need to facilitate diverse learning methodologies that embrace AI without compromising the development of independent knowledge, and the significance of ensuring privacy in the use of technological tools.

The thesis concludes that the integration of AI like ChatGPT into education has significant potential to enrich English teaching. This necessitates a balanced approach that supports individual learning paths and promotes digital competencies while safeguarding privacy and educational integrity. Furthermore, there must be an ongoing dialogue among educational professionals, technologists, and policymakers to ensure a responsible and sustainable integration of AI in education.

Sammendrag

Masteroppgaven utforsker integreringen av kunstig intelligens, spesielt ChatGPT, i engelskundervisningen, med mål om å forbedre studentenes læring. Studien analyserer hvordan denne teknologien kan brukes til å supplere tradisjonell undervisning og tilby tilpasset læringsstøtte, samtidig som den vurderer implikasjonene for personvern og opprettholdelse av utdanningens grunnleggende verdier. Problemstillingen i studien er tosidig; den søker ikke bare å identifisere metodene for effektiv integrasjon av AI i engelskundervisningen, men den tar også for seg de etiske og praktiske overveielsene som følger med bruk av AI. Spørsmål om datavern, elevautonomi, og bevaring av kritisk tenkning og individuell læring står sentralt. Gjennom intervjuer med lærere og gjennomgang av eksisterende litteratur, identifiserer oppgaven flere sentrale temaer. Blant disse er betydningen av lærerens rolle i å veilede og moderere bruken av AI, nødvendigheten av å tilrettelegge for en variert læringsmetodikk som omfavner AI uten å kompromittere dannelsen av selvstendig kunnskap, og betydningen av å sikre at personvern er ivaretatt i bruken av teknologiske verktøy.

Oppgaven konkluderer med at integrering av AI som ChatGPT i undervisningen representerer et betydelig potensial for å berike engelskundervisningen. Dette krever en balansert tilnærming som støtter elevers individuelle læringsstier og fremmer digitale ferdigheter, mens den ivaretar deres personvern og utdanningens verdier. Videre må det være en kontinuerlig dialog mellom pedagogiske fagfolk, teknologer og beslutningstakere for å sikre en ansvarlig og bærekraftig integrering av AI i skoleverket.

Table of Contents

1.0   Introduction

The arrival of artificial intelligence has catalyzed profound transformations across diverse sectors, also impacting operational paradigms in education (Zawaki-Richter et al., 2019, p. 1). In the realm of education, one notable AI development is ChatGPT, created by OpenAI. This conversational chatbot utilizes sophisticated natural language processing algorithms to generate responses that closely mimic human-like interactions. The ability of ChatGPT to produce coherent, informative, and contextually relevant text was for many reasons a gamechanger in countless sectors across the globe. Since its introduction on November 30, 2022, ChatGPT has experienced unprecedented growth, reaching approximately 180 million users by March 2024, with over 1.6 billion visits alone this January (SimilarWeb, 2024). This rapid adoption underscores its noteworthy influence on everyday digital communications and hints at its potential to transform educational methodologies. Nevertheless, the deployment of robust AI technologies within educational frameworks is accompanied by several challenges. There is an increasing concern regarding AI-facilitated cheating, where students may exploit such technologies to complete assignments or examinations, thereby undermining academic integrity. Consequently, several academic institutions worldwide have opted to prohibit access to ChatGPT during exams where aids are allowed (Vassdal, 2023). This thesis, however, chooses to examine the issue from the opposite end: namely, how artificial intelligence programs like ChatGPT can be utilized to enhance educational practices within schools, focusing, specifically on the English subject. The objective is to augment student learning while simultaneously safeguarding privacy and upholding educational values. Through conducting interviews with six distinct educators, this study aims to investigate teachers' perceptions of AI's role in the classroom and explore its potential to revolutionize the educational landscape.

1.1 The Purpose of the Study

I have referred to the increasing integration of artificial intelligence technologies in educational settings, particularly in English teaching. The widespread adoption of AI tools like ChatGPT has revolutionized the way educators and students approach learning and assessment, presenting new opportunities and challenges in the classroom. However, there has not been as much emphasis on the ethical considerations and privacy concerns associated with these technologies. While AI has the potential to enhance learning outcomes, it also raises questions about how student data is managed and protected, and how the use of AI aligns with educational values.

As an ambitious and upcoming teacher, I feel close with the knowledge base and mindset of contemporary students of this generation. It is imperative for me to remain current with their evolving learning strategies and areas of interest. Given the potential of artificial intelligence as a transformative tool in education, I am convinced that its integration will benefit both educators and future students. To optimize the impact and learning outcomes of AI, establishing early bridges for its effective use is of paramount importance. By comprehensively understanding the technological tendencies and learning preferences of the current generation, my objective is to foster an educational environment that aligns with their needs. In doing so, I seek to leverage artificial intelligence as a strategic asset to enhance pedagogical methods and improve student performance. My commitment to continuous professional development and to forging connections between traditional teaching and emerging technologies ensures that I am well-prepared to integrate AI into my instructional practices. I also wish to contribute to the development of guidelines and best practices for the responsible use of AI in educational settings, ensuring that the technology is used to support rather than undermine the teaching and learning process.

1.2 Research Question

This study explores teachers' perceptions of the challenges and opportunities they encounter when implementing OpenAI technology in the classroom. The study aims to analyze how teachers adapt their instructional practices to accommodate this technology, as well as the strategies they use to help students develop their subject-specific skills. Additionally, the study focuses on how individual privacy is safeguarded when using such technology in schools.

I sought to approach this issue from an objective standpoint, albeit from the teachers' perspective. The goal of this thesis is to determine whether AI in education is a viable path forward for Norwegian schools. Relevant reports, such as the one from the Norwegian Government's Security and Service Organization (Regjeringen, 2020), cover some related topics, ranging from the basics of AI to regulatory frameworks, research, higher education, and skills development. However, this specific report is over four years old and therefore outdated. The aim in this thesis is to focus primarily on schools concerning the implementation of artificial intelligence. Given these considerations and the study's objectives, the following research question was formulated:

"How can the educational system integrate artificial intelligence, such as ChatGPT, into English teaching to enhance student learning while maintaining privacy and educational values?"

This question explores how integrating artificial intelligence in English teaching can improve learning potential while maintaining privacy and other educational values in schools.

1.3 Thesis Structure

The thesis comprises six chapters. The first chapter introduces the background of the study, outlines its objectives, and clearly defines the research question. This is followed by a justification for examining the study from a teacher's perspective, along with a review of the current state of knowledge, particularly focusing on learning theories and the integration of artificial intelligence. The theoretical framework, which addresses artificial intelligence in education, is then discussed. Subsequently, a methodology chapter outlines the chosen method for addressing the research question. In the fourth chapter, a comprehensive presentation of the findings is provided. The fifth chapter involves a discussion of a selection of findings considering the theoretical framework and existing knowledge base. Finally, the thesis concludes with summarizing remarks.

2.0 State of Knowledge and Theoretical Framework

In this chapter, the current state of knowledge will be elucidated and the theoretical framework that is deemed relevant for adequately will address the research question. Therefore, the chapter will highlight three distinct "main topics," covering the theoretical necessities for later discussion in the paper. The theoretical foundation for artificial intelligence in learning environments will primarily delve deeper into the concept of "learning," in addition to enriching two learning theories that I consider pertinent to the study. Given their widespread use and recognition within educational environments globally, it appears both logical and purposeful to employ cognitive learning theory alongside behaviorist learning theory as theoretical starting points for this study. The cognitive theory, with its in-depth exploration of the internal cognitive processes that underpin learning, and the constructivism theory, which focuses on classroom practices that emphasize the student's active role in the learning process. Teachers who adhere to constructivist principles encourage exploration, questioning, and discussion, and they create learning environments that allow students to construct their own understanding through experiences and interaction with others (Asiksoy & Ozdamli, 2017, p.134). The further application of artificial intelligence in school contexts represents an innovative and potentially revolutionary element in this complex. This creates a fascinating interdisciplinary field that unites pedagogical theory with technological innovation and expands the boundaries of traditional learning environments. With the supplementation of this, there is a greater chance of finding answers to whether the educational system can integrate artificial intelligence, into English teaching to enhance student learning while maintaining privacy and educational values. Furthermore, there will be a detailed exploration of the framework surrounding artificial intelligence, including issues related to privacy and digital ethics arising from the deployment of such technology in educational systems.

2.1 Theoretical Foundation for Artificial Intelligence in Learning Environments

2.1.1 Understanding the Dynamics of Learning

The learning process is continuous and occurs through the interaction between new insights and pre-existing understandings. Establishing a precise definition of the concept of learning presents certain challenges, due to its complex nature and dependence on a multitude of factors. Knud Illeris holds a professorial position in the field of lifelong learning at the Danish University of Education (Gyldendal, 2024). Through his research, Illeris has significantly contributed to the academic discourse on learning, by deepening the understanding of this complex phenomenon. Illeris describes learning as a process that results in a lasting change of capacity in living organisms, a change that cannot solely be attributed to forgetting, biological maturation, or the aging process (2014, p.12). He deliberately uses an "open" formulation, as learning represents a phenomenon that encompasses a broad and complex range of processes. A comprehensive understanding of learning involves not only insights into the learning process itself and its formative aspects but also the recognition of the conditions that underlie, influence, and are influenced by learning activities. Therefore, any conceptualization of learning must be situated within a more expansive contextual framework.

The foundation for understanding learning rests on human intellect and rationality, as well as the individual's capacity to perceive and comprehend. This core aspect includes the biological, psychological, and societal aspects that are part of every learning situation (Illeris, 2014, p. 12). The essence of learning is defined as the processes that must be active for learning to occur, and these processes operate in parallel. The first process involves the interaction between the individual and their social and material environments. The second process consists of the internal processing and assimilation of knowledge at the individual level, where new impulses are integrated with the results of previous learning processes, thus creating new perspectives. A critical aspect of this process is that the learning outcome is a synthesis of new impulses and the already established knowledge and understanding, resulting in a personal product that varies from individual to individual, given the different prerequisites (2014, p. 16).

Regarding the application areas for learning, it is established that learning is a fundamental condition of life, used in all aspects of life. However, in modern society, a distinct sphere has evolved where learning plays a significant role, namely within the education sector. This

sector engages individuals at various levels, driven by societal necessities or targeted learning. Illeris observes that in the educational policy context, there has been a tendency over the last five decades to view learning as a form of production process, where humans, with their innate learning potentials, are considered "raw material" that is processed through various pedagogical methods. By analyzing learning in terms of the complex process it is, it becomes clear that this "production thinking" about human learning is insufficient. The relationship between "input" and "output" in learning depends on a multitude of internal and external human factors, where individual and collective prerequisites, ways of thinking, emotions, passions, interests, and preferences come into play. This underscores the argument that such a reductive approach to learning is problematic, as learning is highly dependent on qualitative human conditions (2014, p. 32-35). Therefore, the integration of AI in schools could potentially serve as a bridge between the traditional production-oriented mindset and a more holistic understanding of learning that values human qualities and individual differences. By doing so, educational systems can potentially offer more effective learning experiences that reflect the complex nature of human learning and meet the genuine need for personalization in the educational process.

2.1.2 Cognitive Theory and Artificial Intelligence

Within the framework of cognitive theory, the human being is viewed as remarkably adaptable, capable of adjusting to significant changes and variations in environment. The terms "cognition and development" are comprised of activity, and it is this activity that constitutes the primary force driving the evolution of human self-regulation (Egeberg et al., 1992, p. 237). Jean Piaget portrayed humans as both social and active beings. According to Piaget, there exist four intrinsic motivations within humans that are important to the development of human cognition. The first is maturation of the entire human system, particularly highlighting the development of the nervous system. The second motivational force, Piaget emphasized the role of action and experience, which he regarded as fundamental conditions for human development. An action consists of both an external and an internal component - the former being tangible and the latter involving cognition (Egeberg et al., 1992, p. 236).

Social interaction constitutes the third driving force in development, predicated on the notion that it is through social interactions that individuals accrue experiences, which are, in turn, contingent upon social engagement. The fourth element in development is self-regulation. While Piaget considered the first three elements to be of utmost importance, they were not, in

his view, sufficient for a full comprehension of cognitive development. He believed that the developmental impetus is the individual's capacity for self-regulation, which steers towards equilibrium or adaptation. This equilibrium, or balance, is intangible but manifests as an innate human inclination towards adaptation. The process of achieving equilibrium operates as an adaptation process - a dynamic interaction where the individual modifies the external to fit the internal and vice versa. Piaget referred to these adaptive processes as assimilation and accommodation. Assimilation is an active human adaptation process whereby individuals apply pre-existing behavioral patterns or frameworks. Piaget defined our previously integrated experiences, frameworks of understanding, and modes of thought as "schemas" that everyone possesses. In an assimilation process, there is no change. Latest information is simply incorporated into an existing schema, resulting in "no change." Conversely, in the process of accommodation, considered the most active form of adaptation, individuals modify their prior experiences and ways of thinking to accommodate new ones, or they integrate new experiences with those already existing. In this process, "changes" are made to the schema to accommodate information that does not fit naturally, thereby altering the schema to make room. When these changes occur, the information can be added to existing knowledge (Egeberg et al., 1992, pp. 237-238).

In cognitive learning theory, individuals are understood as active beings. This theory distinguishes between information and knowledge. Information can be transferred between individuals, but knowledge lacks this "transferability"; knowledge only arises when an individual contextualizes information, building upon what they already know. Assimilation merely stores the information within the "schema," whereas accommodation alters the existing "schema." When the schema is changed, information can be added to the knowledge already possessed. According to cognitive learning theory, learning represents a "restructuring" of how the individual perceives. Learning occurs only when the "schema" changes, that is, through the modification of the cognitive schema. Knowledge acquisition, within this theoretical framework, is an "active" process; here, all information is reprocessed at the individual level before being integrated with the knowledge already held. The premise of such a cognitive learning theory is that all learning occurs within the individual and is situated, meaning that it takes place within a context. From an epistemological stance, it is posited that the learner is afforded the opportunity to evaluate added information against their existing knowledge base, facilitating the formation of new knowledge structures.

Within the ambit of cognitive theory's emphasis on human adaptability, active engagement, and the intrinsic drive towards self-regulation, the integration of artificial intelligence in educational settings can be perceived as a natural extension of these principles. AI technologies, when implemented thoughtfully within the school environment, have the potential to facilitate personalized learning experiences that align with Piaget's conceptualization of cognitive development.

2.1.3 Constructivist Approaches to Technology in Learning

Constructivism represents a pedagogical strategy that influences the development of instructional methodologies, emphasizing the individual's role in generating knowledge through the integration of their existing knowledge, abilities, and competencies (Isik, 2018, p.705). This educational philosophy emerged with the goal of enhancing the effectiveness and durability of learning, adapting traditional teaching methods to foster a novel approach to education (Kiyci, 2003, as cited in Isik, 2018, p. 705). Laney (1990) articulates that within the framework of a constructivist pedagogy, the integration of technology plays a pivotal role in fostering the development of advanced cognitive abilities. This includes the enhancement of skills critical for the identification and resolution of complex problems, as well as the generation of appropriate and effective solutions.

The integration of technology within educational settings is increasingly recognized as a component in facilitating effective learning environments. This recognition is grounded in a growing body of research that underscores the multifaceted benefits of technology use in education. Technology refers to the set of tools and methods created by humans to influence and modify their physical environment, along with the accumulated knowledge related to these processes (Isik, 2018). Notably, Bagley and Hunter (1992) have elucidated that students leveraging technology resources not only utilize a broader array of learning materials but also exhibit heightened enjoyment in learning processes. Furthermore, they develop a diverse range of ideas alongside advanced reasoning capabilities. This evidence aligns with the assertions made by Dwyer et al. (1991), who advocate for technology as a potent instrument for enacting the core principles of constructivism, particularly the emphasis on experiential learning. The constructive interaction between constructivist pedagogy and technological tools facilitates a learning paradigm that is collaborative, interactive, and centers on the learner, consequently fostering positive shifts in student attitudes characterized by enhanced self-efficacy and motivation.

Operating within the constructivist paradigm, which is grounded in the belief that learners actively construct their knowledge through a deliberate engagement with scientific methodologies, both the depth and diversity of the educational environment, as well as the cognitive abilities of the learners, play an essential role in the facilitation of knowledge acquisition. The employment of computer-assisted educational instruments serves to enrich this educational landscape. These tools enable the seamless integration of real-world situations into the classroom using multimedia animations that synergize auditory and visual components, thereby significantly augmenting the learning experience. This technological integration does more than just enhance; it transforms the educational environment into a rich, multi-sensory experience that aligns closely with constructivist ideals. By bringing elements of the external world into the learning space in a dynamic and interactive manner, computer technology not only supports but elevates the learning process. It enables learners to engage with content in a more meaningful, contextualized way, promoting a deeper understanding and retention of knowledge. Hence, the strategic implementation of computer technology in educational settings is not merely an enhancement but a fundamental component in the realization of a constructivist approach. It facilitates the creation of comprehensive and immersive learning environments that are essential for the genuine application of constructivist principles. Through such technologically enriched learning spaces, learners are not only observers but active participants in their own educational journey, navigating through complex concepts and ideas with greater autonomy and engagement. This approach not only aligns with the constructivist philosophy but also prepares learners for the complexities and challenges of the modern world by fostering critical thinking, problem-solving, and the ability to apply knowledge in diverse and changing contexts (Isik, 2018, p. 709).

Research has demonstrated that technological instruments play a vital role in enhancing the constructivist learning model by leveraging an individual's existing knowledge base. These tools are instrumental in accommodating diverse learning styles and needs, facilitating access to vast informational resources, and crafting experiential learning opportunities. Furthermore, technology's versatility extends to fostering personalized learning paths, promoting lifelong education, and accommodating on-demand learning needs. It also bolsters collaborative learning endeavors by facilitating process evaluation and fostering effective communication channels. This technological intervention allows for a curriculum that is not only flexible but also tailored to the learners' requirements, thereby nurturing the development of advanced cognitive abilities and skill sets. It aids in organizing learning environments that are

conducive to active, experiential learning, further encouraging the development of a constructive attitude towards educational pursuits. By facilitating such dynamic learning environments, technology plays a crucial role in transforming traditional educational models to better suit the demands of contemporary learners, thereby contributing significantly to the overall learning experience (Isik, 2018, p. 706).

The potential of technology to enhance the learning experience is significantly amplified when it is underpinned by a pedagogical framework that emphasizes a curriculum which is both well-organized and centered around the learner's journey. Riel (1990c) posits that technological advancements in and of themselves do not precipitate transformative changes in educational practices. Rather, it is the dynamic interplay between these technological tools and the learners, along with the emergent collective vision from this interaction, which informs and shapes the curriculum, thereby influencing the overall pedagogical process. In the contemporary educational landscape, computers and the Internet occupy a decisive role, primarily due to their capacity to manage and disseminate the ever-expanding volumes of information (Asiksoy & Ozdamli, 2017, p. 134). The deployment of computer technologies within educational settings transcends merely preventing student disengagement; it serves to elevate motivation levels through the provision of an interactive learning milieu. Moreover, this digital environment facilitates enhanced concentration on curricular content. The adoption of technology-driven pedagogical strategies allows for a more nuanced and effective expression of ideas and concepts by both educators and learners, marking a significant departure from the constraints associated with traditional educational methodologies (Asiksoy & Ozdamli, 2017, p. 134).

Moersch (1999) suggests that the judicious application of technology can enhance the cultivation of advanced cognitive and complex critical thinking skills. In an era dominated by information, individuals are compelled to retrieve, analyze, and synthesize new data. Contemporary educational paradigms emphasize learning through exploration and firsthand activities. While traditional educational settings may offer a variety of activities, they rely on paper-based methods. Conversely, the adoption of digital tools facilitates the utilization of interactive, multimedia-supported activities, providing a more engaging and effective learning experience (Gunes, 2014, as cited in Isik, 2018, p. 709).

The fusion of constructivist pedagogy and technology, including the prospective integration of AI, presents an exciting frontier for education. This convergence promises not only to enhance the efficacy and engagement of learning but also to prepare learners more effectively

for the complexities of the modern world. To realize this potential fully, one must ensure that technology's use is guided by sound pedagogical principles and that ethical considerations are at the forefront of technological integration in educational settings. Through such collaborative and thoughtful approaches, the promise of technology to revolutionize education in alignment with constructivist principles can be fully actualized.

2.2 Theoretical Framework for Understanding the Concept of "Artificial Intelligence" in School

Including a section about this relevant topic is crucial for the thesis because it provides a foundational understanding of how artificial intelligence functions within educational settings. This section will help contextualize the study by examining the key concepts, principles, and frameworks that define artificial intelligence in the school sector. This theoretical grounding also lends credibility to the research by demonstrating that it is informed by established knowledge and scholarly insights in the field of AI and education.

2.2.1 What is Artificial Intelligence

Artificial intelligence is defined as the capability of computers and robots to execute tasks that traditionally necessitate human intelligence. The esteemed Norwegian professor Jim Tørresen articulates that the field of artificial intelligence is fundamentally concerned with "developing computer systems that can exhibit the most sophisticated levels of intelligent perception, reasoning, and response" (2013, p. 14). This technology has witnessed substantial advancements in recent years, significantly enhancing the capabilities of AI systems (Bareksten, 2023, p. 7). These advancements have led to the development of AI systems equipped with remarkable abilities, including language translation and text generation. One of the core technologies enabling these capabilities is the neural network, a type of machine learning system that processes vast amounts of data. Through this data processing, neural networks can "train" themselves to recognize patterns and solve complex problems, thereby emulating human problem-solving and decision-making processes to a certain extent (Bareksten, 2023, p. 7).

Large Language Models (LLMs) represent a sophisticated subset of artificial intelligence systems specifically designed to understand and generate human language. These models engage in extensive training processes, utilizing advanced machine learning methodologies to process and analyze large volumes of textual data. This analysis helps the models discern statistical patterns and structures inherent in language, thus equipping them with the ability to

perform a variety of functions. These functions include translation, speech recognition, and text generation. Moreover, LLMs also serve as interactive learning aids across diverse academic disciplines, thereby enhancing the development of natural language processing technologies and improving human-computer interactions, especially in educational and professional settings (Bareksten, 2018, p. 21). Therefore, it is intuitive to say that artificial intelligence is continuously expanding into new application areas, including the education sector. Although the technology is still in the preliminary stages regarding its pedagogical use, the potential for enhancing and streamlining learning processes is significant. For educators, various forms of artificial intelligence can contribute to increased structure within professional learning communities, the development of customized and individualized instruction, the liberation of time, and the enhancement of teaching to make it more engaging and motivating for students. This integration of AI in educational contexts promises to revolutionize traditional teaching methodologies and support personalized learning trajectories (Bareksten, 2023, p. 21).

Despite these significant technological advancements, it is important to note that contemporary AI systems still exhibit fundamental limitations when compared to human intelligence. These systems are often characterized by their narrow scopes of application—they are engineered to excel at specific tasks but lack the capacity to exhibit general intelligence. This specialization means that while AI systems can perform certain tasks with remarkable efficiency, their ability to adapt to new or unforeseen challenges in the same way humans can is still underdeveloped (Bareksten, 2023, p. 8). Overall, the evolution of AI technologies such as neural networks and Large Language Models represents a significant leap forward in our ability to harness the power of artificial intelligence. Future research endeavors within this field are likely to focus on the development of more generalized AI systems that can perform not only isolated tasks but also reasoning, planning, and solving problems across various domains or disciplines more efficiently. This transition from specialized to adaptive, flexible intelligence systems aims to mimic human capabilities to apply knowledge and skills in varied and unpredictable circumstances. The development of such systems will necessitate a deeper understanding of underlying cognitive processes and the ability to reconstruct these processes within machine environments, representing one of the most ambitious and challenging frontiers in modern artificial intelligence research (Bareksten, 2023, p.8).

2.2.2 Integrating ChatGPT into Classroom Learning and Information Retrieval

A chatbot can be described as a sophisticated software application precisely engineered to simulate interactive conversations with human users, primarily through text or voice interactions. The underlying framework of a chatbot incorporates advanced mechanisms that facilitate the systematic training of a chatbot instance. This critical training process involves the strategic integration of curated sample dialogues into the chatbot's expansive database, which either initiates or enhances the graph data structure. This structure meticulously delineates the sets of recognized statements along with their corresponding responses, forming the backbone of the chatbot's operational capabilities. Upon the gaining of a new dataset, the chatbot trainer plays a fundamental role in generating the necessary entries within the chatbot's intricate knowledge graph. This precision ensures that both the input statements and their correlated responses are accurately represented within the system, thereby significantly improving the reliability and relevance of the chatbot's outputs. This systematic and structured approach to training not only enhances the chatbot's ability to respond in a contextually appropriate and timely manner but also significantly improves its interactions with users, making it a more effective communication tool (Hiremath et al., 2018, p. 40).

ChatGPT has been frequently recognized as an exceptionally efficient and user-friendly tool for information retrieval. A study conducted by Skjuve et al. illuminated the participants' appreciation for ChatGPT's advanced capability to comprehend and process complex inquiries, which facilitated the efficient acquisition of the necessary information (2024). The effectiveness of ChatGPT in understanding and addressing these complex queries was particularly highlighted for its ability to reduce the need to reformulate questions multiple times, a common and frustrating issue encountered with traditional search engines. This key attribute of ChatGPT not only enhances user satisfaction but also significantly streamlines the information retrieval process, offering a more seamless and effective alternative to conventional search methods (Skjuve et al., 2024, p. 9). Additionally, text generation has emerged as a prominent productivity-oriented feature in ChatGPT's arsenal, highlighting its capability to produce extensive textual outputs in a variety of formats including essays, paper summaries, and detailed reports. The use of ChatGPT has been noted to significantly contribute to time savings while simultaneously maintaining the high quality of the output. This dual advantage highlights ChatGPT's utility in facilitating efficient document creation across a spectrum of professional and academic contexts, underscoring its value as a versatile

and indispensable tool in modern digital environments (Skjuve et al., 2024, p. 9). In the realm of writing support, individual users have increasingly turned to ChatGPT as a cornerstone technology to kickstart their writing projects. These users not only employed the program to initiate their creative or academic writing tasks but also utilized it to refine their sentence structures and explore alternative expressions, enhancing both clarity and style. This multifaceted use of ChatGPT underscores its role as an auxiliary tool in the writing process, offering significant enhancements in structural coherence and stylistic variety (Skjuve et al., 2024, pp. 9-10).

Moreover, according to Skjuve et al., a substantial portion of interactions with ChatGPT involved users posing a wide range of questions or requesting the execution of diverse tasks. These exploratory activities served not only to evaluate the capabilities of the chatbot but also to explore its potential applications in real-world scenarios. For instance, users engaging with ChatGPT in these capacities often discovered its effectiveness as an educational aid, further advocating for its practical integration into academic environments. Such explorations highlighted ChatGPT's versatility as a study tool, capable of assisting students and educators alike by providing quick, reliable answers and facilitating a deeper understanding of complex subjects (2024, p. 11). This strategic engagement with ChatGPT goes beyond mere curiosity about a novel technology; it represents a deliberate effort to harness AI to enrich educational practices and enhance learning experiences. The insights gained from these interactions emphasize ChatGPT's value not just as an advanced technological innovation, but as an instrumental resource in academic settings. Its ability to simulate conversational exchanges and generate informative, contextually appropriate responses makes it an invaluable tool in fostering a more interactive and engaging educational environment. This utility of ChatGPT as a transformative educational tool reflects a broader trend towards the integration of sophisticated AI technologies in educational frameworks, aiming to elevate the quality and accessibility of educational resources across diverse learning platforms.

2.3 Privacy and Digital Ethics

While artificial intelligence systems offer substantial opportunities, their development requires responsible management to ensure compliance with ethical standards, privacy protections, and the promotion of human welfare. The challenges posed by these technologies demand the creation of meticulously crafted regulatory frameworks that operate at local, national, and international levels. These governance structures must strive to harmonize innovation with the protection of societal values. This approach will facilitate the integration of AI across various sectors while mitigating potential abuses and ensuring that advancements in AI positively impact societal progress (Bareksten, 2023, p. 9). With the increasing complexity and autonomy of AI systems, there is a corresponding rise in the potential for significant impacts on human lives, often in ways that are difficult to predict or fully understand. A central ethical dilemma, therefore, is how to ensure that AI systems operate within frameworks that respect human rights and avoid discrimination or harm to individuals. This requires the development and application of AI that actively promotes principles of fairness and ethical accountability.

The responsibility weighs heavily on the developers of such systems, who must consider the potential far-reaching consequences of the technology they create. Additional ethical considerations, such as privacy and data security, are becoming increasingly urgent as AI models require substantial amounts of data to function effectively, potentially endangering individual privacy. The misuse of personal data poses a serious threat to individual freedom and human rights, making it imperative that legislation ensures that data is used in an ethically responsible manner. It is also essential that individuals maintain control over and self-determination regarding their own data. A third important ethical aspect of AI involves the need for transparency and the ability or willingness to explain decision-making processes, which is crucial for maintaining trust in the technology. To ensure responsible and ethical use of AI, continuous dialogue among researchers, government authorities, the business community, and civil society is necessary. Fundamental values such as fairness, non-discrimination, and respect for human dignity must be core values in this dialogue. Through collaboration and comprehensive regulation, AI can be developed in a manner that positively serves humanity. In a global context, international cooperation is also vital, as AI does not recognize national boundaries. Therefore, it is important to work towards establishing common ethical standards and guidelines that can guide the development and application of this transformative technology (Bareksten, 2023, p. 11).

2.3.1 Ethical Principles for the Use of Artificial Intelligence

In his influential 1985 article "What is Computer Ethics," James Moor first introduced the concept of a "policy vacuum," pointing out that the rapid development of modern technologies often outpaces the establishment of necessary regulations and ethical guidelines (Bergsjø & Bergsjø, 2019, p. 13). This persistent gap, Moor argued, means that there are invariably insufficient guidelines to address the latest technological advances (Bergsjø et al., 2020, p. 123). His work laid the groundwork for the field of digital ethics, underscoring the need for ethical frameworks because computers operate in unseen ways. They can be programmed to act unfairly or to commit theft, even without explicit instructions to do so, making such activities incredibly difficult to detect (Bergsjø & Bergsjø, 2019, pp. 13-14). Bergsjø and Bergsjø further note that technology is inherently not neutral (2019, p. 15).

According to Gartner, an international analysis firm, the success of technologies, particularly those based on artificial intelligence, hinges on robust digital ethics (Hare et al., 2018, cited in Bergsjø, 2022, p. 103). This is particularly relevant as artificial intelligence finds its way into educational settings, offering a new lens for ethical and pedagogical examination. The purpose of digital ethics, as Bergsjø and Bergsjø (2019, p. 16) emphasize, is to maximize the benefits of modern technologies towards enhancing the good life, while identifying and mitigating potential risks. He also touched on the evolving nature of learning in the digital age. He speculated on the implications of computers not just assisting with learning, but reshaping the very content and methods of education, and even the definition of learning itself (Bergsjø & Bergsjø, 2019, p. 14). He questioned the role of human interaction in learning and what education means in an era where machines take on teaching roles (Bergsjø, 2022, p. 106). These once speculative ideas have become more concrete as technology increasingly infiltrates our educational systems, suggesting that students might not only learn differently but could also achieve greater independence and productivity, potentially reallocating time from writing to other learning activities. Following the pioneering work of James Moor, the landscape of modern technology development has been shaped by several factors that emphasize the growing need for robust digital ethics. One significant factor is the broad reach of technology; information can be shared globally, anonymously, and instantaneously, raising substantial ethical questions. Moreover, technology development targets a global market, engaging diverse cultural and ethical norms. Particularly critical, and the most severe, is the increased internet connectivity of children and other vulnerable groups, intensifying the risks and ethical dilemmas associated with technological access and usage (Bergsjø et al., 2020, p.

124). Moor argued that we exist in a conceptual vacuum, witnessing shifts in fundamental concepts without a complete understanding of the far-reaching consequences of the technological revolution. This highlights the complexity and uncertainty that accompany technological innovations, underscoring the urgent need for an ethical framework to guide these changes (Bergsjø et al., 2020, p. 124).

In this context, Bergsjø et al. (2020, p. 124) also examine the digital tools currently being implemented in the educational system. They question the effectiveness of these technologies in both the short and long term, and their impact on social interactions among students and between students and teachers. These inquiries are crucial to evaluate not only the educational benefits but also the potential social costs associated with the increasing integration of digital solutions in the education sector.

2.3.2 Data Management and Protection of Student Information

The utilization of ChatGPT in educational settings involves significant risks associated with the access to sensitive student information, such as essays and assignments. This raises concerns about data security and how well these data are protected and managed in accordance with applicable privacy laws (Dwivedi et al., as cited in Sok & Heng, 2024, p. 5). Should such information fall into the wrong hands, ChatGPT could potentially be used in harmful ways. This presents a substantial challenge for lecturers and students who typically may not possess technical expertise or are less aware of internet security concerns (Tlili et al., 2023, as cited in Sok & Heng, 2024, p. 5).

Reflecting these concerns, the national strategy for artificial intelligence, unveiled on January 14, 2020, emphasizes ethical principles in the development and application of AI in Norway. The strategy highlights the importance of AI respecting fundamental human rights and establishes seven principles for ethical AI. These principles include respecting human autonomy, ensuring safety and robustness, consideration for privacy, transparency, and verifiability, promoting inclusion and diversity, societal usefulness, and clear accountability. These principles are intended to apply both to situations involving personal data and to the industrial use of AI (Bareksten, 2023, p. 12).

The collection and dissemination of sensitive personal data represent significant issues within data management. Applications and online services accumulate detailed information about their users, which is often sold to advertisers and analysts. This process enables the creation of highly detailed user profiles that can reveal extensive information about a person's interests,

health, and behavior patterns. Even though these data are frequently anonymized, research has demonstrated that individuals can still be identified using artificial intelligence. Despite regulations such as the General Data Protection Regulations (EU) enhancing individual rights, challenges remain substantial (Bareksten, 2023, p. 10).

Artificial intelligence has also raised increased concerns regarding privacy. AI systems collect and analyze vast amounts of data, including personal information, to train their algorithms. This capability enables the systems to accurately identify faces, voices, and behavioral patterns. While this technology offers valuable applications, it also poses significant privacy risks. One major challenge is that the use of artificial intelligence often occurs in ways that complicate obtaining consent from the individuals from whom the data originates. Bareksten highlights an example related to facial recognition technology: companies may train their algorithms using extensive datasets of images sourced from the internet, without the knowledge or consent of the individuals depicted. When this technology is then deployed for surveillance in public spaces, it can identify and track people's movements without their awareness. This poses a direct threat to privacy. Similar issues arise when private images are shared without the owner's consent, which is illegal (2023, p. 10). These developments emphasize the need for stricter regulations and more comprehensive protection of personal data as technology advances and the integration of artificial intelligence into our society and school environments continues.

Despite the growing number of users, integrating ChatGPT in higher education presents challenges, particularly concerning data privacy and security. This arises as students and lecturers may share personal or sensitive information while interacting with ChatGPT, leading to potential risks such as the misuse of students' information for non-academic activities, unauthorized access to learners' data, and security breaches (Sok & Heng, 2024, p. 5). According to OpenAI, they are currently assuring that ChatGPT does not collect personal information from students (2024). However, the temptation to develop useful services in the future that rely on student profiling and AI memory persists. It is crucial to recognize that the utility of a service should not compromise privacy, as privacy is a complex issue. This approach emphasizes the need for careful consideration of how digital tools and services are implemented in the education sector, with a particular focus on protecting personal information and maintaining high standards for data security. There are various methods that can facilitate and secure the sharing of data among different stakeholders, further strengthening this approach, according to the Norwegian government.

The first concept is a method known as a "Data Lake." A data lake represents a centralized repository where data can be stored in its original format, including both structured and unstructured data, typically within a cloud service. There is no requirement for the data to be structured or labeled before storage. Subsequently, these data can be retrieved for use in various applications, such as machine learning or other analytical processes. In addition to data lakes, there are legal structures known as "data trusts." These are arrangements where a trusted third party manages the data and determines how and with whom the data should be shared, within the boundaries established for the foundation. Furthermore, confidentiality-protecting interfaces have been developed that enable the performance of analyses on registry data, which contains personal information from multiple sources, without exposing data about individuals. An example of this is the Remote Access Infrastructure for Register Data (RAIRD) project, a collaboration between Norsk senter for forskningsdata (NSD) and Statistisk Sentralbyrå (SSB). Synthetic data presents itself as an alternative to personally identifiable or anonymized data. By producing synthetic datasets that retain the original datasets' properties, these can be used for training algorithms or as test data. Thus, such datasets can be made available for research and innovation without compromising privacy, even though the original data are sensitive (Regjeringen, 2020, p. 17).

The future will likely require a balance between exploiting the benefits of artificial intelligence and safeguarding privacy. Transparent and ethical use of the technology is crucial. AI systems should be designed to collect minimal data. Furthermore, individuals should be given greater control over their own data, including the right to decline certain types of analyses. Stricter requirements must also be imposed on companies using AI, to ensure that the technology serves the interests of the community. Responsible use will enable the benefits of AI without sacrificing privacy, which also necessitates a sharp focus on ethical considerations (Bareksten, 2023, p. 10).

3.0 Method

In this chapter I explain the study's method and structure. The study is inspired by a hermeneutic and phenomenological scientific perspective. I have used a qualitative method and a qualitative research interview. The chapter also deals with selection, the recruitment process of informants and the choice of analysis.

3.1 Hermeneutics and phenomenology

This study is rooted in a hermeneutic and phenomenological scientific tradition and is based on a qualitative method in the form of interviews. Descriptions of the informants' experiences refer to a phenomenological procedure, while its interpretation refers to hermeneutics (Brottveit, 2018).

Hermeneutics is fundamentally associated with the theory of text interpretation. Initially, its objective was to facilitate an authentic comprehension of textual meanings (Thagaard, 2003). Over time, the scope of hermeneutics has broadened and is now commonly applied to the interpretation of all forms of human expression (Brottveit, 2018). This discipline underscores the necessity of interpreting human actions by seeking meanings that extend beyond the superficially evident (Thagaard, 2003). Gilje & Grimen (1993) assert that this perspective presupposes that one's engagement with the world is never devoid of preconceptions. Within the hermeneutic framework, researchers interpret situations and responses to inquiries through the lens of their pre-existing beliefs (Gilje & Grimen, 1993). It is crucial to acknowledge that a researcher's interpretation is neither free nor independent. The researcher is constrained by their own horizon of understanding, which comprises both conscious and unconscious attitudes and perceptions (Brottveit, 2018, p. 35). Central to this concept is Gadamer's notion of pre-understanding, which posits that such pre-understanding is indispensable for any genuine comprehension to occur (Malterud, 2017). As researchers encounter updated information, they inevitably develop subjective interpretations influenced by their expectations and prior experiences (Brottveit, 2018, p. 35).

In hermeneutics, it is a foundational principle that phenomena are interpreted within their specific contexts, as meaning is inherently context dependent. The interpretation of phenomena is contingent upon the interpretation of the context, and reciprocally, the context is understood through the interpretation of phenomena. This interdependence extends to the hermeneutic approach of understanding the whole through the interpretation of its individual components (Brottveit, 2018, p. 34). The analytical process facilitated a deeper understanding

of this principle. The informants' statements became comprehensible when contextualized within the overarching themes of the interviews. Similarly, the themes were further explicated through the utilization of quotations from the informants.

Phenomenology is grounded in the subjective experiences of individuals and aims to uncover the deeper significances embedded within an individual's lifeworld. The goal of the researcher is to comprehend a phenomenon within the specific context of its occurrence (Thagaard, 2003). Through this approach, it becomes possible to articulate our "lived experiences" in relation to our "lifeworld" to others (Brottveit, 2018, p. 52). In this context, phenomenology is pivotal to the study as it investigates the meanings that informants, who are teachers in this instance, ascribe to their experiences related to the phenomenon under study. This aligns with the research's objective to elucidate these experiences (Thagaard, 2003).

3.2 Qualitative method

Qualitative methods prioritize depth and emphasize the significance of words and meanings over numbers and measurements, which are typically the focus of quantitative approaches (Bryman, 2012). Employing a qualitative methodology allows researchers to gain a deeper insight into social phenomena through interactive dialogue and sustained relationships with informants. It has been particularly advantageous that the teachers interviewed were able to elucidate and reveal their experiences. Consequently, it was crucial to engage teachers who possess genuine and direct interactions with students who utilize and have utilized ChatGPT within educational settings. This approach was vital for achieving a comprehensive understanding of the subject area. Discovering instances where this form of artificial intelligence may have been misused in schools could also illuminate ways it might be effectively employed to enhance learning and motivation. Given the objectives of this study, qualitative research methods are deemed appropriate. This approach facilitates an in-depth exploration and description of teachers' subjective experiences within their specific environments. Qualitative methodology delves into the contextual settings, aiming to identify patterns in our understandings and practices, and to interpret their implications for individuals. It also examines how these practices are connected to the situations in which they occur and the types of dynamics that operate, such as within a classroom setting. The emphasis on the content of meaning in social phenomena, as experienced by participants, necessitates that the researcher maintains openness to comprehensively capture the informants' perspectives (Thagaard, 2003; Postholm, 2010).

3.3 Data Collection - Semi-structured Interview

In this study, semi-structured interviews were conducted using an interview guide (see Appendix 3), which was constructed based on the study's purpose and research questions. This guide provided structure to the interviews and was devised around pre-selected themes derived from my initial understanding. The key themes outlined in the interview guide focused on the advantages and disadvantages of integrating AI in educational settings, the experiences of the interviewees over the previous 1.5 years, and their specific strategies for effectively incorporating AI into their practice. The methodological flexibility inherent in this approach permits the interview guide to be revised as the study progresses, allowing adjustments based on emerging insights and accommodating the unique perspectives of each informant (Malterud, 2017).

When conducting a qualitative interview, the primary objective is to elucidate the significance of individuals' experiences within their lived environments and to attain a deeper understanding of their perceptions. This method aims to apprehend the world from the informants' perspectives regarding the topics under discussion (Kvale, 2001). It facilitates the acquisition of knowledge directly from individuals about their opinions and attitudes, capturing these insights from their personal viewpoints (Brinkmann & Tanggaard, 2012, p. 17-19). In qualitative research, the researcher exercises control over the thematic focus, the framing of questions, and the underlying knowledge base. Consequently, it is vital to recognize that the power dynamics within the interview setting are inherently skewed in favor of the researcher. Thus, it is imperative for the researcher to foster an environment marked by safety and trust, ensuring ethical and effective communication during interviews (Kvale, 2001).

3.4 Sampling and Recruitment

The process of sampling and recruitment in this study presented several challenges. Determining the appropriate number of informants to recruit proved difficult, as I had not predefined a specific number necessary to adequately address the research question. This uncertainty stemmed from my inexperience as a researcher and the inherent unpredictability associated with the volume of data that semi-structured interviews might generate. Conversely, existing literature advises conducting a limited number of interviews to mitigate the risks associated with data overload and the complexities of subsequent analysis (Brinkmann & Tanggaard, 2012). Therefore, it is essential to balance the sample size carefully; it should be neither excessively large nor too small, to facilitate a thorough and

nuanced understanding of the data post-analysis (Dalland, 2012). Qualitative analyses typically require considerable depth, and practical constraints such as time and resources invariably limit the size of the sample that can be feasibly managed (Thagaard, 2003). When working with a small sample, it becomes crucial to employ a selection process that aligns appropriately with the research question. This approach ensures that the data analysis yields insights into the phenomena under investigation (Brinkmann & Tanggaard, 2012). The selection of informants can proceed via two methodologies: strategic or random. Strategic selection involves systematically choosing informants based on their possession of specific characteristics or qualifications that are deemed crucial for addressing the research question (Thagaard, 2003). Consequently, the approach to selecting informants in this study can be characterized as strategic.

In this study, a strategic selection of informants was employed. The inclusion criteria for the participants were meticulously defined to ensure that the information gathered was both relevant and comprehensive. The primary criterion required that informants, at the time of the interview, possessed a formal education in teaching with English as a designated subject, and held a permanent position within a school. This specification was critical as the interviews focused on their firsthand experiences and insights regarding the use of ChatGPT in educational settings. Furthermore, it was deemed important that the informants had varying levels of experience with integrating and utilizing this artificial intelligence in their teaching practices. This ranged from teachers who had recently started incorporating AI into their pedagogical strategies to those with more experience, who could provide a broader perspective on the long-term development and impact of the technology. Hence, it was crucial for me to gather data from both experienced teachers and those with significantly less experience in the field. This approach aimed to develop a representative depiction of the typical teacher at an average Norwegian secondary school. It would have been inauthentic to focus solely on teachers with either extensive expertise or those completely new to the field. Initial contact with potential informants was made via telephone to introduce the study, followed by a written invitation (see Appendix 1) to participate in the research.

Determining the optimal number of informants for a qualitative study employing semi-structured interviews can be challenging. The number of participants required depends on the study's objectives and the specific questions it seeks to address (Kvale et al., 2015). For this study, I successfully recruited six informants. Upon transcribing and analyzing the data, I

concluded that the information garnered was sufficient to comprehensively address and illuminate the research question.

3.5 The Informants

In the cohort of participants for this study, there were two female and four male informants, whose ages ranged from 34 to 56 years. These individuals consented to contribute to the research. Most of the interviews were conducted on-site in the offices located within the secondary schools of the respective municipalities where the informants worked. However, due to logistical challenges posed by geographical distances, the final two interviews were conducted remotely via Zoom. A common characteristic among all interviewees is their background in teaching English at the secondary school level, complemented by a considerable breadth of professional experience. While some have expanded their teaching careers to include both university and secondary education, others have devoted their entire teaching careers exclusively to secondary education. Notably, a few participants are currently employed as teachers but also engage in delivering lectures across Norway, focusing on the integration of artificial intelligence in educational settings. They shared insights drawn both from their past experiences and their current roles, enriching the data collection process. This heterogeneity among the informants ensured a comprehensive and realistic portrayal of the current understanding and application of AI technologies by teachers in Norwegian secondary schools as of 2024. This diversity is crucial in laying a robust foundation for the research anticipated on this topic.

3.6 Conducting the Interviews

Prior to commencing the interviews, I briefed the participants on my methodological approach, emphasizing the importance of caution and mindfulness throughout the process. During the interviews, I adopted a dialogic style, engaging actively with the informants to ensure the interaction remained dynamic rather than static. My responses to the informants were a blend of affirmation and contradiction, expressed through both verbal and non-verbal communication. This approach facilitated a more nuanced dialogue and encouraged the participants to elaborate on their thoughts. Additionally, I posed follow-up questions to clarify any ambiguities or to delve deeper into topics that particularly piqued my interest.

It was also critical to recognize when an informant had exhausted their contributions to the topic during the interview to avoid unnecessary repetition of the topics in the conversation, thereby avoiding repetitive or redundant exchanges. In the interview environment, it was

crucial to create a space where participants felt comfortable taking the necessary time to articulate responses to complex questions. This approach was designed to elicit the most comprehensive and reflective answers possible, thereby enriching the data for my research. By allowing informants the space to think and express themselves, I aimed to gather high-quality information that could significantly enhance the understanding of the subjects under study.

3.7 Informed Consent

Informed consent entails providing informants with comprehensive details about the objectives, primary aspects of the research, and any potential benefits or risks associated with participation, thereby ensuring that their engagement is entirely voluntary (Kvale & Brinkmann, 2015). It is imperative that informants fully comprehend the nature of their consent and the consequences thereof (Malterud, 2017). During the initial stages of recruitment, each informant received documented information elucidating the study's purpose and objectives. This documentation also covered critical issues related to privacy, anonymity, and confidentiality. Additional details were provided concerning the processes of audio recording and transcription, the voluntary basis of their involvement in the study, and the freedom to withdraw at any point without facing any repercussions (See Appendix 1).

Prior to the commencement of each interview, the details pertaining to the study and the principles of informed consent were revisited to reinforce understanding and ensure clarity. During the recruitment phase, it was a priority for me to maintain an environment free from pressure or implied expectations regarding participation. To safeguard the privacy of the informants, they were given the option to send their signed consent forms confirming participation directly to my email. This method proved particularly beneficial for some interviewees who faced geographical constraints, facilitating a smoother and more secure participation process.

3.8 Confidentiality

Confidentiality entails the non-disclosure of data that could potentially identify participants; thus, such data are anonymized. Personal details concerning the informants and any audio recordings have been confidentially managed and securely stored to prevent unauthorized access. To further ensure privacy, all information and materials have been de-identified (Kvale & Brinkmann, 2015), with any potential identifiers removed during the transcription process. In the presentation of research findings, quotations are utilized in such a manner that they

cannot be traced back to specific informants, thereby preserving their anonymity and preventing any identification.

Prior to the initiation of the research, the project was formally reported to and received approval from "Kunnskapssektorens tjenesteleverandør" (SIKT) (see Appendix 2). In accordance with the Personal Data Act of 2001, research endeavors involving the collection and use of personal data are mandated to comply with reporting requirements (Thagaard, 2003), ensuring that all procedures are conducted in a legally compliant and ethically responsible manner.

3.9 Transcription

During the semi-structured interviews, I opted to employ a voice recorder (specifically, the Voice Memos application) to ensure the smooth progression and continuity of the dialogue, allowing me to remain fully engaged with the informants. Dalland (2012) emphasizes that audio recordings are an effective tool for capturing all spoken elements, including subtle nuances in language and variations in tone of voice. Concurrently, some written notes were also taken to complement the recordings. The series of six interviews were personally conducted by me and subsequently transcribed. Transcription, as defined by Malterud (2017), involves the conversion of oral data from an interview into written text. The transcription process, while essential, presents certain challenges, particularly in accurately conveying non-verbal cues such as body language and tone, which are integral to communication during interviews (Kvale & Brinkmann, 2015). It is crucial to be cognizant of these limitations, as they can impact the depth and fidelity of the data captured during transcription. Even the most accurate transcription cannot completely encapsulate all the nuances conveyed through oral communication; certain elements simply do not translate effectively into written form (Malterud, 2017). In the transition from speech to text, I strived to capture the essence of the conversation in a way that faithfully represented the informants' expressions. Utilizing a voice recorder during each interview facilitated multiple reviews of the informants' statements, which ensured that the transcriptions were as accurate and detailed as possible. This practice significantly enhanced my capacity to engage deeply with the data as needed. According to Dalland (2012), transcription allows one to revisit the nuances of the interview context, effectively reliving the conversation. In the process of transcription, the language is standardized to written norms rather than dialect, enhancing the readability of the text and preserving the anonymity of the informants, especially when direct quotes are selected for the presentation of results. This adaptation not only aids in clarity for the reader but also

addresses concerns regarding informant privacy. Transcription serves as a critical process that renders the oral interviews accessible for detailed analysis and interpretation (Kvale & Brinkmann, 2015).

3.10 Inductive and Deductive Approaches

In this section, I will outline my methodological approach to the analysis of qualitative data, which can be approached through either inductive or deductive methods. The inductive approach to data analysis involves deriving concepts and analytical perspectives directly from the data itself (Thagaard, 2003). This process may incorporate concepts articulated by the informants or develop new concepts through the researcher's interpretation of the data. Inductive analysis begins with the empirical data, which then acts as the foundation for generating theoretical insights. Conversely, the deductive approach to data analysis presupposes the application of pre-existing theoretical frameworks to the data (Thagaard, 2003). This method involves identifying patterns within the data that align with these pre-selected theories. Subsequently, one integrates these observations with the theoretical framework, thus employing a theory-driven exploration of the data. With this approach, the analysis is guided by a chosen theory from the outset, which then informs the interpretation of the empirical data (Postholm, 2010). This structured methodology allows for a systematic examination of data considering established theoretical constructs. Prior to conducting the interviews, I possessed an established theoretical understanding of the topic, which significantly influenced the design of the interview guide. This theoretical framework was integral, as it shaped what I deemed pertinent and intriguing as a backdrop for formulating the interview questions. Throughout the course of the interview process and subsequent analysis, new perspectives and themes surfaced, compelling me to incorporate a broader spectrum of theoretical insights. These expanded theories are subsequently discussed in the analysis section to elucidate the findings, thereby demonstrating a hybrid approach that blends inductive and deductive methods.

The interplay between these two approaches typifies what is known in research methodology as abduction (Thagaard, 2003). Abduction encapsulates the dialectical interrelation between theoretical frameworks and data as they emerge from the research. In an ideal scenario, phenomenological data should be analyzed inductively to ensure that the findings are derived directly from the data itself. However, as Postholm (2010) articulates, it is inevitable that a researcher's pre-existing knowledge and biases will influence the analytical process. This results in a dynamic interplay between inductive and deductive reasoning, where each informs

and refines the other in the development of a comprehensive understanding of the data (Postholm, 2010, p. 99). This methodological interplay not only enriches the analysis but also ensures a more nuanced interpretation of the empirical data.

3.11 Thematic Analysis of the Data

In the realm of qualitative methodology, the process of analysis entails a rigorous engagement with the data, which includes critically questioning, systematically organizing, and effectively retelling the findings in a manner that is both comprehensible and relevant, aligning closely with the research questions posed (Malterud, 2017). For the purposes of this study, I have elected to employ thematic analysis as the analytical strategy.

Thematic analysis is a widely employed method within qualitative research to identify, analyze, and interpret various themes (Braun & Clarke, 2006). This analytical approach is adept at examining how meanings are constructed and the discourses that emerge within the data. It situates individual experiences within a specific context and in relation to others, thereby emphasizing the importance of informants' perceptions, feelings, and lived experiences as central to the research (Braun & Clarke, 2006). By applying thematic analysis, significant themes are delineated both within and across different transcripts, as noted by Bryman (2012). This method involves a comparative analysis of the data, facilitating a thorough and nuanced examination of each identified theme (Thagaard, 2003). Renowned for its flexibility and ease of use, thematic analysis is particularly accessible to novice researchers (Braun & Clarke, 2006). It provides a practical and efficacious tool for those who may not possess experience in research methodologies. Given my own burgeoning experience in research, thematic analysis has been deemed an appropriate and valuable methodological approach for this study (Coolican, 2019). This choice ensures that the analysis remains structured yet adaptable, allowing for a robust interpretation of the data within the theoretical and empirical frameworks established for this investigation.

Thematic analysis boasts considerable flexibility, a trait that allows it to provide a rich, detailed, and yet complex depiction of the data. This flexibility also enables the method to highlight both similarities and differences across the dataset, thereby facilitating the emergence of novel insights (Braun & Clarke, 2006). Despite its widespread application in qualitative research, thematic analysis is not uniformly defined, and there remains a lack of consensus regarding its precise nature and implementation. One potential drawback of thematic analysis is the absence of explicit, comprehensive guidelines, which can result in

vague descriptions of how the method is applied to specific datasets (Attride-Stirling, 2001). Consequently, it becomes imperative to meticulously document and present the analysis process, thereby ensuring transparency in how the findings were derived. The inherent flexibility of thematic analysis, while advantageous in many respects, can also pose challenges for researchers, particularly in terms of deciding on focal points for the analysis (Braun & Clarke, 2006). This requires researchers to exercise a high degree of discernment and strategic decision-making throughout the analytical process, emphasizing the need for a clear and well-structured approach to manage the breadth and depth of the data effectively.

My methodological approach to conducting the thematic analysis of the data is grounded in the model proposed by Braun & Clarke (2006), which delineates a six-phase process. This analytic procedure is inherently dynamic, characterized by a non-linear progression where movement back and forth between the various phases is not only common but necessary. Such flexibility allows for iterative revisions to earlier decisions in response to emergent significant findings within the data (Braun & Clarke, 2006). I will now provide a detailed exposition of each of these six phases as described in Braun & Clarke's framework (2006, pp. 87-93), illustrating the systematic yet adaptable nature of this analytical approach. This step-by-step procedure facilitates a comprehensive understanding of how thematic analysis is applied to explore and interpret the data effectively.

Phases in the Analysis

Phase 1: Getting to Know the Data

By personally conducting the interviews and subsequently transcribing them, I developed a deep familiarity with the data. This immersive process provided me with a comprehensive overview and established a preliminary foundation for an in-depth examination of the data. Initially, I engaged in a thorough reading of the entire dataset, followed by multiple re-readings. During these subsequent reviews, I carefully noted both recurring general descriptions shared by multiple informants and specific details unique to each participant. This iterative re-reading and note-taking were conducted several times to identify and analyze patterns within the data. This methodical approach not only enhanced my understanding but also ensured a meticulous analysis of the data collected.

Phase 2: Initial Coding

Upon transcribing the interviews and familiarizing myself with the data, I proceeded to code the text to facilitate a more structured and comprehensive overview of the information both across and within each interview. This coding functioned as a summative reflection of the initial findings, playing a crucial role in highlighting, and articulating salient points within the data. Coding is a widely recognized method for data analysis in qualitative research, particularly with interview data, as it aids in the development of themes (Kvale & Brinkmann, 2015). The codes generated were related to themes discussed and reflected upon by the interview subjects. The approach to coding was deliberately open and inductive, allowing themes to emerge organically from the data itself (Thagaard, 2003). To enhance the clarity and organization of the material, I employed color codes, assigning the same color to informants' statements that shared similar meanings. Subsequently, codes that were related were grouped into "clusters" to facilitate the exploration of connections among them. The coding process was inherently non-linear; it necessitated multiple iterations of moving back and forth between the transcripts to refine the understanding and representation of the data. This iterative approach ensured a thorough and nuanced analysis, capturing the depth of the informants' experiences and perspectives.

Phase 3: Searching for Themes

The third step in the thematic analysis process involves the organization of data into overarching themes. During this phase, I collated codes that exhibited commonalities, assessing how these could be amalgamated to form tentative themes. Unlike codes, which are typically more granular and descriptive, themes synthesize these elements into coherent statements that articulate the broader meanings derived from the data. At this stage, sets of codes were grouped at a more abstract level and aligned into provisional themes. It is advisable during theme development to retain all codes initially, as the overarching patterns within the data may shift multiple times throughout the analysis process. To enhance the clarity of connections between a large number of codes and facilitate their integration into themes, I utilized mind mapping techniques. This approach allowed for a visual aggregation of codes, making it easier to discern the relationships among them. For instance, codes such as "Teaching," "Motivation," and "Learning Will" were grouped under the tentative theme of "Pedagogy." This method not only streamlined the thematic categorization but also aided in visually conceptualizing the interconnections within the data.

Phase 4: Reviewing Themes

In this critical phase of the thematic analysis, I undertook a comprehensive review of the compiled list of themes to determine the necessity of generating sub-themes. This involved a meticulous comparison of codes and statements both within and across the different themes to ensure that they accurately represented the dataset. Additionally, I evaluated the effectiveness of the thematic "map" in providing a holistic view of the entire dataset. At the onset of this phase, it was crucial to establish a set of potential themes. This entailed having tentative themes that encompassed all or most of the data, aiming to systematically coordinate and organize the codes in relation to these themes. Throughout this process, I endeavored to maintain a critical perspective, remaining vigilant and open to adjustments in the coding and thematic structure. This critical reflection included revisiting the initial ideas for the themes and considering them in context with the various codes that initially emerged, as noted by Braun & Clarke (2006).

During this detailed analysis, some codes were re-assigned to different themes following a reassessment that indicated their greater relevance to other thematic areas. This re-evaluation was integral to refining the thematic framework. Subsequently, the names of the different themes were carefully formulated based on a thorough analysis of the content. This naming process was essential for advancing to the final stages of data handling, where the data were sorted and analyzed under the emergent themes. Finally, this phase culminated in the creation of a list of themes that I determined to effectively describe the data material in a relevant and descriptive manner, setting the stage for the final synthesis and reporting of the research findings.

Phase 5: Defining Themes

The subsequent step in the analysis involved an in-depth discussion of each theme, articulating what the theme encompassed and its interrelation with other themes. This stage required the careful selection of statements that effectively captured and conveyed the essence of each theme. My objective was to extract quotes that enriched the narrative surrounding the theme, yet remained succinct, which presented a significant challenge. This process resulted in the initial draft of the findings presentation. During this phase, considerable effort was dedicated to devising fitting and descriptive titles for each theme, which accurately reflected the substance of the data material. I also engaged in a thorough examination of the "context" of each theme by revisiting codes, clusters of codes, and the selected quotes. This was done to

ensure that the thematic descriptions were comprehensive and that the conveyed meanings were aligned with the defined themes. This meticulous approach facilitated a deeper understanding and a more nuanced presentation of the data, setting the stage for the final synthesis of the research findings.

Phase 6: Thematic Presentation of Findings

In phase six of the thematic analysis, my focus shifted to the detailed description and finalization of the findings, incorporating a systematic review of the thematic headlines. During this phase, adjustments were made to some headlines that initially seemed inadequate in capturing the full essence of the themes they represented. This necessitated a renewed examination of the selected quotes to ensure they effectively illustrated the themes in a nuanced and precise manner. Consequently, this phase extended beyond mere refinement and effectively became an integral part of the analytical process. I endeavored to present the findings in a manner that would provide the reader with a deep insight into and understanding of the teachers' perceptions regarding the challenges they encounter, as well as the adaptations they implement when utilizing OpenAI technology to enhance students' abilities to read, discuss, and reflect. This comprehensive presentation of the findings is detailed in chapter 4 of the thesis. The aim was to craft a narrative that not only conveys the data but also resonates with the readers, allowing them to grasp the practical implications and insights derived from the research.

3.12 Reliability and Validity

In delineating the process of thematic analysis, I have endeavored to uphold the study's reliability and validity. This objective entails demonstrating that the data has been managed in a reliable and credible manner and involves clearly articulating each stage of the research process. This transparency is crucial not only for ensuring the integrity of the research but also for allowing others to understand and evaluate the methods employed. Additionally, this approach includes an openness to acknowledging potential limitations and adjustments in the research design. Such modifications could potentially influence the outcomes and lead to alternative findings (Thagaard, 2003). This level of rigor and openness is fundamental to fostering a robust understanding of the methodology and outcomes in this thesis.

3.12.1 Reliability

Reliability in qualitative research is associated with the notion of trustworthiness. Given the inherent complexity of the phenomena under investigation and the significant influence of contextual factors, some scholars, such as Merrick (1999), contend that attaining reliability in qualitative studies presents considerable challenges. In this study, efforts to ensure reliability were manifested using an open interview guide, which allowed all informants the opportunity to share their experiences comprehensively, at their own pace.

Besides, I have endeavored to address the reader's need for clarity regarding the research process by detailing how the analyses and interpretations were derived. The analysis was systematically applied across the entire dataset, ensuring that the interpretations were firmly grounded in the data material (Thagaard, 2003). This methodical approach to data handling enhances the reliability of the findings, as it demonstrates a consistent and transparent application of analytical procedures throughout the study.

3.12.2 Validity

Knowledge development entails the exploration of relevant manifestations of reality that we seek to understand more comprehensively (Malterud, 2017). Continuous reflections on the relevance of various aspects of the research are crucial in formulating pertinent questions related to validity. This involves critically assessing the appropriateness of the research question, the selection of informants, the methods of data collection, the theoretical frameworks employed, the analytical techniques utilized, and the modes of presentation. Malterud (2017) characterizes this comprehensive scrutiny as reflexivity in practice. Additionally, there exists a consensus among contemporary qualitative researchers regarding the necessity to provide a transparent and detailed description of the qualitative research undertaken. This transparency is imperative not only for the methodology but also for the findings, enabling other researchers to evaluate the study's validity effectively. Such documentation should include a thorough account of the research process and the interpretative steps where specific meanings or conclusions have been ascribed (Merrick, 1999). This approach not only enhances the credibility and reproducibility of the research but also contributes significantly to the field by allowing others to build upon the work conducted.

Validity in research is often conceptualized as a concept with two distinct dimensions. The first, known as internal validity or credibility, pertains to the accuracy with which the study investigates what it claims to investigate. The second dimension, referred to as external

validity or transferability, concerns the degree to which the abstract concepts that are generated, refined, or evaluated within the study are applicable to other groups within the broader population or to different contexts (Merrick, 1999). External validity thus shares common ground with the concept of generalizability, reflecting the broader applicability of the research findings. In this study, efforts to ensure validity have been made through detailed descriptions of the research process and a sustained commitment to reflexivity. Reflexivity requires a consciously reflective stance on the part of the researcher, particularly concerning their role and influence within the research context. This approach involves critical self-reflection on the researcher's preconceptions, individual experiences, and theoretical biases, which are acknowledged as potentially influencing the study's objectivity and outcomes (Malterud, 2017). By engaging in this reflexive practice, the study aims to mitigate biases and enhance the credibility and transferability of its findings.

3.13 Limitations of the Methodology

In this study investigating the incorporation of language models such as ChatGPT into English teaching, purposive sampling was utilized to select participants, rather than employing strategic sampling. Purposive sampling constitutes a collection of distinct non-probability sampling methodologies. Commonly identified as judgmental, selective, or subjective sampling, this technique necessitates the researcher's deliberate choice in selecting the subjects for study, which may include individuals or particular data segments. Typically, the scope of the sample in purposive sampling is considerably smaller than that employed in probability sampling techniques, reflecting its specialized and targeted nature (Rai & Thapa, 2015, p. 5). However, this approach comes with inherent limitations that may impact the generalizability and objectivity of the findings.

3.13.1 Limitations of Purposive Sampling

Purposive sampling is notably vulnerable to researcher bias due to its dependence on the researcher's discretionary choices in selecting the sample. This subjective basis does not serve as a robust defense against potential biases, particularly when contrasted with probability sampling methods, which are explicitly structured to diminish such biases. The subjective nature of purposive sampling becomes a pronounced disadvantage when these judgments lack a solid foundation in established criteria, such as a theoretical framework, or other validated standards nature (Rai & Thapa, 2015, p. 10).

However, this specific sampling method allows for a focused understanding of complex phenomena from a specific group of people, in this case, teachers experienced in integrating AI assisted language models into education. While this method is advantageous for exploratory phases of research, it limits the diversity and representativeness of the sample. By selecting only six teachers, the study's findings are considerably influenced by the perspectives and experiences of a small group, potentially overlooking wider, systemic issues and varied experiences across different educational contexts. The selected educators, being possibly more innovative or receptive to new technologies, might not represent the broader teaching community's challenges, successes, and attitudes towards AI in education.

3.13.2 Disadvantages of Limited Sample Size

The decision to interview only six educators was guided by the practical constraints and the depth of investigation required to answer the research question: "How can the educational system integrate artificial intelligence, such as ChatGPT, into English teaching to enhance student learning while maintaining privacy and educational values?" The study's conclusion is therefore contextualized within the specific settings and backgrounds of the participating teachers. This limitation underscores the need for further research involving a larger, more diverse sample to validate and expand upon the initial findings presented here. In summary, while purposive sampling provided valuable targeted insights for this exploratory study, the inherent limitations regarding representativeness and generalizability must be acknowledged.

4.0 Presentation of Findings

In this chapter, the findings from the conducted semi-structured interviews will be presented, with the intent of elucidating the research question underpinning this study. The themes are "Challenges Related to ChatGPT in English Education", "Experiences with Implementing ChatGPT in the Classroom", "Opportunities in the Future", "Digital Imitation and Academic Honesty", "The Changing Role of Teachers", "Students' Experiences", "Assessment and Feedback" and "Ethical Considerations".

4.1 Challenges Related to ChatGPT in English Education

During the interviews, several interviewees articulated clear challenges associated with integrating ChatGPT into educational settings. The incorporation of artificial intelligence technology presents numerous opportunities for innovation and the enhancement of learning processes. ChatGPT and similar language models have the potential to revolutionize language learning by offering personalized instruction, immediate feedback, and an interactive experience that traditional teaching methods rarely provide. Despite these benefits, the adoption of such technology in the education sector encounters substantial obstacles. For instance, one teacher expressed nationwide concerns regarding the privacy and security of students. One informant remarked:

> "To give students access to AI language models like ChatGPT, I believe that a new solution must be introduced in the education system because the students at the school I teach do not have access to ChatGPT, Bard, and other AI language models (...) The reason for this is because it does not align with privacy and the school's regulations. Thus, ChatGPT, Bing Chat, and Bard are not offered to the students at our school. The sites are therefore blocked on the school network so that they cannot access them... But we know that students use them in their free time, but that does not give us permission to use them at school regardless... Because it would result in them sharing personal information with providers over which we have no control."

Schools' concern for privacy and security is well-founded. Since these types of AI tools often require internet access and can process personal data, school administrations face the dilemma of balancing technological innovation with the protection of students' personal information. This issue is further complicated by strict regulations and guidelines that schools must follow. As a result of these concerns, several schools have chosen to restrict access to AI language

models like ChatGPT, Bing Chat, and Bard by blocking these websites on the school network, as explained to me. This measure is intended to protect students from potential privacy risks, but it also limits how these innovative tools can be used in education. Despite students having access to and being able to use these technologies on their own outside of school hours, schools stand by their decision not to integrate them into the educational tools. As it stands, there is a clear need for innovative solutions that can harmonize the use of AI in education with privacy and data security requirements.

Another challenge identified by one of the interviewees concerns the necessity of evaluating the responses generated by these models. Although artificial intelligence can produce text that is grammatically correct and stylistically persuasive, the accuracy and truthfulness of the content can be inconsistent. This issue arises because language models are trained on extensive datasets, which may include erroneous information. Consequently, their capacity to generate updated content relies on recognizing patterns within these data rather than on genuine understanding or awareness. The informant elaborated:

> *"I think one of the most important factors when we discuss limitations to ChatGPT in English education in particular … is that one must be aware of the language model's own limitations, especially when it comes to text production. It is important to critically assess the answers that are generated to ensure that they do not contain incorrect information or confabulations - that is, information that does not match reality. Expressing emotions and thoughts honestly can also help in the interaction, even though it does not necessarily provide 'better' answers, but it contributes to a more natural conversation."*

Critical assessment thus becomes a necessary skill for students and teachers when navigating the responses from a language model. By actively analyzing and questioning the information presented, users can better distinguish between accurate and incorrect information. This aspect of critical thinking is crucial for educational purposes, not just to avoid the spread of misinformation, but also to develop students' ability to think analytically and critically evaluate sources. This does not necessarily improve the quality of the answers in a technical sense, but it contributes to a more meaningful and engaging conversation. It helps students see the value in expressing themselves authentically, which is important in all forms of communication, not least in language learning. It also promotes a deeper understanding of the nuances of language and how it can be used to express complex ideas and emotions. Thus, even though these language models have their limitations, they can serve as valuable tools for

promoting critical thinking and authentic expression, if those using them approach with a conscious and critical attitude. The same informant also mentioned a slightly different aspect of the challenges related to this:

> *"When errors or limitations in the responses from a language model occur, there are few options other than to acknowledge these errors oneself. If misinformation becomes part of the conversation history, it can affect the quality of future responses. It may be necessary to correct the errors directly in the conversation or start a new dialogue to avoid further misinformation being carried forward."*

> *"A challenge is the language model's ability to 'remember' information only within the current conversation. If misinformation is presented, for example, that London is the capital of France, the model will assume this to be correct for the ongoing conversation. This underscores the importance of correcting misinformation immediately to avoid misunderstandings."*

When misinformation is introduced in a conversation, whether by the user or the language model itself, it has the potential to distort the quality of future responses within the same conversation. This is because the AI model builds on the existing conversation history to generate responses. Therefore, it is crucial to correct misinformation as soon as possible to maintain conversation quality and information accuracy. This highlights the importance of the student's role in the interaction with AI. The student must be actively engaged and critical of the information presented, ready to correct errors to guide the conversation back on track. This can be done either by correcting the misinformation directly in the conversation or, in more serious cases, starting a new conversation to avoid further confusion. At the same time, this opens educational moments in educational contexts, where students can practice critical thinking and information evaluation through interaction with AI.

By challenging and correcting errors, students gain practical experience with the importance of accuracy and reliability in information, while learning about the limitations and potential of AI technology. These challenges also underscore the need for further development within AI technology, especially regarding the models' ability to understand context and handle errors. For AI to become an even more valuable tool, improvements are necessary to enable them to better identify and correct inaccuracies independently, without being entirely dependent on user interventions.

Another factor that can be a challenge related to ChatGPT in education is the time pressure teachers face for the adoption of technological advancements. Most of the interviewees had varying degrees of motivation to stay updated on technological advancements that can be used in the classroom. One informant indicated:

> *"The problem lies in the time-consuming process of getting acquainted with new tools, learning how they work, and figuring out how they can be effectively implemented in teaching. The time pressure makes it challenging to explore and integrate new technology, despite the potential to enrich the learning experience. There is also an acknowledgment that there are individual differences among teachers when it comes to adopting and using technology in teaching, which reflects the varied approach to technological integration in schools."*

Time pressure in teachers' workdays thus makes this challenge even more acute. Teachers must balance many tasks, including teaching, planning, assessment, and professional development. Finding time to acquire new skills and explore how technology can enrich teaching. As a result, it could be seen as overwhelming. It is also a reason to believe there are individual differences among teachers when it comes to technology adoption. These differences can be due to a range of factors, such as personal affinity for technology, previous experiences, or the availability of support and resources for technological integration. This variability reflects the broader challenge schools face in facilitating a unified approach to technological integration, while recognizing and supporting the individual development needs of teachers.

One informant looks at the challenges related to a more concrete level:

> *"Making users, whether they are students or teachers, aware of how language models work, is essential for effective use. It helps in understanding how and why the model responds as it does, and how one can adjust the interaction to get the most out of it."*

This statement points to a critical factor for the successful integration of AI language models in the education sector: the need for a deeper understanding of how these technologies work among those who use them, whether they are students or teachers. Having basic knowledge of the principles behind AI and language modeling can significantly improve the efficiency and relevance of interaction with such systems.

Firstly, when users learn that language models create responses by analyzing huge collections of text to spot patterns and connections, they can more accurately understand what these models do well and where they fall short. For example, this helps explain why a model might give a response that sounds right but is wrong, because it is relying on patterns from the data it was trained on, rather than an actual "understanding" on the matter.

Secondly, an understanding of the model's functionality can help users tailor their questions or commands to elicit more useful responses. If a user knows that the model, for example, might struggle with understanding implicit contextual hints, they can make their requests more explicit or provide additional information to clarify their intent. Having some awareness of how language models can be biased or how they manage uncertain information can also lead to more critical thinking about the responses generated. This is especially important in educational contexts where critical evaluation of information is a key competence. Knowledge of the language model's limitations can also guide teachers in developing educational strategies that complement AI tools, rather than being overly dependent on them. For instance, teachers can use AI as a starting point for discussions or critical analysis, rather than as an authoritative source of information. Building on what one informant told me, here is another example from a different teacher:

"A typical example is when students use language models to write letters in Norwegian and end up with formulations that are more typical for English correspondence, like "jeg håper dette brevet finner deg i god helse". This is because the language models are often more trained on English material. It is therefore important to make students aware of these differences and encourage them not to blindly adopt such stylistic features."

This example highlights an interesting and important challenge when using language models in educational contexts, especially in learning and applying language skills. AI language models, which are often significantly more trained on English data sources than on other languages, can lead students to inadvertently adopt formulations and expressions that are more typical of English, even when they are working in a different language. When students use these models to assist writing in their own language, the result can be a text that bears the hallmarks of English formulations and stylistic features. This happens because the language model generates suggestions based on the vast amount of English material it has been trained on, which naturally includes phrases like "I hope this letter finds you in good health," a polite and common formulation in English correspondence, but which may seem alien or inappropriate in letters in Norwegian.

4.2 Experiences with Implementing ChatGPT in the Classroom

The subsection "Experiences with Implementing ChatGPT in the Classroom" aims to highlight various aspects of using ChatGPT in educational environments. I wanted to explore how teachers and students have experienced the use of ChatGPT, focusing on how the technology affects students' learning, engagement, and interaction in the classroom. By delving into specific experiences and reflections from those involved, I aimed to provide a deeper understanding of the technology's potential benefits and challenges in an educational context. One informant leaned more towards this:

> *"In terms of ChatGPT and its impact on students' learning and engagement, I see the potential for students to quickly find answers and relevant discussion points. This could be an absolute advantage, provided that the technology was not so advanced that ChatGPT itself solved the tasks for them. A more guiding approach, where the technology assists without giving direct answers, would be ideal. This could contribute to a form of personal guidance in the classroom, where the teacher cannot always give individual attention to each student."*

This statement opens an important discussion about the balance between leveraging ChatGPT's capabilities to promote independent thinking and learning, and the risk of the technology becoming a crutch that students rely on for quick answers, without necessarily engaging deeply in the learning process. It points to a central challenge with technological integration in education: How can we best utilize these tools to improve learning and engagement, while avoiding potential pitfalls. Several of those interviewed had similar thoughts as this informant:

> *"So, we see those teachers who put their students through a sort of introduction on how to use artificial intelligence as a learning tool, get students who express that subjects have become easier to become interested in."*

Another informant offered a new angle on how schools could implement new types of chatbots that refrain from giving concrete answers but encourage students to think a bit more before responding:

> *"We have created our own AI language model at the school I work at. It primarily focuses on securing privacy and ensuring all students at the school have access to this tool. Its task is not to answer what you are wondering about; it does not give concrete answers, but new questions about what you are curious about - so that you can figure*

it out on your own. Its task is to challenge you to think and investigate more. This requires students to reflect to a greater extent than they usually would. After introducing this type of chatbot, we have seen positive results from the students, I would also say a higher degree of willingness to learn and motivation as well."

"... What we try to get the students to understand is that it is this chat robot that has been given this as a task. Then you as a student have to participate in the game, so you cannot just mess with it and say, 'I don't understand anything'. You actually have to ask and give concrete honest answers to it. Then the student participates in the dialogue without possibly being aware of it. We also emphasize that the chatbot we are developing should not provide overly complicated answers, but naturally adjust to the level of the student it is engaging with, so that the learning outcome is as beneficial as possible. This is because the problem with the most popular chatbots is that they often give complex answers that students generally do not bother to delve into due to the way the responses are structured, which hinders learning.

Integrating a customized chatbot into the educational environment represents an innovative approach to the learning process, where the goal is to make the learning experience more interactive, engaging, and tailored for each individual student. This strategy highlights the importance of dialogue and interaction with technology, not just as a means for information retrieval but as an active partner in the learning process. By encouraging students to "join in the game" by asking honest and specific questions, this approach embraces a more dynamic and participatory form of learning. A key advantage of this approach is its ability to provide individually tailored responses that meet students at their level of knowledge. This is critical in a classroom where students naturally vary in understanding and skill level. By adjusting the complexity of the answers, the chatbot ensures that no student feels overwhelmed or excluded. This not only promotes understanding and learning but is also likely to build confidence and motivation among students, according to the information I received from this informant.

A challenge that often arises with more general chatbots is their tendency to provide complex and challenging answers that can be daunting for students. By developing a chatbot that consciously avoids this pitfall and instead offers clear and accessible guidance, educators can ensure that technology serves as a supportive resource rather than a source of frustration. The implementation of a tailored chatbot in schools marks a step forward towards a more personalized, interactive, and engaging education. By focusing on the needs and learning pace

of the student, such technological solutions can help create a more inclusive and effective learning environment, addressing both individual and collective educational challenges.

A teacher's perspective also provides valuable insights into how such technologies can be leveraged to improve learning, while highlighting potential risks related to dependency among students. Without direct experience in using ChatGPT, but understanding its capabilities, this informant reflects on the duality of AI tools.

> *"I have not actively used ChatGPT or any other form of AI, but I see the potential in assisting students with the layout and organization of their work, which can be particularly useful in the preparation phase. This can be considered the most positive effect of this technology, as it helps students get started and organize their thoughts and materials for a task. On the downside, I have not experienced many disadvantages with ChatGPT specifically, but a general problem is that students may end up learning less independently. This becomes apparent when they face situations where technological assistance is not available, such as during an exam, and they lack the necessary competence to solve the tasks on their own."*

On one hand, the individual sees the potential for assisting students with organizing and structuring their work, which can be particularly helpful in the initial phase of a project. This support is considered the most significant contribution of technology, by easing the barrier to initiating and designing a work. This dilemma highlights an important discussion about the balance between leveraging technological advancements in teaching and preserving the essence of learning as an active, exploratory process. The same informant also made these statements later in the interview:

> *"From what I have observed, it does not seem that students typically use ChatGPT to challenge or ask in-depth questions, instead of seeking direct answers from teachers. However, there may be a possibility that those students who would benefit most from exploring such technological tools are the ones who traditionally struggle the most with conventional learning."*

> *"... I have also used ChatGPT as a teaching aid, but I am aware of its limitations, especially when it faces unknown or specific topics. In some cases, ChatGPT has generated information that does not correspond with reality, which can be problematic, especially in subjects that require verifiable information, like English at the secondary level."*

From observations in the classroom, it is noted that students often do not use ChatGPT to challenge themselves with in-depth questions or explore complex concepts. Instead, they prefer seeking direct and simple answers, which could potentially limit their critical thinking and ability to independently solve problems. Interestingly, the informant points out that those students who might benefit most from engaging with such technological tools often are the ones who struggle the most with traditional learning methods. This suggests that despite the technology's limits, its facilitative nature might be particularly valuable for including and supporting students with various learning needs. Furthermore, the teacher has utilized ChatGPT as an educational tool, but with an awareness of its limitations. It has been reported that the AI tool, in some instances, has produced incorrect or misleading information, raising concerns especially in subjects requiring accurate and verifiable knowledge. This is particularly problematic in subjects like English at the secondary level, where misinformation can confuse students and undermine learning objectives. This informant's experiences underline the importance of using ChatGPT and similar technologies with a critical approach. It is essential to guide students in asking meaningful questions and to encourage them to explore beyond the immediate answers the AI tool provides. At the same time, teachers must be aware of the risk of misinformation and integrate strategies to verify the accuracy of the information shared. By balancing these factors, teachers can maximize the educational benefits of using ChatGPT in teaching, while ensuring a robust and critical learning experience for their students.

Considering recent reflections on the challenges and potential of implementing ChatGPT in the education system, it is worth exploring how teachers can concretely integrate this technology into teaching to enrich students' learning experiences. Various perspectives from teachers reveal a mix of enthusiasm for the technology's possibilities and concerns for its limitations and potential downsides.

> *"When it comes to integrating ChatGPT into teaching, I encourage my students to use it to enhance and prepare their texts. This has been well received, although it has also opened my eyes to some challenges, especially the tendency to overly rely on the technology for answers. This concerns me, as it may hinder the development of their ability to think critically and engage in deep learning."*

> *"When it comes to the implementation of artificial intelligence, I want my students to be able to use it correctly. The debates about ChatGPT and Bard now remind me of the debates in the eighties about whether we should have computers in school. The*

hysteria is the same. And now we have the internet. We cannot prepare people for the
future if we ignore the tools of the future like ChatGPT. I do not believe ChatGPT will
take over the world, but I still want to use and prepare it for today's needs."

These statements illuminate an important balance between leveraging technology's benefits to support learning processes while also preserving critical educational principles that promote independence and deep learning. By encouraging students to use ChatGPT to improve and prepare their texts, the teacher recognizes the technology's value as a tool to facilitate certain aspects of the learning process. At the same time, an understandable concern arises; overdependence on technology could potentially undermine important learning outcomes, especially in terms of developing critical thinking and independence. The reflections also link the current debate about ChatGPT to historical discussions about computers in education, highlighting how fear and skepticism towards modern technologies often repeat over time. Nevertheless, the teacher emphasizes the importance of preparing students for the future by embracing and understanding how to use these "tools of the future" in a responsible and effective manner.

Overall, these perspectives point to the necessity of integrating ChatGPT and other AI tools into teaching with a conscious strategy that both exploits their potential to support learning processes and simultaneously maintains an educational framework that promotes independent learning. By navigating this balance, teachers can help students become not just technologically adept but also independent thinkers equipped for the challenges of the future.

4.3 Opportunities in the Future

As we navigate through the challenges and opportunities presented by ChatGPT and similar AI tools in the education system, a new landscape of potential for future classrooms opens. These technologies are constantly evolving, and it is crucial to look ahead to understand how they can be shaped and integrated to enrich the learning experience for students. In this subsection, we will explore "The Future Possibilities" with ChatGPT in the classroom, and how these advanced language models can play a key role in education by aiding in text-based tasks, while recognizing and navigating their limitations. In this case, some of the informants had different opinions:

"The future requires today's youth to have an understanding of this technology.
Knowledge of how to interact with language models and other forms of artificial
intelligence will undoubtedly be an advantage. We are only at the beginning of this

development, and it is important to prepare students for the changes that will come. This includes not only understanding how to use the technology but also developing the ability to engage in natural dialogue with it. An honest and natural approach will often result in better and more relevant answers from the language models."

The statement above emphasizes the necessity of equipping the rising generation with knowledge and skills that are relevant for a future where interaction with artificial intelligence becomes increasingly common. Understanding how to effectively communicate with AI, like ChatGPT, will not only enrich the learning experience but also prepare students for a working life where technological competence becomes increasingly important. Furthermore, it is about more than just learning technical skills. It is about developing an understanding of how these technologies work and how they can be used in a way that progresses creativity, and problem-solving. By incorporating ChatGPT and similar AI tools into teaching, educators can guide students through the process of asking questions, exploring ideas, and creating knowledge in a way that is engaging and meaningful.

Recognizing the strengths of ChatGPT and similar language models provides a foundation for building the educational tools of the future. Their ability to process and generate text based on training offers a unique opportunity for teachers and students to explore text-based tasks with new depth. These AI tools can serve as catalysts for learning, where they can offer examples, explanations, and elaborative content that can inspire students to further exploration and learning. The next informant reflects on the increasing integration of artificial intelligence in everyday life and how this changes the way we interact with digital technology in schools:

"The development within artificial intelligence will continue to influence how we interact with digital technology, whether it's through internet searches, text, images, sound, or speech. Learning to use these tools effectively will become increasingly important. This will require an awareness of how to communicate with the technology, and how to adapt this interaction to achieve the best possible results."

The informant further suggests that we can expect machines to become better at understanding our needs and desires. This shows optimism around the future AI technology and its ability to adapt and respond to human interactions in a way that is more intuitive and natural for the user. Such development will not only make technology more accessible but also increase the potential for personalization in the user experience. The informant also points to the necessity of developing an awareness of how we communicate with technology.

This implies an understanding that as AI technology becomes more advanced, it also requires users to adapt their approach and interaction to maximize the utility of these tools. This adaptation involves learning how to formulate requests or commands in a way that AI can interpret and act upon efficiently, which can improve the outcomes of interacting with the technology. This also creates a responsibility for the use of this type of technology for teachers in school towards their students. Another informant was more adamant about this:

> *"Theoretically, if teachers can guide students to use such tools in a reflective and meaningful way, which supports their learning process, it can be greatly beneficial. It would involve encouraging students to think critically and long-term about their own learning work, instead of chasing after quick answers. However, I have not tested this in practice. My techno pessimism reflects the concern that many students look for the easiest way out instead of focusing on maximizing their learning. My experience suggests that there is a tendency among students to prioritize simple solutions over deeper understanding and knowledge."*

The informant here highlights an important aspect of using artificial intelligence AI and other digital tools in the education sector. The informant recognizes the potential positive contribution such tools can have on students' learning processes, especially if teachers can guide their use in a way that promotes reflection, critical thinking, and independent learning. By encouraging such an approach, technology can serve as a catalyst for deeper learning, where the goal is to develop students' abilities to think critically and long-term about their own learning work. At the same time, the informant expresses her own techno pessimism, reflecting concerns about students' tendency to look for the easiest way out. This suggests a fear that the availability of quick answers through AI and digital tools may contribute to a superficial approach to learning, where students prioritize easy solutions over engaging in a process that promotes deeper understanding and knowledge acquisition. The same informant later stated:

> *"Assuming students will not use technology to bypass tasks might seem somewhat techno pessimistic. Therefore, I have chosen to adapt teaching methods by removing certain types of tasks. In subjects other than English, I have chosen to omit written exams as a form of assessment. For the English subject, the focus has shifted more towards oral presentations and tests without aids to promote a different type of learning engagement. The problem is exacerbated in situations where students face tests or exams without access to these aids. They might end up providing incorrect*

answers not because they do not know the answer, but because they do not understand how the knowledge, they have acquired through aids fits into the context they are being tested in."

By recognizing the potential in technological development, while also being critical of how students might use these tools, the informant's strategy shows a deep understanding of both the opportunities and challenges that come with integrating AI into the education system. The informant points out a critical issue: the risk of students becoming too dependent on technology to solve tasks, which can be particularly challenging in situations where technological aids are not available, such as during tests or exams. This can lead to a situation where students have difficulty applying their knowledge in new contexts. To counter this challenge, the informant's approach has been to adapt teaching methods. This includes removing written tests in certain subjects and placing greater emphasis on oral presentations and tests without aids. This choice reflects a strategy that not only seeks to limit potential misuse of technology but also to promote different forms of learning engagement and ensure that students develop a deeper and more robust understanding of the subject matter. The next informant also shares some of the same thoughts on this, but a bit more about the integration of AI in schools – which will also affect teaching methods and students' learning processes:

"... I discovered that the use of ChatGPT can challenge traditional methods of text understanding and analysis. For example, when students are given tasks based on exam questions from previous years, these often require a deeper understanding and comparison of literary works or characters. This is something I believe ChatGPT might struggle with in the same way as a student who has engaged directly with the text."

The informant reflects on how ChatGPT, despite its innovation, may encounter limitations when it comes to deep text understanding and analysis. This is particularly relevant in subjects that require thorough comparison and interpretation of literary works or characters. While ChatGPT can offer immediate information and assistance with a range of tasks, the informant suggests that the technology might struggle to match the level of engagement and understanding achieved through direct interaction with the texts. This consideration underscores an important pedagogical insight.

Although artificial intelligence can revolutionize many aspects of learning, there are certain cognitive and analytical skills that are best developed through personal engagement. The

informant thus highlights the importance of balancing the use of technology with methods that promote deeper learning processes. Furthermore, this reflection points to the necessity of developing teaching strategies that not only incorporate AI as a learning tool but also encourage critical thinking, analytical skills, and personal engagement with the learning material. By doing so, teachers can exploit the potential of technology while ensuring that students develop the in-depth understandings necessary for academic success and learning.

The next and final informant reflects on a profound observation regarding the changing landscape in education and society, driven by technological advancements and societal changes. Pointing out a generational shift, the informant underscores how the rapid development within technology, especially with the introduction of tools like ChatGPT, combined with the unique challenges introduced by the coronavirus pandemic, has affected the way we learn and teach:

> *"What I am saying is that we are witnessing a generational shift. The coronavirus pandemic may have influenced this shift. The pandemic and ChatGPT may have blended, but what we cannot ignore is that society and learning are dynamic and constantly changing. I am approaching 50, and the gap between me and my students is enormous. That means I need to stay updated, and I need to be there for them. If you ask me about a pop artist today, I will not know. The last one I knew was Madonna. This gap means that when we discuss music, I have to ask my students because it is their reality, not mine."*

This statement highlights an important acknowledgment from the informant about the necessity to be flexible and adaptable in the face of an ever-changing teaching environment. By recognizing the gap in knowledge and experience compared to the informant's students, the informant emphasizes the importance of learning from and with them. This perspective underscores that education is not just one-way communication from teacher to student but a mutual exchange of knowledge and experiences. In conclusion, the informant shows that to meet the upcoming challenges and opportunities in the future school, both teachers and students must be prepared to embrace changes. This requires an openness to innovative technology and a willingness for continuous learning and adaptation. By acknowledging and embracing the dynamic interplay between society, technology, and learning, we can better prepare to navigate the educational landscape of the future. This approach will not only enable us to exploit the potential of tools like ChatGPT but also ensure that we remain relevant and effective in our role as guides for the next generation.

4.4 Digital Imitation and Academic Honesty

In an era marked by digital transformation, the integration of artificial intelligence into the education sector has provoked a series of pedagogical and ethical questions, especially related to digital imitation and academic honesty. The chapter "Digital Imitation and Academic Honesty" aims to hear from teachers about the complex dynamics between the use of tools like ChatGPT in the school environment and how this affects the foundational principles of academic integrity. Therefore, the subchapter will closely examine the informants' thoughts on how the school community can navigate this landscape by promoting a culture of academic honesty while embracing the pedagogical benefits that AI technology offers. Furthermore, it will consider arguments for the importance of developing robust pedagogical strategies that not only address the potential for digital imitation but also equip students with the skills and ethical awareness necessary to navigate an increasingly digitized academic world.

As technology evolves and becomes an integrated part of our daily lives, its influence on the education sector has become more prominent. The use of language models such as ChatGPT opens new opportunities for learning and information seeking. This brings both positive aspects and challenges that must be addressed to ensure a meaningful and balanced educational experience for students, according to this informant:

> *"... When comparing the content of textbooks with information found through ChatGPT, there are differences in how subjects are presented. None of the sources are necessarily wrong, but they offer different perspectives. This diversity in approach is important in education but can lead to confusion among students who blindly trust a single source for their answers."*

> *"... A concrete example was when I came across a student submission that appeared suspicious. This assignment required significantly more time to assess than others because the content seemed to have been generated with the help of artificial intelligence. This led to a situation where I had to discuss the submission with colleagues and decide how to handle the issue in terms of grading and potential sanctions. I have also observed that students have used ChatGPT to generate text, but without understanding or reflecting on the content themselves. This was particularly evident when a student used ChatGPT to write an assignment, but clearly lacked understanding of the content when asked to explain or elaborate on what they had written."*

These statements highlight key aspects of integrating AI tools like ChatGPT into education and underscores the challenge of ensuring students not only produce content with technology but also understand and take responsibility for it. To address these challenges, the education system must develop robust frameworks for incorporating AI language models in ways that enhance learning and development. This includes crafting pedagogical methods that emphasize not only information retrieval but also source criticism and academic integrity. By doing so, technology can become a valuable educational tool, supporting better learning, and preparing students for future obstacles and opportunities.

The integration of artificial intelligence in schools has proven to have various consequences for how students acquire knowledge and develop skills. While these tools can offer new ways to engage and enhance learning experiences, it is also crucial to consider the potential challenges they may pose. One informant later added:

> *"In terms of the effect ChatGPT has on students' reading and discussion skills, I have noticed an improvement. However, I am also concerned that an excessive dependence on AI can weaken these skills. It is important to me that students develop a balanced approach to using AI, where they still prioritize developing their own understanding and critical thinking."*

> *"The concept of cheating or attempts at cheating is something I take seriously. If there is suspicion, I do not let it go. Not because I want to harm the students, but because I want to understand why. The more I understand why they do it, the better I can help them do it right. The problem is when they take the easy way out to minimize their own effort to advance without learning."*

The remarks underscore a pivotal aspect of employing AI in educational setting. That is the need to strike a balance. On one hand, technologies like ChatGPT can enhance the educational experience, offering new perspectives and sparking student engagement. Interacting with such tools can boost students' reading and discussion skills by providing diverse and accessible content. On the other hand, there are legitimate concerns regarding an overreliance on AI, which might impede students' ability to retain problem solving for instance.

Additionally, there is a risk that AI could in fact facilitate cheating, detracting from genuine learning. Regarding the "honesty" of programs like ChatGPT, several teachers have become aware that it can be a real issue. Therefore, according to this informant, the discussions must revolve around the general balance between leveraging technology in the best conceivable way without hindering the learning itself:

> *"Speculations that older versions of ChatGPT were downgraded to promote newer paid versions point to a broader debate about accessibility versus business models in the edtech sector. Regardless of these speculations, it is clear that there is a desire for technological tools that can enhance the learning experience without replacing the critical thinking and deep learning that occurs through more traditional educational methods."*

This statement touches on several key issues within the edtech sector. First, it addresses concerns about how the development and distribution of ChatGPT are influenced by business models, particularly the tension between making these tools widely accessible and the financial imperatives of their creators. The speculation about downgrading older versions of ChatGPT to push users towards paid versions raises questions about equity and access, fundamental considerations in educational settings. The informant's statement also underscores a widespread recognition of the value that technology can bring to education, provided it is used as a complement to, rather than a replacement for, traditional pedagogical approaches.

However, this integration presents a complex challenge. On one hand, AI can offer personalized learning experiences, immediate feedback, and access to a vast array of information, all of which can significantly enhance the learning process. On the other hand, over-reliance on these technologies' risks diminishing students' engagement with the more demanding, but rewarding, aspects of learning that require perseverance, reflection, and intellectual struggle. Navigating this balance requires careful consideration of how AI are implemented in educational contexts. It calls for a pedagogical framework that values the unique contributions of both technology and traditional methods, ensuring that students benefit from the best of both worlds. Moreover, it demands ongoing dialogue among educators, technologists, and policymakers to address the ethical and practical implications of AI in education, with a focus on fostering equitable access and maintaining the integrity of the learning process.

4.5 The Changing Role of Teachers

In the current era of educational transformation, the integration of Artificial Intelligence in schools signifies a pivotal shift in the role of educators. As we navigate through this new landscape, the chapter on "The Changing Role of Teachers" aims to explore how this evolution impacts educators' responsibilities and methodologies. With technologies like ChatGPT becoming more prevalent in the classroom, teachers are not just knowledge dispensers, but also guides, mentors, and facilitators in a digitally enhanced learning environment. This change necessitates a reevaluation of pedagogical approaches and a significant emphasis on teachers' competencies in leveraging AI tools effectively. As one informant mentioned during the interview:

> *"The competence of teachers is, I would say, the first premise when discussing the implementation of AI in education. It is only once they truly understand it that one can comprehend how it should – and should not – be used in teaching. In other words - teachers should demonstrate how AI can be used. Students should learn to write effective prompts. They can engage in a conversation with the chatbot about a topic. At best, this can lead to a better understanding…"*

Teachers should demonstrate how AI can be utilized creatively and constructively in educational settings. Students should learn to write effective prompts to engage in meaningful dialogues with chatbots on several topics. This approach could potentially lead to an enhanced understanding of subjects. When reflecting upon this statement, it is evident that the arrival of AI in education not only opens new avenues for learning but also challenges the traditional paradigms of teaching. It underlines the necessity for educators to possess a deep understanding of these technologies to harness their potential effectively. By guiding students on how to interact with AI thoughtfully, teachers can encourage critical thinking, creativity, and a deeper comprehension of subjects. Moreover, incorporating AI in vocational and professional education underscores the importance of preparing students for the realities of the modern workplace, where AI is increasingly integral. As another informant expressed:

> *"Once that is in place, it is more about how most of it works automatically with the solution itself. Therefore, it is important to emphasize the training of teachers in schools across the country, so they understand what the technology and language models really are."*

This means that when teachers have the necessary competence and understand how these technologies work, they can more effectively integrate them into teaching. When all these factors finally fall into place, the integration of AI in educational settings is anticipated to significantly transform the role of teachers, shifting towards a more facilitative and guiding approach in the teaching role itself. The coming generations of teacher students will receive a much broader introduction to AI in their curriculum than my own cohort and will have the opportunity to improve their knowledge with both the use and application of integrated AI in schools from the start.

This informant was more explicit about how she managed to maintain a nuanced view of the indoctrination of AI in schools, where her main priority was to guide and support her students through their learning process. The use of AI tools such as ChatGPT marks a new era in pedagogy, where the role of the teacher extends beyond traditional teaching:

> *"I have no problem with the use of AI if it is clear in their work. I see myself more as a mentor than a grader. I know my students, and after spending many months together, one gets a sense of the person. There are different ways to analyze text, and you can often tell when something has been written by a human. If my students have used or mentioned that they have used ChatGPT, I first discuss with them why they chose to use it, and then we explore the strengths and weaknesses of what they have produced."*

> *"I believe that artificial intelligence, especially ChatGPT, is something the new generation is going to use a lot in the future. Therefore, it is essential to not just stand on the sidelines, but to actively guide them on how to use this technology responsibly and creatively. Considering that both the students and ChatGPT have their limitations, I see it as my duty to ensure that the information generated is of high quality."*

These statements emphasize an important angle: the necessity of including AI in education in a way that enriches the learning experience without compromising academic integrity. It points out an important balance between using the technology to enhance teaching and maintaining a focus on students' ability to think critically and independently. As teachers, we face the challenge of integrating AI into our pedagogical arsenal, while maintaining our commitment to cultivating well-informed, critically thinking individuals prepared for the challenges of the future. What I find interesting in this qualitative study is that there is a wide gap between the viewpoints of different informants on this topic. There is also a fine balance between integrating new technology to enrich the learning experience and ensuring that

students still develop necessary skills and knowledge on their own. This balancing act becomes particularly challenging considering AI tools like ChatGPT, which have the potential to radically transform teaching methods. The second informant from the same school had this to say about the changed use of artificial intelligence in schools:

> *"It seems there was a concern that I was trying to limit the possibilities for using technology in teaching by removing certain methods. I admit that I have not embraced technology as much as I perhaps should have. There is an acknowledgment that among technology-optimistic teachers, who share their experiences and methods on platforms like Facebook, there are many useful ways to integrate technology into teaching. (…) While there have always been and always will be students looking for shortcuts or ways to cheat, the introduction of technologies like ChatGPT has made it easier than ever. However, this problem is not new and is not limited to the use of new technology alone. Recently, I have noticed that students' performance can vary significantly from course grades to exam results, which is not always due to the use of technological aids but can also be a result of too much guidance from the teacher throughout the year."*

The previous statement was thus from a teacher who may be perceived as more reserved in his approach to innovative technology. Nevertheless, it recognizes the value of sharing and learning from the experiences of technology-optimistic teachers. The issue around cheating and shortcuts in learning is not unique to the digital age, but the availability of advanced AI tools has undoubtedly intensified these challenges. Furthermore, the teacher's observation on fluctuations in students' performance points to the importance of finding a balance between guidance and independent work. This underscores the need for a reflective and targeted approach to integrating technology in the education sector, where the goal is to harness the potential of technology while maintaining a solid foundation of pedagogical practice. He also later spoke about this:

> *"In teaching, especially in subjects like English, it has traditionally been common to assign tasks where students must read a book and then write an analysis or summary of it. This method has been important for developing reading comprehension and critical thinking. However, the introduction of technological tools like ChatGPT has changed the dynamics somewhat. I have not specifically adapted tasks with ChatGPT in mind and have instead chosen to give students a certain degree of freedom when it comes to the choice of text. If they do not find a book themselves, I offer them one. This*

has led to me using self-selected texts as the basis for tasks, where students have been given deadlines and guidance."

This perspective highlights an adaptive approach to teaching, where the same teacher attempts to maintain the essence of traditional literature study while embracing the flexibility and adaptability enabled by technology. Regardless, he seems determined that learning in the "old way" is the most effective for students. Therefore, the importance of continuous guidance throughout the time students work on the given tasks in English is emphasized. A third informant has also declared that he has had to adjust his didactic work in the classroom because of integrating AI:

"I have also begun to adjust the types of assignments to increase engagement and understanding among the students. By reducing the scope of large assignments in favor of more engaging activities, I see that students respond positively. This shows me that adapting to the students' needs and expectations is the key to effective learning."

This emphasizes a notable change in pedagogical practice in response to the increasing use of AI language models. This adaptation includes a conscious decision to change the types of assignments to better engage and meet students' needs. By shifting the focus from traditional, extensive assignments to more interactive and engaging activities, the informant's approach aims to create a more dynamic and inclusive learning environment.

"With the increasing use of AI like ChatGPT, I find it necessary to reconsider and adapt my teaching methods. I make sure to do pedagogical adjustments every two years and engage students in a dialogue about how they wish to learn. This includes integrating their ideas with mine in the curriculum, which promotes a more collaborative learning environment. Through this process, I have become increasingly aware that each generation of students brings new challenges and expectations to the learning process. This underscores the importance of being flexible and adaptable in the role of a teacher to effectively meet these challenges."

It illuminates the importance of continuously reassessing and adapting teaching methods considering technological advancement and changing student expectations.

By including students in making decisions about their own learning, the informant aims to create an environment focused on collaboration and joint effort. This represents a shift towards a more student-centered approach, where students' voices and needs actively shape

and influence the teaching methods. These reflections clarify how the role of the teacher is changing with the introduction of AI assisted language models. The increasing availability and use of AI tools like ChatGPT challenge traditional pedagogical methods and require a new type of flexibility and openness from teachers. By adapting to this new reality, teachers can not only meet students' expectations and needs, but also harness the potential of technology to enrich and improve learning experiences.

4.6 Students' Experiences

In the forthcoming subchapter, the focus will be on assessing the implications and experiences of students with AI language models, as interpreted through the perspectives of their teachers. The deliberate focus on teachers rather than students aims to offer a more objective and reflective assessment. Teachers can observe and analyze how students interact with technology over time, providing deeper insights into the advantages and challenges of integrating ChatGPT into educational settings. By analyzing teachers' accounts, we access valuable insights into how students adapt to the digital learning environment, utilize AI tools for their studies, and the pedagogical challenges that emerge.

In discussing the integration of AI in education, one informant shared insights on students' usage of technology, particularly ChatGPT. According to the informant, students do utilize technology, but often discreetly and not always appropriately:

> *"Students utilize technology to a certain extent, but often covertly, as they do not always use it appropriately. There lies a challenge in how technology, such as ChatGPT, is applied for educational purposes. I have encouraged students to use ChatGPT to generate discussions about assignment topics or to find relevant subjects to work on. However, in some instances, it seems that the purpose is not to use ChatGPT as a tool for learning and improvement. Instead, it is used as a shortcut to complete assignments, which contradicts the intention that technology should contribute to deeper understanding and learning."*

This perspective sheds light on a critical aspect of integrating AI into education: the necessity of guiding students towards using these tools responsibly and constructively. While AI has the potential to revolutionize learning by providing access to vast amounts of information and fostering creative approaches to problem-solving, its effectiveness is contingent upon users' intentions and methods. It is vital that teachers clarify the purpose and limitations of AI in academic settings, setting clear boundaries for its use while emphasizing its role as a

facilitator of learning rather than a substitute for personal effort and intellectual engagement. By doing so, teachers can help students navigate the complexities of the digital age, equipping them with the skills and moral compass needed to use AI and other technologies wisely and effectively.

It is commonly assumed that modern students are inherently technology proficient due to their constant exposure to digital devices and the internet from an early age. However, this assumption does not always hold up under scrutiny, as real-world classroom experiences often reveal a different story. Two informants shared similar views on this very topic:

> *"I have noticed that many students are assumed to be technologically adept, but reality often shows the opposite. This became especially clear to me when I introduced basic computer competency tasks, like organizing files into folders; a task many students struggled with. Despite easily changing the computer's wallpaper, they had challenges in creating and using folders effectively. This reveals a gap in their digital competence - they can navigate the entertainment aspects of technology but struggle with the basic organizational and productive use of technology."*

> *"My experiences indicate that students primarily view technology, such as ChatGPT, as a shortcut to completing tasks without deeply engaging in the learning process. They often use such tools to directly answer assignments, without reading and understanding the material themselves. This results in them missing half the task, which is reading and understanding the content. Even though ChatGPT can provide correct answers, students lose valuable insights and knowledge by not exploring the material themselves."*

These quotes underscore a critical issue in the integration of AI and technology into education. The first quote highlights a discrepancy between perceived and actual technological proficiency among students, pointing out that familiarity with digital entertainment does not necessarily translate into effective or productive use of technology for educational purposes. The second quote further elaborates on this theme, showing how reliance on AI tools like ChatGPT can potentially undermine the learning process by encouraging shortcuts rather than deep engagement with material. This informant delved deeper into this angle and described the situation carefully in the context of students' experiences:

"I have observed that some students have tried to circumvent the work by using works from others, whether it is siblings, friends, or now, ChatGPT. This is nothing new; there have always been students looking for shortcuts. For example, in the past, a student might have gotten help from an older sister on an assignment and then just changed a few details before submission. This mirrors the current situation where ChatGPT can offer similar 'help,' but the essential problem remains the same: the student does not learn the material themselves. The use of ChatGPT represents a kind of democratization of help for schoolwork, where everyone now has access to a 'digital parent' that can assist with the tasks. (...) However, the outcome is the same as before; if students rely too much on this help and do not engage themselves, they learn nothing. The important thing is how these tools are used. If, for example, one starts with a submission from an older sibling, the focus should be on learning from the structure and content, not just copying it. The same applies to ChatGPT; if used correctly, it can be a valuable resource for understanding how to structure and approach a task, but it should not replace the personal learning process and understanding."

The informant's claim sheds light on an important and timeless challenge in education: students' quest for shortcuts and superficial learning. By drawing parallels between traditional forms of help (such as assistance from an older sibling) and modern help from ChatGPT, the statement underscores how technological advances have made it easier than ever to find these shortcuts. However, it also points to the fundamental issue that such shortcuts undermine the actual learning process. This is a valid point because it highlights that the problem does not primarily lie in the tools or technology themselves, but in how students use them. By referring to the use of ChatGPT as a "democratization of help for schoolwork," the informant suggests that access to knowledge and assistance is more available than ever.

Another informant approaches the use of artificial intelligence in the classroom in a thoughtful manner, with an underlying goal of assessing how well students master the technology. The informant emphasizes the importance of selecting teaching methods that not only give students an understanding of what they are supposed to do but also enable them to demonstrate the competencies they are meant to acquire. This approach is about more than just choosing the right method; it is about ensuring that students understand the objective of the teaching and that they achieve the set competence goals:

"You must choose methods that enable students to grasp what they should do, and that they can show you the competencies they are supposed to learn... Or you must teach methods that allow them to learn what is the goal of the teaching – So that you can see that they master the competence goals. If you have sufficient competence in AI, this can be an extremely useful tool for students. Both for solving tasks, reading training, and understanding. It's about teaching students to use this artificial intelligence as a kind of conversational partner rather than a tool that only gives you answers you wonder about."

The informant also points out that if teachers have adequate competence in AI, the technology can serve as an invaluable tool for students in their learning. AI can be used for a variety of educational purposes, including task resolution, reading training, and deeper understanding of the subject matter. By regarding artificial intelligence as a conversational partner rather than a mere answer tool, teachers can guide students towards a more reflective and independent use of the technology. This not only promotes students' competence in the subject but also prepares them to navigate a future where interaction with AI becomes increasingly common. This perspective challenges traditional teaching methods and invites reflection on how teachers can integrate AI into teaching in a way that enriches students' learning experiences and contributes to their overall skill development. By promoting such an approach, teachers can ensure that students are not just passive recipients of information but active participants in their own learning process.

Observations from another informant also unveil an intriguing development in student experiences related to language subjects, spurred by the integration of artificial intelligence in education. Students have reported finding language subjects easier and more accessible, leading to an increase in general interest in the subject. This is an interesting indication of how technological tools can influence students' engagement and experience of learning.

"And so, we have received feedback from students directly saying that they find several of the language subjects easier, and that it is easier to keep up with the subject, which has increased the general interest. However, it is important for me to clarify that this has not been researched, and this is only based on experience so far. But the early forecasts are very positive."

The informant is careful to note that these observations are not confirmed through formal research but represent experiences from the educational field. Nonetheless, the early feedback

from students points towards positive trends regarding the use of AI in education. The positive response from students about increased accessibility and interest in language subjects using AI underscores the importance of exploring and integrating new educational tools in teaching.

The informant's reflection on students seeking shortcuts, such as leveraging ChatGPT for task completion without engaging with the material, underscores a perennial challenge in education: fostering deep learning over superficial understanding. The findings highlighted a critical challenge, which was ensuring students utilize AI tools like ChatGPT responsibly and effectively. Encouraging students to engage critically with AI-generated content can lead to meaningful learning experiences. This subchapter's exploration into teachers' perceptions of students' AI interactions has underscored the necessity for educational guidance in the digital age.

4.7 Assessment and Feedback

Assessment and feedback serve as the backbone of educational development, offering insights into student progress and understanding. This subchapter will show different views from the informants on this specific matter. The aim behind this was to explore the transformative potential of AI in revolutionizing traditional assessment methods and feedback mechanisms, spotlighting how these technologies can support educators in identifying student needs, tailoring learning experiences, and fostering a more engaging and responsive educational environment. This includes understanding how AI can automate grading, provide instant and personalized feedback, and analyze student data to inform teaching strategies. Equally important was acknowledging the limitations and ethical considerations surrounding the use of AI in educational assessments.

When we initially delved into the topic of assessment and feedback with our informants, a variety of thoughts led to diverse responses from the group. One informant focused on how AI, as developed today, may not be fully equipped to perform adequately across all areas within the educational sector:

> *"Because it is a language model, it is not capable of reasoning or planning in the same way humans do. This has implications in various subjects, especially within mathematics and the sciences, where the ability to explain concepts and methodologies is crucial. Even though the language model can guide you through solving an equation, it has not actually solved the equation in practice. This underscores that the*

model relies on training data to generate answers, and if it solves an equation correctly, it's because it has been exposed to similar problems during its training."

This statement brings to light the limitations of current AI technologies in providing assessment and feedback that require deep reasoning and personalized explanation, particularly in subjects that demand more than just language processing. The reliance on pre-existing data to generate responses can be a double-edged sword, providing quick answers but potentially lacking in the depth of understanding and customization that a human teacher can offer. As we explore AI's role in assessment and feedback further, it becomes clear that while AI can offer significant assistance and efficiency improvements, there is still a need for human oversight and intervention to ensure that educational outcomes are meaningful and comprehensive. This realization prompts a broader discussion on the complementary roles of AI and human educators in shaping a balanced and effective educational experience. The same informant also emphasized the importance of treating the chatbot as exactly that – a chatbot. Despite the continual development and improvement of various chatbots, making them increasingly sophisticated day by day, they still are not a 100% reliable source:

"The language model is adept at explaining things in a manner that may seem as though it understands the concepts, even though it does not 'understand' in the same way humans do. For instance, it can explain how to conduct a physics experiment involving weights and mass, based on the training material it has been exposed to. This demonstrates the model's strength in conveying information it has been trained on."

This perspective sheds light on a crucial distinction between the apparent understanding displayed by AI and genuine human comprehension. It underscores the need for cautious engagement with AI technologies, recognizing their capabilities and limitations. While chatbots can provide valuable assistance in explaining concepts and processes, their lack of true understanding means they should be viewed as tools rather than replacements for human educators. This understanding prompts further reflection on the best ways to integrate AI into educational settings, leveraging its strengths to enhance learning while maintaining a critical awareness of its limitations. This balanced approach ensures that educational outcomes remain deeply rooted in genuine comprehension of the subject. When employing such technology as a teacher, several factors must be considered. It is not advisable to blindly trust the technology but rather to use it as a kind of collaborator. One informant has taken on the "responsibility role" at their school regarding advice and assistance with the use and

implementation of artificial intelligence for teachers, who may not be as knowledgeable as many of the students in Norwegian schools:

> *"The advice I give is largely about being very honest and clear when interacting with a language model. When asking questions or receiving answers from the language model, it is crucial to be honest about whether you understand the responses or not. If further explanations or specifications are needed, this should be communicated clearly. This is essential to avoid misunderstandings and ensure that the information provided is accurate and relevant."*

The informant highlights a critical point about being honest and clear in interactions with AI. This is not only important for ensuring one understands the answers received but also for guiding the technology to provide more precise and useful responses. By clearly communicating what one understands and what requires further explanation, one can enhance the quality of interaction with AI and make the technology a more effective resource in the learning process. It is interesting to see how the informant takes on a guiding role for other teachers at the school, recognizing the need to equip the teaching staff with knowledge and strategies to utilize AI in a pedagogically beneficial manner. This approach reflects an understanding that while students may be technologically proficient, there can still be a knowledge gap among teachers who need more training in this specific field.

In the context of assessment and feedback in schools, artificial intelligence takes an intriguing place. These technologies have demonstrated impressive capabilities for processing and generating text, making them valuable assistants in various text-based tasks. By engaging in conversations and producing content on topics they have been trained on, language models show significant potential for supporting learning processes.

> *"Despite these limitations, language models do a good job of processing and generating text based on their training. They can engage in conversations and produce texts on topics they are knowledgeable about, which shows their usefulness in assisting with text-based tasks. However, it's important to be aware of the models' limitations, especially regarding creativity, originality, and the ability to independently reflect and reason."*

This emphasizes the importance of understanding and acknowledging the limits of these technologies. Although language models can simulate understanding and generate coherent texts, they lack the ability to think creatively, originate ideas, and reflect independently, which

is so crucial for deep learning. Therefore, it is vital for teachers and educational institutions to be mindful of these limitations when utilizing AI tools in assessment and feedback processes. The issue of how best to assess student work for honesty and originality, given the availability of AI tools, becomes increasingly relevant. It requires teachers to continually seek methods that encourage genuine effort and learning among students while recognizing and leveraging the positive aspects of AI technology. To navigate through these challenges, it is essential to maintain continuous attention and adaptation in teaching methods. It requires a balanced approach, where one utilizes the strengths of AI tools to enrich assessment and feedback, while also maintaining and promoting students' ability to think independently and solve problems creatively. By doing this, we as educators can find the best methods to promote genuine learning and understanding among students, ensuring they develop the skills and knowledge necessary to succeed in an increasingly digitalized world.

4.8 Ethical Considerations

The concluding subchapter, "Ethical Considerations," delves into the ethical dilemmas associated with using ChatGPT in educational settings. This section aims to highlight the insights of various informants on the ethical questions posed by the integration of artificial intelligence in education. Concerns range from academic integrity and plagiarism risks to the biases in AI algorithms and their impact on student learning. Drawing on perspectives from teachers and educational professionals, this subchapter navigates the ethical complexities introduced by ChatGPT. It seeks to balance the potential benefits of these tools with the imperative to maintain a fair and authentic educational experience, contributing to the broader dialogue on AI's role in educational practices.

There are various ethical considerations to examine concerning this topic, as discussed by several informants during the interviews. Many informants addressed the issue of "Bias" within artificial intelligence. Ethically speaking, this could be a point of consideration since chatbots can create false narratives or direct misinformation based on the dataset they have been trained on. This is also something that teachers must take seriously. One informant had an interesting perspective:

"Curious students may experience richer opportunities from which they can learn. Calculating students may take shortcuts. For them, this will limit learning as it is problematic for less motivated students who take shortcuts without significant cognitive engagement."

This is also another reason one must be conscious of these challenges and work actively to guide students on how to critically evaluate the information they receive from AI tools. There is also a need to focus on developing AI technologies that minimize the risk of bias and misinformation, so they can serve as reliable and valuable resources in the educational process. This issue becomes particularly relevant given that AI systems rely on the datasets on which they are trained. As AI continues to be integrated into educational contexts, educational institutions must navigate these ethical challenges carefully to ensure that technology is used in a way that encourages academic integrity.

An aspect that aligns with the previous paragraph on ethical considerations is the hindrance of learning. If students view ChatGPT as a shortcut to avoid the demanding work of thinking for themselves and processing their own texts, it can undermine their learning process and hinder their cognitive development. When technology is used to bypass challenges, students miss learning opportunities that require active engagement, reflection, and personal effort.

> *"Students can ask the chatbot to improve the texts they write. If they examine the suggestions for improvement, they can learn something from them. Or, this could be a shortcut, a robot that solves the task, so they do not have to."*

The previous consideration points to the ethical responsibility teachers must guide students on how to use ChatGPT and similar tools in a way that promotes, rather than hinders, their development. This involves teaching students how to question, assess, and build on the suggestions they receive from AI, instead of accepting them uncritically. By promoting such a reflective use of technology, teachers can help students see the value in exploring and understanding the material deeply, thus developing both skills and insights that will serve them well beyond the classroom. Another ethical consideration that was highlighted by one informant is the balance between leveraging the potential of technology while upholding critical pedagogical principles:

> *"I have observed situations in the classroom where students immediately turned to GPT to answer questions I posed. They quickly found an answer through the technology, but without engaging deeply in the learning process. This leads to them not learning anything of significance; they regurgitate information without having understood or processed it. This reminds me of when students google information and recite it without having read or understood the content properly. The intent seems more to impress than to actually learn and understand the material."*

"This points to an important lesson about the balance between providing support and ensuring independent learning. Technological aids like ChatGPT can offer valuable contributions to the learning process, but it is crucial that students also learn to process and understand the information on their own. This will better equip them for future challenges where they must stand on their own two feet."

Although technological tools can offer quick solutions and access to a wealth of information, it is essential that students go beyond superficial search and repetition of found information. This is not only relevant for preparing them for academic challenges but also for developing learning skills, which are increasingly crucial in today's world. To promote such depth in learning, teachers can play a pivotal role by designing tasks and activities that encourage students to think critically about the information they find through AI tools. This can include posing open questions that require students to reflect on the information, compare various sources, and draw their own conclusions based on thorough analysis.

The exploration of ethical considerations in using ChatGPT in education underscores significant challenges. Ethical dilemmas, such as bias and misinformation within AI algorithms and their impact on academic integrity and student development, necessitate a careful approach to AI integration in educational contexts. A key finding from the interviews highlights the need for educators to actively guide students in responsibly using AI language models. Educators must encourage critical engagement with technology, fostering an environment where AI complements rather than replaces traditional learning methods. This responsibility extends to ensuring that AI supports genuine learning and upholds academic integrity. The ethical guidelines discussed in this section aim to balance AI's benefits with the need to maintain an equitable and authentic educational experience, thereby enabling students to develop integrity and critical thinking skills in a digital age.

5.0 Discussion

The study examines the integration of artificial intelligence, exemplified by ChatGPT, within the framework of English language education, with the aim of enhancing student learning while concurrently upholding privacy and educational values from a pedagogical perspective. It endeavors to investigate the balance between technological integration and the preservation of educational integrity and student privacy. Drawing on qualitative data from teacher interviews, this research offers a comprehensive analysis of the potential implications, strategic approaches, and ethical considerations associated with the deployment of AI tools like ChatGPT in educational settings. The findings suggest that this area is still in its preliminary stages, characterized by a lack of consensus among educators on the appropriate methodologies for implementation. This paper will therefore articulate and discuss a selection of pivotal findings that are deemed academically significant within the context of the study's established theoretical framework and empirical foundation.

Integrating ChatGPT and other AI systems into higher education, despite their increasing user base, involves navigating significant challenges, particularly those related to data privacy and security. Sok & Heng (2024) highlight concerns that arise as students and lecturers may inadvertently share personal or sensitive information while interacting with AI platforms like ChatGPT. This can lead to potential risks, including the misuse of student information for non-academic activities, unauthorized access to learners' data, and security breaches. Such vulnerabilities underscore the need for robust security measures and clear protocols to protect sensitive information within educational settings. Besides, while AI systems such as ChatGPT represent significant technological advancements, they are not without limitations, especially when compared to human intelligence. Bareksten (2023) notes that these systems often have narrow scopes of application; they are designed to excel at specific tasks but lack the capacity to exhibit general intelligence. This specialization restricts their ability to adapt to new or unforeseen challenges in a manner akin to human problem-solving. Consequently, while AI can perform certain tasks with remarkable efficiency, its utility in dynamic and complex educational environments remains limited.

Further compounding the challenge is the inherent limitation of AI in language education. As discussed in the field, AI language models like ChatGPT operate with constraints, particularly in their ability to "remember" information only within the current conversation. This characteristic poses a risk of perpetuating misinformation if not immediately corrected—for example, if the AI incorrectly asserts that London is the capital of France, it will treat this

misinformation as fact within that dialogue. Therefore, it is crucial for users, especially educators and students, to critically assess AI-generated content for inaccuracies or confabulations. In discussing the integration of AI into English education, it becomes imperative to not only consider the technological and practical implications but also to critically evaluate the pedagogical outcomes. The reliance on AI tools must be balanced with an awareness of their limitations and potential risks, ensuring that these tools are used in ways that enhance educational integrity without compromising security or the quality of education. Thus, the discourse on AI in higher education continues to evolve, emphasizing the need for continuous assessment and adaptation to harness these technologies' potential responsibly.

When exploring the diverse experiences of implementing ChatGPT in the classroom, it is crucial to consider multiple aspects of its integration and impact. The integration of artificial intelligence in educational settings is increasingly recognized as a transformative force, capable of enhancing teaching methodologies and fostering personalized learning trajectories. Constructivism, a pedagogical strategy that emphasizes the learner's active role in constructing knowledge through integrating their existing knowledge and skills, aligns well with the capabilities of AI tools (Isik, 2018). ChatGPT, with its advanced text generation capabilities, exemplifies how AI can support constructivist approaches by facilitating customized instruction and liberating educator time, thus enhancing educational engagement and motivation (Bareksten, 2023).

In practical terms, educators have explored the use of ChatGPT to not only provide quick access to information and relevant discussion points but also to foster a more guided learning experience. For instance, some teachers advocate for a model where ChatGPT does not simply provide answers but prompts students with questions that encourage them to investigate and think critically, thus fostering deeper learning and engagement. This approach leverages the technology as a tool for personal guidance in the classroom, where direct teacher interaction may not always be feasible. This has led to reports of students finding subjects more accessible and engaging, thus increasing their interest and motivation in learning (Skjuve et al.). Furthermore, at some educational institutions, AI language models have been customized to prioritize privacy and equitable access, focusing on challenging students to reflect and explore rather than providing direct answers. Such initiatives underscore a shift towards using AI as a catalyst for independent thought and inquiry, rather than as a mere repository of information. The positive outcomes reported from these implementations—increased willingness to learn and higher motivation among students—

highlight the potential of AI to significantly enhance educational experiences. This discussion underscores the need for careful consideration of how AI is integrated into learning environments. The ideal use of such technologies should not replace traditional teaching methods but should enhance them, supporting the constructivist model by encouraging students to engage actively with the material and by facilitating a more interactive and personalized learning environment. As AI continues to evolve, its role in education will expand, necessitating ongoing assessment to ensure it aligns with educational goals and ethics, contributing to more dynamic and effective learning experiences.

As we look toward the future, embracing AI technologies such as ChatGPT not only enhances the learning environment but also prepares students for a future where digital fluency will be indispensable. The potential for AI to support and extend educational practices is immense, given its ability to adapt to and facilitate individual learning paths. This foundational knowledge will undoubtedly provide a competitive advantage as AI continues to evolve and become more ingrained in everyday interactions across various digital platforms, including internet searches, multimedia content, and communication technologies.

The need for students to not only understand how to use these technologies but also to engage in natural dialogue with AI is paramount. An honest and nuanced approach can often lead to more relevant and accurate responses from AI systems, thereby enhancing the learning experience. However, as we are only at the nascent stages of this technological integration, it is crucial to prepare students for the forthcoming changes and challenges. This preparation involves cultivating a sophisticated awareness of how to communicate with AI and how to adapt interactions to optimize outcomes.

The continuous advancements within AI technology have significantly enhanced the capabilities of these systems. Recent developments have equipped AI with remarkable abilities such as language translation and sophisticated text generation. Central to these advancements is the neural network, which is a type of machine learning system that processes vast amounts of data to recognize patterns and solve complex problems, thus emulating human cognitive processes (Bareksten, 2023). However, the use of AI like ChatGPT in educational settings also presents challenges, particularly in areas requiring deep analytical skills, such as text understanding and literary analysis. For instance, when students are tasked with analyzing exam questions from previous years, which often require a nuanced understanding and comparison of literary works or characters, AI tools may struggle to replicate the depth of analysis achieved by students who have engaged directly with the texts.

This limitation highlights the need for a balanced approach to AI integration, where AI complements rather than replaces traditional educational methods.

This shift towards a more technologically integrated education is supported by a growing body of research that emphasizes the multifaceted benefits of technology use in educational contexts. According to Isik (2018), technology encompasses a broad set of tools and methods devised by humans to influence and modify their environment, coupled with the accumulated knowledge associated with these processes. Historical analyses by Bagley and Hunter (1992) have highlighted that students who utilize technology resources experience a broader access to learning materials and demonstrate a heightened enjoyment in the learning process. This suggests that technology does more than supplement traditional education; it enriches the learning experience by making it more accessible and enjoyable, thus fostering a more inclusive educational setting. Furthermore, the transformative impact of technology in education aligns well with constructivist ideals, which advocate for an active, experiential learning process where learners construct knowledge through interactions with their environment (Isik, 2018). This alignment is significant because it underscores the potential of technology to create a rich, multi-sensory learning environment that not only conveys information but also stimulates various senses, thereby enhancing the overall quality of education. Moersch (1999) expands on this by suggesting that the thoughtful application of technology can significantly enhance the cultivation of advanced cognitive and complex critical thinking skills. In an era increasingly dominated by information, the ability to efficiently retrieve, analyze, and synthesize new data becomes crucial. Technology, therefore, plays a pivotal role in preparing students for the challenges of the modern information age by equipping them with the necessary skills to navigate and manipulate vast amounts of data effectively.

The discussion surrounding digital imitation and academic honesty in the context of ChatGPT's integration into educational settings provides a complicated view of the potential and challenges posed by artificial intelligence in schools. When comparing textbook content with information obtained through ChatGPT, notable differences emerge in the presentation of subjects. These differences are not indicative of inaccuracies but rather reflect divergent perspectives that each source offers. This variety is beneficial for educational depth and breadth, yet it also poses risks of confusion if students rely solely on one source without critical scrutiny. The influence of ChatGPT on students' reading and discussion skills has been observed positively, with noticeable improvements in engagement and comprehension.

However, there is a concurrent concern that an overreliance on AI technologies might diminish these very skills. The crux of the matter lies in ensuring that students utilize AI like ChatGPT as a tool to augment their learning without substituting the need for developing their own critical thinking and analytical abilities. Encouraging a balanced approach to AI use is crucial, where AI complements rather than dominates the educational process. Furthermore, research by Skjuve et al. (2024) highlights the significant contributions of ChatGPT in saving time and maintaining output quality, which underscores its utility in streamlining document creation within both academic and professional realms. This dual advantage not only enhances productivity but also ensures the maintenance of high-quality standards in written outputs. In the realm of writing support, the adoption of ChatGPT by individual users has evolved from mere experimentation to becoming a cornerstone technology. It has been increasingly utilized to initiate and refine creative and academic writing tasks. ChatGPT aids users in improving sentence structures and exploring alternative expressions, thereby enriching the clarity and stylistic variety of the text. This demonstrates ChatGPT's role as a supportive tool that enhances the writing process by providing structural coherence and diverse stylistic options. The strategic engagement with ChatGPT in educational practices represents a deliberate effort to leverage this novel AI technology to enrich learning experiences and expand educational methodologies. Thus, the ongoing dialogue on the role of AI like ChatGPT in education underscores the necessity of harnessing its potential responsibly while fostering an educational environment that prioritizes critical thinking and personalized learning trajectories.

The implementation of artificial intelligence in educational settings raises significant questions about the role and competence of teachers in this rapidly evolving landscape. As we navigate the integration of AI into classrooms, the preparedness and understanding of educators are paramount. The competence of teachers in utilizing AI technology effectively forms the foundational premise for its application in teaching, underscoring the need for comprehensive teacher training. Educators must first acquire a deep understanding of AI to appropriately harness its capabilities and understand its limitations. This knowledge is crucial not only for the effective use of AI in educational practices but also for demonstrating to students how to interact with AI tools productively. For instance, teaching students to write effective prompts for AI, such as ChatGPT, and to engage in meaningful dialogues about diverse topics can significantly enhance their learning experience and lead to a deeper understanding of the subject matter.

However, the use of AI in education extends beyond mere operational knowledge; it involves a transformative approach to teaching and learning. As Egeberg et al. (1992) noted, learning involves modifying existing knowledge frameworks or schemas to accommodate current information. AI can facilitate this dynamic by introducing students to new ways of thinking and integrating added information with existing knowledge bases, thereby enriching their cognitive development. Moreover, the role of AI in education should not be passive; it necessitates active guidance from educators to ensure that students use this technology responsibly and creatively. The responsibility lies with the teachers to not only understand the technology themselves but also to ensure that the information and content generated by AI tools like ChatGPT are of high quality and academically dependable.

Considering the future role of AI in society, it is essential for educational institutions to invest in the training of teachers across the country. Such initiatives would equip educators with the necessary skills and knowledge to integrate AI tools effectively into their teaching practices. This understanding of AI and language models is crucial for educators to guide students through a landscape where digital tools are increasingly prevalent. Isik (2018) emphasizes that by facilitating such dynamic learning environments, technology plays a crucial role in transforming traditional educational models to better suit the demands of contemporary learners. This transformation is not just about adopting new tools but also about rethinking educational paradigms to foster environments where both teachers and students can thrive. The effective integration of AI in education hinges on the competence of teachers and their ability to guide students in using these technologies thoughtfully and creatively. The educational sector must prioritize the development of teacher competencies in AI, ensuring that they are well-prepared to lead students in navigating the complexities of this new digital frontier.

As educational environments increasingly embrace digital tools, it is crucial to understand the experiences and perceptions of the students who interact with these technologies daily. The integration of tools like ChatGPT in educational settings offers a window into how these technologies are reshaping learning processes and outcomes from the students' perspective. The essence of the challenge lies in ensuring that such technology aids rather than undermines educational integrity. When students rely excessively on "digital parents" like ChatGPT to complete their assignments, they may bypass the critical learning processes necessary for genuine comprehension and skill acquisition. This issue mirrors traditional forms of academic shortcutting but is magnified in scale and accessibility due to the democratization of

assistance provided by AI technologies. As a result, there is a risk that students might not engage deeply with the learning material, thereby missing crucial educational development.

Educators must, therefore, focus on methods that not only introduce students to the potential of such technologies but also guide them in their proper use. This involves teaching students to use AI tools as "conversational partners" in their learning journey, where the technology serves as a facilitator rather than as a crutch. Properly guided interaction with AI can help students understand how to structure their work and approach tasks creatively and critically, thereby integrating AI into a learning process that remains fundamentally human-centered. Supporting this educational strategy, research by Skjuve et al. (2024) underscores the capabilities of ChatGPT in efficiently managing complex queries, which enhances the learning experience by reducing the cognitive load associated with information retrieval. This efficiency can free up cognitive resources for higher order thinking and problem-solving, which are essential competencies in contemporary education. Likewise, Laney (1990) elaborates on the constructivist approach to pedagogy, where the integration of technology is seen as crucial for the development of advanced cognitive abilities. This pedagogical framework advocates for the active involvement of students in constructing their knowledge through interactions with both traditional and digital tools, thus enhancing their ability to identify and solve complex problems. In conclusion, while the integration of AI like ChatGPT in educational contexts offers significant advantages for information retrieval and task efficiency, it also necessitates a renewed focus on pedagogical strategies that emphasize deep learning and critical engagement with technology. Educators are called upon to ensure that students harness these digital tools in ways that genuinely enhance their learning outcomes, fostering not only competence in specific tasks but also a broader developmental mastery that aligns with the goals of contemporary education. This balanced approach will maximize the benefits of technology while safeguarding the integrity and efficacy of educational processes.

When discussing assessment and feedback in educational contexts, it is important to consider the role of language models like ChatGPT, which offer algorithmic guidance but also expose significant limitations in their operational foundations. The core functionality of a language model lies in its capacity to guide students through problem-solving processes by drawing on extensive training data. For instance, although ChatGPT can provide step-by-step guidance on solving an equation, it does not "solve" the equation in the human sense of applying conceptual understanding; rather, its responses are generated based on patterns and information it has encountered during its training phase. This distinction highlights a

fundamental limitation: the model operates based on pre-existing data rather than through an intrinsic understanding or original reasoning process.

While language models like ChatGPT might adeptly describe different solutions to student's questions or inquiries, it also has several weak spots as of today. Such examples underscore the model's proficiency in conveying information it has been trained on, yet they also reveal the absence of true understanding like human cognitive processes. Despite these limitations, language models remain highly valuable in educational settings for their ability to engage in dialogues and produce coherent texts on familiar topics. Their utility is particularly evident in text-based tasks where expansive coverage of subject matter can aid in learning and assessment. However, educators and students must remain cognizant of the limitations inherent in these models, particularly their lack of creativity, originality, and independent reflective and reasoning capacities. The architecture of these AI systems, as outlined by Hiremath et al. (2018), involves sophisticated software mechanisms that enable interactive conversation simulations with users through text or voice. This functionality is achieved through the systematic training of the chatbot on a graph data structure enhanced by curated sample dialogues. This training enables the chatbot to simulate conversational exchanges, although its responses are confined by the limitations of its programming and the data it has been trained on.

While these tools can provide valuable feedback that potentially enhances learning, there is a risk that they may be used as shortcuts, thereby diminishing the depth of the educational experience. This scenario parallels the concern articulated by Bareksten (2023), which emphasizes the necessity of establishing common ethical standards and guidelines to govern the development and application of transformative technologies. In classroom environments, the reliance on AI for immediate answers to questions highlights a trend towards superficial engagement with learning materials. This behavior, reminiscent of the quick searches on Google that students often make to find answers without a thorough understanding, underscores a shift in learning dynamics. The intention often leans more towards displaying knowledge—however superficial—rather than genuinely understanding and internalizing it. This situation presents an ethical dilemma: how to balance technological support with the need for independent critical thinking and learning.

James Moor's concept of a "policy vacuum," as discussed by Bergsjø and Bergsjø (2019), is particularly relevant here. Moor suggests that the rapid evolution of technologies like AI often outpaces the development of corresponding ethical frameworks and regulations. This gap can

lead to unintended consequences, such as unfair programming or data theft, which are difficult to detect and regulate. The challenge is to develop digital ethics that not only respond to these issues but also guide the responsible use of AI in ways that enhance societal benefits while mitigating risks. Consequently, the use of AI in education must be navigated carefully to protect sensitive student data, as noted by Dwivedi et al. (as cited in Sok & Heng, 2024). Ensuring that student information is managed in compliance with privacy laws is crucial, highlighting the need for robust ethical frameworks that address data security and privacy concerns. From a cognitive learning theory perspective, the incorporation of AI into education should align with principles of human adaptability and engagement. Cognitive theory posits that learning occurs within an individual and is situated within a specific context (Egeberg et al., 1992). Therefore, the thoughtful integration of AI should enhance the personalized learning experiences by actively engaging students and supporting the development of new knowledge structures, in line with Piaget's theories on cognitive development. In summary, while AI technologies hold the potential to revolutionize educational practices, they also introduce complex ethical and educational challenges. These include balancing technological support with independent learning, protecting student privacy, and ensuring the responsible use of AI. Addressing these challenges requires a thoughtful approach to the development and implementation of AI, guided by robust ethical frameworks and a deep understanding of cognitive learning principles.

6.0 Conclusion

The investigation into the integration of artificial intelligence, specifically ChatGPT, into the educational system for English teaching has unearthed multifaceted insights. It has illuminated the ways in which AI can enhance student learning, while also spotlighting the challenges in maintaining privacy and upholding educational values. The study has demonstrated that when AI tools are used judiciously, they can serve as powerful allies in the learning process, providing immediate feedback, fostering engagement, and personalizing learning experiences. Some teachers have observed an increased interest in English language learning and improved engagement with learning materials when students interact with AI. Yet, alongside these benefits, the necessity for critical evaluation skills among students has been underscored to prevent over-reliance on technology. Privacy concerns and the ethical use of AI have emerged as paramount considerations. This research has shown that while AI can streamline educational practices, it can also raise concerns about data security and the potential for AI to perpetuate biases. Teachers and educational institutions must navigate these challenges with care, ensuring that the use of AI is aligned with the core values of education.

This thesis contributes to the ongoing conversation about AI's role in education, emphasizing the importance of ethical considerations in the design of its integration into teaching and learning practices. It has laid the groundwork for continuous adaptation and learning, as educators and policymakers strive to reconcile the rapid pace of technological innovation with the steadfast principles of education. In conclusion, the integration of AI like ChatGPT in the educational system is a dynamic and evolving endeavor. While it offers significant potential to enhance English teaching and learning, it necessitates a balanced approach that considers the complexities of technology, pedagogy, and ethics. This thesis provides a roadmap for educators to navigate these waters, but it also highlights the need for ongoing research to ensure that the deployment of AI in education maximizes benefits, minimizes risks, and remains attuned to the ever-changing landscape of student needs and societal values.

In the book called *The End of the Road,* Jon Barth articulates a compelling vision for adaptation and flexibility, asserting *that "Paths should be laid where people walk, instead of walking where paths happen to be laid."* (1981, p. 20). This assertion poignantly captures the essence of what I think modern educational frameworks should aspire to as well. In this case, the quote can symbolize that educational practices must evolve dynamically to meet the genuine needs and behaviors of students, avoiding rigid adherence to traditional paradigms.

6.1 Further research

The thesis establishes a foundational understanding of AI's role in enhancing English language teaching within current educational and ethical frameworks. However, it also reveals the necessity for continuous exploration into the long-term effects and potentials of such technologies. Future research should expand on several dimensions identified in this thesis. One area for further research is therefore the long-term impact of AI assisted language models on student learning outcomes and cognitive development. It is critical to examine whether the use of ChatGPT in English teaching leads to sustained improvements in language proficiency and whether these tools foster or hinder critical thinking skills over time. A second area for further research should aim to include a broader array of participants and possibly integrate quantitative methods to provide a more balanced view of the integration of AI tools like ChatGPT in the educational sphere. This approach would help to better address the complex dynamics of technological adoption in education and ensure that the insights gained are robust and widely applicable.

Lastly, interdisciplinary research that includes perspectives from educators, AI developers, ethicists, and policymakers is highly essential. Collaborative efforts can lead to the development of AI tools that are pedagogically sound, ethically constructed, and aligned with the holistic educational needs of students. The integration of such technologies is an ongoing process that will require persistent scholarly attention to navigate its complexities and maximize its benefits for student learning.

Literature list

Asiksoy, G., & Ozdamli, F. (2017). An Overview to Research on Education Technology Based on Constructivist Learning Approach. Cypriot Journal of Educational Sciences, 12(3), 133-147.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. Qualitative Research, 1, 385-405. https://doi.org/10.1177/146879410100100307

Bagley, Carol, & Hunter, Barbara. (1992),' Restructuring, constructivism, and technology: forging a new relationship', *Educational Technology,* 32(7), 22-27.

Bareksten, K. (2023). Kunstig Intelligens for lærere. Oslo:

Lærerliv

Barth, J. (1981). *The End of the road* (Bantam Windstone edition).

Bantam Windstone.

Bergsjø, L. O. (2022). Digitalt kappløp - en verdikamp. I H. Bergsjø & K. Friis (Red.), *Digitalisering og internasjonal politikk* (s. 103-119). Universitetsforlaget.

Bergsjø, L. O. & Bergsjø, H. (2019). *Digital etikk: Big data, algoritmer og kunstig intelligens*. Universitetsforlaget.

Bergsjø, L. O., Eilifsen, M., Tønnesen, K. T. & Vik, L. G. V. (2020). *Barn og unges digitale dømmekraft: Verdiløft i barnehage og skole*. Universitetsforlaget.

Braun, V. & Clarke, V. (2006) Using thematic analysis in psychology. Quality Research in Psychology, 3, 77-101.

Brinkmann, S. & Tanggaard, L. (2012). Kvalitative metoder: Empiri og teoriutvikling. Oslo: Gyldendal akademisk.

Brottveit, G. (2018). Vitenskapsteori og kvalitative forskningsmetoder. Om å arbeide forskningsrelatert. Oslo: Gyldendal Norsk Forlag.

Bryman, A. (2012). *Social research methods* (fourth. ed).

Oxford University Press.

Coolican, H. (2019). Research Methods and Statistics in psychology. (Seventh ed.).
Routledge.

Dalland, O. (2012). Metode og oppgaveskriving for studenter. Oslo:

Gyldendal Akademisk.

Dwyer, D., Ringstaff, C & Sandholtz, J (1991), Changes in teachers' beliefs and practices in
technology-rich classrooms, Educational Leadership, vol.48, No: 8

Egeberg, S., Halse, J. Jonassen, A.J., Jerlang, E., Ringsted, S. & Wedel-Brandt, B. (1992):
Utviklings psykologiske teorier – en innføring: København, 2.udgave, 6.oplag

Gilje, N., & Grimen, H. (1993). Samfunnsvitenskapens forutsetninger. Innføring i
samfunnsvitenskapenes vitenskapsfilosofi. Oslo: Universitetsforlaget.

Gyldendal. (2024) *Knud Illeris.* Retrieved February 11, 2024, from

https://www.gyldendal.no/forfattere/knud-illeris/a-10011204-no/

Hiremath, G., Hajare, A., Bhosale, P., Nanaware, R., & Wagh, K. S. (2018). Chatbot for
education system. *International Journal of Advance Research, Ideas and Innovations
in Technology*, *4*(3), 37-43.

Illeris, Knud. (2014): Læringsteorier, 6 aktuelle forståelser. København: Roskilde
Universitetsforlag.

Isik, A. D. (2018). Use of technology in constructivist approach. *Educational Research and
Reviews*, *13*(21), 704-711.

Kvale, S. (2001). Det kvalitative forskningsintervju.

Oslo: Gyldendal Norsk Forlag AS.

Kvale, S. & Brinkmann, S. (2015). Det kvalitative forskningsintervju. Oslo: Gyldendal Norsk
Forlag AS.

Laney, D. (1990). Micro Computers and Social Studies.

OCSS Review 26:30-37

Malterud, K. (2017). Kvalitative forskningsmetoder for medisin og helsefag (fourth ed.).
Oslo: Universitetsforlaget.

Merrick, E. **(**1999). An exploration of quality in qualitative research: Are "reliability" and
    «validity» relevant? In M. Kopala & L.A. Suzuki **(**Eds.) Using qualitative methods in
    psychology **(**s. 25-36). Sage Publications, Inc.

Moersch C (1999). Assessing Current Technology Use in the Classroom: A Key to Efficient
    Staff Development and Technology Planning. Leading and Learning with Technology
    26(8):40-49

OpenAI. (2024). Enterprise privacy. Retrieved April 15, 2024, from
    https://openai.com/enterprise-privacy

Postholm, M.B. (2010). Kvalitative metode: en innføring med fokus på fenomenologi,
    etnografi og kasusstudier. Bergen: Fagbokforlaget.

Rai, N., & Thapa, B. (2015). A study on purposive sampling method in research. *Kathmandu:*
    Kathmandu School of Law, *5*(1), 8-15.

Regjeringen. (2020). *Nasjonal strategi for kunstig intelligens*. Retrieved May 13, 2024, from
    https://www.regjeringen.no/contentassets/1febbbb2c4fd4b7d92c67ddd353b6ae8/no/pd
    fs/ki-strategi.pdf

Riel, M. (1990c). A model for Integrating Computer networking with classroom learning. in
    A. McDougall and C. Dowling (Eds)

Similarweb. (2024, April 6) *Domain analysis for March 2024*. Retrieved May 1. 2024, from
    https://www.similarweb.com/website/chat.openai.com/#overview

Skjuve, M., Brandtzæg, P. B., & Følstad, A. (2024). Why do people use ChatGPT? Exploring
    user motivations for generative conversational AI. First Monday, 29(1).

Sok, S., & Heng, K. (2024). Opportunities, challenges, and strategies for using ChatGPT in
    higher education: A literature review. *Journal of Digital Educational Technology*,
    4(1), ep2401. https://doi.org/10.30935/jdet/14027

Thagaard, T. (2003). Systematikk og innlevelse. En innføring i kvalitativ metode. Bergen:
    Fagbokforlaget.

Tørresen, J. (2013). *Hva er kunstig intelligens* (Bd. 49).

    Universitetsforl.

Vassdal, S. (2023, January 21). Forbyr ChatGPT. *TV2 Nyheter*. Retrieved May 1. 2024, from

   https://www.tv2.no/nyheter/utenriks/forbyr-chatgpt/15443825/

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of

   research on artificial intelligence applications in higher education–where are the

   educators. *International Journal of Educational Technology in Higher*

   Education, *16*(1), 1-27.

Vil du delta i forskningsprosjektet

"Hva er lærernes oppfatning av utfordringene de møter og tilpasningene de gjør når de implementerer OpenAI-teknologi for å støtte studentenes evne til å lese, diskutere og reflektere, samtidig som de etiske aspektene rundt personvern opprettholdes?"

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å *finne ut av lærernes oppfatning av utfordringer de møter i skolen tilknyttet kunstig intelligens*. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Formålet med denne masteroppgaven er å undersøke lærernes oppfatninger av utfordringene de møter når de implementerer OpenAI-teknologi for å støtte studentenes evne til å lese, diskutere og reflektere. Studien tar sikte på å analysere hvordan lærere tilpasser sin undervisningspraksis i møte med denne teknologien, samt de strategiene de bruker for å hjelpe studentene med å utvikle disse kritiske ferdighetene.

Omfang: Studien vil utforske flere aspekter av implementeringen av OpenAI-teknologi i klasserommet. Dette inkluderer valg av teknologiske verktøy, pedagogiske tilpasninger, lærerstudent-interaksjoner og studentenes opplevelser. Forskningen vil bli gjennomført ved å samle inn data fra lærere og studenter gjennom intervjuer, spørreskjemaer eller observasjoner.

Problemstillinger / Forskningsspørsmål:

1. Hvordan opplever lærere implementeringen av OpenAI-teknologi i undervisningen for å støtte studenters leseforståelse?
2. Hvilke utfordringer står lærerne overfor når de bruker OpenAI-verktøy for å fremme diskusjon og refleksjon blant studentene?
3. Hva slags tilpasninger gjør lærerne i undervisningsmetodene sine for å innlemme OpenAI-teknologi, og hvordan påvirker dette studentenes læring og engasjement?
4. Hvordan opplever studentene bruken av OpenAI-teknologi i sin læringsprosess, spesielt med tanke på leseforståelse, diskusjon og refleksjon?

Type Studie: Dette er en masteroppgave som tar sikte på å utføre kvalitativ forskning for å få innsikt i lærernes oppfatninger og tilpasninger knyttet til implementeringen av OpenAI-teknologi i undervisningen.

Studiens funn vil kunne bidra til forståelsen av lærerens rolle og erfaringer i bruken av avanserte teknologier som OpenAI, samt gi verdifulle innsikter for utvikling av pedagogiske retningslinjer og støttetiltak i implementeringen av slike verktøy for å styrke studenters kritiske lese- og refleksjonsferdigheter.

Hvem er ansvarlig for forskningsprosjektet?

Det er jeg selv, Even Hammer, som er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Utvalget er trukket etter utvalgskriterier. Disse kriteriene går ut på at intervjuobjektene må ha en lærerutdanning og undervise på VGS innenfor engelskfaget. Det er totalt 6 personer som skal bli med i forskningsprosjektet. Derfor er nettopp du en aktuell kandidat.

Hva innebærer det for deg å delta?

Du vil bli invitert til et semistrukturert intervju, der jeg på forhånd har laget i stand egne spørsmål, men du vil kunne underveis måtte svare på oppfølgingsspørsmål som vil forekomme mer spontant. Selve intervjuet vil nok ta 20 minutters tid å gjennomføre. Dataene vil bli samlet elektronisk og transkribert om til tekst – deretter vil lydopptaket bli slettet for godt. Selve intervjuet vil foregå på engelsk.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Det er kun jeg og mine veiledere som vil kunne ha tilgang på dine opplysninger. Navnet og kontaktopplysningene dine vil jeg erstatte med en kode som lagres på egen navneliste adskilt fra øvrige data

Du som deltaker, vil ikke kunne gjenkjennes i publikasjon.

Hva skjer med personopplysningene dine når forskningsprosjektet avsluttes?
Prosjektet vil etter planen avsluttes når prosjektet blir godkjent rundt midten av mai måned. Etter prosjektslutt vil datamaterialet med dine personopplysninger slettes. Det vil bli erstattet eller sensurert eventuelle identifiserende elementer som nevnes i samtalen.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra *Høgskolen i Innlandet* har Sikt – Kunnskapssektorens tjenesteleverandør vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:
- Førsteamanuensis ved Høgskolen i Innlandet ved Petter Hagen Karlsen (Tlf: +47 62 59 79 44 / Mail: petter.karlsen@inn.no)
- Vårt personvernombud: personvern@inn.no.

Hvis du har spørsmål knyttet til vurderingen som er gjort av personverntjenestene fra Sikt, kan du ta kontakt via:
- Epost: personverntjenester@sikt.no eller telefon: 73 98 40 40.

Med vennlig hilsen

Prosjektansvarlig   *Eventuelt student*
(Forsker/veileder)

Even Hammer

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet *[sett inn tittel]*, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ å delta i *intervju*
- ☐ å delta i *spørreskjema*

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

----

(Signert av prosjektdeltaker, dato)

Appendix 2: Approval from SIKT

Sikt

Vurdering av behandling av personopplysninger

Referansenummer	**Vurderingstype**	**Dato**
166403	Standard	01.11.2023

Tittel
What are teachers' perceptions of the challenges they face and the adaptations they make when implementing OpenAI technology to support students' ability to read, discuss, and reflect on the content, language features, and literary devices in various types of texts, including self -chosen texts, in the context of English education

Behandlingsansvarlig institusjon
Høgskolen i Innlandet / Fakultet for lærerutdanning og pedagogikk / Institutt for pedagogikk og samfunnsfag - Hamar

Prosjektansvarlig
Petter Hagen Karlsen

Student
Even Hammer

Prosjektperiode
15.11.2023 - 15.01.2024

Kategorier personopplysninger
Alminnelige

Lovlig grunnlag
Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjemaet. Det lovlige grunnlaget gjelder til 15.01.2024.

Meldeskjema 🔗

Kommentar
OM VURDERINGEN
Sikt har en avtale med institusjonen du forsker eller studerer ved. Denne avtalen innebærer at vi skal gi deg råd slik at behandlingen av personopplysninger i prosjektet ditt er lovlig etter personvernregelverket. Vi har nå vurdert at du har lovlig grunnlag til å behandle personopplysningene.

FØLG DIN INSTITUSJONS RETNINGSLINJER
Det er institusjonen du er ansatt/student ved som avgjør hvordan du må lagre og sikre data i ditt prosjekt og hvilke databehandlere du kan bruke. Husk å bruke leverandører som din institusjon har avtale med (f.eks. ved skylagring, nettspørreskjema, videosamtale el.).

Personverntjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Se våre nettsider om hvilke endringer du må melde: https://sikt.no/melde-endringar-i-meldeskjema

OPPFØLGING AV PROSJEKTET
Vi vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Appendix 3: Interview guide

General thoughts about OpenAI Technology and English Education?

1. Can you describe your experience with implementing OpenAI technology in teaching to support students' ability to read, discuss, and reflect on several types of texts within the framework of English education?

2. How have OpenAI impacted students' reading and discussion skills?

3. Can you provide examples of adaptations you have had to make when using OpenAI technology, particularly in supporting students' understanding of content, language features, and literary devices in texts?

Challenges Related to OpenAI Technology in English Education?

4. What challenges have you encountered while implementing OpenAI technology in the classroom, especially concerning helping students understand text content, language features, and literary devices?

5. How do you address any limitations or errors in OpenAI technology concerning the interpretation of texts or language nuances?

6. Have you noticed any differences in the challenges students face when using OpenAI technology compared to traditional teaching methods for text analysis?

Adaptations with ChatGPT?

7. Can you some examples where OpenAI technology has helped students understand complex texts, discuss language features, or identify literary devices in ways traditional methods could not achieve?

8. How do you adapt your teaching methods to include both OpenAI technology and traditional approaches to text analysis, and how do you balance between the two?

9. Have you observed any changes in students' engagement or motivation when using OpenAI technology in teaching?

Students' Self-Chosen Texts?

10. How do you adapt the use of OpenAI technology when students choose their own texts to study, and how does the technology support students' understanding of these texts?

11. Can you provide examples of how OpenAI technology has assisted students in analyzing and discussing self-chosen texts in a more in-depth manner?

12. Do you have any tips or best practices for guiding students when they use OpenAI technology to explore and understand the texts they choose themselves?

Experiences with Academic Honesty?

13. How has the introduction of ChatGPT impacted students' understanding of academic honesty in your classroom?
14. What measures do you take to ensure that students use ChatGPT responsibly in academic tasks?

Ethical considerations?

15. What ethical training or resources do teachers need to use AI effectively and responsibly in their classrooms?
16. How do you perceive the ethical implications of using AI technologies like ChatGPT in teaching?