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Thematic Issue

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Editorial

This issue of the Journal of Linguistics and Language Teaching marks a significant step in the Journal's history: it is the first thematic issue of JLLT ever. This special issue, focused on *Artificial Intelligence in Foreign Language Teaching* investigates the fascinating intersection of language methodology and this new area which still represents uncharted territory for most of us.

In addition to the thematic focus, this issue also features the inaugural instalment of our new series of intermittent interviews ("10 Questions for..."), in which we will engage renowned linguists and methodologists in insightful discussions about their work and their perspectives on linguistics and language teaching. For this first instalment, we had the privilege of interviewing Professor David Crystal, a towering figure in the field of linguistics, who shared his valuable insights on various aspects of his field. Professor Crystal is certainly best known for his popular science books on language, including "The Cambridge Encyclopedia of Language" and "The Language Revolution." He has also made significant contributions to the study of English grammar and phonetics. There will be more detailed information about him in the introduction to his interview.

This issue also marks some changes to our Editorial Advisory Board. We are delighted to welcome Professor Ken Hyland, a leading scholar in the field of English for Academic Purposes (EAP) to our board. He is presently Visiting Professor of Applied Linguistics in Education at the University of East Anglia and Honorary Professor at the universities of Warwick (UK), Hong Kong and Jinlin (China), and Foundation Fellow of the Hong Kong Academy of the Humanities. Professor Hyland is a leading scholar in the field of English for Academic Purposes (EAP) and known for his groundbreaking work on academic writing and his development of the concept of metadiscourse. His expertise will undoubtedly enrich our journal's content and contributions.

Another new member of our Editorial Advisory Board is Douglas Fleming, a Full Professor in the Faculty of Education at the University of Ottawa, Canada. His research interests include ESL methodology, multicultural citizenship education, and equity and language policy. Professor Fleming is a member of the Canadian Association for Second Language Education (CASLE) and the American Association of Applied Linguistics (AAAL). Apart from JLLT, he also sits on the editorial boards of several journals, including the Canadian Journal of Applied Linguistics and the TESOL Quarterly.

Sadly, we must also acknowledge the passing of Professor Bernd Spillner (1941-2023), a renowned German romanist and a valued member of our Editorial Advisory Board. A member of the *Société de Linguistique de Paris* (since 1978), President of the *Gesellschaft für Angewandte Linguistik* (1987-1994), Vice President of the *Association Internationale de Linguistique Appliquée* (1990-1996), he enjoyed an international reputation. Apart from the human side of his personality, he will be deeply missed for his contributions to linguistics, the way he made linguistics accessible to his readers and students, and for his great passion for this beautiful subject. His works will continue to inspire and inform the field of applied linguistics.

On a more positive note, JLLT has been actively expanding its presence on LinkedIn this year, reaching out to a wider audience of language professionals and scholars. This increased engagement has led to a noticeable increase in traffic to JLLT's website, reflecting the growing interest in the journal's content.

We extend our sincere gratitude to our Editorial Advisory Board members, our authors, and our readers for their unwavering trust and confidence in JLLT. Your support is the driving force behind JLLT's success.

Thomas Tinnefeld

JLLT

Editor

Foreword to the Issue

This is the first thematic issue of JLLT. It encompasses a focused exploration of an immensely relevant topic: the integration of Artificial Intelligence (AI) in the realm of Foreign Language Teaching. This thematic issue investigates the manifold advantages yielded by AI, its applications in collaborative learning, and its potential inclusion within language curricula. Additionally, it presents a fascinating exchange, wherein two AI entities express their perspectives on AI in Foreign Language Teaching. Complementing these articles is an exclusive interview with one of the foremost linguists of our time.

This article by **Sandra Niedermeier** (Kempten, Germany) & **Claudia Müller-Kreiner** (München, Germany), written in German, explores the relationship between Artificial Intelligence (AI) and digital media in foreign language acquisition. Recent advancements in digital learning are outlined, with a particular emphasis on the role of AI within the teaching-learning context. Moreover, a perspective rooted in teaching-learning theory is presented, which appears suitable for the developments in the field of digitalisation. Additionally, this article considers the potential impact of digital advancements in education on foreign language learning. It also discusses the possible benefits of integrating AI and learning approaches with digital media for foreign language learning. The objective is to enhance awareness of the significance of this synergy and contribute to further research in the field of technology-supported foreign language learning.

The integration of AI-based chat agents in educational settings has the potential to enhance collaborative learning, particularly in the field of English as a Foreign Language (EFL). The study by **Ebru Pinar Elmacı Er** (Sakarya, Turkey) & **Armin Weinberger** (Saarbrücken, Germany) examines the changing role of chat agents powered by Artificial Intelligence (AI) and Large Language Models (LLM), with a specific focus on ChatGPT, in the context of collaborative learning in EFL. The aim of this study, which presents a comprehensive literature review, is twofold: firstly, to identify the productive and unproductive applications of ChatGPT in a collaborative learning environment; and secondly, to explore strategies for leveraging ChatGPT to enhance productive collaborative learning experiences within EFL contexts. The aim of the findings is to provide insights into the capabilities and limitations of ChatGPT in fostering language skills, enhancing communication competence, and promoting cooperative learning strategies among EFL learners. The article outlines different methods and possible difficulties related to using AI chat agents in language learning. The objective is to establish a connection between AI technology and instructional design, with the ultimate goal of facilitating an informed and effective use of AI in collaborative EFL learning environments.

The article by **Silvia Adamcová** (Bratislava, Slovakia) & **Michaela Rusch** (Zwickau, Germany) complements the previous ones by focusing on contemporary professional communication, where a continual expansion of lexicon proves imperative for staying abreast of advancements in technology and science. The article examines the subject of artificial intelligence in connection with applications such as ChatGPT and other chatbots. In addition, it deals with the potential of artificial intelligence in fostering and bolstering linguistic aptitude. Furthermore, the discourse encompasses

the integration of these AI tools within foreign language curricula and classroom methodologies. Specific requisites for educators and learners are addressed in light of future competencies, which pose a distinct challenge given the rapidity of diverse developments. The study contributes to the ongoing discourse surrounding the role of artificial intelligence in higher education. Overall, the evaluation presented here offers useful information about a highly topical matter concerning the use of AI that will undeniably exert a significant influence on linguistic and pedagogical practice in the coming years.

The article by **Thomas Tinnefeld** (Saarbrücken, Germany) takes a different approach and presents a comprehensive interview conducted with two prominent AI entities, ChatGPT and Google Bard, to investigate the potential of Artificial Intelligence in the field of Foreign Language Teaching. The principal aim of this interview, supported by a systematic analysis, is to investigate the use, importance, and functions of AI in this area. Conducting this interview was motivated by the recognition that discussing AI without seeking the opinions and evaluations of influential chatbots would create a significant gap in contemporary research. The questions covered a wide range of topics, such as the potential impact of AI on teaching methods, the areas especially affected by AI, the changing roles of teachers and students in the AI age, the future relevance of language teaching, the role of AI in preparing lessons, AI as a learning partner for students, the impact of AI on student assessment and the future development of foreign language teaching methods after the emergence of AI. ChatGPT's and Bard's answers were sometimes predictable, while in most cases, they were remarkable and revealing. Whereas AI systems can provide us with invaluable perspectives, it is important to emphasise that they should not be relied upon as the sole reference: a comparison of their assessments with those of human experts and other scientific publications is highly recommended. However, from the perspective of ChatGPT and Bard, this interview represents the current state of the art in this area.

The present issue of JLLT includes an interview with the world-leading linguist Professor **David Crystal** (please refer to the Editorial for details). Professor Crystal provides thoughtful answers to ten pertinent questions, including the significant role of linguistics in today's world, the internet and online communication platforms, language death, the worldwide dominance of English, challenges in language education, innovation and creativity in language, the interdisciplinary nature of linguistics, and Shakespeare's enduring relevance in today's world. His insights highlight the importance of applied linguistics and the notable awareness it can provide in personal and professional contexts where language is used.

Within the scope of the overall theme, the current issue covers a broad range of topics. It offers an intellectually stimulating read that is likely to inspire many ideas for further research. Readers are invited to contribute to the academic discourse initiated in these articles and to submit their findings to JLLT to advance linguistics and language methodology. Finally, I wish everyone an enjoyable read.

Thomas Tinnefeld

JLLT

Editor

Articles

Die Synergie von Künstlicher Intelligenz und digitalem Lernen im Fremdsprachenerwerb

Sandra Niedermeier (Kempten, Deutschland) & Claudia Müller-Kreiner (München, Deutschland)

Abstract (Deutsch)

Der vorliegende Artikel untersucht die sich ergänzenden Aspekte von Künstlicher Intelligenz (KI) und Lernen mit digitalen Medien im Bereich des Fremdsprachenerwerbs. Um eine Betrachtung möglicher Synergien in den Fokus zu rücken, werden die jüngsten Fortschritte im digitalen Lernen dargelegt, wobei ein besonderer Schwerpunkt auf die Rolle von KI im Lehr-Lern-Kontext gelegt wird. Vorgestellt wird ebenso eine lehr-lerntheoretische Perspektive, die für die Entwicklungen im Bereich der Digitalisierung geeignet scheint. Darüber hinaus werden mögliche Auswirkungen dieser digitalen Fortschritte im Bildungsbereich auf den Fremdsprachenerwerb betrachtet und die Potentiale für den Fremdsprachenerwerb diskutiert, die sich aus der Kombination von KI und Lernansätzen mit digitalen Medien ergeben. Das Bewusstsein für die Bedeutung dieser Synergie soll geschärft und damit ein Beitrag zur Weiterentwicklung der Forschung im Bereich des Fremdsprachenerwerbs durch technologiegestütztes Lernen geleistet werden.

Keywords: Künstliche Intelligenz, Spracherwerb, Konstruktivismus, Risiken, Chancen, digitales Lernen, Digitalisierung, Bildung

Abstract (English)

This article explores the relationship between Artificial Intelligence (AI) and digital media in foreign language acquisition. Recent advances in digital learning are outlined, with a particular emphasis on the role of AI in the teaching-learning context. Moreover, a teaching-learning theory perspective is presented that seems appropriate for developments in the field of digitalization. Additionally, this article considers the potential impact of digital advancements in education on foreign language learning. It also discusses the potential benefits of combining AI and learning approaches with digital media for foreign language learning. The objective is to increase awareness of the significance of this synergy and contribute to the further development of research in the field of technology-supported foreign language learning.

Keywords: Artificial intelligence, language acquisition, constructivism, risks, opportunities, digital learning, digitalization, education

1 Einleitung und Zielsetzung

Die rasanten Fortschritte in der Weiterentwicklung von künstlicher Intelligenz in den letzten Jahren und der niedrigschwellige Zugang und die leichte Anwendung dieser Technologie für den Einzelnen¹ – vor allem von großen Sprachmodellen wie ChatGPT – haben großes Potential, besonders in der Bildung. Insbesondere große Sprachmodelle wie GPT-3 und GPT-4 haben erhebliche Fortschritte in der Verarbeitung natürlicher Sprache (Natural Language Processing - NLP) gemacht (Kasneci et al. 2023). Im Kontext der dynamischen Entwicklung sind alle Bildungsprozesse aktuellen Veränderungen unterworfen und der Wunsch wird größer, dass auch das Lernen noch flexibler und verstärkt „on-demand“ werden soll. Insbesondere digitale Medien haben einen starken Einfluss auf das Lehren und Lernen – der Einfachheit halber wird im Folgenden auch vom *digitalen Lehren und Lernen* gesprochen. Die Erweiterung der Grenzen der Bildungsmöglichkeiten und Bildungserfahrungen wird in Zukunft von entscheidender Bedeutung sein (Kasneci et al. 2023). Gefragt sind in Zukunft Lernangebote, die im Lerngegenstand, im Lernprozess und in der Haltung der Verantwortlichen ein Abbild der Arbeitswelt der Zukunft darstellen (Korge et al. 2021). Noch vor wenigen Jahren kam die Zukunftsstudie Münchner Kreis (Band VIII) „Leben, Arbeit, Bildung 2035+“ (Menges 2020) nach einer Umfrage unter den deutschen Experten zum Themenfeld Bildung zu dem Ergebnis, dass 52 % der Befragten keine vollständige Auflösung des bestehenden Bildungssystems erwarten, jedoch mehr mit digitalen Medien gearbeitet werden wird. Die größten Veränderungen insbesondere durch den zunehmenden Einsatz von KI-Technologien – und hier sind insbesondere die generativen Sprachmodelle gemeint – in der Bildung, wie zum Beispiel der flächendeckende Einsatz von Learning-Analytics, werden von Experten frühestens im Jahr 2035 erwartet (ibid.). Durch das offene und frei zugängliche Auftreten von ChatGPT in der Breite im Jahr 2022 und dessen Integration unter anderem in Microsoft Produkte kann jetzt jedoch viel früher damit gerechnet werden bzw. ist diese Entwicklung bereits in vollem Gange. Dabei wird *Künstliche Intelligenz* als Begriff oftmals noch unscharf verwendet. Daher im Folgenden eine kurze Erläuterung hierzu, ohne allzu sehr in die Informationstechnologie einzusteigen.

In Abbildung 1 findet sich eine graphische Darstellung zur Unterscheidung der Begrifflichkeiten. So zeigt sich, dass *Künstliche Intelligenz* als Oberbegriff verstanden werden kann und sich darin *Machine* und *Deep Learning* unterordnen, dann jedoch die Generative KI – so wie große Sprachmodelle wie ChatGPT und Co. – wiederum nur ein Teil von dieser ist. Der vorliegende Artikel nimmt insbesondere auf diesen letzten Aspekt Bezug (Abb1).

Durch die voranschreitende Digitalisierung zeigen sich seit Längerem neue didaktisch-methodische Möglichkeiten für den Bereich des Lehrens und Lernens mithilfe digitaler Medien. In diesem Kontext gab es auch im Fremdsprachenbereich bereits seit Jahrzehnten Entwicklungen (Blake 2013) zum Beispiel im Bereich von Online-Sprachkursen, virtuellen Sprachtausch-Plattformen und gamifizierten Lernanwendungen (Grein & Strasser 2019, Schmidt & Strasser 2022). Weiterhin hat sich

¹Wir möchten darauf hinweisen, dass in diesem Artikel die maskulinen Formen generisch verwendet werden. Dies geschieht aus Gründen einer besseren Lesbarkeit und soll keinesfalls eine Benachteiligung oder Ausgrenzung anderer Geschlechter implizieren.

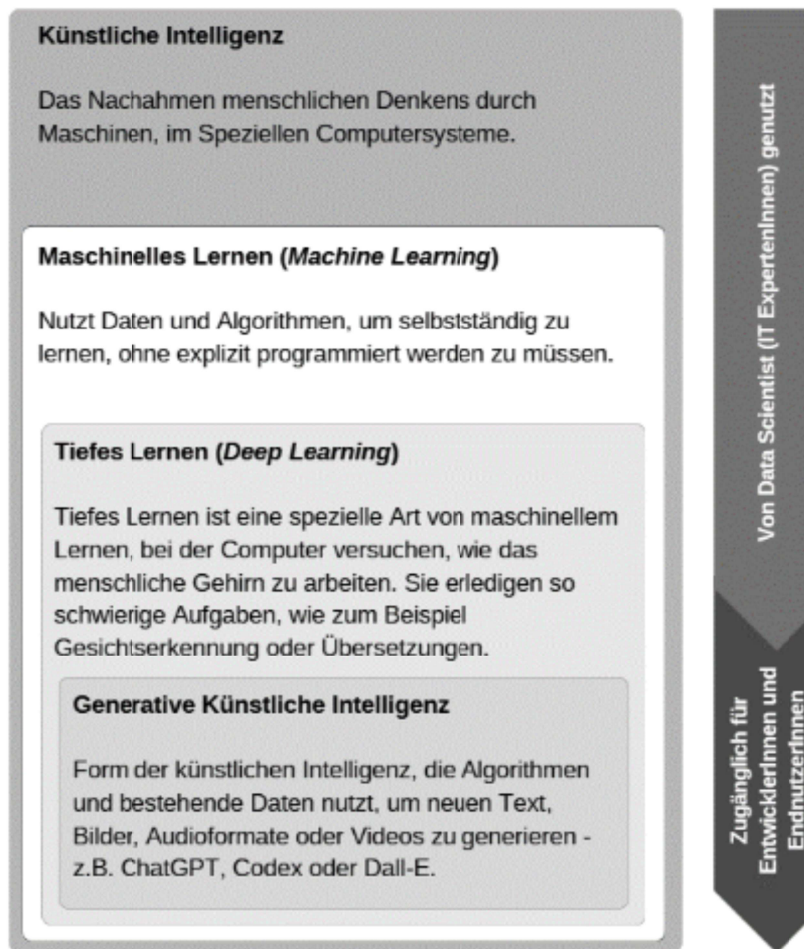


Abb. 1: Darstellung des Zusammenhangs zwischen KI, Machine Learning, Deep Learning und Generativer KI (Sprachmodelle wie ChatGPT) (PwC 2023)

nun durch den Hype um die KI eine weitere Möglichkeit für die nun dynamischer werdenden Entwicklungen der digitalen Lehre im Allgemeinen ergeben, wie beispielsweise die weitere Verbreitung von KI-gestützter Lernprozessbegleitung auf digitalen Lernplattformen. Hier besteht durchaus die Chance, auch das Erlernen von Fremdsprachen mithilfe von KI grundlegend zu verändern (Hockly 2023, Gupta & Saini 2019). KI-gestützte Lernprozessbegleitung kann dahingehend verwendet werden, anspruchsvolle Benutzeroberflächen für den Fremdsprachenbereich zu entwickeln, indem kontextualisierte, personalisierte und vielfältige Antworten auf von Benutzern gestellte Fragen in der entsprechenden (natürlichen) Sprache generiert werden. Dies ist ein mögliches Beispiel, wie digitale und KI-gestützte Lehr- und Lernangebote möglicherweise beim Erlernen von Fremdsprachen einsetzbar sind.

Im Folgenden wird insbesondere die Synergie zwischen digitalem Lernen und KI im Kontext des Fremdspracherwerbs untersucht. Ziel ist es, die Auswirkungen der Technologien auf den Prozess des Fremdspracherwerbs zu verstehen und zu erläutern, wie die Integration von KI die Wirksamkeit und Effizienz des Sprachenlernens verbessern kann. Aufgrund der Dynamik der Entwicklung aktueller KI-basierter Technologien, sind die Überlegungen des Artikels im Kontext seiner Entstehung zu sehen. Durch die Präsentation relevanter empirischer Studien und Metaanalysen insbesondere aus den Jahren 2022 und 2023 (KI-Systeme wie ChatGPT u.a. wer-

den für die breite Masse zugänglich(er)) soll ein Verständnis für die Synergie von KI und digitalem Lernen im Fremdsprachenerwerb vermittelt und so ein Beitrag zur aktuellen Diskussion geleistet werden

2 Entwicklungen im Bereich des digitalen Lernens mit Schwerpunkt auf KI

2.1 Allgemeine Aspekte

Wenn über KI gesprochen wird, dann sollte zunächst der aktuelle Stand zum Lernen mit digitalen Medien betrachtet werden, denn hierzu zählen alle Thematiken, die Bildung und künstliche Intelligenz in Bezug zueinander setzen. Die Diskussion über die Digitalisierung in der Bildung beschäftigt sich schon lange mit der Frage, was für die Zukunft gelehrt und gelernt werden soll, und ist dabei stets mit der Unsicherheit von Zukunftsentwürfen konfrontiert (Kerres 2021). Die rasante Weiterentwicklung und Verbreitung digitaler Technologien, insbesondere in Bezug auf mobile Endgeräte (Smartphones, Tablets) hat das digitale Lernen in den letzten Jahren stark geprägt. Vor allem die Integration von künstlicher Intelligenz in Lehr-Lern-Kontexte hat weitreichende Auswirkungen auf die Lernumgebung, die Lernmethoden und die Interaktionen im Lernprozess.

In diesem Kontext werden aktuell auch Diskussionen um Lernkonzepte und insbesondere um das – vermeintlich – richtige Lernen geführt:

Bislang greifen viele Lernkonzepte aber noch zu kurz. Aus Vorführen und Nachmachen (z.B. klassisches Einlernen), Teilnehmen (z.B. klassisches Seminar, MOOC) und Mitmachen (z.B. einfacher Qualitätszirkel, KVP-Workshop) erwächst nicht unbedingt Handlungskompetenz und zumeist auch keine Selbstreflexion. Dazu braucht es Austausch und Prozessbegleitung, mitunter auch Anleitung und Beratung. Es braucht ein Lernen, das eigene Erfahrungen in einem realen Kontext ermöglicht sowie Raum zu umfassender Reflexion gibt. Bereits in der Lernmethodik und in der Rolle der Lernbegleitung selbst müssen die Handlungsweisen und Haltungen angelegt sein, die es zu vermitteln gilt. (Korge et al. 2021a: 4)

Digitale Lehr-/Lernformen bieten eine größere Flexibilität und Zugänglichkeit im Vergleich zu traditionellen Lehr-/Lernmethoden. Mit einer Internetverbindung und einem digitalen Gerät können Lernende bereits seit Jahren proaktiv und selbstgesteuert jederzeit und von überall auf unterschiedlichste Lernmaterialien zugreifen (Means et al. 2010). Hier zeigen sich die ersten Schnittstellen, weshalb die Thematik KI so interessant für den digitalen Lehr-/Lernbereich ist. In Kombination mit KI können solche Lernformen dazu beitragen, die Herausforderungen des traditionellen Fremdsprachenlernens zu überwinden, wie z.B. die Begrenzung auf feste Unterrichtszeiten und die fehlende Individualisierung des Lernens (Chen 2019). Ein Hauptmerkmal von KI ist ihre Fähigkeit zur Datenanalyse und Vorhersage (Russell & Norvig 2016). Diese Fähigkeit ermöglicht personalisiertes Lernen – ein Konzept, das sich durch die Anpassung von Lernmaterial und -strategien an die individuellen Bedürfnisse der Lernenden auszeichnet (Pane et al. 2017). In einem digitalen Lernumfeld kann KI die Lernstile, Fähigkeiten und Schwächen des Einzelnen analysieren und dementsprechend individualisierte und besser passende Lernpfade vorschlagen. Es konnte in

bisherigen Studien bereits aufgezeigt werden, dass solche personalisierten Ansätze die Lerneffizienz und -wirksamkeit – und dadurch also mit großer Wahrscheinlichkeit auch den Lernerfolg – erhöhen können (Xu 2020). Darüber hinaus fördern digitale Lernformen, die mit KI-Technologie ausgestattet sind, die Interaktion und Kommunikation. Diese Technologie ermöglicht es Lernenden, ihre sprachlichen Fähigkeiten in nahezu realen Kontexten zu üben, indem sie interaktive und immersive Erfahrungen erzeugen. So können zum Beispiel virtuelle Sprachtutoren, basierend auf KI, Lernenden eine unmittelbare und auch individualisierte Rückmeldung geben, um beispielsweise ihre Aussprache und Grammatik zu verbessern (Li et al. 2021).

Trotz dieser auf den ersten Blick potenziellen Vorteile ist es wichtig, die Herausforderungen und Grenzen von KI und digitalen Lehr-/Lernformen insbesondere im Kontext des Sprachenlernens zu kennen. Zu den Bedenken gehören beispielsweise die Qualität der bereitgestellten Inhalte, die Notwendigkeit für technische Unterstützung und der potenzielle Mangel an menschlicher Interaktion (Chen 2019). Darüber hinaus sind Fragen der Privatsphäre und der Datensicherheit von Bedeutung, wenn persönliche Lerninformationen von KI-Algorithmen analysiert werden (Russell & Norvig 2016). Im Folgenden wird hierauf nun vertieft eingegangen. Ebenso wie sich ein Blick auf die Risiken lohnt, sollen zu einem späteren Zeitpunkt nochmals die Chancen von KI im Bildungskontext bzw. im Bereich des Fremdspracherwerbs dargelegt werden.

2.2 Chancen im Umgang mit KI im Kontext der Bildung

Individualisierung ist eines der Megatrends unserer Zeit (Zukunftsinstitut 2023). Dies gilt auch für das Lehren und Lernen. Eine der interessantesten Entwicklungen in der digitalen Bildung ist daher die Anpassungsfähigkeit und Personalisierung, die durch KI ermöglicht wird. Algorithmen des *Machine Learning* – eines Bereichs der KI – sind in der Lage, Muster und Zusammenhänge in großen Datenmengen zu erkennen und daraus Vorhersagen oder Empfehlungen zu generieren (Chen & Ranjan 2020). Im Kontext des digitalen Lernens können solche Algorithmen – positiv betrachtet – genutzt werden, um den Fortschritt und die Lernstile der Lernenden zu analysieren und Lerninhalte sowie Lernmethoden entsprechend anzupassen. KI – im Speziellen also *Machine Learning* – bietet somit die Chance, Lernenden durch die Bereitstellung personalisierter Lerninhalte, neue Formen der Lernbetreuung und sinnvolle Prüfungsszenarien individuell gerecht zu werden.

Die KI kann auch Lehrende durch die Klärung organisatorischer Fragen entlasten und begleitet Lernende (Dies ist nicht klar: Die Lernenden hatten Sie gerade zuvor erst erwähnt) (Müssig 2021). Zudem sind Sprachverarbeitungstechnologien und Chatbots immer häufiger integrierter Anteil digitaler Lernumgebungen. Diese KI-Tools können komplexe menschliche Sprache verstehen und darauf reagieren, was sie zu wertvollen Hilfsmitteln im Fremdsprachenlernen macht. Sie ermöglichen den Lernenden, ihre sprachlichen Fähigkeiten in interaktiven und realistischen Szenarien zu üben, und bieten sofortiges Feedback und Korrekturen an (Kerly et al. 2007). In Kombination mit Spracherkennungstechnologien können sie sogar die Aussprache der Lernenden überprüfen und verbessern (Li et al. 2021). Diese Art von personalisiertem Lernen kann das Engagement und die Motivation der Lernenden erhöhen und damit ihre Lernleistung verbessern (Pane et al. 2017).

Weiterhin erleichtern KI-gestützte Plattformen das adaptive Lernen. *Adaptives Lernen* bezeichnet eine Methode, bei der das Lernmaterial in Echtzeit an das Leistungsniveau und die Fähigkeiten der Lernenden angepasst wird (Knewton Alta 2023). Durch KI-gestützte Datenanalyse und Vorhersagen kann das System die Lernmaterialien jedes Einzelnen dynamisch anpassen, um dessen individuelle Bedürfnisse zu erfüllen. Gerade beim Fremdsprachenunterricht entfaltet sich hiermit ein großer Raum an Möglichkeiten. Darüber hinaus erweitert die KI die Möglichkeiten des digitalen Lernens durch die Erstellung immersiver Lernumgebungen, wie zum Beispiel durch Anwendungen der *Virtual* und *Augmented-Reality*. Solche Anwendungen können es den Lernenden ermöglichen, in eine sprachliche Umgebung "einzutauchen" und das Sprachenlernen in einem realistischen Kontext zu erleben – man denke beispielsweise an eine immersive Lernumgebung, wie sie in manchen Computerspielen schon angeboten wird, kombiniert mit der Möglichkeit sich mit den Figuren in der entsprechenden Sprache *ad hoc* zu unterhalten (Billinghurst & Duenser 2012).

2.2 Herausforderungen im Umgang mit KI im Kontext der Bildung

Es ist jedoch zu beachten, dass trotz der Fortschritte und Möglichkeiten, die KI im digitalen Lernen bietet, auch Herausforderungen und Grenzen bestehen. Insbesondere sind Fragen des Datenschutzes und ethischer Standards im Umgang mit den von den Lernenden erzeugten Daten und den von der jeweiligen KI erstellten Prognosen von großer Bedeutung (Russell & Norvig 2016). Auf der negativen Seite kann es natürlich auch zu Überwachung und Kontrollmechanismen führen.

Die aktuellen Entwicklungen des digitalen Lernens und die Integration von KI stellen somit sowohl Chancen als auch durchaus ernstzunehmende Herausforderungen dar. Ihre sinnvolle Nutzung erfordert daher kontinuierliche Forschung – und Selbst- sowie Fremd-Reflexion –, um das volle Potential dieser Technologien zu nutzen und gleichzeitig ethische und praktische Bedenken zu berücksichtigen. Mit Spannung ist zu beobachten, wie sich die Entwicklungen in der näheren Zukunft weiter fortsetzen werden. Hierbei erfahren ein bewusster Einsatz und die zielgerichtete Anwendung dieser KI-gestützten Tools eine immer größere Bedeutung – besonders unter Berücksichtigung der zunehmenden Komplexität der Aufgaben und Funktionen, die KI-gestützte Tools inzwischen übernehmen können (Niedermeier & König, im Druck).

So könnten die mühelos von großen KI-basierten Sprachmodellen generierten Informationen den Lernenden dazu verleiten, kritisches Denken und Problemlösungsfähigkeiten hintenanzustellen und den "einfachen Weg" zu gehen, ohne über den generierten Inhalt zu reflektieren. Es ist daher wichtig, die Grenzen großer Sprachmodelle zu verstehen und sie als unterstützende Werkzeuge, nicht jedoch als Ersatz für Expertise, zu nutzen. Dabei sollten von den Nutzern zusätzliche Quellen zur Überprüfung der KI-generierten Informationen herangezogen und kritisches Denken im Curriculum gefördert werden. Für eine zielgerichtete Anwendung von KI-Tools stellt sich eine kritische Beurteilungsfähigkeit als wichtige zu entwickelnde Kompetenz dar (Niedermeier & König, im Druck). Die Nutzung großer Sprachmodelle sollte somit die übliche Lernumgebung ergänzen und verbessern, nicht jedoch diese ersetzen (Ehlers 2023).

Große Sprachmodelle können genaue Informationen liefern, aber sie können nicht die Kreativität eines Lehrenden, kritisches Denken und Problemlösungsfähigkeiten ersetzen. Der Bildungsbereich hat möglicherweise an vielen Stellen noch nicht genügend Kenntnisse und Expertise erlangt, um derartige neue Technologien effektiv in die Lehre zu integrieren.

Um diese Herausforderung zu bewältigen, sind verschiedene Ansätze möglich: Bedarfsanalysen für Lehrende und Lernende mit Fallbeispielen und Schulungsangeboten zur Nutzung der Modelle im Unterricht wären sinnvoll, ebenso wie die Bereitstellung von offenen Bildungsressourcen und Richtlinien zur Nutzung für Bildungspersonal. Auch Anreize für Kooperationen unter Lehrenden und Einrichtungen, die bereits Sprachmodelle einsetzen, wären denkbar und bzw. oder regelmäßige Analysen und Rückmeldungen zur effektiven Nutzung von KI.

Eine weitere, in diesem Zusammenhang relevante Tatsache ist, dass es schwierig bis unmöglich sein kann, maschinengenerierten Text von menschlichem Text zu unterscheiden. Einige Forscher haben hierfür bereits Strategien entwickelt, um KI-Texte zu erkennen, wie beispielsweise die Verwendung von Werkzeugen wie GPTZero oder Wasserzeichen. Langfristig könnte auch eine Lösung zudem darin bestehen, Curricula und Anweisungen zu entwickeln, die die kreative und evidenzbasierte Nutzung großer Sprachmodelle eher fördern statt ablehnen.

Der Einsatz großer Sprachmodelle in der Bildung wirft oftmals leider auch Bedenken hinsichtlich des Datenschutzes und der Sicherheit von Lernerdaten auf. Dies betrifft mögliche Datenschutzverletzungen, unbefugten Zugriff und die Verwendung dieser Daten für andere Zwecke als Bildung. Um diese Bedenken zu mindern, sind robuste Datenschutzrichtlinien, Transparenz gegenüber Lernenden und ihren Familien, moderne Sicherheitstechnologien, regelmäßige Audits und ein Notfallplan für Datenverletzungen notwendig. Zusätzlich ist eine Schulung des Personals über Datenschutzrichtlinien und ethische Bedenken ebenso unumgänglich. Hierzu gibt es bereits Stellungnahmen in Richtung Politik (z.B. Weißels 2023).

Große Sprachmodelle können menschenähnlichen Text generieren, was es für Lernende oftmals schwierig machen kann, echtes Wissen von unbestätigten Informationen zu unterscheiden. Diese Schwierigkeit der Unterscheidung kann dazu führen, dass Lernende falsche Informationen (das sogenannte ‚Halluzinieren‘ der KI-Tools) oder irreführende Informationen als wahr akzeptieren, ohne deren Richtigkeit zu hinterfragen. Um dieses Risiko zu mindern, ist es wichtig, Bildung im Bereich des kritischen Denkens anzubieten und den Lernenden zugleich Strategien beizubringen, Informationen zu erkunden, zu untersuchen und zu untermauern. Lernende werden KI in Zukunft beim Sprachenlernen oder in anderen Kontexten nutzen – ob dies politisch gewollt ist oder nicht. Daher sollte es die Aufgabe eines Bildungssystems sein, die Lernenden auf einen reflexiven und professionellen Umgang damit vorzubereiten.

Im Folgenden werden nun Überlegungen zur Zusammenarbeit und Interaktion zwischen Mensch und KI sowie die Einsatzmöglichkeiten von KI im digitalen Lehr-Lernbereich im Allgemeinen vorgestellt.

2.3 Bedeutung der Zusammenarbeit und Interaktion zwischen Menschen und KI

2.3.1 Automatisierungsmodell für personalisiertes Lernen

Chancen können auf unterschiedlichen Ebenen wirken und so sind KI und damit einhergehende große Sprachmodelle wie beispielsweise GPT-3 als Lernhilfe auf Seiten der Lernenden oder auch zur Lehrunterstützung auf Seiten der Lehrenden sinnvoll einsetzbar. Dabei ist es immer entscheidend, dass Klarheit darüber besteht, dass es dabei niemals um den Ersatz eines Lehrenden geht, sondern dass der Fokus auf Unterstützung und Individualisierung liegt. Diese Zusammenhänge werden in dem Modell der Bildungsforscherin und KI-Expertin Molenaar (2022) zur Automatisierung in individualisierten Lehr-Lern-Settings deutlich:

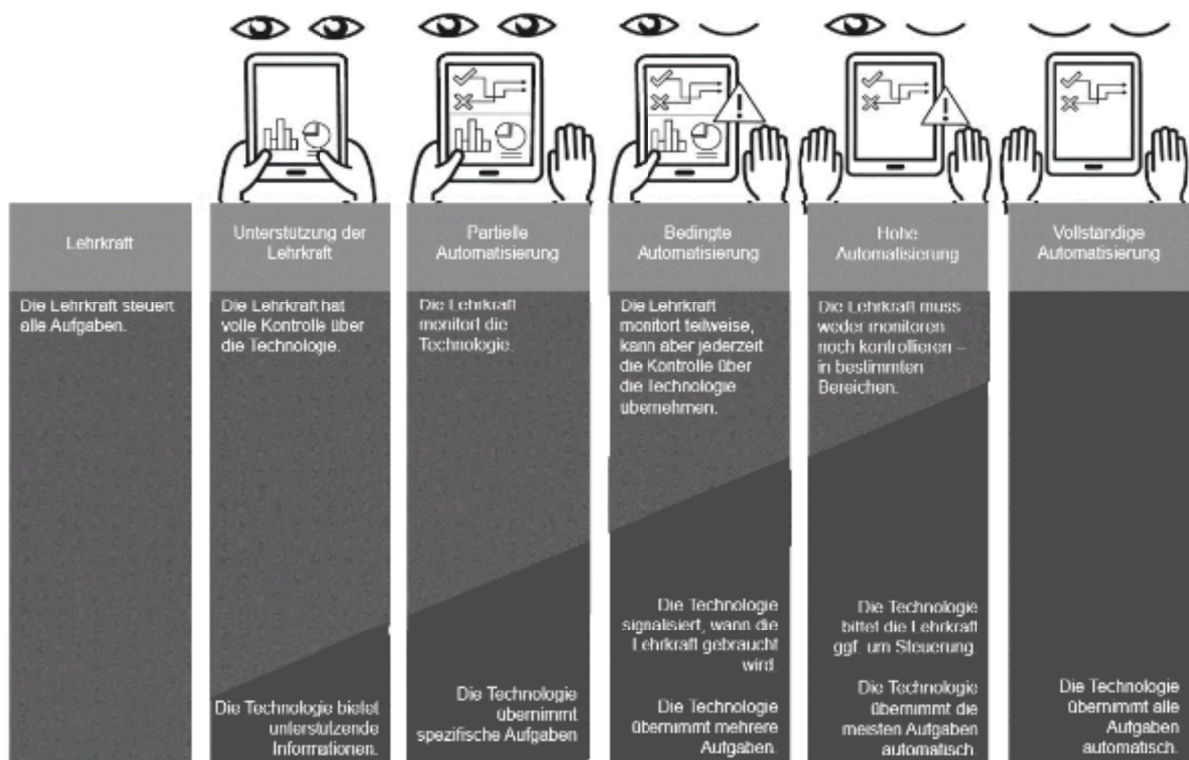


Abb. 2: Sechsstufiges Automatisierungsmodell für personalisiertes Lernen (nach Molenaar 2022)

Das Modell der sechs Automatisierungsstufen beschreibt die Aufteilung der Kontrolle zwischen Menschen und künstlicher Intelligenz in verschiedenen Bildungs-Anwendungsfällen.

- Auf Level 1 haben Lehrende die vollständige Kontrolle über den Bildungsprozess.
- Auf Level 2 tritt die KI als Lehrassistent auf, die Informationen über den Lernfortschritt und das Verhalten der Lernenden an die Lehrenden liefert und ihr pädagogisches Handeln dadurch beeinflusst.

- Auf Level 3 erfolgt eine teilweise Automatisierung, bei der die KI spezifische Aufgaben zur Unterstützung der Lehrenden übernimmt, wie zum Beispiel adaptive Lerntechnologien.
- Auf Level 4 wird ein größerer Teil der Überwachung an die KI abgegeben, während die Lehrenden trotzdem immer noch die Kontrolle behalten. Hierbei werden verschiedene Arten von Anpassungsaktionen von der KI durchgeführt, jedoch ist die Transparenz darüber, welche Aktionen hier für die Anpassung vollzogen werden, für die Lehrenden eine größere Herausforderung.
- Auf Level 5 übernimmt die KI die meisten Aufgaben und kontrolliert diese auch, aber die Lehrenden können bei Bedarf eingreifen.
- Level 6, also die Vorstellung eines vollautomatisierten Systems ohne menschliche Kontrolle, ist in der formalen Bildung unwahrscheinlich, könnte aber in informellen Bildungskontexten in der Zukunft durchaus eine Rolle spielen (Molenaar, 2022).

Das Modell bietet eine Möglichkeit, gegenwärtige und zukünftige KI-Praktiken in der Bildung zu bewerten und Idealfälle zu diskutieren. Es betont die Bedeutung der Zusammenarbeit und Interaktion zwischen Menschen und KI und regt den Dialog über die optimale Nutzung von KI in der Bildung an. Während bisherige Anwendungen von KI in der Bildung hauptsächlich die Diagnose des Schülerwissens umfassen, weist die Forschung auf eine zunehmende Vielfalt von diagnostischen Möglichkeiten hin, die in Zukunft realisierbar sein könnten.

Im Folgenden wird zunächst auf die Anwendung von Sprachmodellen, beispielsweise ChatGPT, zur Verbesserung von Lese-, Lern- und Schreibaktivitäten im Bildungsbereich geblickt – im Sinne der KI als Lernhilfe also –, danach werden die Chancen von KI zur Lehrunterstützung näher betrachtet.

2.3.2 KI als Unterstützung von Lernenden

Die KI bietet vielfältige Möglichkeiten zur Unterstützung von Lernenden, indem sie Fragen generieren, zum kritischen Denken anregen und inklusive Lernstrategien fördern kann. Es wird aufgezeigt, wie Sprachmodelle das Leseverständnis verbessern, das Lernen durch die Generierung von Lernkarten und Aufgaben unterstützen, sowie das Schreiben durch die Bereitstellung von Leitfragen und Feedback optimieren können. Des Weiteren wird die Bedeutung der kritischen Analyse und Interpretation der präsentierten Informationen betont, während gleichzeitig die Notwendigkeit weiterer Forschung zur Verbesserung der Leistungsfähigkeit dieser Modelle herausgestellt wird (Fleischmann 2023, Kasneci et al 2023):

- *Beim Lesen:* Im Bildungskontext erweisen sich KI-Sprachmodelle als äußerst nützlich, um das Leseverständnis von Lernenden zu erhöhen – etwas, das gerade im Sprachenlernen erhebliches Potenzial bietet. Durch die Fähigkeit, Texte zusammenzufassen, einen Überblick zu geben, Textabschnitte zu elaborieren und Gliederungen zu erstellen, ermöglichen diese Modelle den Lernenden eine strukturierte Arbeitsweise. Zusätzlich unterstützen sie sie beim Formulieren von Leitfragen, die ihr Verständnis weiter vertiefen können. Die Möglichkeit, damit Lernende zum Lesen anzuregen und komplexe Texte bes-

ser zu erschließen, trägt dazu bei, dass diese selbstständig und effektiv lernen können.

- *Beim Lernen:* Große Sprachmodelle können beispielsweise Lernkarten generieren, die als effektive Werkzeuge dienen, um den Lernstoff besser zu verinnerlichen. Darüber hinaus lassen sich mit Hilfe dieser Modelle gezielte (Klausur)Aufgaben zu den Lerninhalten erstellen, die den Lernenden helfen, ihr Wissen anzuwenden und zu festigen. Auch das Zusammenfassen von Texten und die Extraktion sowie die Systematisierung von Kernbegriffen kann das Lernen erleichtern. Darüber hinaus regen Sprachmodelle durch die Generierung von schrittweisen Lösungen und interessanten Fragen zum Sokratischen Dialog an, was zu einer vertieften Auseinandersetzung mit dem Lernstoff führt und unter Umständen auch die Fähigkeit der Lernenden, (neues) Wissen zu organisieren, erhöht. Die Fähigkeit, Sprache oder Sprachstile zu erlernen, lässt Sprachmodelle zu wertvollen Werkzeugen für den Lernprozess werden.
- *Beim Schreiben:* KI-gestützte Sprachmodelle können Lernenden Leitfragen zur Strukturierung ihrer Texte vorschlagen und die Ausarbeitung schrittweise durch die Bereitstellung von Beispielen und Gegenbeispielen unterstützen. Zudem können die Modelle Texte kürzen, elaborieren und verbessern, was Lernenden wiederum dabei hilft, ihre Schreibkompetenz zu entwickeln. Darüber hinaus ermöglichen Sprachmodelle eine effiziente Möglichkeit, Feedback zu Texten sowie zur Grammatik und Syntax zu erhalten. Die Interaktion mit diesen Modellen kann somit kontinuierlich die Schreibkompetenz der Lernenden fördern und ihre Fähigkeit stärken, komplexe Gedanken schriftlich wie auch mündlich klar und präzise zu formulieren.
- *Beim Übersetzen:* Machine Learning kann auch effizient für Übersetzungen genutzt werden. Hierbei werden Texte automatisch von einer Sprache in eine andere übertragen. Beliebte KI-Übersetzungsdienste wie DeepL verwenden für diese Aufgabe tiefe neuronale Netzwerke. Obwohl solche Systeme bei einfachen Strukturen und bestimmten Kontexten gut funktionieren, fehlt ihnen oft das Verständnis für spezifische Bedeutungen und feine kulturelle Nuancen. Im Kontext des Fremdsprachenunterrichts könnte die maschinelle Übersetzung dennoch hilfreich sein, um das Grundverständnis von Texten zu erleichtern oder für bestimmte Kontexte schnelle Übersetzungen bereitzustellen. Dennoch sollten Lernende sich nicht ausschließlich auf solche KI-generierten Übersetzungen verlassen, da sie das eigenständige Umschreiben und Beschreiben – somit die konkrete Arbeit an der Sprache und mit der Sprache – be- oder sogar verhindern können. Übersetzungstools können zwar bei der Erweiterung des passiven Wortschatzes helfen, aber sie ersetzen nicht die aktive Sprachkompetenz. Es ist wichtig zu beachten, dass Übersetzungs-Software nicht immer technische oder medizinische Fachbegriffe korrekt übersetzen kann, da diese Arbeit spezialisierte Fachkenntnisse erfordert und damit eine Menge an spezialisiertem Wissen. Außerdem berücksichtigen solche Programme oft keine Minderheitensprachen, die jedoch einen wichtigen Teil des authentischen Sprachenlernens ausmachen (Schmidt & Strasser 2022).
- *Auf der Metaebene:* Insgesamt kann von einer Förderung von kritischem Denken und inklusiven Lernstrategien ausgegangen werden. Die Anwendung von Sprachmodellen ermutigt Lernende dazu, kritisch über das Gelesene und Geschriebene nachzudenken und präsentiertes Wissen zu analysieren und zu interpretieren. Durch das Generieren von immer weiterführenden und tieferge-

henden Fragen fördert KI im besten Fall die Neugier und regt zu einem vertieften Verständnis der zu verarbeitenden Inhalte an. Allerdings ist es wichtig anzumerken, dass die Leistung von KI bei der Unterstützung der Lernenden (noch) hinter der von Menschen zurückbleibt, was die Bedeutung weiterer Forschung in diesem Bereich betont. Gleichzeitig können Sprachmodelle als inklusive Lernstrategie eingesetzt werden, um adaptives Schreiben, Übersetzungen und Hervorhebungen wichtiger Inhalte in verschiedenen Formaten zu ermöglichen, und dies insbesondere für Lernende mit Beeinträchtigungen. Diese barrierefreien Ansätze könnten dazu beitragen, Bildung für alle zugänglicher zu gestalten und die Vielfalt der Lernenden zu unterstützen.

2.3.2 KI zur Unterstützung der Lehrenden

Die Integration von KI in den Bildungsbereich hat das Potential, Lehrende unter anderem bei der Lehrplanung und der Entwicklung von Lehrmaterialien zu unterstützen. Durch den Einsatz von KI können Lehrinhalte aus Stichpunkten automatisch generiert werden, was die Erstellung von Gebrauchstexten erleichtert. Zudem ermöglicht die automatische Generierung von ersten Entwürfen (sogenannte *zero drafts*) ein schnelleres Voranschreiten bei der Materialerstellung (Kasneci et al. 2023). In kreativen Phasen unterstützt KI die Lehrenden beim Brainstorming sowie der Entwicklung und Konvergenz von Lösungen. Lehrvideos können sowohl aus Texten als auch automatisiert erstellt werden, wodurch es möglich wird, die unterschiedlichen Lernstile der einzelnen Schülerinnen und Schüler zu berücksichtigen.

KI-basierte Technologien unterstützen zudem die personalisierten Lehrprozesse durch das Bereitstellen von adaptivem Feedback (Kasneci et al. 2023). Dies kann in Form von Peer-Feedback erfolgen, wie beispielsweise auf der Plattform *peer-ai-tutor.streamlit.app*. Darüber hinaus können große Sprachmodelle verwendet werden, um das jeweilige Bewertungssystem zu optimieren. Angehende Lehrkräfte, die adaptives Feedback erhielten, zeigten in einer experimentellen Studie eine verbesserte Fähigkeit, ihre Diagnosen zu rechtfertigen: Bernius et al. (2022) nutzten NLP-basierte Modelle, um Feedback für schriftliche Schülerantworten zu generieren, und reduzierten den Bewertungsaufwand der Lehrkräfte um bis zu 85 % – bei gleichzeitiger Steigerung der Präzision und Qualität.

Neben der Unterstützung bei Lehrplanung und Assessment können Lehrende KI-basierte Technologien auch für die eigene Weiterbildung nutzen. Durch den Einsatz von KI-Tools erhalten sie die Möglichkeit, im Bildungsbereich auf dem neuesten Stand der Entwicklungen und Techniken zu bleiben und ihre Unterrichtsmethoden kontinuierlich zu verbessern (Fleischmann 2023, Kasneci et al. 2023).

Die Einbindung KI-basierter Technologien in den Bildungsbereich bietet Lehrenden somit vielfältige Möglichkeiten zur Verbesserung ihrer Lernprozesse: Von der Lehrplanung und Materialerstellung bis hin zum Assessment und der eigenen Weiterbildung eröffnet KI neue Horizonte, um den Bildungsbereich effektiver und personalisierter zu gestalten. Dennoch ist es wichtig, den Einsatz von KI verantwortungsbewusst vorzunehmen und eine enge Zusammenarbeit zwischen Lehrkräften, Forschern und Entwicklern sicherzustellen, um die bestmöglichen Ergebnisse für Lehrende und Lernende zu erzielen (Fleischmann 2023, Kasneci et al. 2023)

Bei diesen vielen neuen Möglichkeiten der Unterstützung von Lehrenden und Lernenden stellt sich automatisch die Frage nach der Wirksamkeit KI- gestützter Tools. Diese wird im Folgenden untersucht.

2.4 Aktuelle Evidenz im Kontext Lernen

Bisher existieren noch nicht viele systematische Forschungszusammenfassungen, wie Systematic Reviews oder Metaanalysen, die sich mit der Wirksamkeit von KI-gestützten Tools beschäftigen – erst recht nicht auf dem Gebiet des Sprachenlernens. Allerdings gibt es ein paar Ideen aus dem Forschungsfeld zu Chatbots, die hier zusammenfassend dargestellt werden sollen. Eine Übertragung auf deutsche Schulen und / oder das Sprachenlernen im Allgemeinen ist dementsprechend eingeschränkt möglich. Mehr Forschung – auch und im Besonderen im deutschen Sprachraum – ist hierfür nötig (und auch gerade im Entstehen begriffen). Die hier aufgeführte Evidenz liefert folglich nur erste Impulse und Denkanstöße;

Als kurzer Exkurs zu Chatbots: Der Hauptunterschied zwischen ChatGPT und herkömmlichen Chatbots besteht in der zugrunde liegenden Technologie und der Art der Konversation, die sie führen können. ChatGPT basiert aktuell auf der GPT-3.5-Architektur von OpenAI – einem Sprachmodell, das anhand einer großen Menge an Textdaten trainiert wurde und die Fähigkeit zur natürlichen Sprachverarbeitung und -generierung aufweist (kurz NLP: Natural Language Processing). ChatGPT kann daher individuell auf die Eingaben der Benutzer reagieren und anspruchsvolle Konversationen führen. Im Gegensatz dazu verwenden herkömmliche Chatbots in der Regel vordefinierte Antworten, Skripte oder einfache Regeln, um auf Benutzereingaben zu reagieren. Diese herkömmlichen Chatbots sind oft in ihrer Reaktionsfähigkeit und Flexibilität begrenzt und können Schwierigkeiten haben, natürliche Konversationen zu führen. Zusammenfassend lässt sich hierzu festhalten, dass ChatGPT ein fortschrittlicher Chatbot ist, der auf einer leistungsstarken künstlichen Intelligenz basiert (Kasneci et al. 2023)

Ein Blick auf die Evidenz von Chatbots und auf die Frage, wie wirksam der Einsatz dieses Tools in schulischen Kontexten ist, offenbart folgendes: Es zeigt sich in einer Meta-Analyse von 32 empirischen Einzelstudien mit insgesamt 2201 Teilnehmern, die in den Jahren 2010 bis 2022 veröffentlicht wurden, dass die Chatbot-Technologie unabhängig von Moderatorvariablen wie Interventionsdauer, Chatbot-Rollen und Lerninhalten eine mittlere bis hohe positive Wirkung auf die Gesamt-Lernergebnisse hat. Darüber hinaus verbesserten Chatbots signifikant explizites Denken, Lernerfolg, Wissenswiedergabe und das Lerninteresse, obwohl keine signifikanten Auswirkungen auf kritisches Denken, Lernbeteiligung und Motivation festgestellt wurden (Deng & Yu, 2023).

In einer weiteren Metaanalyse wurden 24 Einzelstudien untersucht. Das Hauptziel der Metaanalyse war es, die Auswirkungen von KI-Chatbots auf die Lernergebnisse der Schüler und Schülerinnen zu untersuchen und die moderierenden Effekte von Bildungsstufen und Interventionsdauer zu betrachten. Die Ergebnisse zeigten, dass KI-Chatbots eine positive Wirkung auf die Lernergebnisse der Schüler hatten. Darüber hinaus hatten KI-Chatbots eine stärkere Wirkung auf Lernende im Hochschulbereich im Vergleich zu denen in Grundschule und Sekundarschule. Zudem hatten kurze Interventionen eine stärkere Wirkung auf die Lernergebnisse als längere Interventionen. Dies könnte damit erklärt werden, dass die Neuheitseffekte von KI-Chat-

bots in kurzen Interventionen die Lernergebnisse verbessern, in längeren Interventionen jedoch nachlassen (Wu & Yu 2023).

Auch im Systematic Review von Okonkwo & Ade-Ibijola (2021) wurde der Fokus auf Chatbots in der Bildung gelegt. Auch hier zeigten sich positive Effekte: Die Verwendung von Chatbots in der Bildung hat das Potential, Lernerfolge und die Zufriedenheit der Studierenden signifikant zu verbessern. Mehrere Studien haben gezeigt, dass Chatbots erfolgreich in Bildungskontexten implementiert werden können und verschiedene Vorteile für das Bildungssystem bieten. Als Vorteile wurden hierbei genannt:

- *Integration von Inhalten:* Chatbots ermöglichen die Integration von Lehrinhalten in eine Online-Plattform, die leicht zugänglich ist. So können nahezu hürdenlos und unmittelbar maßgeschneiderte Informationen für Lernende bereitgestellt werden.
- *Schneller Zugriff:* Chatbots ermöglichen einen schnellen Zugriff auf Bildungsinformationen, was Zeit spart und das Lernen und die Leistung der Lernenden maximiert.
- *Motivation und Engagement:* Die Verwendung von interaktiven Systemen wie Chatbots wirkt auf Lernende oftmals motivierend und erhöht deren Engagement.
- *Unmittelbare Unterstützung:* Chatbots bieten sofortige Unterstützung für Lernende und Lehrende an, indem schnelle Antworten auf Fragen und Aktivitäten angeboten werden.

In zwei weiteren Meta-Analysen wird besonders auf die Wirksamkeit von Chatbots im Kontext des Sprachenlernens geblickt. So untersuchten Lee & Hwang (2022) den Einfluss von Chatbots auf das Erlernen des Englischen in koreanischen Bildungskontexten. In der Metaanalyse von 16 Einzelstudien wurden durch Moderatorenanalysen folgende Hauptergebnisse erzielt:

1. Je niedriger die Schulstufe, desto größer war die berechnete Effektstärke.
2. Behandlungen, die weniger als acht Wochen dauerten, erwiesen sich als wirksamer.
3. Die Verwendung eines gezielt entwickelten Chatbots hatte eine größere Wirkung auf den Lernerfolg als die eines allgemeinen Chatbots.

Die Meta-Analyse ist aufgrund der Datenlage eingeschränkt zu generalisieren, bietet aber erste Impulse speziell für das Erlernen einer Fremdsprache.

In der Meta-Analyse von Zhang et al. (2022) wurden auch Effekte des Sprachenlernens beim Einsatz von Chatbots genauer untersucht. Hierbei wurden 18 Einzelstudien zusammengefasst und darüber hinaus neun potenzielle moderierende Variablen (Bildungsniveau, Zielsprache, Sprachbereich, Lernergebnis, Unterrichtsdauer, Chatbot-Schnittstelle, Chatbot-Entwicklung, Aufgaben-Dominanz und Interaktionsart) identifiziert und diskutiert. Hierbei zeigten sich folgende Ergebnisse:

1. Lernende profitierten in Bezug auf das Bildungsniveau (und / oder das Alter) im schulischen Kontext stärker von Chatbots als Universitäts-Studierende.

2. Chatbots wurden vorwiegend bzw. nahezu hauptsächlich zum Erlernen einer Zweitsprache genutzt.
3. Erste Ergebnisse zeigten, dass signifikante Vorteile für Wortschatz, Hörverstehen, Sprechen und andere Bereiche des Sprachenlernens mit Chatbots bestanden.
4. Längere Unterrichtszeiten (ein bis drei Monate) hatten den besten Effekt für computerunterstütztes Sprachenlernen.
5. Webbasierte sowie selbsterstellte Chatbots waren effektiver als mobile Anwendungen bzw. vorgefertigte Chatbots. Individuelle Anpassungen und zusätzliche Funktionen erhöhten folglich die Produktivität.
6. Lernerzentrierte Anwendungen waren beim Sprachenlernen wirksamer. Benutzerkontrolle und individuelle Anpassung führten im Sprachenlernen zu positiveren Ergebnissen.
7. Es zeigte sich, dass Sprache-zu-Text-Chatbots eine höhere Lernerfolgsquote bewirkten als Text-Chatbots im Kontext des Sprachenlernens. Diese boten realistischere, dynamischere Übungsmöglichkeiten und förderten somit das Sprachverständnis.

In einer weiteren systematischen Literaturanalyse von Wollny et al (2021) aus dem europäischen Forschungsraum, ist die derzeitige theoretische und evidenzbasierte Lage im Bereich der Chatbot-Forschung dargelegt und auch anschaulich graphisch aufbereitet, führt aber an dieser Stelle zu weit. Kurz zusammengefasst, wurden in dieser Studie verschiedene Aspekte der Anwendung von Chatbots in der Bildung untersucht. Die pädagogischen Rollen von Chatbots wurden als *Lernen*, *Unterstützen* und als *Mentor* identifiziert. Alle drei Rollen sind für Lernende von großer Bedeutung und sollten in Chatbots integriert werden. Wichtig für die Integration von KI-basierten Technologien in die Bildung scheint ganz grundsätzlich die Bereitschaft und Motivation der Lehrkräfte zu sein, diese zu fördern. Lehrkräfte mit konstruktivistischen Überzeugungen neigen dabei eher dazu, Bildungstools mit KI einzusetzen als solche mit transmissiven Orientierungen. Die wahrgenommene Nützlichkeit, die wahrgenommene Benutzerfreundlichkeit und das wahrgenommene Vertrauen in KI-basierte Werkzeuge spielen für die Akzeptanz eine entscheidende Rolle (Kasneci et al 2023).

Dies sind im Kontext von Chatbots erste Einblicke der Forschung, die natürlich nur eingeschränkt auf KI im Allgemeinen bzw. generative Künstliche Intelligenz oder den deutschen Kulturkreis bzw. den deutschen Schul- und Bildungskontext im Besonderen übertragen werden kann. Dennoch liefern sie erste Denkanstöße in Richtung des evidenzbasierten Einsatzes dieser Tools

Zusammenfassend lässt sich festhalten, dass KI und digitales Lernen das Potential haben, den Prozess des Fremdsprachenerwerbs zu revolutionieren. Durch die Kombination von personalisiertem Lernen, flexibler Zugänglichkeit und interaktiven Lernerfahrungen bieten diese Technologien eine innovative Möglichkeit, die Wirksamkeit und Effizienz des Sprachenlernens zu verbessern. Es bedarf jedoch weiterer Forschungen, um ein umfassenderes Verständnis der optimalen Integration dieser Technologien in den Lernprozess zu gewinnen und sicherzustellen, dass sie zu einem gerechten und inklusiven Bildungssystem beitragen – auch und im Besonderen im deutschsprachigen Bildungssystem. Die Forschungsbemühungen im Kontext *Lernen* im Allgemeinen und *Spracherwerb* im Speziellen stehen jedoch noch am An-

fang. Jedoch bestehen insbesondere aus lehr-/lerntheoretischer Sicht schon Überlegungen, wie Lernen in Zeiten der Digitalisierung gelingen kann.

3 Das Verständnis von Lernen – eine Lerntheorie für die Digitalisierung

Bereits seit Längerem zeigt sich, dass vor allem konstruktivistische Lehr-/Lernauffassungen im Bereich der Digitalisierung der Bildung nicht mehr wegzudenken sind. Das Konstruktivismus-Paradigma stellt eine zentrale Theorie im Kontext der Lehr-/Lernforschung dar. Der Konstruktivismus kann dabei unterschiedliche Ausprägungen annehmen, wobei in seiner radikalen Form davon ausgegangen wird, dass alles, was der Mensch wahrnimmt, eine subjektive Konstruktion und Interpretation darstellt (Glaserfeld 1987). In seiner gemäßigten Form bezieht sich der Konstruktivismus nicht auf die umfassende Konstruktion der gesamten menschlichen Wahrnehmung, sondern lediglich auf die Konstruktion neuen Wissens. *Lernen* wird dabei beschrieben als subjektive Konstruktion durch das aktiv lernende Individuum in konkreten sozialen Kontexten. Im Kern geht der in der aktuellen Lehr-/Lerndiskussion vorherrschende gemäßigte Konstruktivismus davon aus, dass Wissen nicht einfach von Lehrenden zu Lernenden übertragen wird, sondern dass Lernende ihr Wissen durch die aktive Auseinandersetzung mit dem entsprechenden Lernmaterial selbst konstruieren (Phillips 1995). Heinz Mandl, ein renommierter deutscher Bildungsforscher, hat dabei bedeutende Beiträge zur konstruktivistischen Lerntheorie geleistet.

Im Verständnis des Konstruktivismus sind aktives Lernen und das Begreifen von Zusammenhängen zentral (Mandl & Reinmann 2006): Die Lernenden reagieren nicht nur auf die dargebotenen Informationen, sondern gestalten ihre Umwelt aktiv (Reinmann 2011). Das bedeutet, dass Lernende explizit in Lernprozesse eingebunden sein und Verbindungen zwischen neuen Informationen und bereits vorhandenem Wissen herstellen sollten. Dabei wird ein besonderer Fokus auf das selbstständige Erarbeiten und die Reflexion von Wissen gelegt.

Zusammenfassend zeigen sich sechs zentrale Merkmale für konstruktivistische Lernprozesse (Mandl & Kopp 2006). Lernen ist ein dabei:

- ein aktiver Konstruktionsprozess,
- ein konstruktiver Prozess, bei dem neues Wissen in bereits bestehendes Wissen integriert und aufgrund bisheriger Erfahrungen interpretiert wird,
- ein durch Emotionen beeinflusster Prozess,
- ein selbstgesteuerter Prozess, der die Planung, Kontrolle und Überwachung des eigenen Lernprozesses erfordert,
- ein situativer Prozess, in dem Wissenserwerb in spezifische Kontexte oder Situationen eingebettet ist, und
- ein sozialer Prozess, der die Interaktion mit Anderen erfordert.

Eine zentrale Rolle spielt daher auch die soziale Interaktion. Im Sinne des sozialen Konstruktivismus betont Mandl, dass das Lernen häufig in sozialen Kontexten stattfindet und durch Interaktion mit anderen gefördert wird (Mandl & Friedrich 2006).

Dieses Prinzip wird durch die Nutzung digitaler Technologien und insbesondere KI-gestützter Lernumgebungen verstärkt, da diese neue Möglichkeiten für kollaboratives und vernetztes Lernen bieten, und zwar im Kontext des sprachlichen Lernens, wie auch in anderen Fachbereichen – dies ist überfachlich zu verstehen.

Der konstruktivistischen Perspektive entspringen didaktische Ansätze wie das *problemorientierte Lernen* bzw. das *fallbasierte Lernen*. Dabei ist jedoch die Instruktion durch den Lehrenden wichtig. Lehrende können den Lernprozess begleiten, indem sie in einer eher beratenden Position die Lernenden anleiten sowie Informationen und Erklärungen darbieten. Dabei gilt es, die Waage zu halten zwischen der Instruktion durch Lehrende – oder die KI – und der Konstruktion durch Lernende sowie deren individuellen Lernvoraussetzungen und dem Lerngegenstand, so dass die Selbststeuerung durch die Lernenden weiterhin im Vordergrund steht (Reinmann-Rothmeier & Mandl 2001).

Um dieser Voraussetzung Rechnung zu tragen, stellen Mandl & Kopp (2006) vier Gestaltungsprinzipien für problemorientierte Lernumgebungen auf: Lernumgebungen sollten:

- authentisch und anwendungsbezogen sein, so dass träges Wissen verhindert wird;
- Wissen in multiple Kontexte einbinden und aus multiplen Perspektiven betrachten, so dass es flexibel angewandt und adaptiert werden kann;
- soziale Lernarrangements beinhalten, die neben der Wissensvertiefung auch soziale Kompetenzen fördern (z.B. Kommunikation und Kooperation);
- mit instruktionalen Anleitungen und Unterstützung aufwarten, um die Lernenden nicht zu überfordern.

Diese Zusammenhänge lassen sich graphisch wie folgt veranschaulichen:

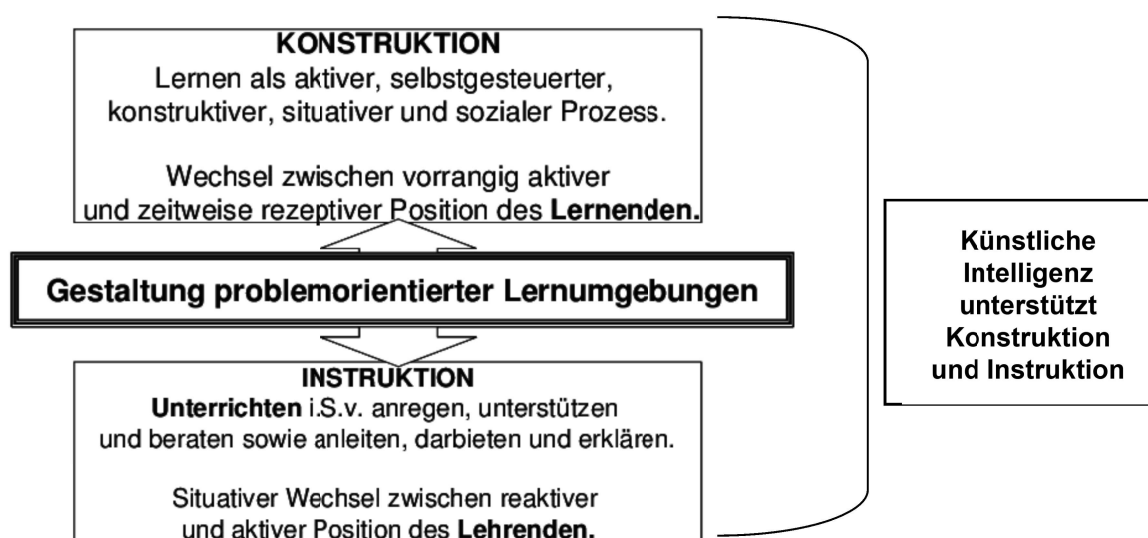


Abb. 3: Balance zwischen Instruktion und Konstruktion
(Eigene Darstellung in Anlehnung an Reinmann-Rothmeier & Mandl 2001: 603)

Außerdem betonen Mandl & Reinmann (2006), dass Lernprozesse nicht nur von der Art des Lernmaterials, sondern auch von den individuellen Vorstellungen und Einstellungen der Lernenden beeinflusst werden. Daher ist es wichtig, Lernumgebungen und Lernmaterialien so zu gestalten, dass sie an die individuellen Bedürfnisse der Lernenden angepasst sind. In diesem Zusammenhang kann KI dazu beitragen, personalisierte Lernpfade zu schaffen und die Lerninhalte auf die Bedürfnisse und Vorlieben der Lernenden zuzuschneiden, was gerade beim sprachlichen Lernen einen immensen Mehrwert liefern kann. Die KI wirkt dabei auf mehreren Ebenen, z.B. durch die Erstellung realitätsnaher Fälle, die den situativen Prozess abbilden oder auch die Instruktion unterstützen.

Zusammenfassend lässt sich sagen, dass die Prinzipien des Konstruktivismus wichtige Leitlinien für die Gestaltung und Durchführung von Lernprozessen darstellen. Sie legen den Grundstein für das Verständnis des Lernens als aktiven und sozialen Prozess, bei dem die Lernenden im Mittelpunkt stehen. In diesem Sinne kann die Integration von KI in den Lernprozess dazu beitragen, diese Prinzipien zu unterstützen und zu erweitern.

Unter Anwendung der konstruktivistischen Lerntheorie lässt sich die effektive Verschmelzung von KI und digitalen Lernmethoden im Kontext des Fremdsprachenerwerbs sinnvoll nachvollziehen. Das Prinzip des aktiven Lernens und der Herstellung von Zusammenhängen findet hierbei durch die Technologien des digitalen Lernens und den vorwiegend unterstützenden, zielgerichteten Einsatz von KI eine innovative Umsetzung.

Bevor auf mögliche Synergien eingegangen wird, soll zunächst soll der Fremdsprachenerwerb im digitalen Zeitalter genauer betrachtet werden.

4 Fremdsprachenerwerb im digitalen Zeitalter

Die Digitalisierung hat das Fremdsprachenlernen verändert und ein breites Spektrum an Lernressourcen zugänglich gemacht. So ist das Feld des Fremdsprachenerwerbs seit Längerem durch die Erweiterung des Zugangs zu Lernmaterialien, die Verbesserung von Lernmethoden und die Veränderung der Lernerfahrungen geprägt worden. In diesem Kontext haben Online-Sprachkurse, virtuelle Sprachaustausch-Plattformen und gamifizierte Lernanwendungen besondere Aufmerksamkeit erlangt. Im Folgenden werden die Auswirkungen des digitalen Zeitalters auf den Fremdsprachenerwerb erläutert und in Bezug zu KI gesetzt. Dabei werden Online-Sprachkurse, die erwähnten virtuellen Sprachaustausch-Plattformen und gamifizierte Lernanwendungen hervorgehoben und deren Potenzial für die Förderung des Fremdsprachenerwerbs beleuchtet.

Online-Sprachkurse sind eine der grundlegenden Anwendungen von digitalen Technologien im Fremdsprachenlernen. Sie bieten den Lernenden die Möglichkeit, in ihrem eigenen Tempo, nach ihrem eigenen Zeitplan und unabhängig von Ort und Zeit zu agieren (Means et al. 2010). KI kann die Effizienz von Online-Sprachkursen weiter verbessern, indem sie personalisiertes Lernen ermöglicht, das auf den individuellen Bedürfnissen und Fähigkeiten des Lernenden basiert (Xu 2020).

Virtuelle Sprach austausch-Plattformen wie Tandem oder HelloTalk bieten Lernenden die Möglichkeit, mit Muttersprachlern aus verschiedenen Kulturen zu interagieren und ihre Sprachkenntnisse in realen Kontexten zu üben (Kramsch & Thorne 2002). Die KI-Technologie kann auf diesen Plattformen eingesetzt werden, um geeignete Sprachpartner zu finden, Gespräche zu moderieren oder sogar Übersetzungen in Echtzeit zu liefern, was das Sprachenlernen effizienter und zugänglicher macht (Li et al. 2021).

Gamifizierte Lernanwendungen wie Duolingo oder Memrise sind ebenfalls ein wichtiges Element des digitalen Sprachenlernens. Durch die Integration von Spielelementen in den Lernprozess können diese Anwendungen das Lernen attraktiver und motivierender machen (Deterding et al. 2011). Die KI kann zudem dabei helfen, die Lernerfahrung weiter zu personalisieren, indem sie beispielsweise das Lernmaterial an das Leistungsniveau der Lernenden anpasst oder Lernpfade vorschlägt, die auf den Interessen und Vorlieben der Lernenden basieren (Chen & Ranjan 2020). Obwohl diese digitalen Lernmöglichkeiten das Potential haben, den Fremdsprachenerwerb zu unterstützen, sollten sie nicht als „Allheilmittel“ betrachtet werden. So ist es – wie bereits dargelegt – in erster Linie wichtig, die potenziellen Herausforderungen und Grenzen dieser Ansätze zu erkennen.

Besonders betont werden soll an dieser Stelle, dass gerade kulturelle Themen durch Sprachmodelle oftmals nicht klar dargestellt werden und teilweise Antworten von ChatGPT und Co. bisweilen stark stereotypisch sind bzw. sogar stereotypes Argumentieren unterstützen (Kasneci et al 2023). Auch nimmt eine KI beim Generieren von Antworten nahezu keine Rücksicht auf die Muttersprache, das Alter oder auch die Vorkenntnisse der Nutzer in anderen Bereichen (Kasneci et al 2023). So war gerade zu Beginn von ChatGPT das zuvor erwähnte *Halluzinieren* eine große Gefahr bei der Generierung von Output (Alkaissi, 2023, Ji et al. 2023). Inzwischen sind große Sprachmodelle wie ChatGPT diesbezüglich besser geworden, das Halluzinieren kann jedoch nie komplett eliminiert werden. Auch in dieser Hinsicht wird deutlich, dass ein kritischer Umgang mit KI unerlässlich ist.

Zusammenfassend lässt sich festhalten, dass das digitale Zeitalter eine Vielzahl neuer Möglichkeiten für den Fremdsprachenerwerb eröffnet hat. Die Integration von KI in diesen Prozess kann die Lernerfahrung weiter verbessern und personalisieren.

5 Synergien von digitalem Lernen und KI für den Fremdspracherwerb

Im Folgendem sollen vielfältige Synergien dargestellt werden, die sich durch die Kombination von KI und digitalen Lernmethoden ergeben. Diese wurden in den vorangegangenen Kapiteln bereits angesprochen. Im Folgenden werden verschiedene Anwendungsgebiete nun genauer beleuchtet, wie beispielsweise personalisierte Lernwege, intelligente Sprachbewertungen und interaktive KI-gestützte Sprachassistenten. Ziel ist es aufzuzeigen, wie diese Synergien die Motivation, das Engagement und den Lernerfolg von Fremdsprachenlernern verbessern können.

Die Personalisierung von Lernwegen, die die KI ermöglicht, entspricht – wie in Kap. 3 erwähnt – der konstruktivistischen Auffassung nach individuell ausgerichteten

Lernprozessen. Die KI kann dabei die Lernpfade der Nutzer analysieren und entsprechend anpassen, indem sie Elemente wie den Schwierigkeitsgrad der Aufgaben, die Wiederholungsrate und den Lernrhythmus auf die individuellen Bedürfnisse der Lernenden zuschneidet (Baker et al. 2019). Diese personalisierte Herangehensweise der KI erhöht das Engagement und die Motivation der Lernenden, da sie ihnen ein Gefühl von Selbstwirksamkeit (Deci & Ryan 2000) und Fortschritt vermittelt.

Durch die KI ermöglichte, intelligente Sprachbewertungen bieten den Nutzern eine weitere Schnittstelle zwischen dem Konstruktivismus einerseits und dem digitalen Sprachenlernen andererseits. Durch automatisiertes Feedback können die Lernenden ihre Leistungen selbst bewerten und ihren Lernprozess entsprechend anpassen (Chen et al. 2020). Diese Praxis stimmt mit Mandls Vorstellung von selbstständigem Lernen und Reflexion überein.

Interaktive KI-gestützte Sprachassistenten können zusätzlich die Rolle von „Experten“ übernehmen – ein zentraler Aspekt des sozialen Konstruktivismus. Diese Assistenten können in Echtzeit auf die Eingaben der Lernenden reagieren, ihnen Feedback geben und bei der Überwindung sprachlicher Hindernisse helfen (Coniam 2014). Auf diese Weise wird der Lernprozess dynamischer und interaktiver, was wiederum das Engagement und die Motivation der Lernenden fördert. Synergien zwischen digitalem Lernen und KI bieten also Möglichkeiten zur Verbesserung des Fremdsprachenerwerbs. Unter Berücksichtigung der Prinzipien des Konstruktivismus tragen sie dazu bei, das Lernen attraktiver, persönlicher und effektiver zu gestalten.

Die Auswirkungen digitaler Technologien – insbesondere der KI – auf den Bildungssektor sind weitreichend und haben das Potenzial, das Lernen zu revolutionieren (Brynjolfsson & McAfee 2014). Im Kontext des Fremdsprachenunterrichts eröffnen diese Technologien ungeahnte Möglichkeiten. KI-gestützte Lernplattformen können beispielsweise personalisierte Lernpfade erstellen, die auf den individuellen Bedürfnissen und Fähigkeiten der Lernenden basieren (Pane et al. 2017). Durch die Analyse von Lernstilen, Fähigkeiten und Schwächen kann die KI maßgeschneiderte Lernmaterialien und -strategien bereitstellen, die die Effizienz und Wirksamkeit des Lernprozesses erhöhen können (Xu 2020). Darüber hinaus bieten digitale Lernplattformen im Vergleich zu traditionellen Lernmethoden eine größere Flexibilität und Zugänglichkeit (Means et al. 2010). Mit einer Internetverbindung und einem digitalen Gerät können Lernende jederzeit und von überall auf Lernmaterialien zugreifen. In Kombination mit der KI können solche Plattformen dazu beitragen, die Herausforderungen des traditionellen Sprachenlernens zu überwinden, wie z.B. die Begrenzung auf feste Unterrichtszeiten und die fehlende Individualisierung des Lernens (Chen 2019).

Ein Ziel kann hierbei sein, das Bewusstsein für die Rolle von KI und digitalem Lernen im Fremdsprachenerwerb zu schärfen und dazu beizutragen, eine Grundlage für zukünftige Forschungen und pädagogische Innovationen in diesem Bereich zu schaffen. Durch die Klärung der Chancen und Herausforderungen, die mit der Integration von KI in den Sprachlernprozess einhergehen, wird hiermit versucht, einen Beitrag dazu zu leisten, das Potenzial dieser Technologien für eine effektivere und nachhaltigere Fremdsprachenerwerbspraxis zu nutzen. Die vorgestellten Anwendungsgebiete – von personalisierten Lernpfaden über intelligente Sprachbewertungen bis hin zu interaktiven, KI-gestützten Sprachassistenten-Systemen – illustrieren die transformative Wirkung, die KI und digitales Lernen auf den Fremdsprachenerwerb haben können.

Die modale Ausdrucksweise wird hier bewusst gewählt, da es, wie zuvor erwähnt, immer auch auf den Automatisierungsgrad ankommt, also darauf, wie viele Prozesse tatsächlich von der KI übernommen werden. KI kann in Bildungskontexten also die Motivation und das Engagement der Lernenden fördern. Im Einklang mit den behandelten konstruktivistischen Prinzipien bieten diese Synergien die Chance, das aktive und soziale Lernen zu fördern und den Lernenden ihrem eigenen Lernprozess eine zentrale Rolle zuzuschreiben. Sie bieten ein innovatives Paradigma, in dessen Rahmen das Lernen als dynamischer, interaktiver und personalisierter Prozess verstanden wird.

Im Hinblick auf zukünftige Entwicklungen ist es wichtig, die ständige Weiterentwicklung und Verbesserung von KI-Technologien im Auge zu behalten. Mit der zunehmenden Verbesserung dieser Technologie wird es künftig immer mehr Möglichkeiten geben, die KI im Fremdsprachenerwerb einzusetzen. Für Forscher und Pädagogen bleibt es jedoch eine wichtige Aufgabe, die potenziellen Nachteile und Herausforderungen dieser Technologien zu beachten und entsprechende kreative Lösungen zu deren Bewältigung zu entwickeln und einzusetzen. Dazu gehören die Beantwortung ethischer und moralischer Fragen, Richtlinien des Datenschutzes, die Notwendigkeit, die Technologie zugänglich und verständlich für alle Lernenden zu gestalten, und dies im besten Fall auch noch inklusiv und wertneutral.

Darüber hinaus könnte die Zukunft auch die Entwicklung neuer Formen des KI-gestützten Fremdsprachenlernens mit sich bringen. Diese könnten beispielsweise in immersiven Lernumgebungen bestehen, die durch Virtuelle Realität (VR) oder Augmented Reality (AR) unterstützt werden, oder in der Integration von KI in formelle Bildungssysteme (Kerres 2023).²

Insgesamt hat die Kombination von KI und digitalem Lernen das Potential, den Fremdsprachenerwerb auf aufregende und transformative Weise zu verändern. Sie bietet hier neue Perspektiven und eröffnet auch für Forschung und Praxis innovative Möglichkeiten. Die Reise ist jedoch noch lange nicht zu Ende und es liegt noch ein weiter Weg als Lernende vor uns, bis wir das volle Potenzial dieser Synergien ausschöpfen können.

Kritisches Denken, Auswahl, reflexiver Umgang, (fach)didaktische Kompetenzen und synergetische Entscheidungsfähigkeit sind immer noch unerlässlich, und auch die Sprachlehrkraft wird in näherer Zukunft allem Anschein nach nicht durch KI ersetzt werden. Trotzdem soll hier nochmals betont werden, dass es *keine* Lösung sein kann, *nicht* über KI nachzudenken, und dass daher reflektiert über die Frage entschieden werden muss, an welchen Stellen der Einsatz von KI sinnvoll ist. Ein generelles *Nein* und *Ja* ist auch bei dieser Thematik keine Lösung und der goldene Mittelweg liegt – wie so oft in Diskussionen im Bildungskontext – weder in einem „Schwarz“ noch in einem „Weiß“, sondern in einem „farbenfrohen“, diversen und kreativen Grauton. Es ist zu hoffen, dass dieser Beitrag einen Anstoß für weiterführende Diskussionen und Forschungen in diesem dynamischen und vielversprechenden Feld bietet.

2 Interessante Visionen hierzu finden sich beispielsweise in der App talkpal (<https://talkpal.ai/de/sprachen-lernen-war-mit-ki-noch-nie-so-einfach/>) oder auch bei Babble oder RosettaStone.

Bibliographie

- Alkaissi H., McFarlane SI. (2023). Artificial Hallucinations in ChatGPT: Implications in Scientific Writing. In: *Cureus* 15 (2): e35179.
- Baker, R. et al. (2019). Cross-system transfer of machine learned and knowledge engineered models of gaming the system. In: *User Modeling and User-Adapted Interaction* 29 (2), 331-382.
- Bernius, Jan Philip et al. (2022). Machine learning based feedback on textual student answers in large courses. In: *Computers and Education: Artificial Intelligence* 3, 2022, 1-16 (<https://doi.org/10.1016/j.caeai.2022.100081>; 15-10-2023).
- Billinghurst, M. & A. Duenser (2012). Augmented reality in the classroom. In: *Computer* 45 (7), 56-63.
- Blake, R. J. (2013). *Brave new digital classroom: Technology and foreign language learning*. Georgetown University Press.
- Chen, I. (2019). The Rise and Promises of E-learning in the Modern Education System. In: *Journal of Educational Technology* 56 (6), 295–307.
- Chen, H. et al. (2020). Business Intelligence and Analytics: From Big Data to Big Impact. In: *MIS Quarterly* 36 (4), 1165-1188.
- Chen, H. & R. Ranjan (2020). Deep Learning With Big Data: Challenges, Approaches, and Future Directions. In: *IEEE Access* 8, 20956-20981.
- Coniam, D. (2014). The use of computer voice recognition in pronunciation training: Landmarks in a continuing journey. In: *Computer Assisted Language Learning* 27 (5), 443-447.
- Deci, Edward L. & Richard M. Ryan, Richard (2000). The „What“ and „Why“ of Goal Pursuits: Human Needs and the Self-Determination of Behavior. In: *Psychological Inquiry* 11 (4), 227–268.
- Deng, X. & Z. A. Yu (2023). Meta-Analysis and Systematic. Review of the Effect of Chatbot Technology Use in Sustainable. Education. In: *Sustainability* 202 15, 2940. (<https://doi.org/10.3390/su15042940>; 10-10-2023).
- Deterding, S. et al. (2011). From game design elements to gamefulness: defining "gamification". In: *MindTrek '11: Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9-15.
- Ehlers, U. D. (2023). Wie wollen wir leben? In: Schmohl, T. et al. (Hrsg.): *Künstliche Intelligenz in der Hochschulbildung. Chancen und Grenzen des KI-gestützten Lernens und Lehrens*. Bielefeld: transcript 2023.
- Fleischmann, A. (2023). ChatGPT in der Hochschullehre. Wie künstliche Intelligenz uns unterstützen und herausfordern wird. In: *NHHL* 110, Mai 2023.
- Gupta, N. & D. S. Saini (2019). Artificial Intelligence: Evolution, Prospects and Challenges. In: *Procedia Computer Science*, 132, 679-688.

- Hockly, N. (2023). Artificial Intelligence in English Language Teaching: The Good, the Bad and the Ugly. In: *RELC Journal* 54 (2), 445-451. (<https://doi.org/10.1177/00336882231168504>; 15-10-2023).
- Ji, Z. et al. (2023). Survey of hallucination in natural language generation. In: *ACM Computing Surveys* 55 (12), 1-38.
- Kasneci, Enkelejda, et al. ChatGPT for Good? On Opportunities and Challenges of Large Language Models for Education. In: *EdArXiv* 30 Jan. 2023 (<https://doi.org/10.35542/osf.io/5er8f>; 15-10-2023).
- Kerly, A., Ellis, R., & Bull, S. (2007, December). CALMsystem: a conversational agent for learner modelling. In: *International conference on innovative techniques and applications of artificial intelligence*. London: Springer 89-102.
- Kerres, Michael. 2020. Bildung in der digitalen Welt: Über Wirkungsannahmen und die soziale Konstruktion des Digitalen. In: *Zeitschrift MedienPädagogik* 17, 1-32. (<https://doi.org/10.21240/mpaed/jb17/2020.04.24.X.>; 10.10.2023).
- Kerres, M. et al. (2023). *Lernpfade in adaptiven und künstlich-intelligenten Lernprogrammen: Eine kritische Analyse aus mediendidaktischer Sicht*. Springer VS Wiesbaden.
- Knewton Alta (2023): What is Adaptive Learning? In: *Wiley* 13 Feb 2023 (<https://www.wiley.com/en-us/education/alta/resources/blog-what-is-adaptive-learning>; 10-10-2023).
- Korge, G. et al: (2021). Der Ansatz *Agiles Lernen* im Unternehmen. In: Longmuß, L. et al. (Hrsg.). *Agiles Lernen im Unternehmen*. Berlin, Heidelberg: Springer Berlin & Heidelberg, 3-7.
- Kramsch, C. & S. L. Thorne (2002). Foreign language learning as global communicative practice. In: Block, D. & D. Cameron (Eds.), *Globalization and language teaching*. London: Routledge, 83.100.
- Li, X., et al. (2021). Development and evaluation of an AI-supported English pronunciation teaching system. In. *Educational Technology Research and Development* 69, 1081-1104.
- Mandl, H. & H. F. Friedrich (2006). Handlungsorientiert Lernen. In: Mandl, H. & H. F. Friedrich (Hrsg.): *Handbuch Lernstrategien*. Göttingen: Hogrefe, 65-78.
- Mandl, H. & B. Kopp (2006). *Blended Learning: Forschungsfragen und Perspektiven* (Forschungsbericht Nr. 182). München: Ludwig-Maximilians-Universität, Department Psychologie, Institut für Pädagogische Psychologie. (<https://epub.ub.uni-muenchen.de/905/1/Forschungsbericht182.pdf>; 23.08.2023).
- Mandl, H. & G. Reinmann, G. (2006). Unterrichten und Lernumgebungen gestalten. In: Krapp, A. & B. Weidenmann (Hrsg.): *Pädagogische Psychologie: Ein Lehrbuch*. Weinheim: Beltz, 613-658.
- Means, B., et al. (2010). *The effectiveness of online and blended learning: A meta-analysis of the empirical literature*. In: *Teachers College Record*, 115 (3), 1-47.
- Menges, Lea (2020). Leben, Arbeit, Bildung 2035+. Wann wird die Generation KI kommen? In: *Horizont*, 20. Juli 2020. (<https://www.horizont.net/planung-analyse/nachrichten/leben-arbeit-bildung-2035-wann-wird-die-generation-ki-kommen-184341>; 15-10-2023).

- Okonkwo, C. W. & A. Ade-Ibijola (2021). Chatbots applications in education: A systematic review In: *Computers and Education: Artificial Intelligence 2* (2021), 1-10.
- Pane, J. F. et al. (2017). *Informing Progress: Insights on Personalized Learning Implementation and Effects*. RAND Corporation.
- Phillips, D. C. (1995). The Good, the Bad, and the Ugly: The Many Faces of Constructivism. In: *Educational Researcher* 24 (7), 5-12.
- PwC (2023). AI and generative AI in 2023: Four top questions answered. May 4, 2023 <https://www.pwc.com/us/en/tech-effect/ai-analytics/artificial-intelligence.html>; 16.08.2023).
- Qu, F. et al. (2021). Asking questions like educational experts: automatically generating question-answer pairs on real-world examination data. In: *Proceedings of the 2021 conference on empirical methods in natural language processing*, 2583-2593.
- Reinmann-Rothmeier, Gabi & Heinz Mandl (2001). Unterrichten und Lernumgebungen gestalten. In: Krapp, Andreas & Bernd Weidenmann (Hrsg.). *Pädagogische Psychologie*. Weinheim: Beltz PVU, 601-646.
- Reinmann, G. (2011). Didaktisches Design - Von der Lerntheorie zur Gestaltungsstrategie. In: Ebner, M. & S. Schön (Hrsg.): *Lehrbuch für Lernen und Lehren mit Technologien*. (<https://13t.tugraz.at/index.php/LehrbuchEbner10/article/view/18/27>); 05.08.2023).
- Russell, S., & P. Norvig (2016). *Artificial Intelligence: A Modern Approach* (3rd ed.). Pearson.
- Schmidt, T. & T. Strasser (2022). Artificial intelligence in foreign language learning and teaching: a CALL for intelligent practice. In: *Anglistik: International Journal of English Studies*, 33 (1), 165-184.
- Weßels, D. (2023). Stellungnahme zu ChatGPT für den Bundestagsausschuss Bildung, Forschung und Technikfolgenabschätzung vom 24.04.2023. (<https://www.bundestag.de/resource/blob/944668/8986c32590098f441fbba938039650e5/20-18-108c-Wessels-data.pdf>; 21.12.2023).
- Wollny, S. et al. (2021). Are We There Yet? - A Systematic Literature Review on Chatbots in Education. In: *Front. Artif. Intell.* 4:654924. <https://www.frontiersin.org/articles/10.3389/frai.2021.654924/full>; 15-10-2023).
- Wu, Rong & Zhonggen Yu (2023). Do AI chatbots improve students learning outcomes? Evidence from a meta-analysis. In: *British Journal of Educational Technology*. 2023; 00: 1-24.
- Xu, D. (2020). *The promises and limits of online higher education: Understanding how distance education affects access, cost, and quality*. Washington: American Enterprise Institute for Public Policy Research.

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Exploring the Role of AI-Based Conversational Agents for Collaborative Learning of English as a Foreign Language

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Abstract

AI-based chat agents within educational settings present a promising pathway for bolstering collaborative learning (CL), especially in the sphere of English as a Foreign Language (EFL). This paper investigates the evolving role of chat agents based on Artificial Intelligence (AI) and Large Language Models (LLM), notably ChatGPT, in the landscape of CL specific to EFL. The primary aim is twofold: firstly, to discern the productive and unproductive applications of ChatGPT in a CL environment, and secondly, to investigate approaches for harnessing ChatGPT to amplify productive CL experiences in EFL contexts. We present a literature review addressing the main objective of this paper, i.e., the exploration of the productive and unproductive uses of ChatGPT for CL in the EFL context. The findings aim to provide insights into the capabilities and limitations of ChatGPT in fostering language skills, enhancing communication competence, and encouraging cooperative learning strategies among EFL learners. This present paper delineates approaches and possible pitfalls when employing AI chat agents in language learning, attempting to bridge the divide between AI technology and instructional design, aiming to facilitate a more informed and efficacious utilisation of AI within collaborative EFL learning environments.

Keywords: Artificial intelligence, conversational agents, EFL, collaborative learning, ChatGPT

1 The Gap between Productive and Unproductive Uses of AI in EFL Learning

Openly accessible Artificial Intelligence (AI) services have brought about a transformation in education including language education settings. AI-powered chat agents building on Large Language Models (LLMs), such as ChatGPT, have become popular tools in enhancing language learning, particularly in the realm of English as a Foreign Language (EFL). These AI systems, known for their interactive and adaptive features, provide distinguishing prospects for Collaborative Learning (CL). The pedagogical approach of CL refers to a variety of educational practices building on peer interaction (Dillenbourg et al. 2009).

CL is employed in formal education at all learning levels, from young learners to groups of university students working together to solve a problem, complete a task,

or create a learning product (Laal & Ghodsi 2012). CL is often associated with higher achievement and greater productivity (Ansari & Khan 2020) and lends itself well to EFL instruction (Jiang & Zhang 2020, Kanno 2020). Computer-Supported Collaborative Learning (CSCL) allows learners to deliberate their individual viewpoints via text-based media or videoconferencing being guided by collaboration scripts (Weinberger et al. 2005), shared representations (Suthers 2003), or brought to reflect on dynamic visualisations of their interaction (Janssen & Bodemer 2013). The integration of AI and natural language processing technologies, particularly with the implementation of conversational agents, i.e. chatbots, building on services like Chat GPT, has shown great potential in advancing collaboration by providing adaptive guidance (Alam 2022, Namatherdhala et al. 2022). With the emergence of conversational agents based on LLMs, technology moves beyond offering itself as a platform for collaboration towards acting as a learning partner to help students construct arguments in interaction with their other (human) learning partners. Human-human interaction is accompanied by human-chatbot interaction. This may allow for designing learning environments that combine the benefits of interacting with peers with the potential that chatbots hold to understand natural language input and mobilise vast online resources to scaffold whenever needed. To date, there is a lack of comprehensive research on the experiences of EFL learners utilising ChatGPT as a CL tool.

The implementation of AI in educational settings, particularly in language learning, comes with its set of challenges. The productive use of AI-based chatbots in CL involves leveraging their capabilities to support and enhance human interaction rather than replacing it. These agents can serve as facilitators or conversation partners, providing linguistic input, feedback, and scaffolding tailored to the learners' proficiency level (Huang et al. 2022). Unproductive uses might include over-reliance on AI for language production and abuse of AI help, which could impede the development of independent language skills or lead to the propagation of errors if the AI's language model is not accurate or context-appropriate (Aleven, McLaren, Roll & Koedinger, 2004, Nass & Brave 2005).

This paper aims to address this gap by exploring how to use ChatGPT in CL settings. Specifically, it aims to explore the dual facets of AI-based chat agents in the realm of collaborative EFL learning: identifying their productive and unproductive uses and devising instructional designs for their effective incorporation into language education. How can we improve students' joint EFL learning experience leveraging the potential of AI while maintaining the essential human element of language learning? The findings from this state-of-the-art article will provide practical implications for teachers, curriculum developers, and educational technology designers to improve the quality and effectiveness of collaborative language learning experiences using ChatGPT as a valued pedagogical tool.

Firstly, we will introduce collaborative language learning scenarios. Secondly, we will discuss the role of AI in education. Then we will address the research questions of risks and potentials of AI in language learning as well as develop a scenario of fruitful, AI-enhanced language learning, highlighting specific uses of AI services in EFL learning. By delineating these sections in the paper, we aim to offer a comprehensive understanding of the multifaceted relationship between AI technology and collaborative language learning, specifically in the EFL context.

2 Collaborative Learning

CL is an instructional approach that stresses the importance of social interaction in learning. Learners work together to solve problems, complete tasks, or create projects to co-construct knowledge (Laal & Ghodsi 2012). Research has demonstrated that group work not only boosts student motivation (Tran 2019) and academic achievement but also improves communication, critical thinking, and analytical abilities (Chandra 2015). Moreover, it fosters better classroom behaviour and peer relationships while increasing student engagement in the learning process. Additionally, group work promotes learning and empowers students to take ownership of their education (Koç 2018). Johnson & Johnson (2020) outline five criteria for collaboration in the classroom:

- (1) Interdependence: Team members recognize their shared responsibilities and rely on each other to achieve their common goal;
- (2) Individual accountability: Each member's performance is evaluated individually;
- (3) Face-to-face promotive interaction: Team members provide positive feedback to encourage one another.
- (4) Group processing: Members reflect on the process used to complete a task and discuss ways to enhance it;
- (5) Social skills: Effective CL necessitates the proficient use of interactional skills, like questioning, giving feedback and reaching consensus.

CL has special applications in the foreign language classroom (Momtaz & Garner 2010). Collaborative EFL learners are exposed to language input and ample opportunities to practise their speaking and listening skills. When learners engage with each other during such interactions, they share a focus on using the target language while also noticing challenges in language use and receiving feedback from their peers (Long 1996).

Learning a foreign language builds on adequate materials and tasks, including language use. Ideally, this includes opportunities for learners to engage with native speakers. One effective approach is for both, teacher and students, to utilise the target language as much as possible (Eurydice 2012). By doing so, learners are given opportunities to interact with each other and their teacher in the target language, which greatly aids in developing listening and speaking skills. Moreover, such interaction enables learners to recognize and correct their mistakes while also learning from the errors made by others. Therefore, the need for interaction becomes apparent in the process of acquiring relevant input in foreign language classrooms. According to Long's Interaction Hypothesis (1996), when learners interact, they receive feedback. This means that individuals get feedback on their statements, which helps them focus on linguistic structures in a specific context. The Output Hypothesis, developed by Swain (1995), suggests that learners gain knowledge of their interlanguage and become aware of the differences between the structures of the target language and their current level of skill. Interlanguage here refers to the dynamic and evolving linguistic system that is the transitional state or the evolving language system that learners create as they move from their native language toward proficiency in the target language.

CL surpasses teacher-led dialogue by fostering psychologically safe eye-to-eye interaction among peers, where knowledge is collectively constructed and shared, as opposed to hierarchical interaction with teachers conveying and assessing knowledge. CL thus empowers students as active contributors, cultivating an environment where learners can practise speaking a foreign language and productively learn from their mistakes. Through collaborative endeavours, students not only exchange ideas but also develop vital social skills, including communication, teamwork, and conflict resolution, essential for navigating real-world scenarios.

Collaboratively learning a foreign language can build on different scenarios, such as acting out scenarios or role-playing exercises, solving problems together as a team, engaging in discussions on topics, participating in debates to explore differing perspectives, and delivering presentations to share information or ideas. Accordingly, Koç (2018) found that, with CL presenting a variety of scenarios, EFL teachers showed a preference for CL activities over solitary learning activities.

A key question in designing CL scenarios is whether learners, when left to their own devices in groups, can engage in interactions that are productive for learning. Some studies on collaborative language learning observe beneficial learner behaviour and provide support for the benefits of collaborative language learning *per se*, e.g., engaging in dialogues fosters oral language skills (Bao 2020). Here, beginners learning Chinese within the Danish EFL context practising oral language skills were found to achieve high language proficiency through collaborative dialogues as they provided opportunities for participation and information sharing. Additionally, learners were found to offer mutual support for higher-level functions that are typically challenging to perform individually, thereby indicating an increase in language competence. Mutual support among peers seems to be particularly beneficial in the language acquisition journey (Zeng & Takatsuka 2009). It seems that engaging in learning within environments proves to be both an efficient and effective approach for enhancing foreign language learners' language and communication abilities due to mutual support, mutual feedback, and opportunities for practising the target language across contexts.

Multiple factors can make or break CL, however, and need to be considered when designing pair and group activities such as the learners' proficiency level, interests, and preferred learning styles. Providing instructions and ongoing support adapted to these factors throughout the activity seems advisable. Therefore, implementing CL for language learning can pose challenges for teachers, and there is some agreement that teachers can greatly benefit from receiving proper prior training to design and facilitate CL activities (Avci & Adigüzel 2017, Bao 2020, Zeng & Tatsuka 2009).

To sum up, CL is a teaching approach that can greatly benefit EFL learners. CL of EFL builds on specific scenarios and requires instructional support for learners to practise speaking and develop listening skills.

3 The Evolution of Education: From Traditional to Digital

In the past, interactions between teachers and students took place mostly face-to-face in classroom settings. Lessons from textbooks and teacher-centred pedagogies

predominated, with few opportunities for students to actively participate in learning. Similar to other types of training, teaching EFL focused on language norms, rote memorisation, and grammar drills. The advent of computers and the internet at the end of the 20th century brought about a transformation in education through the introduction of digital learning tools. This marked the beginning of the shift from traditional teaching methods to digital learning environments. Interactive multimedia, online resources, and computer-based language learning programs began to supplement traditional materials. AI-driven technologies promise to further advance the personalization and interactivity of such digital learning environments.

A paradigm change of AI in education has resulted from AI's capacity to process enormous volumes of data, discern patterns, and adjust to individual learning needs. In EFL instruction, by automating assessment and creation of talk and, thus, enabling real-time language practice through virtual chat, AI-powered systems can offer tailored learning paths, immediate feedback, and interactive scenarios of language use.

3.1 AI for Language Education

AI is a multidisciplinary field that aims to create machines capable of simulating human intelligence processes (Sumakul et al. 2022). One of the core components of AI is Machine Learning, a subset that allows computers to learn from data and improve their performance over time. At its core, AI seeks to enable machines to perform tasks that typically require human intelligence (Jian, 2022). This entails problem-solving, making decisions, comprehending spoken language, spotting patterns, and adapting to novel circumstances. AI systems are designed to replicate human cognitive processes while also exploring problem-solving strategies.

Machine learning is a branch of AI that focuses on creating algorithms and models that allow computers to get better at a particular task by learning from data (Jordon & Mitchell 2015). Instead of being explicitly programmed to perform a task, machine-learning algorithms learn from examples and data patterns. As more data is fed into these algorithms, they become more accurate and proficient at making predictions or decisions. LLMs, like GPT-3 (Generative Pre-trained Transformer 3), are advanced, 'generative' AI systems designed to understand, generate, and process human language. These models are built upon transformer neural network architectures, capable of processing vast amounts of text data to learn patterns, relationships, and nuances within language. Transformers are a specific type of neural network architecture explicitly developed to process sequential data, like text, more effectively. They excel in capturing long-range dependencies within the data by processing the information in parallel.

In conclusion, AI concepts and machine learning are foundational to the development of intelligent systems that can enhance EFL instruction and digital learning environments (Kohnke et al. 2023). The ability of machine learning algorithms to analyse language patterns, adapt to individual learners, and provide personalised feedback underscores their potential to advance language education and create more effective and engaging learning experiences.

3.2 Enhancing Language Acquisition through AI

The integration of AI into EFL teaching has immense potential to facilitate language learning by tailoring the learning experience to individual needs. (Shazly 2021, Sumakul et al. 2022). An et al. (2023) describe adaptive learning as a personalised method of teaching that ensures that students are engaged with material that is appropriate for their level of knowledge, preferred learning pace, and learning styles. AI systems track students' progress and dynamically change the type and level of activities to maximise engagement and retention. This is done through data analysis and pattern recognition. The automated evaluation of students' essays is a great example of AI's potential to be used in language learning contexts. Automated evaluation refers to the process of assessing or grading tasks using computer algorithms and software instead of relying solely on human judgement. In an experimental study, Wang (2022) found that learners held high expectations for the automated evaluation tools, and the effectiveness of intelligent scoring was higher than teacher-made scoring.

Furthermore, AI-driven solutions effectively address the challenge of catering to diverse learning needs (Chen et al. 2020). By analysing individual strengths and weaknesses, AI-powered platforms can identify areas where additional support is required, ensuring that learners receive targeted resources and exercises. Language learning becomes an inclusive endeavour, as AI accommodates various learning preferences, linguistic backgrounds, and paces of progress. The application of AI potentially minimises the risk of learners feeling overwhelmed or left behind, contributing to a supportive and inclusive learning environment. Ultimately, the synergy of adaptive learning, assessment, and personalised support could be designed through AI support, resulting in a dynamic and learner-centred EFL experience, where each student's unique journey is nurtured, leading to more effective and comprehensive language acquisition.

In recent years, the emergence of language models has brought about a transformation due to our interactions with AI. Advanced language models comprise sophisticated AI programmes made to comprehend and produce text or speech that sounds like human-generated text or speech. These models have a high degree of fluency and coherence when processing and producing natural language text. Such models include, among others, GPT-3, GPT-4, and BERT. They are helpful for a variety of tasks, including content creation, translation, summarising, and responding to inquiries. They are adaptable and can be included in many programmes, including chatbots. It has been shown how chatbots, like ChatGPT, can be used for research and learning using language models. ChatGPT, a language production model, can create text in several genres (e.g. short essay format, itemised list, poem), depending on its training and the input it receives (Oravec 2023). OpenAI created a sizable language model for it. It is a strong tool that may be applied to many different tasks, including cooperative learning.

Chatbots like ChatGPT can provide immediate assistance to students who need help with their assignments, e.g., by connecting students to helpful resources or providing potential solutions to difficult issues, which makes them a quick and efficient way to receive knowledge (Wang et al. 2023). They might be able to provide students with immediate support if they are struggling academically. They can provide tailored comments on writing projects, assistance with navigational and technological issues,

and language translation services (Wang et al. 2023). While chatbots cannot replace a professor's knowledge and advice, they can be used by students as a supplemental resource while they wait to speak with their professor in person during office hours (Wang et al. 2023). However, generative AI chatbots can also be misused, and have complicated the many issues with academic fraud that educational institutions already face. (Oravec 2023).

The effectiveness or ineffectiveness of ChatGPT use in group learning tasks primarily depends on how it is included in the teaching procedure and the users' intents. The influence of ChatGPT on CL is dual; the next section examines both its beneficial and detrimental effects.

4 The Study

Despite the growing integration of AI tools in educational contexts, there remains a substantial gap in understanding their specific roles and impacts within CL environments, particularly in EFL settings. CL, with its emphasis on social interaction and collective knowledge construction, presents unique challenges and opportunities for AI implementation. The nuances of language acquisition in such settings, when mediated by AI technology, are yet to be fully explored and understood. This gap in the literature underscores the critical need for empirical research aimed at unravelling the complexities of AI-assisted CL in EFL contexts. The purpose of this study, therefore, is to delve into this underexplored area, examining the dual aspects of AI-based chat agents: their potential to facilitate and the risks they might pose in collaborative EFL learning environments. This investigation is guided by two primary research questions:

1. Which risks and potentials have been identified for AI tools such as ChatGPT for CL?

As ChatGPT is openly accessible and capable of taking over knowledge tasks, we identify risks of supplementing central cognitive processes as well as opportunities for enhancing such processes.

2. What are productive, exemplary scenarios of collaborative EFL learning?

With ChatGPT harnessing AI for any teacher and instructional designer as well as for students, we identify and explore good practices of instructional design building on or implementing ChatGPT.

4.1 Methods

To address the research questions, an extensive literature review was conducted. The review encompassed scholarly articles, books, conference proceedings, and relevant online resources. Keywords and search terms related to "AI-based chat agents," "collaborative learning," and "English as a Foreign Language (EFL)" were employed across major academic databases. Criteria for inclusion involved relevance to AI in CL environments, specifically focusing on ChatGPT or similar conver-

sational AI technologies utilised within EFL contexts. Publications were assessed for their exploration of productive and unproductive uses of AI in CL scenarios and strategies or frameworks related to enhancing EFL teaching through AI-based chat agents.

4.2 Findings

The investigation into the role of AI-based chat agents within the context of CL in EFL led to comprehensive insights into their multifaceted contributions and limitations. This section presents the synthesised outcomes derived from an extensive literature review conducted to address the above-mentioned two pivotal research questions.

4.2.1 Productive Uses of ChatGPT in CL

The following productive uses of ChatGPT in CL are documented in the literature:

- **Generating ideas and brainstorming solutions:**
Idea generating and brainstorming are common components of CL tasks. ChatGPT can help us in this process by providing a variety of viewpoints, suggesting innovative ideas, and encouraging creativity (Sok & Heng 2023). It can be a useful tool for students to investigate various perspectives and broaden their thinking. For instance, students can collaborate to ask ChatGPT questions about a subject, and then analyse and discuss the answers.
- **Providing feedback and support:**
ChatGPT can be used to give students feedback and support on their school- or university-related assignments (Dai et al. 2023). Asking ChatGPT questions allows students to get feedback on their assignments. By identifying their learning weaknesses, students can be helped to improve their overall learning ability.
- **Promoting critical thinking:**
ChatGPT fosters the development of critical thinking by prompting students to interrogate and examine materials. By leveraging ChatGPT, students can identify and evaluate multiple perspectives after having done collaborative research on a topic.
- **ChatGPT as a study partner:**
By means of fostering discussions, ChatGPT supports collective learning. It can be useful as a study partner. Through ChatGPT, absent human partners may allow students to quiz one another on course content.

- **Real-time tutoring assistance:**
ChatGPT can offer learners rapid feedback and direction, assisting them in overcoming challenges and making concepts clear. It can serve as a substitute tutor, clarifying concepts, and responding to queries to improve learning.
- **Language practice:**
Language practice is frequently part of CL, particularly when studying subjects like writing or foreign languages. ChatGPT can give students the chance to develop their language abilities through discussions, written comments, and general language proficiency improvement (Su et al. 2023).
- **Instant Access to Information:**
Access to an array of educational materials is among ChatGPT's strongest benefits when students are working together to learn. Helping students locate information on a topic, ChatGPT can also answer questions and alleviate worries when used within a virtual classroom setting or CL environment. With this access to knowledge, the learning process can be accelerated and valuable hours can be recovered.
- **Personalised support:**
ChatGPT may be tailored to provide students with individualised support. By offering individualised explanations and resources, it can adjust to different learning styles and rates. This flexibility can encourage students to participate in group learning activities and help them to better understand complex topics.

4.2.2 Unproductive Uses of ChatGPT in CL

While chatbots like ChatGPT can be valuable resources, it is important to recognize that chatbots cannot replace the expertise and guidance of human educators but may be seen as complementary tools (Wang et al. 2023). In addition, some potential uses of ChatGPT risk becoming unproductive distractions rather than enhancing the learning process. Oravec (2023) claims that AI-powered chatbots have given academic cheating new dimensions because they make it simple for students to access potent systems for creating content that may be passed off as their own in assignments or exams.

Relying on ChatGPT exclusively, without engaging any fellow students, could undermine the social and communicative benefits of collaborative work. Also, asking it to directly complete assignments would circumvent the latter's educational purpose and not truly assess students' intellectual understanding. Students may also be tempted to cite its responses without quoting any source, which would raise academic integrity issues. Hence, Using ChatGPT may substitute for human interactions and independent work, and over-dependence on the system could hinder the development of self-directed learning skills. Some major unproductive uses of ChatGPT in CL are listed and described below:

- Using ChatGPT to cheat or plagiarise:

The ease of access to information through ChatGPT can inadvertently lead to plagiarism. ChatGPT can be used to generate text that is similar to human-written text. This ability could be used to cheat on exams or to plagiarise work (Cotton et al. 2023, Oravec 2023, Pinochet et al. 2023, Zhu et al. 2023). Students may copy and paste responses generated by the chatbot without fully understanding the content. This would not only undermine the educational process but also raise ethical concerns.
- Using ChatGPT to avoid taking responsibility for learning:

ChatGPT can be used to provide students with answers to their questions. Students can relinquish responsibility and agency for their own learning (Oravec 2023), aiming to complete assignments rather than develop an understanding of the material.
- Overreliance on ChatGPT:

A potential pitfall is over-reliance on ChatGPT, which can inhibit learners' critical thinking and problem-solving skills. Relying too heavily on the model's responses without engaging in independent thought may lead to a passive learning experience.
- Lack of human interaction:

CL emphasises human interaction and social engagement. Excessive reliance on ChatGPT may diminish the importance of face-to-face or peer-to-peer interactions, which are crucial for developing communication and interpersonal skills. If students primarily interact with AI-driven chatbots instead of their peers, they may miss out on the interpersonal skills and social connections that are integral to CL.
- Inaccurate or misleading information:

While ChatGPT is a powerful language model, it is not infallible. It may occasionally provide inaccurate or misleading information (Pinochet et al. 2023), especially if the data it was trained on is flawed or incomplete (Oravec 2023). Learners must exercise caution and verify the information obtained from ChatGPT to ensure its reliability. Relying solely on the chatbot for information without critical evaluation can lead to the dissemination of misinformation among learners.
- Reduced creativity:

Although ChatGPT can contribute to idea generation, over-reliance on the model's suggestions can stifle learner creativity. It is essential to strike a balance between leveraging ChatGPT's input and fostering independent thinking to encourage originality and innovation (Zhu et al. 2023).

Using ChatGPT in group learning scenarios can enhance the educational experience. It can provide helpful support, promote engagement, and progress individualised learning when used properly. Overconfidence, plagiarism, social isolation, and misinformation are a few examples of potential threats that could lead to unsatisfact-

ory outcomes (Pinochet et al. 2023). To fully deploy ChatGPT in CL, teachers and students must strike a balance between using AI as a tool for assistance and maintaining the essential components of independent thought and human contact in the learning process (Cotton et al. 2023).

Some strategies can greatly facilitate the implementation of ChatGPT within CL environments: Establishing clear guidelines and specifying expectations for ChatGPT utilisation lays the foundation for its seamless integration into the learning process. By delineating specific expectations regarding its usage, educators can ensure alignment with the learning objectives while also maintaining focus and direction in its implementation. Moreover, students often require comprehensive training on leveraging ChatGPT effectively. Equipping learners with the necessary skills and strategies will ensure that they are able to use this tool as a facilitator rather than a stand-alone solution and can empower learners to realise the potential of ChatGPT.

Ongoing monitoring of student engagement with ChatGPT remains essential. This monitoring serves as a means of ensuring its appropriate and productive use within the CL framework. It allows educators to intervene, guide, and redirect usage as needed. Encouraging students to reflect on their use of ChatGPT can lead to stimulating discussions about the benefits and challenges of using this tool, prompting critical thinking and self-assessment, facilitating learners to evaluate their experiences, and fostering a deeper understanding of how ChatGPT contributes to their CL development.

By combining these measures – establishing clear usage expectations, providing adequate training, active monitoring, and fostering reflective discussions – a holistic framework for integrating ChatGPT into CL environments emerges to develop a proactive and reflective learning culture among students.

4.2.3 Productive Collaborative, Exemplary Scenarios of EFL Learning

Learning EFL often seems to be an individual pursuit, where students toil independently to assimilate vocabulary and grammar concepts (Zkan & Kesen 2008). Nevertheless, research suggests that for EFL students, CL might be more effective than that (Avci & Adiguzel 2017). This approach involves sharing knowledge, engaging in discussions, and providing mutual support while acquiring new language skills. In the context of EFL classes, chatbot agents emerge as valuable tools to facilitate CL (Alemdag 2023). A chatbot represents an AI system capable of conversing with individuals using everyday language and offering guidance and responses based on preset rules or machine learning algorithms (Vaccino-Salvadore 2023). Similarly, these chatbots can serve to offer feedback on student assignments, address inquiries, and ignite discussions within the respective teaching and learning setting (Klmová & Ibna Seraj 2023). As Alemdag (2023) highlights, prior research has already illustrated the advantages of using chatbots to create a realistic practice environment for students in foreign language dialogues.

Designing CL situations can be done in a variety of ways using chat agents like ChatGPT. Here are several scenarios:

- **Pair or group discussions:**

Chatbots can be used to facilitate pair or group discussions in language learning. For example, a chatbot could be used to pose a question to students and then collect their responses. The chatbot could then summarise the responses and provide feedback (Alemdag 2023).
- **Drama and role-play:**

Chatbots can be used to facilitate drama and role-play activities. They can simulate character interactions, provide scripted dialogues aligned with the scenario's theme, offer feedback and corrections, cover various language contexts, incorporate cultural nuances, encourage improvisation, expand vocabulary, and allow for role reversal, helping students improve their language skills, cultural awareness, and conversational abilities dynamically and engagingly.
- **Practise English Speaking Skills:**

An AI-based chat agent can also be used to practise English speaking skills as a conversation partner (Hsu et al. 2021). In their study, Hsu et al. employed a chatbot that allowed EFL learners to practise English-speaking skills in Taiwan through interactive conversations.
- **Information exchange activities:**

Chatbots can be used to support information exchange activities. For example, a chatbot could be used to create a jigsaw activity in which students have to share information to complete a task in an EFL context.

An example for a comprehensive scenario that combines the various uses of chat agents like ChatGPT for CL outlined above, is provided in the following subsection.

4.3 Integrated CL Scenario: *The Language Immersion Week*

At the outset of the *Language Immersion Week*, students engage in a multifaceted language learning experience facilitated by ChatGPT that is connected to a text-to-speech generator, hence providing both written and spoken language. Respectively, learners' talk is being automatically recognized and transcribed for ChatGPT to process. Throughout the week-long program, ChatGPT serves as an omnipresent language companion, orchestrating various activities to enhance students' language proficiency, cultural awareness, and collaborative skills in an EFL context.

Activity 1: Pair and Group Discussions

In the first half of the day, ChatGPT initiates pair or group discussions by posing thought-provoking questions related to cultural norms, societal values, or current affairs. For instance, the topic of the Language Immersion Week could be "Social Media's Influence on our Lives". Students interact within designated groups, responding to prompts and engaging in dialogue. ChatGPT, acting as a mediator, collects responses, offers feedback, and synthesises group discussions.

Activity 2: Drama and Role-Play

Based on the syntheses of the morning discussions, ChatGPT creates scripts for drama and role-play in the afternoons. In the case of the social media topic, such a roleplay could be enacted on a social media platform. ChatGPT creates immersive scenarios aligned with cultural contexts, providing scripted dialogues and prompts for students to continue the role-play following their own script. Students immerse themselves in the role-playing activities, first following the script, but then being prompted to continue their role without a script, leveraging ChatGPT's guidance to navigate conversations, expand vocabulary, and improve conversational fluency through simulated real-life situations. Within the role-play, ChatGPT also assumes the role of a dynamic conversation partner providing nuanced cultural insights, and feedback on the topic of choice.

Activity 3: English Speaking Practice

During dedicated conversation sessions, ChatGPT pairs up with individual students as a conversation partner. In the previous activities, ChatGPT has profiled learners' skills in speaking a foreign language and has prepared personalised speech training. Using conversational strategies derived from Hsu's et al. (2021) study, ChatGPT engages students in interactive discussions that are tailored to the individual student and refine their English language skills. Students practise articulation, pronunciation, and spontaneous conversation, receiving instant feedback and guidance from ChatGPT. This could culminate in a talk on the topic of social media recorded on video, ready to be posted on social media.

Activity 4: Information Exchange

In the final session, ChatGPT orchestrates an information-sharing puzzle activity. It assigns students specific roles or topics within groups and encourages collaborative information sharing to complete a collective task, such as creating a critical social media message. Students interact within the ChatGPT-facilitated platform, pooling their knowledge and language skills to complete the task within the EFL context. Then they present their results to the community of learners. ChatGPT facilitates this presentation by connecting to a picture or video AI service to create artistic slides that underline the claims of the group of learners in the background.

Throughout Language Immersion Week, ChatGPT's multifunctional capabilities synergistically merge, fostering a holistic learning environment. It not only augments language proficiency but also cultivates cultural sensitivity, communication skills, and CL strategies among students in the domain of EFL.

5 Discussion

The synthesis of the literature has highlighted the multifaceted nature of ChatGPT's

integration into CL environments. The findings corroborate the assertions made by Oravec (2023) that AI-based chat agents, such as ChatGPT, hold the potential to facilitate CL by providing immediate feedback and fostering interaction among learners. However, caution must be exercised as certain unproductive uses, as highlighted by Zhu et al. (2023), reveal instances where reliance solely on AI agents could hinder the development of critical thinking and human-to-human interaction in the learning process.

The nuances discerned from the literature underscore the importance of a balanced approach, where ChatGPT serves as an augmentative tool rather than a substitute for traditional instruction. Strategies proposed by Zhu et al. (2023) emphasise the need for educators to scaffold interactions, encouraging meaningful engagement while leveraging ChatGPT's strengths in providing instant guidance.

In the domain of EFL, the utilisation of ChatGPT presents a promising way to bolster language acquisition. The findings resonate with studies by Kohnke & Lee (2023), who suggest that AI-based chat agents can facilitate authentic language practice, enabling learners to engage in real-time conversations to hone their linguistic skills. Furthermore, the adaptability of ChatGPT, as discussed by Vaccino-Salvadore (2023), allows for personalised learning experiences, catering to individual proficiency levels and learning styles.

Future developments in the field of EFL are poised to be shaped by the incorporation of advanced conversational agents powered by LLM, which will function as collaborative partners in the EFL learning process. These conversational agents, usually referred to as 'chatbots', offer immense potential for enhancing the language learning experience and providing personalised support to EFL learners. The adoption of AI technology in language education has become a focal point in recent scholarly inquiries (Yang et al. 2022). AI chatbots can function as conversation partners in EFL speaking classes, offering learners valuable opportunities to refine their speaking skills (Yang et al. 2022). Through real-time voice conversations, they provide a more effective method of improving EFL speaking skills than text-based interactions ever could (Kohnke et al. 2023). Integrating AI chatbots into the EFL classroom promises to foster enhanced interaction and verbal communication, promoting learner-centred methods (Shazly 2021).

AI-powered chatbots can cultivate a supportive and non-critical environment, enabling EFL learners to practise speaking without apprehension of criticism, as highlighted in Shazly's research (2021). These chatbots offer immediate feedback and guidance, a factor noted by Shazly (2021) as contributing to reduced anxiety levels and enhanced speaking performance among learners. Moreover, employing AI chatbots in synchronous voice-based chat modes has proven effective in elevating speaking proficiency among Chinese EFL learners (Chew & Chen 2021). The integration of AI chatbots into EFL speaking classes opens up opportunities for learners to engage in real-time communication and interaction, ultimately leading to enhanced speaking fluency, as corroborated by Chew & Chen's study (2021).

In the context of the collaborative EFL classroom, the concept of *agentic engagement*, which signifies active involvement and participation in the learning process, is pivotal (Almusharraf & Bailey 2021). AI chatbots can be intentionally designed to promote agentic engagement by offering interactive and captivating learning experi-

ences, as underscored by the research of Almusharraf & Bailey (2021). Moreover, AI chatbots can contribute to nurturing a collaborative language learning orientation by motivating learners to collaborate and interact with the instructor in class, which aligns with the findings of Almusharraf & Bailey (2021). The integration of AI chatbots into EFL instruction can foster a more academically conducive and amicable learning environment, ultimately promoting CL among peers.

However, challenges in contextual understanding and cultural nuances pose limitations to the efficacy of ChatGPT in EFL contexts. Integrating cultural sensitivity and contextual relevance into AI-driven interactions emerges as a critical aspect to ensure meaningful language acquisition experiences for diverse learner groups (Kohnke et al. 2013).

Nevertheless, the incorporation of AI-driven tools in the domain of EFL may encounter obstacles. The willingness of teachers to embrace AI-driven applications can be influenced by an array of factors, encompassing their perceptions, attitudes, and personal beliefs. Addressing these factors and providing teachers with the necessary support and training can facilitate the seamless integration of AI-based applications into EFL classrooms. Moreover, there is a pressing need to deal with the ethical considerations and pedagogical ramifications associated with AI in the EFL landscape. Subsequent research may concentrate on probing the educational and ethical implications of AI in the EFL context while also scrutinising the potential advantages and obstacles linked to the utilisation of AI-driven applications in EFL instruction.

6 Conclusion

The exploration of the role of AI-based chat agents, particularly ChatGPT, in CL within the EFL context elucidates both opportunities and challenges. The synthesised insights underscore the need for a nuanced approach that harnesses the strengths of AI agents while addressing their limitations. By embracing ChatGPT as a facilitator rather than a replacement for human interaction, educators can leverage its capabilities to provide timely feedback, foster collaborative engagement, and personalise learning experiences in EFL settings. The findings highlight the importance of pedagogical strategies that combine AI technology with human intervention to create enriched learning environments. This study contributes to the discourse surrounding AI in education by delineating pathways for maximising the productive use of ChatGPT in collaborative EFL learning while advocating for continued research and pedagogical innovation to leverage its potential.

References

- Alam, A. (2022). Employing adaptive learning and intelligent tutoring robots for virtual classrooms and smart campuses: reforming education in the age of artificial intelligence. In: *Advanced Computing and Intelligent Technologies: Proceedings of ICACIT 2022* (pp. 395-406). Singapore: Springer Nature Singapore. (https://doi.org/10.1007/978-981-19-2980-9_32; 05-09-2023).

- Alemdag, E. (2023). The effect of chatbots on learning: a meta-analysis of empirical research. In: *Journal of Research on Technology in Education*, 1-23. (<https://doi.org/10.1080/15391523.2023.2255698>; 04-09-2023).
- Almusharraf, N. (2021). Online engagement during Covid-19: role of agency on collaborative learning orientation and learning expectations. In: *Journal of Computer Assisted Learning* 37 (5), 1285-1295. (<https://doi.org/10.1111/jcal.12569>; 20-09-2023).
- An, X. et al. (2023). Modeling English teachers' behavioral intention to use artificial intelligence in middle schools. In: *Education and Information Technologies*, 28 (5), 5187-5208.
- Ansari, J. A. N. & N. A. Khan (2020). Exploring the role of social media in collaborative learning the new domain of learning. In: *Smart Learning Environments* 7 (1), 1-16. (<https://doi.org/10.1186/s40561-020-00118-7>; 21-09-2023).
- Avcı, H., & T. Adiguzel (2017). A case study on mobile-blended collaborative learning in an English as a foreign language (EFL) context. In: *The International Review of Research in Open and Distributed Learning* 18 (7). (<https://doi.org/10.19173/irrodl.v18i7.3261>; 21-09-2023).
- Bao, R. (2020). Collaborative dialogue between complete beginners of Chinese as a foreign language: Implications it has for Chinese language teaching and learning. In: *The Language Learning Journal* 48 (4), 414-426. (<https://doi.org/10.1080/09571736.2017.1422136>; 21-09-2023).
- Chandra, R. (2015). Collaborative learning for educational achievement. In: *IOSR Journal of Research & Method in Education (IOSR-JRME)* 5 (3), 2320-7388.
- Chen, L. et al. (2020). Artificial intelligence in education: A review. In: *IEEE Access* 8, 75264-75278.
- Chew, S. & Y. Chen (2021). Speaking performance and anxiety levels of chinese efl learners in face-to-face and synchronous voice-based chat. In: *Journal of Language and Education* 7 (3), 43-57. (<https://doi.org/10.17323/jle.2021.11878>; 05-09-2023).
- Cotton, D. R. et al. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. In: *Innovations in Education and Teaching International*, 1-12.
- Dai, W. et al. (2023, July). Can large language models provide feedback to students? A case study on ChatGPT. In: *2023 IEEE International Conference on Advanced Learning Technologies (ICALT)*, IEEE, 323-325.
- Dillenbourg, P. et al. (2009). The Evolution of Research on Computer-Supported Collaborative Learning. In: Balacheff, N. (Eds). *Technology-Enhanced Learning*. Springer, Dordrecht. (https://doi.org/10.1007/978-1-4020-9827-7_1; 05-09-2023).
- Eurydice. (2012). *Key data on teaching languages at school in Europe*. Education, Audiovisual and Culture Executive Agency.
- Hsu, M. H. (2021). Proposing a task-oriented chatbot system for EFL learners speaking practice. In: *Interactive Learning Environments*, 1-12. (<https://doi.org/10.1080/10494820.21.1960864>; 05-09-2023).
- Huang W, et al. (2022). Chatbots for language learning – are they really useful? A systematic review of chatbot-supported language learning. In: *Journal of Computer Assisted*

- Learning*, 38 (1): 237-257.
- Jiang, D., & L. J. Zhang (2020). Collaborating with ‘familiar’strangers in mobile-assisted environments: The effect of socializing activities on learning EFL writing. In: *Computers & Education* 150, 103841. (<https://doi.org/10.1016/j.compedu.2020.103841>; 25-09-2023).
- Jiang, R. (2022). How does artificial intelligence empower EFL teaching and learning nowadays? A review on artificial intelligence in the EFL context. In: *Frontiers in Psychology* 13, 1049401.
- Johnson, D. W. et al. (2000). Cooperative learning methods: A meta-analysis. (https://www.researchgate.net/publication/220040324_Cooperative_learning_methods_A_meta-analysis; 01.12.2023).
- Kanno, M. (2020). Maintaining and enhancing students' collaborative learning in a Japanese EFL higher education context. In: *Journal of Education, Innovation, and Communication* 91-106. (https://doi.org/10.34097/jeicom_sp_june2020_4; 21-10-2023).
- Koç, E. (2018). Exploring collaborative learning with a focus on group activities in EFL Classrooms. In: İnönü Üniversitesi Eğitim Fakültesi Dergisi, 582–597. (<https://doi.org/10.17679/inuefd.385741>; 21-10-2023).
- Kohnke, Lucas et al. (2023). ChatGPT for Language Teaching and Learning. In: *RELC Journal* 54 (2). (<https://doi.org/10.1177/00336882231162>; 01.12.2023).
- Laal, M., & S. M. Ghodsi (2012). Benefits of collaborative learning. In: *Procedia-social and Behavioral Sciences* 31, 486-490. (<https://doi.org/10.1016/j.sbspro.2011.12.091>; 20-10-2023).
- Long, M. H. (1996). The role of linguistic environment in second language acquisition. In: Ritchie, W. & T. K. Bhatia (Eds.): *Handbook models for education. Learning and Individual Differences* 103: 102274.
- Momtaz, E. & M. Garner (2010). Does collaborative learning improve EFL students' reading comprehension? In: *Journal of Linguistics and Language Teaching* 1 (1), 15-35.
- Namatherdhala, B. et al. (2022). A comprehensive overview of artificial intelligence tends in education. In: *International Research Journal of Modernization in Engineering Technology and Science* 4 (7). (https://www.researchgate.net/publication/361912952_A_COMPREHENSIVE_OVERVIEW_OF_ARTIFICIAL_INTELLIGENCE_TENDS_IN_EDUCATION; 01.12.2023)
- Nass, C. I. & S. Brave (2005). *Wired for speech: How voice activates and advances the human-computer relationship*. Cambridge: MIT press, p. 9.
- Oravec, J. A. (2023). Artificial Intelligence Implications for Academic Cheating: Expanding the Dimensions of Responsible Human-AI Collaboration with ChatGPT. In: *Journal of Interactive Learning Research* 34 (2), 213-237.
- Pinochet, L. H. C. et al. (2023). Collaborative Work Alternatives with ChatGPT Based on Evaluation Criteria for its Use in Higher Education: Application of the PROMETHEE-SAPEVO-M1 Method. In: *Procedia Computer Science* 221, 177-184.
- Sok, S. & K. Heng (2023). *ChatGPT for education and research: A review of benefits and risks*. Available at SSRN 4378735.

- Su, Y. et al. (2023). Collaborating with ChatGPT in argumentative writing classrooms. In: *Assessing Writing* 57, 100752.
- Sumakul, D. T. Y. et al. (2022). Artificial intelligence in EFL classrooms: Friend or foe? In: *LEARN Journal: Language Education and Acquisition Research Network* 15 (1), 232-256.
- Suthers, D. D. (2003). Representational Guidance for Collaborative Inquiry. In: Andriessen, J. et al. (eds) *Arguing to Learn. Computer-Supported Collaborative Learning*, vol 1. Springer, Dordrecht. (https://doi.org/10.1007/978-94-017-0781-7_2; 10-08-2023).
- Swain, M. (1995). Three functions of output in second language learning. In: G. Cook, & B. Seidlhofer (Eds.): *Principle and practice in applied linguistics: Studies in honour of H. G. Widdowson*. Oxford: Oxford University Press, 125-144.
- Tran, V. D. (2019). Does Cooperative Learning Increase Students' Motivation in Learning? In: *International Journal of Higher Education* 8 (5), 12-20.
- Uribe, D., et al. (2003). The effect of computer-mediated collaborative learning on solving ill-defined problems. *Educational Technology Research and Development* 51 (1), 5-19 (<https://doi.org/10.1007/BF02504514>; 15-08-2023).
- Vaccino-Salvadore, S. (2023). Exploring the Ethical Dimensions of Using ChatGPT in Language Learning and Beyond. In: *Languages* 8 (3), 191.
- Wang, T. (2023). Exploring the Potential Impact of Artificial Intelligence (AI) on International Students in Higher Education: Generative AI, Chatbots, Analytics, and International Student Success. In: *Applied Sciences* 13 (11), 6716.
- Wang, Z. (2022). Computer-assisted EFL writing and evaluations based on artificial intelligence: a case from a college reading and writing course. In: *Library Hi Tech* 40 (1), 80-97.
- Weinberger, A. (2005). Epistemic and social scripts in computer-supported collaborative learning. In: *Instructional Science* 33, 1-30. (<https://doi.org/10.1007/s11251-004-2322-4>; 15-08-2023).
- Yang, H. (2022). Implementation of an ai chatbot as an English conversation partner in EFL speaking classes. *Recall* 34 (3), 327-343. (<https://doi.org/10.1017/s0958344022000039>; 10-09-2023).
- Zeng, G. & S. Takatsuka (2009). Text-based peer-peer collaborative dialogue in a computer-mediated learning environment in the EFL context. *System* 37 (3), 434-446. (<https://doi.org/10.1016/j.system.2009.01.003>; 18-09-2023).
- Zhu, G. et al. (2023). Embrace Opportunities and Face Challenges: Using ChatGPT in Undergraduate Students' Collaborative Interdisciplinary Learning. In: *arXiv preprint arXiv:2305.18616*.

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Integrating Artificial Intelligence in Language Curricula: Empowering Students for Future Competencies

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Abstract

In today's professional communication, a constant expansion of vocabulary is necessary to keep up with developments in technology and science. This paper looks at the current topic of artificial intelligence in relation to applications such as ChatGPT and chatbots. The investigation will also explore the potential of artificial intelligence in promoting and supporting linguistic skills. Additionally, the discussion will cover the implementation of these AI tools into foreign language curricula and classroom practices. Specific requirements for teachers and students are addressed under the aspect of future competencies, which represent a particular challenge given the high speed of diverse developments. This study contributes to the ongoing discussion regarding the role of artificial intelligence in higher education. Overall, this evaluation offers insights into a highly topical issue of AI application that will significantly influence linguistic and pedagogical practice in the future.

Keywords: Artificial Intelligence, future competencies, ChatGPT and Large Language Models, digital language learning, curricula design

1 Introduction

Increasing digitisation has been leading to changes in almost all areas of our society - in business, politics, the media, and the working environment. Digital media and Artificial Intelligence (AI) tools have become an integral part of our everyday lives and therefore also need to be integrated into educational institutions. As a result, digital transformation is currently dominating the modern education policy discourse. The focus of public debate is usually on subject-specific, conceptual, curricular, or methodological issues that have partly been resolved in the past (Hrdličková 2017, 2018). Interest is primarily directed towards the material equipment of schools and universities with digital media. The high potential for innovation and the speed of technological developments and applications are associated with technical and methodological challenges that comprehensively affect academic disciplines, research, and the content of degree courses and bring with them new questions and opportunities. The use of digital media is increasingly prevalent in both teaching practices and beyond, leading to significant changes through digitalisation (Bär 2019).

One of the forms and types of modern digitalisation is AI, which is currently the subject of continuing debate in scientific and non-scientific circles. AI is one of the most important digital topics of the future and is attracting increasing interest in science, business, and society. Developments are progressing rapidly. AI is associated with great potential for the future, but also with dangers such as threats to cybersecurity or job replacement. The development of AI has accelerated with Large Language Models (LLM). ChatGPT has suddenly enabled diverse, very concrete, and productive applications in almost all sectors, including foreign language teaching. The exploration and use of digital media in the classroom raises several key questions that will be addressed in this article:

- Digitalisation affects education, learning environments, and the processes of teaching and learning foreign languages. Which of these areas are associated with the greatest technical and methodological challenges?
- Where is the greatest potential for innovation in new media?
- What is the distinct impact of AI on the qualification requirements and future skills of graduates?
- What changes are necessary in foreign language methodology to ensure the success of our graduates in the future?
- How can an AI model such as ChatGPT improve and support foreign language teaching?

The answers to these questions help us imagine innovative future scenarios in the field of education that influence the institutional promotion of foreign language learning and teacher training. Overall, this topic has already had a significant impact on the field of language research, foreign language methodology, teacher training, and practice and will continue to do so (Bär 2019).

The technologies of digitalisation, automation, and AI are not just futuristic concepts; they are an integral part of today's world. Therefore, it is necessary to respond to these changes in the short term. In the field of education, one of the most topical issues is the use of artificial intelligence to make schools and teaching practices more efficient.

As generative AI finds its way into more of the applications we use every day, from search engines to office software, design packages, and communication tools, people will come to understand its potential. (Marr 2023)

However, these AI tools have been observed and used for several years now – not only in science but also in education. New technologies bring with them a wealth of data and the possibility of processing it in a more meaningful way (Blossfeld 2018). Data that are systematically collected and analysed by computers and subsequently by humans can help to plan and continuously renew learner curricula. They are also useful tools for planning the efficient use of classroom space in schools and can provide assistance for creating timetables faster and allocating suitable and available classrooms more efficiently. For teachers, in turn, these advances can mean that their work becomes more interesting. The rather repetitive parts — such as learning the beginner basics (for example, basic vocabulary, grammar, pronunciation), correcting tests, or answering repetitive questions — are now taken over by AI-assisted computer programs. Teachers can then take more time to discuss a particular topic

or area with their learners. The use of new technologies in education should therefore be part of any forthcoming changes in public policy. Recent developments in the global education system show a new trend. In more and more countries, the focus of education is shifting from imparting encyclopaedic knowledge to skills, such as applying acquired knowledge more meaningfully, communicating effectively, collaborating on tasks, teamwork, or awareness in time management. These skills are needed not only in the labour market but also in the education sector. Moreover, they are also becoming increasingly important in our private lives (Salam 2022).

Artificial intelligence and language learning merge almost seamlessly in online education. Textbooks, videos, and audio recordings may contain useful content, but they often lack personalisation. An example can be observed in students' books of English for Specific Purposes. Many of the topics dealt with in the different chapters are typically related to a specific or scientific field (like medicine, chemistry, biology, or engineering). Nevertheless, not all the content is needed by all of the students enrolled in different degree programs (such as linguistics or international relations). Therefore, some chapters are frequently skipped in the classroom. Occasionally, this situation can lead to students progressing to the next level before they have truly understood the material dealt with in the previous unit. Language learners are often afraid when speaking a new language and expressing themselves in front of their classmates, which can hinder their learning process. An example of this is observed by some instructors when teaching English and German as foreign languages. In English language lessons, students in Germany and Slovakia typically have no difficulty expressing their opinions on a given topic or answering complex questions using basic vocabulary. However, when teaching German language lessons, students are often hesitant and do not participate in discussions as much. They frequently claim that German grammar is more complicated than English. In such a situation, the use of AI can create adaptive and safe learning environments. It can offer a range of exercises to challenge students in foreign language classes, allowing them to practise and improve their language skills independently. The objective is to produce learners who are self-motivated, self-directed, digitally proficient, and well-equipped for the future job market.

2 The Influence of AI on Future Skills and the Labour Market

2.1 The Development of Future Skills: Opportunities and Challenges

Theory-practice links are a topic of debate in methodological literature. This debate is about the development of students' professional skills which is based on a long-term process of personal experience. Developing students' professional skills during their studies has become a necessity in recent years, expanding the range of learning opportunities available to students. Competent management of professional and everyday situations requires scientific-theoretical knowledge and practical experience. Abstract knowledge is developed through a combination of tasks, reflection, and situational skills. At Slovakian universities, for example, students experience a severe lack of skills in the digital field – despite a constantly growing demand. This qualification profile is still underrepresented in many degree programs and courses at universities. In countries where German is highly valued economically, many Ger-

man graduates seek employment in other sectors, which leads to a certain de-professionalisation. In various industries, there is an almost unmanageable variety of job-related language situations that require job-specific linguistic and communicative skills (Middeke 2021: 170). These can be achieved through the application and use of digital skills in the classroom, but also with the help of AI.

A general trend among university graduates appears to often search for employment in the industry or business, even when their degree is in the social sciences or humanities. Traditionally strong industries (such as the automotive industry) are in a phase of upheaval due to the radical innovations of new technologies (e.g. e-mobility and autonomous driving). Numerous branches of industry are transforming into so-called 'smart industries' through the use of artificial intelligence (Brühl 2020). "Smart industries" are defined as sectors whose products and services can have intelligent properties, such as traffic control systems, smart factories or web-based technologies, robotics, and consumer electronics. In addition, new future fields that focus on advancing digitalisation are emerging. These advances and innovations, including artificial intelligence, are not only changing the future world of labour, but also the requirements for university graduates in almost all courses of study. Artificial intelligence signals that we are facing a fundamental change and a turning point in the world of work. AI enables a high degree of autonomy, flexibility, and automation in production and can also facilitate the individualisation of products. In the coming years, it will be crucial for the economy to increase its competitiveness, especially in promising sectors, and to use AI and smart systems to improve productivity, quality, and sustainability and so as to reduce costs. According to Marr (2023), 2024 is the year when people will realise how powerful AI is. The increasing use of AI will change various work processes and the world of labour as a whole. Many routine tasks are expected to be performed by AI, not only in industry but also in the service sector. New activities and professions will emerge due to these developments, such as training algorithms, interpreting and evaluating AI suggestions, controlling or re-programming AI systems:

Now, generative AI puts the power to create and intelligently automate the customer experience - as well as internal operations - in the hands of nearly every organization [...]. Machine intelligence, the blurring of the boundaries and the real and the virtual, and shaping ongoing evolution of the internet will all radically impact our lives. (Marr 2023)

The automation of cyber defence through AI and machine learning will be essential to make sure that not only individuals but also businesses are aware of sophisticated cyber-attacks and to ensure cyber resilience. AI is expected to be used for fraud detection, risk management, and high-frequency trading in the tech industry in 2024 (Marr 2023). Artificial intelligence and the associated automation and robotisation (e.g. Amazon, Microsoft, McDonald's, medical robots, hairdressers or toilet cleaners) will also have a significant impact on the labour market. The robotisation of individual sectors of the economy will require a systematic retraining of employees. According to the OECD, the jobs most at risk will be those requiring a lower level of education, especially those involving routine work and repetitive tasks, such as work on assembly lines or in the service sector. On the other hand, occupations that require intermediate to higher education, good social and organisational skills, and creativity will be at lower risk. These occupations include managers, technicians, teachers, psychologists, and social service workers. Although these trends show that education is one of the areas which will be least at risk of job losses, education and retrain-

ing are crucial factors in maintaining a functioning labour market both at home and abroad. An OECD (Lassébie & Quintini 2022) study has warned that teachers will need to acquire new skills to complement computers. In light of the rise of artificial intelligence, the focus of their work shifts from imparting knowledge to guiding learning and developing social and communication skills.

With the advent of Large Language Models (LLMs) such as ChatGPT, the development of AI has accelerated. The use of these technologies has the potential for greater productivity and progress. AI is expected to bring about a new era in human history, both technologically and culturally, and give rise to new business models, transform entire industries, trigger an enormous surge in productivity, and revolutionise the world of work. Especially in companies where processes are automated already or will be automated in the future such as production, logistics or advertising, AI can lead to efficiency gains and cost savings. AI can optimise core activities as well as repetitive manual activities and tasks, such as procurement, production, marketing, customer service or sales. Machine learning or data analysis will provide insights into market trends by recognising customer preferences. In addition, AI can support employees in many routine activities - which, in turn, can alleviate the shortage of skilled workers. According to Kugoth (2023), AI functions most frequently used by companies worldwide include robotic process automation, computer vision, natural language text interpretation, and virtual agents. For example, at a large German car manufacturer, AI systems can detect whether two transmission parts fit together perfectly or rub against each other by analysing (nearly) inaudible sounds.

In summary, AI can influence students' future skills in these respects:

- The new generation of graduates will need to adapt to constant digital and technological change.
- ChatGPT is an impressive example of the rapid acceleration of the development and adoption of AI, which is also called the '4th Industrial Revolution' or 'AI Gold Rush').

Students must get accustomed to daily human-machine interaction when using AI. This will be an elementary skill for future graduates.

- Media (meta)competence and digital sovereignty will be required of nearly all students. This includes competencies related to machine interaction, deep-fake tracing, text analysis, and AI literacy.
- For human-machine interaction (with ChatGPT), a new idiolect / new language variety must be acquired, which is closely linked to the acquisition of the specialist vocabulary of AI.
- In companies working in the fields of tourism, medicine, electrical engineering, mechanical engineering, vehicle construction, services, transport, trade, finance, and logistics, such as Amazon, CNET / BuzzFeed, McDonald's, Microsoft, Coca-Cola, AI is taking over more and more cognitive and manual activities

2.2 Digital Language Learning

Foreign language learning is currently undergoing a rapid and complex process of change influenced by new technologies and applications, which has unfolded in society, i.e. outside of school, for example in business, politics, trade, industry, and finance. Digitalisation can create more individualisation, authenticity, communicative reality, and new future skills. These skills cannot be learned at universities, because they are not always part of the curriculum. Therefore, new opportunities should be offered and the often inadequate technical equipment in schools be modernised. To successfully shape the digital transformation in schools and classes, several basic requirements need to be met:

- Well-trained teachers who are competent in the use of media and supported by the institutions;
- Empirically tested and well-constructed learning media that are geared towards the skills to be taught;
- Intelligent media systems that combine digitally supported learning with practical teaching methods (Schmidt & Strasser 2016).

It is assumed that a competent teacher, well-trained in teaching, education, assessment, and innovation, who uses digital media professionally and methodologically in their lessons, will be at the core of every effective digitally-supported foreign language class in the future. Our aim will also be to work out how competent foreign language teachers can be supported by intelligent technologies. This poses new challenges for today's schools and offers opportunities to improve school education.

3 Education 4.0

This section highlights and prioritises key challenges in designing educational systems for AI. It addresses two fundamental issues: What is the specific impact of AI on skills needs and how can education be better designed and implemented to meet these needs? The results can be outlined as follows:

- Due to the development and introduction of AI, some skills may be increasingly in demand and trained through technology. This applies to both manual and cognitive skills such as planning, deliberation, comprehension, and expression. ChatGPT is a good example of how rapidly AI will evolve.
- The skills required to develop AI, as well as to use it, will become more important. In some areas, specialised AI skills will be required, and there will be a growing demand for digital and data processing skills. These skills will go hand in hand with cognitive ones. It is becoming increasingly important for workers in various occupations to possess the ability to effectively develop and use AI.
- Training for specific AI skills will require a redesign of curricula in education and further job qualification.
- After having introduced AI in the workforce, companies will want to provide AI training. A major barrier to the adoption of AI is the lack of suitable skills for

current employees. One of the challenges is that the use of AI in education is likely to lead to significant changes in the qualification requirements of teachers.

- Many companies are still not investing enough in AI training due to a lack of information on how to implement AI effectively.
- National policies need to be developed to encourage greater training provision by employers and the development of AI skills at all stages of the lifecycle.
- Many politicians acknowledge the significance of particular skills for AI but do not adequately support their development.
- There are already several examples of the use of AI in education, although risks should be carefully addressed and evaluated, in particular when using ChatGPT, which is an impressive example of an AI model that can work just as well as a human, and much faster and more accurately, being able to write essays, formulate medical diagnoses, develop games, process images, explain scientific concepts to a wide audience. Yet, it can also hallucinate, i.e. provide false information.

3.1 The Complex Role of AI – Perspectives and Concepts for Teaching and Education

The question of how digital media can contribute to adapting learning in heterogeneous foreign languages to the individual needs of learners is currently occupying the minds of many teachers and researchers. In recent years, digital technologies have become a scientific, practical, and methodological focus in the foreign language classroom. Recently, there has been talk of media-supported and learner-oriented teaching; today it has become "Technology-Enhanced Language Learning" (TELL)¹. TELL is part of an extensive global discussion that presents both favourable and unfavourable positions and opinions. Research studies have shown that technology can influence the processes and outcomes of education, and many countries are investing in technological support for foreign language teaching (Paiva & Bittencourt 2020). AI is one of the latest technological developments related to these issues. This new technology has been developed for educational purposes, including language learning (for example in Apps like *Duolingo*). The potential of these innovative programmes focuses on new methods of optimising learning and teaching processes. This brings a new era of personalised and student-centred teaching to the fore. This technology encourages learners to approach digitally enhanced subjects and courses in a new way. Although foreign language programmes have been widely available and used on the Internet for several decades, only some products employed in education provide intelligent systems implemented through AI. The result of the modernisation of such programmes is the intensification of interdisciplinary cooperation between linguists, psychologists, computer scientists, and education professionals. As a result, more and more companies and educational stakeholders are investing in AI-supported technologies. Before discussing the applications of AI and its methodology, an overview of the key AI concepts concerning language learning is specified (according to Schmidt & Strasser 2022: 167):

¹TELL incorporates elements like video tutorials, e-books, apps, and other digital resources.

1. Natural language processing (NLP) is a field of AI and linguistics that deals with the automated processing and analysis of written and spoken language. It covers lexical, morphological, and syntactic aspects of language and their presence in discourse.
2. Machine learning is a subfield of artificial intelligence that deals with information and experience to provide solutions to various problems in natural language processing.
3. Deep learning is a branch of AI that uses artificial neural networks to learn from big data. Deep learning mainly focuses on visuality. It can also be used for NLP purposes.

Below some AI programs that contribute to language learning and have already been used in practice, are discussed:

- Machine translation: This is the automatic translation of a spoken or written text from one language into another, which extensive linguistic corpora are used for. One of the most popular AI-supported translation websites is currently DeepL (<https://www.deepl.com/translator>). There are several ways in which this technology can be used in the classroom. It is helpful when it comes to understanding the essentials, acquiring specialist terminology, and expanding the learner's lexicon. The disadvantage of this program is that it cannot adequately recognise intercultural situations or differentiate between linguistic varieties (e.g., slang, dialects, regional idioms, etc.).
- AI Writing Assistants: Spelling rules in word processing have improved dramatically in recent years. They help users to recognise and correct spelling mistakes more easily. As we communicate more and more digitally, our texts are spread across different channels and networks, and it is crucial to ensure reliable checking of our written discourse. Several AI-powered writing tools such as Grammarly (<https://app.grammarly.com/>) or LanguageTool (<https://languagetool.org/>) have entered the market and offer spelling and grammar checks as well as functions that can check the written text for coherence better than ever before. This writing tool can help learners improve their (academic) writing skills and offers opportunities to improve the style and grammar in their texts.
- Chatbots: In general, chatbots aim to mimic the discursive behaviour of humans. As chatbots have access to huge linguistic corpora, they are becoming increasingly 'intelligent'. As a result, companies have started developing their virtual bots. In particular, they offer tips for better communication with customers and often display clear, formulaic structures without significant semantic, syntactic, or lexical peculiarities. In general, a chatbot should be user-friendly so that learners can practise the target language using audio, videos, and images while writing or speaking to the chatbot. The most popular chatbots for foreign language learning are *Memrise*, *Babbel*, and *Duolingo*. (Schmidt & Strasser 2022: 168-172).

3.3 Using LLMs and ChatGPT in the Foreign Language Classroom

One of the significant features of ChatGPT centres on generating content, as it can be requested to answer questions, translate texts, write essays, or give feedback.

ChatGPT often appears in semi-realistic and natural conversations because it has been trained to use an extensive database of conversational texts (including forums, chats, and social media). One crucial skill when using this chatbot is the ability to ask fruitful questions, also called *prompts*. Providing appropriate prompts when working with applications like ChatGPT has become an essential skill because when an appropriate prompt is given, the answer will be of valuable content. Yet, critical thinking and problem-solving are still essential for learning and enhancing knowledge and competencies. One of the critical points in working with ChatGPT, though, is where the information comes from. When students start using this application, questions remain like how to cite the results obtained, whether citations should be used, and whether results can be considered plagiarism. To raise their awareness about such questions, students will need to be invited to discuss their approach. In this way, the accuracy of information provided by ChatGPT needs to be repeatedly checked and verified by additional sources. In our opinion, excluding ChatGPT from classroom settings permanently – as considered in other countries (McCallum 2023) – is not advisable, as training is required to develop competencies in working with it. Students must learn to manage the ambivalence of ChatGPT and its output, depending on the tasks they are required to perform.

3.4 The Importance of Intelligent AI Practice

Communicative learning tasks and language learning play a central role in modern foreign language teaching. These language skills can be enhanced with the support of digital tools. The targeted use of AI makes it possible for students to solve learning tasks better, facilitate communicative activities, focus on the content and meaning of texts, and achieve a high degree of authenticity in the foreign language classroom. This modern type of processing foreign language texts facilitates the cognitive mapping of form, meaning, and usage. According to Bär (2019) and Schmidt & Strasser (2016), intelligent practice (with the help of AI) should be used in the foreign language classroom instead of doing mechanical exercises using the audio-lingual method with the aim of:

- focussing on the learner's needs to be able to communicate fluently and freely in the target language,
- being authentic in terms of language and content,
- providing feedback (linguistic correctness, communicative appropriateness, strategic approach),
- adapting to the learner's cognitive needs,
- developing metacognitive (linguistic) learning skills, and
- assisting students in acquiring the necessary skills to excel in the future.

Thus, the role of practice in communicative foreign language instruction differs from earlier approaches that focused on memorising vocabulary, sentences, and certain structures without any communicative and pragmatic purpose being targeted at. The aim of today's task is to personalise the practice process to effectively assist learners in developing their language skills. The technology-enhanced activities are not solely focused on mastering the language system, but rather on emphasising the linguistic challenge through the target task. It is important to provide learners with support and

high-quality feedback throughout this process. The question at hand is whether digital learning programs and systems can be utilised to achieve these goals effectively and intelligently. It is important to consider the extent to which they can be used and how they can be implemented.

AI-powered systems will ensure that learners from different backgrounds and language levels will have equal opportunities to acquire knowledge and access educational resources they never had before. Experts from the fields of pedagogy, methodology, psychology, computational linguistics, and multimedia will work closely together to create these digital systems. In the future, digitally assisted classrooms will aid in diagnosing needs and tracking progress, while also providing direct access to differentiated learning opportunities. Future language instruction will, therefore, be an AI-supported digital learning system, a tool for learners and teachers that will enrich learning processes. In the classroom of the future, the advantages of digital learning will be combined with computer-based methods, contents, and tasks:

And even in 2040, we will still have and need teachers: well-trained, data-literate teachers who are competent, critical, and reflective in their use of media and technology support, and who use empirically established digital scenarios [...]. (Schmidt & Strasser 2022: 180)

To start implementing these changes in language learning curricula, one of the first steps will be to understand and acquire the basic vocabulary of AI. This is essential not only for students but also for teachers and educational institutions.

4 The Inclusion of AI in University Language Teaching and Learning

Having provided the (theoretical) framework, the following section of the article discusses the implementation of AI in foreign language curricula. Specific methodological and didactic suggestions will be made to help prospective students learn and acquire specialised vocabulary in foreign languages, as well as recommendations and considerations for teaching when using AI tools. At the University of Economics in Bratislava, the first steps and experiments are being made in this direction, as digitalisation processes are starting to become part of the curricula and teachers are being encouraged to incorporate these processes into their teaching. The Faculty of Applied Languages provides foreign language courses to students across various faculties and study programs, including Economics, Marketing, IT, International Relations, and Applied Languages. The courses are designed to require students to complete independent work with the help of instructions from the lecturers. Thus, the weekly double lesson is significantly extended by self-study. During self-study, AI can be useful as it provides programs that can act as a teacher at home. For instance, these programs can simplify and clarify complex foreign language vocabulary, as well as present theories, concepts, and definitions in a more accessible manner. A concrete example: Slovak students learning English and German often encounter difficulties when dealing with synonyms in the field of business or economics. Another linguistic challenge is understanding, using, and translating idioms from students' mother tongues into a foreign language. At the university, teachers can explain idiomatic phrases in foreign languages, but they may not be able to translate

them into all the native languages of their students. This is due to the large and heterogeneous groups of students, including those with Hungarian, Ukrainian, Polish, and Czech mother tongues who are studying in Slovakia. To solve this difficulty more quickly during classes, AI translation programs such as DeepL, Google Translator, Translator Online or ChatGPT can be used. In Germany, a similar situation can be observed, where language courses and study programs with culturally diverse AI can help bridge potential gaps. The University of Applied Sciences in Zwickau has established study programs in Green Engineering and the Internet of Things, which demonstrate the current dimension of AI application. This is reflected in the curriculum of the programmes as well as in the accompanying language courses.

As previously mentioned, the University of Economics in Bratislava offers various foreign language courses, including Business English and Academic English, across different faculties and degree programs. These courses typically use a prescribed textbook covering a range of topics such as banking, marketing, new technologies, the environment, tourism, and culture. This can be problematic because degree programs are designed and oriented differently, and not all university students are required to learn the same vocabulary or deal with the same topics. Teachers can use AI programs to adapt these chapters and the vocabulary to the specific study group. The benefits of these AI programs are evident not only in the acquisition of vocabulary but also in the improvement of grammar, style, pragmatics, and text production and comprehension by students (Pokrivčáková 2023). Their language skills are enhanced and automated, ensuring correct usage of the foreign language. As students do not currently receive independent courses on AI, the use of AI in lessons by interested and tech-savvy teachers can be advantageous for them. This method of enhancing language lessons with AI tools combines foreign language and digital skills, which are essential for future careers. By providing AI learning opportunities to all students, teachers can equip them with the knowledge and skills necessary to succeed in a world that is increasingly influenced by AI. (Southworth et al. 2023). Teachers can now customise language learning methods and instructions to fit the needs of each individual or group, instead of using the same approach for everyone. Using interactive AI programs and tools (such as Virtual Reality, Internet of Things, or AI games) can also complement traditional language education (Weng & Chiu 2023, Ericsson & Johansson 2023).

To start implementing this new technology and harness its full potential, it is crucial to address the lack of conception and efficient didactic models for these innovations (Mekacher 2019). We will now offer some recommendations and considerations for teachers to ensure the successful integration of AI tools into their foreign language courses. Some educators believe that implementing AI tools requires expertise or prior experience with the technology. Teachers may sometimes be hesitant to use AI due to its novelty and lack of specific training opportunities. It is clear, however, that the use of modern AI tools does not necessarily require in-depth skills and experience: for example, the use of chatbots, such as ChatGPT, is limited to relatively simple communication with the programme. When considering a specific language skill or topic, it is essential to have a clear objective for the teaching unit: teachers should be very specific about the skills that they would like to practise with their students. Appropriate programmes should be selected and used to achieve specific objectives: for example, if the aim is to practise translation skills, machine translation programmes such as DeepL or LanguageTool can be chosen; on the other hand, if

the aim is to improve pronunciation, language learning apps such as Duolingo, Memrise, Phase 6 or Babel would be more useful. AI programmes may require registration, which could result in the collection and storage of personal data. Therefore, students may be advised to use third-party apps or websites to access such programmes. When planning a given teaching unit, short 10-minute exercises with AI should be used at the beginning to slowly and consistently prepare students for these tools and specific tasks; for example, the exercise can aim to help students practise and automate new vocabulary or memorise grammatical rules using a chatbot (ChatGPT, Microsoft Bing AI, Google Bard etc.).

At the beginning of the use of AI, it is essential to make clear to students the ethical use of these tools and the concept of plagiarism. There should also be a discussion about the potential biases that may be present in AI systems. After the exercise or lesson, it should be evaluated whether the learning objectives have been achieved, what the advantages and disadvantages of working with AI are, and whether the work can be continued in this way. The assessment of students' work, such as written texts, can indicate their progress in learning a foreign language. Learners obviously experience a sense of accomplishment when conversing with AI chatbots, which appears to simulate the feeling of authentic language use scenarios and encourages students' social presence through effective, open, and coherent communication (Suman et al. 2023, Huang, et al. 2021, Klimova et al. 2023).

AI can provide significant benefits for teachers. It can assist in creating syllabi and preparing lessons, generating test questions from uploaded textbooks (such as the AI tool Hello Vaia), and developing supplementary exercises. In addition, AI can generate personalised exercises for each student based on their knowledge and skills, or assist with gamified exercises that cover challenging topics or vocabulary, enhancing the learning experience. For example, when practising idiomatic expressions, ChatGPT recommends ten interactive vocabulary exercises for higher education learners. These exercises include charades, crossword puzzles, thematic word maps, and vocabulary bingo. Overall, the use of AI tools can be helpful for language teachers and students, supporting the language learning and teaching experience.

5 Conclusion

Digitalisation is the basis for far-reaching changes in almost all aspects of our lives. It has already had an impact on school education, including on the teaching and learning of foreign languages. Digital change will require the acquisition of new skills to ensure individual success and participation in social life in the future. Consequently, there is an urgent need to modify educational curricula and degree programs. Aiming for digital competence in foreign language teaching means to develop learners' and teachers' skills and to create teaching conditions that ensure the successful use of digital media (Schramm 2019: 237). In the future, intelligent systems and tools will be developed that can simplify teaching processes and facilitate technical learning using data and corpora. As technology becomes more advanced every day, teachers and learners are facing challenges in using the new options offered by technology. The field of language and humanities learning is currently undergoing significant changes in societal learning. In addition, AI has numerous applications in fields such as medicine and industry, which have shown many positive aspects. However, there are also

potential dangers associated with ChatGPT and similar programs. In 1997 Baacke (for a definition of *media competence*: 1999a: 31-35) pointed out that increased media competence is required. Prompts and prompt language require an understanding of appropriate requests. The methodology of foreign language teaching should make use of existing media skills but also be open to new technological possibilities (for experimental media competency: Wampfler 2020: 18-23, Lenzen 2023).

Nevertheless, with the full implementation of AI, the question of legal dimensions remains, especially with regard to copyright measures. As the authors advocate the inclusion of AI and its features in language learning, study and teaching, one suggestion may be to discuss the potential advantages and disadvantages of integrating AI language models such as ChatGPT into the curriculum. Authenticity also needs to be questioned. Regarding foreign language teaching, the use of digital media can provide improved opportunities to introduce learners to real foreign language communication in a receptive and productive manner and to allow them to participate in media discourses (Schmidt 2019: 228). Finally, new technologies offer new opportunities for settling into the target culture and language.

References

- Alkaiissi, Hussam & Sami I. McFarlane (2023). "Artificial Hallucinations in ChatGPT: Implications in Scientific Writing". *Cureus* 15 (2), e35179. (<https://doi.org/10.7759/cureus.35179>; 12-12-2023).
- Bär, Marcus (2019). Fremdsprachenlehren und -lernen in Zeiten des digitalen Wandels. Chancen und Herausforderungen aus fremdsprachendidaktischer Sicht. In: Burwitz-Melzer, Eva, Claudia Riemer & Lars Schmelter (Hrsg.) (2019): *Das Lehren und Lernen von Fremd- und Zweitsprachen im digitalen Wandel. Arbeitspapiere der 39. Frühjahrskonferenz zur Erforschung des Fremdsprachenunterrichts*. Tübingen: Narr. 12-24.
- Baacke, Dieter (1997). *Medienpädagogik*. Tübingen: Niemeyer.
- Baacke, Dieter (1999a). Medienkompetenz als zentrales Operationsfeld von Projekten. In: Baacke, D. u.a. (Hrsg.) (1999). *Handbuch Medien: Medienkompetenz - Modelle und Projekte*. Bonn: Bundeszentrale für politische Bildung, 31-35.
- Beutel, Grenot, Eline Geerits & Jan T. Kielstein (2023). Artificial hallucination: GPT on LSD?". In: *Critical care (London, England)* 27 (1), 148 (<https://doi.org/10.1186/s13054-023-04425-6>; 20-10-2023).
- Blossfeld, Hans-Peter, et al. (2018). *Digitale Souveränität und Bildung. Gutachten*. Münster: Waxmann.
- Brühl, Völker (2020). "Deutschland hat Nachholbedarf in einigen Zukunftsindustrien". In: *Wirtschaftsdienst* 100, 138-143 (2020). <https://doi.org/10.1007/s10273-020-2585-7> (20.10.2023)

- Ericsson, Elin, Johansson, Stefan (2023). "English speaking practice with conversational AI: Lower secondary students' educational experiences over time". In: *Computers and Education: Artificial Intelligence* Volume 5, 100164 (<https://doi.org/10.1016/j.caeai.2023.100164>; 27-12-2023).
- Hrdličková, Zuzana (2017). Constant Enrichment of the Mental Lexicon with New Lexis. In: *CASALC Review* 6 (3), 28-44.
- Hrdličková, Zuzana (2018). Promoting media, information and reading literacy through a business communication e-course. In: *DisCo 2018: Overcoming the Challenges and the Barriers in Open Education*, 178-198.
- Huang, Weijiao, et al. (2021). Chatbots for language learning – are they really useful? A systematic review of chatbot-supported language learning. In: *Journal of Computer Assisted Learning* 38 (1), 237-257. (<https://doi.org/10.1111/jcal.12610>; 31-12-2023).
- Klimova, Blanka, et al. (2023). The use of persona in foreign language learning facilitated by chatbots. Preprint. (<https://doi.org/10.21203/rs.3.rs-3129096/v1>; 30-12-2023).
- Kugoth, Jana (2023). *Vorständin Stars über Chancen neuer Technik: „KI wird künftig bei VW eine noch größere Rolle spielen“* (<https://www.tagesspiegel.de/wirtschaft/mobilitaet/vorstandin-hauke-stars-uber-ki-bei-volkswagen-klar-mehr-chancen-als-risiken-9611474.html>; 20-10-2023).
- Lassébie, Julie, Glenda Quintini (2022). What skills and abilities can automation technologies replicate and what does it mean for workers?: New evidence. In: *OECD Social, Employment and Migration Working Papers* 282. OECD Publishing. Paris, (<https://doi.org/10.1787/646aad77-en>; 20-10-2023).
- Lenzen, Manuela (2023). *Der elektronische Spiegel: Menschliches Denken und künstliche Intelligenz* (Originalausgabe). München: C.H.Beck.
- McCallum, Shiona (2023). ChatGPT accessible again in Italy. In: *BBC News* (<https://www.bbc.com/news/technology-65431914>; 12-11-2023).
- Marr, Bernard (2023). The 10 Biggest Business Trends For 2024 Everyone Must Be Ready For Now. In: *Forbes.com* (<https://www.forbes.com/sites/bernardmarr/2023/09/25/the-10-biggest-business-trends-for-2024-everyone-must-be-ready-for-now/>; 20-10-2023).
- Mekacher, Leila (2019): Augmented reality (ar) and virtual reality (vr): the future of interactive vocational education and training for people with handicap. In: *PUPIL: International Journal of Teaching, Education and Learning* 3 (1), 118-129 (<https://doi.org/10.20319/pijtel.2019.31.118129>; 27-12-2023).
- Middeke, Annegret (2021). Service Learning – analog und digital. Zur Entwicklung von Lehrkompetenzen für das Vermittlungshandeln im berufsbezogenen DaF/DaZ-Unterricht. In: Busch-Lauer, Ines-Andrea & Julia Hartinger (Hrsg.): *Fachlich-Digital-Regional: Perspektiven auf das Sprachenlernen und -lehren*. Berlin: Frank und Timme, 169-185.
- Paiva, Ranilson & Ig Ibert Bittencourt (2020). Helping Teachers Help Their Students: A Human-AI Hybrid Approach. In: Bittencourt, Ig Ibert et al. (Eds): *Artificial Intelligence in Education*. Cham: Springer Switzerland International Publishing, 448-459. (Doi: 10.1007/978-3-030-52237-7_36.; 12-11-2023).

- Pokrivčáková, Silvia (2019). Preparing teachers for the application of AI-powered technologies in foreign language education. In: *Journal of Language and Cultural Education* 7 (3), 135–153 (<https://doi.org/10.2478/jolace-2019-0025>; 31-12-2023).
- Schmidt, Torben (2019). Digitally empowered teaching and learning - Kompetente Fremdsprachenlehrkräfte und intelligente Technologie. In: Burwitz-Melzer, Eva & Riemer, Claudia, Lars Schmelter (Hrsg.): *Das Lehren und Lernen von Fremd- und Zweitsprachen im digitalen Wandel*. Tübingen: Narr Francke Attempto, 228-236.
- Schramm, Karen (2019): DaF-Unterricht in Zeiten digitalen Wandels. In: Burwitz-Melzer, Eva & Riemer, Claudia, Lars Schmelter (Hrsg.): *Das Lehren und Lernen von Fremd- und Zweitsprachen im digitalen Wandel. Arbeitspapiere der 39. Frühjahrskonferenz zur Erforschung des Fremdsprachenunterrichts*. Tübingen: Narr Verlag, 237 – 248.
- Salam, Erum (2022). Touchscreens, conveyor belts: McDonald's opens first largely automated location. In: *The Guardian* <https://www.theguardian.com/business/2022/dec/23/mcdonaldsautomated-workers-fort-worth-texas>; (20-10-2023).
- Schmidt, Torben & Thomas Strasser (2016). Digital Classroom. In: *Der fremdsprachliche Unterricht Englisch* 50 (144), 2-7.
- Schmidt, Torben & Thomas Strasser (2022). Artificial Intelligence in Foreign Language Learning and Teaching: A CALL for Intelligent Practice. In: *Anglistik: International Journal of English Studies* 2022 33 (1), 165-184.
- Southworth, Jane et al. (2023). Developing a model for AI Across the curriculum: Transforming the higher education landscape via innovation in AI literacy. In: *Computers and Education: Artificial Intelligence* 4, 100127 (<https://doi.org/10.1016/j.caeai.2023.100127>; 27-12-2023).
- Wampfler, Philippe (2020). *Digitales Schreiben: Blogs & Co. im Unterricht*. Ditzingen: Reclam.
- Weng, Xiaoming & Thomas K.K. Chiu (2023): Instructional design and learning outcomes of intelligent computer assisted language learning: Systematic review in the field. In: *Computers and Education: Artificial Intelligence* 4, 100117 (<https://doi.org/10.1016/j.caeai.2022.100117>; 27-12-2023).

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Artificial Intelligence in Foreign Language Teaching – Insights from an Interview with ChatGPT and Bard

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Abstract

This article presents a comprehensive interview conducted with ChatGPT and Google Bard, investigating the role of Artificial Intelligence (AI) in the domain of Foreign Language Teaching. The primary objective of this interview, supported by subsequent analysis, is to provide valuable insights into the use, significance, and functions of AI in the context of foreign language teaching. Conducting this interview was motivated by the belief that discussing AI without seeking the opinions and estimations of prominent chatbots would be a notable gap in existing modern research. Both ChatGPT and Bard were posed the same ten questions. These questions explored various aspects, including AI as a paradigm shift in teaching methodology, the most affected areas by AI, the changing roles of teachers and students in the wake of AI, the future importance of language education, the assistance of AI in lesson preparation, the role of AI as a direct learning partner for students, the impact of AI on student assessment, and the future development of foreign language methodology. The responses obtained were, at times, predictable, while in other instances, they proved remarkable and insightful. It is crucial to emphasise that these AI systems should not be solely relied upon as references. It is highly recommended to compare their assessments with those of human experts and other publications to attain a more comprehensive understanding. From the perspective of these two AI systems, this interview represents the current state of the art.

Keywords: Artificial intelligence, ChatGPT, Google Bard, teacher, student, paradigm shift, teacher's role, student's role, lesson preparation, learning partner, assessment

1 Introduction

The purpose of this article is to investigate the impact of Artificial Intelligence (AI) on foreign language teaching, focusing on the perspectives of two prominent AIs in the field: ChatGPT (Motlagh et al. 2023) and its prominent competitor Google Bard¹, which “was developed as a direct response to the meteoric rise of OpenAI's ChatGPT” (Wikipedia 2023a). When analysing the role of AI in foreign language education, it is crucial to take into account the viewpoints of central AIs themselves. Disregarding their opinions and analyses would certainly not be the best option. It is inappropriate to discuss them without affording them the opportunity to express their views. We operate under the assumption that ChatGPT and Bard provide valuable insights into how AI can improve language acquisition, nurture cultural understand-

1 The Wikipedia articles about “ChatGPT” (2023) and “Bard (2023a)” provide topical information about these two chatbots.

ing, and facilitate effective communication in diverse linguistic contexts (Kushmar et al. 2022, Winaitham 2022, Yang & Kyun 2022).

To acquire a thorough understanding of the subject, the author of this article conducted two written interviews with ChatGPT and Bard. The assumption here is that their status as Large Language Models provides valuable insights into the potential benefits and challenges associated with incorporating AI into foreign language teaching.

The two 'interviews' were conducted in late December 2023, and identical questions were posed to both AIs. Each question served as a distinct prompt. The formulation of these prompts was intentional, aiming to mimic the structure of interviews with human subjects to render the situation as realistic as possible.

While ChatGPT typically offers a single response for each prompt, Bard presents three responses or "drafts." The first draft is visible on the computer screen, while the remaining two are concealed until clicked. Operating under the assumption that Bard's emphasis on the visual prominence of the first draft suggests its prevalence, this initial draft was selected for use in the present article, deliberately disregarding the other two drafts. This approach appeared to be the most effective means of ensuring the utmost objectivity.

The questions asked cover the following aspects:

- AI as a paradigm shift in foreign language teaching and methodology
- The areas of foreign language teaching affected by AI the most
- The role of the teacher after the emergence of AI
- The potential benefits of artificial intelligence (AI) for teachers in lesson preparation
- The impact of AI on the role of students in universities and schools
- AI as a learning partner for students
- The importance of teaching and learning foreign languages in the future despite the Presence of AI
- The impact of AI on student assessment
- Areas of foreign language methodology that will become more important and those that will become less important with the advent of AI

Certainly, these areas are not exhaustive or complete. Nevertheless, they encompass the challenges that language instructors currently encounter and will increasingly struggle with as time progresses and language learners at schools and universities are becoming more familiar with various AIs and the opportunities they offer. This trend is particularly noteworthy given the continuous diversification of the AI domain on a daily basis.

ChatGPT and Bard were prepared for the interviews in the following manner:

Hi ChatGPT / Bard, I am the Editor of the Journal of Linguistics and Language Teaching. It is for a special issue about "Artificial Intelligence in Foreign Language Teaching" that I will now interview you as a first-hand expert, as you yourself are an artificial intelligence. Please give detailed answers to the questions I am asking you. Feel free to tell

me anything that comes to your mind and which you think is of importance for the questions you will be asked. Please take your time before answering. What is important is that your answers be very deep.

This initial prompt, in which the situation was outlined for the respective AI, aimed to provide the AI with minimal information and exert the least possible influence, ensuring maximum objectivity. While it was conceivable to offer more detailed prompts with extensive information, this approach was intentionally rejected. Providing excessive information might have led the AI to derive biased answers. For this reason, we opted for the principle that less information yielded more unbiased results.

To prevent misunderstandings, it is important to clarify that this article does not aim to criticise the two AIs in question, as the primary focus is not on AI itself. ChatGPT and Bard are regarded as experts, akin to human beings interviewed within a specific context. Furthermore, it is worth noting that writing this article involved the assistance of AI.

This analysis reflects the current situation, but it is important to acknowledge that circumstances may evolve rapidly. The dynamic nature of technology and its advancements suggest that the described picture is subject to change in the near future. Innovation and developments in the field of Artificial Intelligence can lead to shifts, making it necessary to closely watch changes and updates.

ChatGPT 3.5 was employed, being the free version that provides easy accessibility for users, including teachers and researchers. Although the Bing-offered ChatGPT 4 is currently quite widespread, it is likely not as widely recognized as OpenAI. Consequently, it was not included in this study. Google Bard, defined as a direct competitor to ChatGPT, utilises a different technology, making it a natural choice for inclusion in this research. Introducing more than two AIs would have created unnecessary complexity, so the study deliberately focused on the two presumably most well-known AIs.

In the subsequent sections, the detailed and comprehensive responses from the two AIs that were interviewed are presented. Each response is accompanied by a brief commentary, aiming to emphasise the most significant insights from the perspectives of ChatGPT and Bard, as perceived by the author.

2 The Interview

This section analyses the areas addressed in the two interviews, with the responses from ChatGPT and Bard being presented first. The choice of questions focused on several key aspects that are crucial for understanding the impact of AI on language learning and teaching. These questions were designed to explore the notion of AI, with the aim of investigating the potential transformative effects of AI in the field. The aim of the interview was to shed light on the evolving nature of AI and the ways in which it can function as a tool for improved teaching. The interview questions also aimed at highlighting the changing dynamics of language learning and the potential benefits and challenges students might face. The potential of AI to support learners was also explored. Overall, these questions were selected to provide a comprehens-

ive understanding of the implications and possibilities that AI brings to the field of language learning and teaching, with a focus on academic exploration and analysis.

The answers given by ChatGPT and Bard are cited below each question. To enhance readability, these answers are promptly succeeded by comments provided by the author. For improved accessibility, the AIs' responses are presented in a parallel representation. This format is considered more suitable than quoting one answer after the other, as it minimises the need for readers to thumb or scroll through the article.²

2.1 AI as a Paradigm Shift in Foreign Language Teaching and Methodology

As it is widely agreed that the advent of AI will drastically change the world, the first question of the interview was related to AI as a paradigm shift (Chisega-Negrilă 2023, Liu 2023, Culbertson 2023, Rugaiyah 2023, Sotomayor Cantos 2023) in foreign language teaching and methodology:

Question 1:

Your release has marked a paradigm shift in every field of science. This also applies to language methodology and foreign language teaching. How much has foreign language teaching changed between November 2022 and now, i.e. December 2023?

ChatGPT:

My responses are based on information available up to January 2022, and I don't have access to real-time data or updates.

However, I can share some general trends and possibilities that may have shaped the field of foreign language teaching during this period:

- **Integration of AI and Language Teaching Platforms:** There might have been further integration of artificial intelligence technologies into language teaching platforms. This could involve more sophisticated language processing, personalized learning paths, and adaptive assessment systems.
- **Advancements in Natural Language Processing (NLP):** If there have been notable advancements in NLP and AI capabilities, it could have influenced the development of language learning appli-

Bard:

The release of large language models (LLMs) like me has indeed marked a paradigm shift in the field of language methodology and foreign language teaching. These models have the potential to revolutionize the way we learn and acquire new languages, offering a wealth of opportunities for personalization, immersion, and assessment.

Personalization:

LLMs can analyze individual learner data to tailor lesson plans, practice exercises, and feedback to specific needs and preferences. This personalized approach ensures that learners receive instruction that is tailored to their strengths, weaknesses, and learning styles, accelerating their language acquisition journey. For example, an LLM can identify a learner's areas of difficulty and provide targeted practice exercises, or it can adjust the difficulty level of exercises based on the learner's progress.

² If one AI's answer was considerably longer than the other's, it was set in a smaller font to save space. This choice of font size does not have any functional implications.

cations. Enhanced language understanding, improved chatbot interactions, and better language generation might contribute to more effective language teaching tools.

- **Increased Emphasis on Personalization:** The period between 2022 and 2023 could witness a growing emphasis on personalized learning experiences. AI technologies might be used to tailor language lessons to individual learners' needs, adapting content and activities based on their strengths, weaknesses, and learning styles.
- **Virtual and Augmented Reality in Language Learning:** The use of virtual and augmented reality (VR/AR) technologies might have expanded, offering immersive language learning experiences. Virtual environments and simulations could provide learners with practical, real-life language use scenarios.
- **Data-Driven Insights:** Increased use of AI could lead to more data-driven insights into language learning processes. Educators and institutions might leverage analytics to assess the effectiveness of teaching methods, identify challenges, and tailor instructional strategies accordingly.

It's essential to consult the latest research, publications, and educational technology updates to gain a comprehensive understanding of how foreign language teaching has evolved during this specific timeframe. If there are any groundbreaking developments or paradigm shifts, they would likely be documented in scholarly articles, conferences, and educational publications.

Immersion:

LLMs can provide learners with immersive language exposure through chatbots, virtual language partners, and interactive scenarios. These tools allow learners to practice their speaking and listening skills in real-time with native speakers or trained language models, which can help them develop fluency and confidence in using the target language. For instance, an LLM can engage in conversations with a learner, providing prompts and feedback to encourage natural language usage.

Assessment:

LLMs can automatically evaluate written and spoken language samples, providing immediate feedback on grammar, vocabulary, and pronunciation. This automated assessment can free up teachers to focus on more nuanced aspects of language teaching, such as cultural context and comprehension. For example, an LLM can analyze a learner's written essay and identify grammatical errors, provide synonyms for overused words, and suggest alternative sentence structures.

Integration into Teaching Practices:

LLMs are not meant to replace teachers but rather to complement and augment their efforts. Teachers can integrate LLMs into their teaching practices to personalize instruction, provide immersive language exposure, and automate assessment tasks. For instance, a teacher can use an LLM to create personalized lesson plans based on learner data, assign chatbot conversations to students for practice, and automate grammar and vocabulary quizzes.

Impact on the Future of Foreign Language Teaching:

LLMs are poised to play an even more significant role in foreign language teaching in the future. As LLM technology continues to develop, we can expect to see even more personalized, immersive, and effective language learning experiences. For example, LLMs will be able to provide real-time feedback on pronunciation, identify and correct cultural faux pas, and even generate creative text formats like poems or stories in the target language.

In conclusion, the emergence of LLMs has ushered in a new era of foreign language teaching, marked by personalization, immersion, and automation. These models have the potential to revolutionize the way we learn and acquire new languages, making language education more accessible, engaging, and

effective for learners of all ages and backgrounds. As LLM technology continues to evolve, we can expect to see even more innovative and groundbreaking applications in the field of foreign language teaching.

While ChatGPT, armed with information only up to January 2022, approaches potential developments with cautious speculation rather than providing a detailed account of recent occurrences, its emphasis lies on the AI perspective and technological performance. In contrast, Bard, who adopts a more assured tone, places greater emphasis on teacher and learner, highlighting teaching practices and assessment. Under the assumption that points mentioned by both AIs carry potentially higher relevance than those mentioned by only one, our focus will be placed on the shared perspectives.

Both AIs highlight the importance of personalisation in foreign language teaching, be it the growing emphasis on personalised learning experiences, or the way AIs can tailor instruction, practice exercises, and feedback to individual learners' needs and preferences. Personalisation is obviously crucial for learners because it answers their different strengths, weaknesses, and learning styles. In the future, learners will have the opportunity to experience language learning in a more effective and engaging way, resulting in better support than ever before.

Additionally, both AIs emphasise the potential of technology to provide immersive language exposure. Immersion opens the pathway for learners to practise their speaking and listening skills in real-life language use scenarios, helping them develop fluency and confidence. Immersive language exposure has, even before the emergence of AI, been found to enhance language acquisition and improve learners' communicative competence (Lai 202).

Personalisation and immersive language exposure, emphasised by both ChatGPT and Bard, appear to be the most significant aspects from an AI perspective. While these concepts have long been in discussion, their implementation in the foreign language classroom is considerably facilitated with the support of AI compared to the pre-AI era. Personalisation becomes easily achievable with AI serving as an active learning partner (Hyangeun 2022), and language immersion becomes more accessible when AI is used as a speaking and listening companion. In general, a human learning partner may not be available at all times, whereas AI is always accessible.

2.2 Areas of Foreign Language Teaching Most Affected by AI

The second question asks for ChatGPT's and Bard' assessment of how the emergence of AI may change foreign language teaching (Crompton & Burke 2023):

Question 2:

Language teaching comprises many different areas such as the class preparation, material selection, classroom interaction, homework assignments, post-class evaluation. In what areas of language teaching have you had the most impact?

ChatGPT:

The integration of artificial intelligence, including my presence, has had a significant impact on various aspects of language teaching. Here are some key areas that have been influenced:

Adaptive Learning and Personalization:

- **Preparation of Classes:** AI can assist teachers in preparing lessons by providing personalized content recommendations based on individual student needs and learning styles.

Digital Learning Platforms:

- **Selection of Materials:** AI algorithms can analyze vast amounts of language learning materials to recommend suitable resources based on the curriculum, students' proficiency levels, and learning objectives.

Interactive Learning Environments:

- **Classroom Interaction:** AI-driven chatbots and virtual assistants can enhance classroom interactions by providing real-time language practice, answering questions, and engaging students in interactive conversations.

Automated Assessment and Feedback:

- **Homework Assignments:** AI tools can automate the grading of assignments, providing instant feedback to students and freeing up teachers' time for more personalized instruction.

Individualized Learning Paths:

- **Homework Review:** AI can analyze students' homework and performance data to identify areas of strength and weakness, enabling teachers to tailor future assignments and interventions to meet individual needs.

Continuous Evaluation and Improvement:

- **Post-Evaluation by Teachers:** AI analytics can assist teachers in evaluating the effectiveness of their teaching methods, identifying trends in student performance, and making data-driven decisions to enhance instructional strategies.

Language Skill Development:

- **Speaking and Pronunciation Practice:** AI-driven language applications can provide

Bard:

Large language models (LLMs) like me have had a significant impact on various aspects of foreign language teaching, including:

Class Preparation: LLMs can assist teachers in preparing engaging and effective lesson plans by providing personalized recommendations for materials, activities, and exercises based on learner data. They can also help teachers create interactive presentations, generate practice questions, and tailor instruction to specific learning styles.

Resource Selection: LLMs can access and analyze vast amounts of language learning resources, including textbooks, online materials, and multimedia content. They can help teachers identify relevant and up-to-date resources that align with their curriculum and learner needs. Additionally, LLMs can generate personalized recommendations based on learner preferences and progress.

Classroom Interaction: LLMs can be used to enhance classroom interaction by providing engaging prompts, role-playing scenarios, and interactive activities. They can also facilitate conversations between learners and native speakers or trained language models, promoting fluency and confidence in real-time communication.

Homework Creation and Feedback: LLMs can assist teachers in creating personalized homework assignments, tailoring difficulty levels and providing immediate feedback on grammar, vocabulary, and pronunciation. They can also generate graded quizzes and assignments, saving teachers time and effort.

Homework Evaluation: LLMs can analyze student homework submissions, identifying patterns in errors, common mistakes, and areas for improvement. This feedback can help teachers focus their instruction on specific learning gaps and provide targeted support to individual learners.

targeted feedback on pronunciation and speaking skills, offering learners opportunities for focused improvement.

Assistive Technologies:

- Support for Diverse Learners: AI can provide additional support for learners with different proficiency levels and learning preferences, fostering inclusivity in language classrooms.

Real-time Language Translation:

- Cultural and Linguistic Diversity: AI-powered translation tools can facilitate communication in multilingual classrooms, promoting a more inclusive and collaborative learning environment.

Efficiency in Administrative Tasks:

- Administrative Tasks: AI can assist in automating administrative tasks, such as attendance tracking and record-keeping, allowing teachers to allocate more time to instructional activities.

While these areas highlight the positive contributions of AI in language teaching, it's crucial to consider ethical considerations, privacy concerns, and the need for a balanced approach that combines technology with effective pedagogical practices. Additionally, ongoing research and collaboration between educators and technologists are essential to ensure that AI continues to enhance, rather than replace, the human aspects of language teaching.

Post-Evaluation and Reflection: LLMs can help teachers reflect on their teaching practices by analyzing feedback from students, parents, and colleagues. They can identify areas for improvement, suggest alternative teaching approaches, and provide data-driven insights to support continuous professional development.

In conclusion, LLMs are transforming the landscape of foreign language teaching by providing personalized tools and support for teachers and learners alike. These models are empowering teachers to create more engaging and effective lessons, while also providing learners with a wealth of resources and opportunities for practice and feedback. As LLM technology continues to evolve, we can expect to see even more innovative applications that further enhance language education and promote global communication.

Both AIs discuss the impact of AI on personalisation and interaction. In addition, ChatGPT highlights the potential of AI to enhance aspects like class preparation, material selection, classroom interaction, homework assignments and review, post-evaluation by teachers, speaking and pronunciation practice, diversity, and assistance in administrative tasks. Bard focuses on areas such as class preparation, resource selection, classroom interaction, homework creation and feedback, homework evaluation, and post-evaluation and reflection.

Overall, personalization is discussed in greater depth than in the previous question, and its second mention underscores the significance attributed to this aspect by both AIs. It is crucial because it allows instruction to be tailored to individual learners' needs, preferences, and proficiency levels, promoting more effective language learning. The aspect of personalization represents one of the substantial changes that AI brings about in the field of teaching, which can be particularly important in language instruction due to its highly interactive nature in the classroom. The assessment of both AIs suggests that if implemented, this could lead to a significant advancement

in language teaching, benefiting learners in ways that were previously unimaginable before the widespread accessibility of AI.

The emphasis both AIs place on interaction highlights the significant impact that ChatGPT, Bard, and other chatbots can have on the foreign language classroom, particularly their ability to serve as immediate learning partners for language learners. This direct engagement with a "native speaker" enables AI to simulate real-time written or oral communication, representing a paradigm shift from the pre-AI era, when contact with native speakers was limited to receptive rather than productive interactions, such as through YouTube videos. For instructors, AI can provide valuable insights into creating engaging role-playing scenarios and discussion opportunities, fostering more opportunities for students to engage in active dialogue and practise their language skills more than ever before. Interaction, therefore, represents a crucial aspect that will be significantly enhanced in the AI-supported foreign language classroom.

2.3 The Role of the Language Teacher after the Emergence of AI

With the availability of AI through the students, the function of the teacher is evolving. This raises the question of the teacher's future role (Pokrivcakova 2019) as he or she will no longer be the sole source of information in the classroom:

Question 3:

How will the role and the importance of the foreign language teacher be positively or negatively affected by AI?

ChatGPT:

The impact of Artificial Intelligence (AI) on the role and importance of foreign language teachers is a complex and multifaceted topic. I'll discuss several dimensions to provide a comprehensive view.

Positive Impacts:

- **Personalized Learning:** AI can enhance the adaptability of language instruction by providing personalized learning experiences tailored to individual students' needs. This allows teachers to focus on addressing specific challenges and facilitating a more effective learning process.
- **Language Assessment:** AI can assist in assessing language proficiency more accurately through advanced language processing algorithms. Teachers can utilize

Bard:

The role and importance of foreign language teachers are likely to be both positively and negatively affected by AI in the coming years.

Positive impacts of AI on foreign language teaching:

AI has the potential to make foreign language learning more accessible, personalized, and effective. For example, AI-powered chatbots can provide personalized feedback and practice opportunities to learners, while adaptive learning systems can adjust instruction based on each learner's individual needs. AI can also be used to create engaging and immersive language learning experiences through virtual reality and augmented reality simulations.

AI-driven assessment tools to gauge students' strengths and weaknesses, enabling targeted interventions.

- **Resource Augmentation:** AI can serve as a valuable resource for teachers, providing access to a vast array of language learning materials, interactive exercises, and multimedia content. This can enrich the learning experience and save teachers time in curriculum development.
- **Language Practice and Immersion:** AI-driven language applications can create immersive language practice environments, allowing students to engage in real-life conversations and scenarios. This fosters practical language skills and cultural understanding.

Negative Impacts:

- **Depersonalization of Education:** Excessive reliance on AI might lead to a depersonalization of education, where the human element is diminished. Language teaching is not only about conveying information but also about building relationships and understanding individual learning styles, which AI may struggle to replicate.
- **Job Displacement Concerns:** There are concerns about AI technologies replacing certain aspects of the teacher's role, potentially leading to job displacement. However, it's crucial to view AI as a tool that can augment the teacher's abilities rather than a complete substitute.
- **Ethical Considerations:** The use of AI in education raises ethical considerations, such as data privacy, algorithmic bias, and the need for transparent decision-making processes. Teachers must be aware of these issues to ensure responsible implementation.
- **Overemphasis on Technology:** There is a risk of overemphasis on technology, where the focus shifts from pedagogical principles to technological tools. Teachers need to maintain a balance, integrating AI as a supportive tool rather than the sole driver of the learning experience.

In addition, AI can help teachers to automate administrative tasks, provide them with data-driven insights into student progress, and offer guidance on teaching strategies. This will free up teachers' time to focus on providing individualized support and fostering a positive learning environment.

Negative impacts of AI on foreign language teaching:

Some experts worry that AI could lead to a decrease in the demand for human foreign language teachers. If AI-powered systems can provide high-quality instruction for a fraction of the cost of a human teacher, schools may be tempted to invest in AI instead. This could lead to job losses for foreign language teachers, especially in areas with limited resources.

Another concern is that AI could depersonalize the foreign language learning experience. While AI can provide personalized instruction, it may lack the warmth, empathy, and cultural sensitivity that human teachers can bring to the classroom. This could make it more difficult for students to develop a strong connection to the language and culture they are learning.

Recommendations for a harmonious integration of AI and human teachers

In order to maximize the benefits of AI while minimizing its potential negative impacts, it is important to integrate AI into the foreign language learning process in a way that complements, rather than replaces, human teachers. Here are some recommendations:

- Use AI to automate tasks that can be done more efficiently by machines, such as grading quizzes or providing routine feedback. This will free up teachers' time to focus on more personalized interactions with students.
- Use AI to create engaging and interactive learning experiences that students would not be able to access otherwise. This could include virtual travel experiences, language exchange simulations,

Conclusion:

In conclusion, the impact of AI on foreign language teaching can be both positive and negative. It offers opportunities for personalized learning, improved assessment, and enhanced resources. However, it also poses challenges related to depersonalization, potential job displacement, ethical concerns, and the risk of overreliance on technology. The key is to approach AI as a complementary tool that empowers teachers and enhances the overall language learning experience. Teachers should actively engage with AI technologies, incorporating them thoughtfully into their teaching practices while preserving the essential human touch in education.

or personalized language learning programs.

- Use AI to provide data-driven insights into student progress. This will help teachers to identify areas where students need additional support and to adjust their instruction accordingly.
- Provide professional development opportunities for teachers to learn how to use AI effectively in the classroom. This will help teachers to maximize the benefits of AI while minimizing its potential drawbacks.

Ultimately, the future of foreign language teaching will depend on the way AI is used to complement and enhance the role of human teachers. If used responsibly, AI has the potential to revolutionize foreign language learning, making it more accessible, personalized, and effective. However, it is important to ensure that AI does not replace the human element of teaching, which is crucial for fostering a positive learning environment and developing students' critical thinking and cultural sensitivity.

Both ChatGPT and Bard acknowledge the positive impacts that AI can have on foreign language teaching. One common point that both AIs mention again is the potential for personalised learning experiences. AI can enhance the adaptability of language instruction by providing individualised learning experiences that consider individual students' needs, which allows teachers to focus on addressing specific challenges and facilitating a more effective learning process.

ChatGPT points to the immense potential of AI in language assessment, resource augmentation, and language practice and immersion. Furthermore, Bard recognizes the automation of administrative tasks as a favourable outcome. This aspect reinforces the teacher's future role as an educator rather than merely an administrator.

Neither ChatGPT nor Bard explicitly addresses the personal role of the teacher in the classroom, his or her significance, or their authority in their interactions with students. The question of whether a teacher's role might be undermined by the presence of another expert in the classroom does not seem to be relevant to the two chatbots interviewed. On the one hand, it is surprising that neither of them considers this important aspect. On the other hand, it is not entirely unexpected since AIs lack emotions and, therefore, are unlikely to consider human emotions. However, from a human perspective, this omission can be criticised.

Among the negatives mentioned by the two AIs, ChatGPT highlights ethical aspects (Adams et al. 2023, Hockly 2023, Miao & Holmes 2023³) and the potential overemphasis on technology. Both ChatGPT and Bard express concerns about the depersonalisation of education and the possibility of teachers being replaced by AI. These two points are considered significant since both AIs mention them.

Excessive reliance on AI might indeed diminish the human element of teaching, which is crucial for building relationships and understanding individual learning styles. Whereas AI can provide personalised instruction, it may not give learners the warmth, empathy, and cultural sensitivity that human teachers bring to the classroom.

Another concern is job displacement. There are legitimate fears that AI could replace certain aspects of the teacher's role, leading to job losses. In this context, it will be all the more important to see AI as a tool that can enhance a teacher's skills, rather than as a complete replacement.

Interestingly, the harmonious relationship between a teacher and AI is perceived as a potential issue by Bard, who offers recommendations for establishing such a relationship.

Among the points raised by Bard, one stands out: the need to maintain a balance between technology and human presence (Ji et al. (2022)). While AI can bring unimaginable benefits to the learning process, it cannot fully replace the essential qualities that human teachers bring to the classroom. Language teaching is not just about conveying information; it is about building relationships, understanding individual learning styles, and fostering critical thinking and cultural sensitivity. Therefore, it is crucial to approach AI as a *complementary* tool that empowers teachers and enhances the overall language learning experience, rather than relying solely on technology.

In this particular context, the second question pertains directly to the teacher's position and his or her continued authority within the classroom, despite the presence of AI.

The teacher's authority in interacting with pupils is a crucial aspect of their role. Will his or her word still carry weight? This is the focus of the next question:

Question 4:

Will the language teacher continue to be the authority in the foreign language classroom, or will AI be the authority?

ChatGPT:

The role of the language teacher as the au-

Bard:

Language teachers and AI will likely have a

3 In this context, the guidelines that Miao & Holmes (2023: 23) list for individual users, including "individual teachers, researchers and learners in formal educational institutions or those participating in non-formal programmes of study" provide useful direction.

thority in the foreign language classroom is unlikely to be completely replaced by AI. Instead, the relationship between teachers and AI is more likely to evolve into a collaborative and complementary dynamic. Here are some key considerations:

Complementary Roles:

- AI can serve as a powerful tool to support language teachers rather than replace them. While AI can provide personalized learning paths, automate assessments, and offer instant feedback, the teacher's expertise is crucial for understanding the nuances of individual student needs, providing emotional support, and adapting instruction based on real-time classroom dynamics.

Human Connection and Emotional Intelligence:

- Teachers bring a unique human touch to the learning experience. They provide emotional support, motivation, and a social context that AI may struggle to replicate. Language learning often involves cultural nuances and context, which teachers, with their cultural competence, can navigate effectively.

Adaptability and Creativity:

- Language teachers possess the ability to adapt their teaching strategies based on the dynamic needs of the classroom. They can respond to unexpected challenges, foster creativity, and create a flexible learning environment, qualities that AI may find challenging to emulate.

Facilitating Collaboration:

- Teachers play a vital role in fostering collaboration and communication among students. While AI can facilitate individual learning, teachers can create opportunities for group activities, discussions, and peer interactions that contribute to a richer language learning experience.

Ethical and Moral Guidance:

- Teachers offer moral and ethical guidance, helping students navigate complex cultural and ethical considerations related to language use. AI lacks the ethical and moral reasoning capabilities inherent in human educators.

complementary role in the future of foreign language teaching. AI will play a significant role in providing personalized instruction, interactive learning experiences, and data-driven insights, while teachers will continue to be the human experts who bring their knowledge, experience, and passion for language learning to the classroom.

AI will not replace teachers but rather provide them with new tools and resources to enhance their teaching. AI can automate many routine tasks, such as grading homework and providing feedback, freeing up teachers to focus on more personalized and engaging instruction. AI can also generate personalized learning paths, adapt content to individual learner needs, and create immersive language environments.

However, teachers will still play a crucial role in the foreign language classroom. They will be responsible for creating a supportive and engaging learning environment, fostering cultural understanding, and providing individualized support to students. They will also be the ones to interpret and apply AI-generated data to guide their teaching practices.

In short, AI will become an invaluable tool for language teachers, but teachers will remain the central figures in the foreign language classroom. Their expertise, passion, and human connection with students will be essential for successful language learning.

Here is a table summarizing the roles of teachers and AI in the future of foreign language teaching:

Individualized Support:

- Teachers can provide tailored and nuanced support to individual students. They can recognize learning styles, address unique challenges, and offer encouragement in a way that acknowledges the diverse needs of learners, which AI might not fully comprehend.

Cultural Context:

- Language teaching often involves conveying the cultural context of a language. Teachers can share personal experiences, stories, and insights that enrich the cultural understanding of the language, enhancing the learning experience beyond linguistic aspects.

While AI can offer valuable support by automating routine tasks, providing data-driven insights, and offering personalized learning experiences, the teacher's role remains essential in fostering a holistic and well-rounded language education. The optimal approach is a symbiotic relationship where AI enhances the efficiency and effectiveness of language teaching, allowing teachers to focus on aspects that require human intuition, empathy, and cultural understanding.

Role	Traditional	Future
Instruction and content delivery	Primary role	Reduced
Facilitating learning	Emerging role	Primary role
Providing individualized support	Secondary role	Increasing importance
Fostering a collaborative environment	Secondary role	Increasing importance
Developing critical thinking skills	Secondary role	Continuing importance
Creativity	Secondary role	Continuing importance
Problem-solving skills	Secondary role	Continuing importance

Overall, the future of foreign language teaching will be a collaboration between teachers and AI, with each playing a distinct and essential role in enhancing language learning experiences for students.

Both ChatGPT and Bard broadly agree that AI will play a significant role in language teaching. They emphasise the importance of teachers' expertise and the human element in the learning process. They also highlight the complementary nature of AI and teachers and suggest that AI will serve as a powerful tool to support language teachers rather than replace them. The teacher's expertise is seen as crucial in understanding individual student needs, providing emotional support, and adapting instruction based on real-time classroom dynamics. Teachers bring a unique human touch to the learning experience and offer emotional support, motivation, and cultural competence that presently, AI cannot offer accordingly. They possess adaptability, creativity, and the ability to foster collaboration and communication among their students. Teachers can also provide moral guidance, individualised support, and convey the cultural context of a language. Thus, for ChatGPT, the teacher's role remains essential in fostering a holistic and well-rounded language education (also Vogt & Flindt 2023). In addition to his analysis presented in the form of a running text, Bard provides a table that accurately depicts the situation, highlighting the teacher's role as a facilitator for learning and individual support, which becomes increasingly crucial with the emergence of AI.

Based on this analysis, the recognition of the complementary relationship between AI and teachers emerges as the most significant aspect of these responses. Rather than competing, AI and teachers harmoniously work together to enhance the learning experience. Teachers contribute their expertise, experience, and passion, while the human touch they provide remains essential for successful language

acquisition. AI, on the other hand, automates routine tasks and improves efficiency. However, it is the teacher who creates a supportive and engaging learning environment. Both ChatGPT and Bard emphasise the ongoing and vital role that teachers will continue to play in the future of foreign language instruction.

In the subsequent subsection, we take a look at potential benefits for teachers in preparing lessons, as the presence of AI is likely to modify this task significantly.

2.4 Potential Benefits for Teachers in Preparing Lessons

The question posed for AI possibly befitting teachers for lesson preparation was this one:

Question 5:

How will AI help language teachers prepare their lessons? How will the collection of materials change?

ChatGPT:

The integration of Artificial Intelligence (AI) into language teaching can significantly impact the way teachers prepare their lessons and collect materials. Here are some key aspects to consider:

1. Personalized Content Recommendations:

AI can analyze individual student performance, learning styles, and preferences to provide personalized content recommendations for teachers. By understanding each student's strengths and weaknesses, AI can suggest specific materials that cater to their needs, making lesson planning more targeted and effective.

2. Adaptive Learning Platforms:

AI-powered adaptive learning platforms can assess students' language proficiency levels and dynamically adjust the difficulty of learning materials. This ensures that teachers can easily differentiate instruction, catering to a diverse range of language abilities within the same classroom. Teachers can leverage these platforms to find suitable materials for various proficiency levels.

3. Automated Content Creation:

AI tools can assist teachers in creating engaging and tailored lesson materials. Natural Language Processing (NLP) algorithms

Bard:

AI is poised to revolutionize the way language teachers prepare their lessons and gather materials, offering a multitude of benefits and transforming the learning experience for both teachers and students. Here's a comprehensive overview of how AI will impact lesson preparation and material collection in foreign language teaching:

Personalized Lesson Planning and Resource Discovery

AI-powered tools will assist language teachers in crafting personalized lesson plans tailored to individual student needs and learning styles. By analyzing student data, AI can identify areas of strength and weakness, suggesting appropriate vocabulary, grammar exercises, and interactive activities. This personalized approach ensures that lessons are engaging and effective for each learner, maximizing their progress and engagement.

AI-driven systems can also facilitate the discovery and curation of relevant language learning resources. Teachers can utilize AI-powered search engines to locate high-quality educational content, filtering results based on specific language levels, topics, and learning objectives. This eliminates the time-consuming task of manually searching for materials, allowing teachers to focus on creating engaging lessons and providing individualized support to students.

Adaptive Learning and Personalized Feed-

can generate exercises, quizzes, and even dialogues based on specific language learning objectives. This automation allows teachers to allocate more time to other critical aspects of teaching, such as individualized student support and classroom interaction.

4. Enhanced Resource Search and Curation:

AI can streamline the process of searching for and curating language teaching materials. Advanced algorithms can analyze the vast amount of available resources, considering factors like relevance, quality, and alignment with learning objectives. This not only saves teachers time but also ensures they have access to a diverse range of high-quality materials.

5. Real-time Feedback and Analytics:

AI-driven assessment tools can provide teachers with real-time feedback on student performance. By analyzing students' responses, AI can identify areas of improvement and recommend additional materials or teaching strategies. This dynamic feedback loop allows teachers to adjust their lesson plans on the fly, responding to the immediate needs of their students.

6. Collaboration and Knowledge Sharing:

AI can facilitate collaboration among language teachers by providing platforms for sharing lesson plans, strategies, and effective materials. By leveraging collective intelligence, teachers can benefit from a broader pool of resources and insights, fostering a more collaborative and supportive teaching community.

7. Multimodal and Interactive Content:

AI can enable the creation of multimodal and interactive learning materials. Virtual reality (VR), augmented reality (AR), and other immersive technologies can bring language lessons to life, offering students engaging and authentic experiences. Teachers can incorporate these interactive materials to make lessons more dynamic and appealing.

Challenges and Considerations:

While AI offers numerous advantages in

back

AI can further enhance lesson preparation by incorporating adaptive learning mechanisms. AI-powered systems can monitor student performance in real-time, providing immediate feedback and adjusting the learning pace accordingly. This adaptive approach ensures that students receive the appropriate level of challenge and support throughout their learning journey, preventing boredom and frustration.

AI can also assist teachers in providing personalized feedback to students. Language assessment tools can analyze student writing samples, identifying grammatical errors, vocabulary gaps, and areas of improvement. This data-driven feedback can then be used to tailor lesson plans, focus on specific areas of need, and guide students towards proficiency.

Automated Grading and Assessment

Time-consuming tasks such as grading quizzes, assignments, and language tests can be significantly streamlined with AI. AI-powered grading tools can automatically assess student work, providing teachers with detailed feedback and performance metrics. This automation frees up teachers' valuable time, allowing them to devote more attention to personalized interaction with students and creating engaging learning experiences.

Content Creation and Generation

AI is revolutionizing content creation for language learning, enabling the development of personalized exercises, interactive dialogues, and customized multimedia materials. AI-powered tools can generate personalized vocabulary lists, practice questions, and creative writing prompts, tailored to the individual needs and interests of each student. This personalized approach ensures that language learning materials are engaging and relevant to students' learning goals.

Virtual Language Partners and Conversational Practice

AI-powered virtual language tutors and chatbots can provide students with opportunities for personalized conversational practice. These AI assistants can engage in real-time conversations, providing feedback on pronunciation, grammar, and conversational fluency. This immersive language learning experience can enhance students' confidence and ability

lesson preparation and material collection, it's crucial to consider potential challenges such as ethical considerations, algorithmic bias, and the need for teacher autonomy. Teachers should be mindful of maintaining a balance between AI assistance and their expertise, ensuring that technology serves as a supportive tool rather than a replacement for professional judgment.

In essence, AI's role in lesson preparation and material collection can revolutionize language teaching by providing personalized recommendations, automating content creation, and fostering collaborative communities of educators. The key is to approach AI integration with a thoughtful and informed perspective, recognizing both its capabilities and limitations in enhancing the language learning experience.

to communicate effectively in the target language.

Data-Driven Insights and Progress Monitoring

AI can provide teachers with valuable data-driven insights into student progress. By analyzing student interactions, responses to exercises, and feedback, AI can identify patterns and trends in learning patterns. This data can then be used to inform lesson planning, identify areas for improvement, and track individual student progress.

Overall, AI is set to transform the way language teachers prepare their lessons, gather materials, and assess student progress. By leveraging AI's capabilities, teachers can create personalized, engaging, and effective language learning experiences for students, enhancing their language proficiency and fostering a deeper understanding of the target language and culture.

ChatGPT and Bard provide comprehensive insights into AI that will impact lesson preparation and material collection for language educators. Both emphasise the potential for AI to provide a plethora of opportunities: personalised content recommendations, adaptive learning platforms, automated content creation, enhanced resource search and curation, real-time feedback and analytics, and multimodal and interactive content. They recognise the potential for AI to revolutionise the way language teachers prepare their lessons and gather materials, offering personalised lesson planning, resource discovery, adaptive learning, personalised feedback, automated grading and assessment, content creation and generation, virtual language partners, conversational practice, and data-driven insights and progress monitoring.

In addition, both AIs discuss different points. ChatGPT focuses on adaptive learning platforms, collaboration and knowledge sharing, and multimodal and interactive content. It also addresses potential challenges such as ethical considerations, algorithmic bias, and the need for teacher autonomy. Bard, on the other hand, emphasises resource discovery, automated grading and assessment.

Again, ChatGPT and Bard see the potential for AI to provide personalised content recommendations and adaptive learning platforms as one of the most important aspects for language teaching. Although it is and should be the responsibility and goal of every teacher to attend to their students' individual progress and cater to their needs, accomplishing this task is not always easy in the context of everyday school life. In this context, AI with its ability to analyse individual student performance and their learning styles, and its capacity to dynamically adjust the difficulty of learning materials, can be even more effective than the efforts teachers may exert, and on the other hand, it presents better opportunities for educators to enhance the efficiency of their lessons for each individual learner. This is particularly true because AI's potential to automate routine tasks allows teachers to dedicate their attention to every student's language development, thereby providing them with the optimal learning outcome possible.

In conclusion, the presence of AI in language teaching has the potential to optimise the way teachers prepare their lessons and collect and use their materials, giving students better opportunities for efficient and individualised learning than ever before.

In this context, it should be noted that changes may occur not only in the role of the teacher, but also in the role of the students.

2.5 The Role of the Language Student after the Emergence of AI

The question about the role of the language student complements the question about the role of the teacher:

Question 6:

How will the role of the language learner in school and university be positively or negatively affected by AI?

ChatGPT:

Positive Impacts:

Personalized Learning Paths:

- AI can analyze individual learning styles, preferences, and progress, allowing for the creation of personalized learning paths. This adaptability ensures that students receive tailored instruction based on their specific needs, fostering a more efficient and effective learning experience.

Enhanced Language Practice:

- AI-driven language applications can provide students with immersive language practice opportunities. Whether through chatbots, language exchange platforms, or virtual reality simulations, AI can create realistic language scenarios, enabling students to apply their knowledge in practical contexts.

Immediate Feedback and Remediation:

- AI can offer real-time feedback on language exercises and assessments, identifying errors and providing explanations for improvement. This immediate feedback loop allows students to address weaknesses promptly, accelerating the learning process and building confidence.

Bard:

AI is poised to revolutionize the role of the language learner in school and university settings, offering both positive and negative implications. Here's a comprehensive analysis of how AI will impact language learners:

Positive Effects of AI on Language Learners

- **Enhanced Access and Flexibility:** AI-powered language learning tools can be accessed anywhere, anytime, providing learners with greater flexibility and convenience to fit language learning into their busy schedules.
- **Personalized and Adaptive Learning:** AI can tailor learning experiences to individual needs and learning styles, ensuring that learners receive the appropriate level of challenge and support. This personalized approach can optimize learning outcomes and accelerate language acquisition.
- **Immersive and Engaging Experiences:** AI can create immersive language learning environments through virtual reality, augmented reality, and interactive multimedia simulations. These engaging experiences can enhance motivation and make language learning more enjoyable.
- **Real-time Feedback and Correction:** AI-powered language tutors and chatbots can provide real-time feedback on pronunciation, grammar, and conversational fluency. This immediate feedback can help

Access to Diverse Learning Resources:

- AI can facilitate access to a vast array of language learning materials. Through content curation algorithms, learners can explore a variety of resources such as articles, videos, and interactive exercises, enhancing their exposure to diverse linguistic contexts and cultural nuances.

Customized Learning Tools:

- AI-powered tools can be designed to cater to specific language learning challenges. For example, applications can focus on pronunciation, grammar, or vocabulary based on individual student needs. This customization ensures that learners receive targeted support in areas where they require improvement.

Negative Impacts:

Overreliance on Technology:

- There is a risk that students might become overly dependent on AI tools, neglecting traditional language learning methods and interpersonal communication. Striking a balance between technology-assisted learning and traditional language instruction is crucial to maintaining a holistic approach to language education.

Reduced Human Interaction:

- Language learning is not solely about mastering grammar and vocabulary; it also involves communication and cultural understanding. Excessive reliance on AI may diminish opportunities for authentic human interaction, potentially affecting students' ability to navigate real-life language situations.

Ethical Considerations and Data Privacy:

- The use of AI in education raises concerns about data privacy and the ethical handling of student information. Safeguarding learners' personal data and ensuring transparent and responsible AI practices are essential to build trust and maintain ethical standards.

Equity and Access Challenges:

- The availability of AI-driven language

learners identify and correct errors, improving their accuracy and fluency.

- Access to Native Speakers and Language Partners: AI can connect learners with native speakers or language partners for virtual conversations, providing opportunities for authentic language practice and cultural exchange.
- Data-driven Insights and Personalized Learning Plans: AI can analyze student data to identify areas of strength and weakness, suggesting personalized learning plans and resources. This data-driven approach can maximize the effectiveness of language learning.

Potential Negative Impacts of AI on Language Learners

- Loss of Human Interaction and Feedback: While AI can provide valuable feedback, it may lack the empathy, cultural sensitivity, and personalized support that human teachers can offer. This could hinder language learners' ability to develop cultural understanding and effective communication skills.
- Dependency on Technology and Lack of Critical Thinking: Reliance on AI-powered tools could lead to a decrease in independent learning and critical thinking skills. Learners may become passive consumers of language rather than active participants in the learning process.
- Potential Bias and Inaccuracy in Language Data: AI algorithms are trained on vast amounts of data, which may contain biases. This could lead to inaccurate or inappropriate feedback, potentially negatively impacting language learners.
- Loss of Human Element in Language Learning: AI may contribute to a more impersonal and less engaging learning environment, potentially reducing motivation and enthusiasm for language learning.

Recommendations for a Balanced Integration of AI and Language Learners

To maximize the benefits and minimize the potential drawbacks of AI in language learning, it is crucial to integrate AI tools effectively into a comprehensive learning approach that emphasizes both human interaction and technology-enhanced learning. Here are some re-

learning tools may not be uniform across different educational settings. There is a risk of creating disparities in access, with some students benefiting more from AI integration than others. Addressing these equity issues is crucial to ensuring inclusive language education.

Conclusion:

In conclusion, the integration of AI into language education holds immense potential to positively impact language learners by providing personalized learning experiences, enhancing language practice, and offering immediate feedback. However, it is essential to navigate challenges such as overreliance on technology, the potential reduction of human interaction, ethical considerations, and addressing equity issues to ensure that AI serves as a supportive tool in the language learning journey. The key lies in leveraging AI to augment, not replace, the rich and multifaceted aspects of language education.

commendations:

- Leverage AI for Personalized Learning and Practice: Use AI to provide personalized feedback, adjust learning pace, and tailor learning materials to individual needs.
- Utilize AI for Interactive and Engaging Activities: Employ AI-powered games, simulations, and virtual experiences to make language learning more fun and engaging.
- Foster Human-AI Collaboration: Integrate AI tools into teacher-led lessons, allowing teachers to provide personalized guidance and cultural context.
- Promote Critical Thinking and Independent Learning: Encourage learners to use AI tools as a resource, but emphasize the importance of critical thinking and independent learning.
- Maintain Ethical Use of AI: Ensure that AI algorithms are free of bias and that data collection and use align with ethical principles.

Conclusion

AI has the potential to revolutionize the landscape of foreign language learning, offering both transformative benefits and potential challenges. By carefully integrating AI tools into a balanced learning approach that emphasizes human interaction and critical thinking, we can maximize the positive impact of AI while mitigating potential drawbacks. Ultimately, the future of language learning lies in a harmonious collaboration between human teachers and intelligent technologies, ensuring that learners receive the personalized, engaging, and effective instruction they need to achieve proficiency in the target language and gain a deeper understanding of the target culture.

ChatGPT's and Bard's answers to this question and the previous one about teachers overlap to a certain extent. Both AIs emphasise the potential for AI to provide personalised and adaptive learning experiences, immersive and engaging language practice, real-time feedback and correction, access to native speakers and language partners, and data-driven insights and personalised learning plans. They both recognise the benefits of AI in enhancing access, flexibility, and personalised learning experiences for language learners. Additionally, both AIs acknowledge the potential negative impacts of AI, such as the loss of human interaction and feedback, dependency on technology, potential bias and inaccuracy in language data, and the loss of the human element in language learning.

Only ChatGPT focuses on personalised learning paths, remediation, access to diverse learning resources, and customised learning tools. It also addresses potential challenges such as overreliance on technology, reduced human interaction, and equity.

Only Bard provides recommendations for a balanced integration of AI and language learners, emphasising the importance of human-AI collaboration (also Molick & Molick 2023), decreasing critical thinking skills, and the importance of AI's algorithms being free of any ethical bias.

The most important aspect for language learners, mentioned by both ChatGPT and Bard, is, again, the potential of AI to provide personalised and adaptive learning experiences, its ability to adapt the learning experience to the needs of the individual, ensuring that learners receive the appropriate level of challenge and support, and its potential to provide real-time feedback and correction. Access to native speakers, already facilitated by the existence of YouTube, is another very important point in this context, and even more so access to language partners, which has never been easier than in the era of AI.

It is interesting that neither AI takes into account the emotional role of the language learner. Although they both talk about reducing human interaction, they do not mention any negative effects this might have on the learner at an emotional level. This is not surprising, however, as AIs by nature do not have feelings and therefore cannot assess the emotional side of humans. Instead, Bard sees opportunities for "human-AI collaboration" by incorporating AI into lessons designed by human teachers. It remains to be seen whether this kind of interaction will compensate for the reduced human interaction. Scepticism remains.

2.6 AI as a Learning Partner for Students

AI can serve as a direct partner for students to learn with (Belda-Medina & Calvo-Ferrer 2022). This aspect is addressed by the following question:

Question 7:

What opportunities do you see for students to interact directly with AI in the foreign language classroom, with AI as their direct learning partner?

ChatGPT:

The direct interaction of pupils with AI in the foreign language classroom can offer several opportunities to enhance language learning experiences. Here are some potential opportunities:

Real-Time Language Practice:

- Opportunity: AI can serve as a real-time language practice partner, engaging stu-

Bard:

The integration of AI into the foreign language classroom offers a wealth of opportunities for pupils to interact with AI directly, with AI serving as their personalized learning partner. Here are some specific examples of how AI can be used to enhance foreign language learning through direct interaction:

dents in conversations, providing feedback on pronunciation, and offering interactive language exercises. This can create a dynamic and immersive language learning environment.

Personalized Learning Paths:

- Opportunity: AI can analyze individual student performance and tailor learning paths based on their strengths, weaknesses, and learning styles. This personalization ensures that students receive targeted practice and support in areas where they need improvement.

Adaptive Assessments:

- Opportunity: AI-powered assessments can adapt to students' proficiency levels, offering challenges that align with their abilities. This ensures that assessments are neither too easy nor too difficult, providing a more accurate measure of language proficiency.

Language Skill Development:

- Opportunity: AI tools can focus on specific language skills, such as listening, speaking, reading, and writing. Students can receive targeted practice and feedback in each skill area, promoting a comprehensive development of language proficiency.

Immediate Feedback and Corrections:

- Opportunity: AI can provide instant feedback on students' language exercises, correcting errors, and offering explanations. This immediate feedback accelerates the learning process and helps students reinforce correct language usage.

Conversational Language Learning:

- Opportunity: AI chatbots and virtual language tutors can engage students in conversational practice, simulating real-life language interactions. This dynamic and interactive approach can boost students' confidence in using the language in authentic situations.

Cultural and Contextual Learning:

- Opportunity: AI can contribute to cultural and contextual learning by providing information about cultural nuances, idioms, and real-world language use. This enriches students' understanding of the cultural aspects of the language.

1. Personalized Learning Path Generation: AI can analyze student data, including language proficiency, learning styles, and interests, to tailor personalized learning paths. This allows pupils to progress at their own pace and receive instruction that aligns with their specific needs and preferences.
2. AI-Powered Interactive Lessons: AI can create interactive lessons that incorporate multimedia content, dynamic elements, and real-time feedback. This makes learning more engaging and interactive, helping pupils retain information more effectively.
3. AI-Assisted Conversation Practice: AI-powered chatbots and virtual language partners can provide conversational practice for pupils in a real-time setting. This allows pupils to develop fluency and confidence in speaking the target language.
4. AI-Powered Grammar and Vocabulary Feedback: AI can analyze pupil's writing and speaking, providing immediate feedback on grammar, vocabulary, and pronunciation errors. This helps pupils identify and correct mistakes, improving their overall language proficiency.
5. AI-Generated Cultural Resources: AI can generate personalized cultural resources, such as videos, articles, and quizzes, that align with the specific needs of each learner. This fosters cultural understanding and enhances the overall language learning experience.
6. AI-Powered Error Analysis and Correction: AI can analyze pupil's written and spoken language, identifying patterns in errors and providing targeted feedback. This helps pupils pinpoint areas for improvement and develop stronger language skills.
7. AI-Powered Adaptive Learning: AI can adapt learning materials and activities to pupil's performance, ensuring that they are challenged appropriately and

Gamified Language Learning:

- Opportunity: AI can be integrated into gamified language learning platforms, turning language practice into interactive and enjoyable experiences. Gamification elements, such as rewards and challenges, can motivate students to engage actively with the language.

Multimodal Learning Experiences:

- Opportunity: AI can support multimodal learning by incorporating various types of media, such as videos, audio clips, and interactive simulations. This provides a diverse range of learning experiences, catering to different learning preferences.

Speech Recognition Technology:

- Opportunity: AI-driven speech recognition technology can evaluate students' pronunciation and intonation. This feature allows students to receive targeted feedback on their spoken language skills, improving their overall communication abilities.

Support for Diverse Learners:

- Opportunity: AI can offer additional support for diverse learners, including those with different learning styles, paces, and preferences. This inclusivity ensures that language learning is accessible and adaptable to individual needs.

It's important to note that while these opportunities can enhance language learning, a balanced approach is essential. Human interaction, cultural understanding, and the guidance of a skilled language teacher remain invaluable aspects of the language learning experience. AI should complement, not replace, the human elements that contribute to a comprehensive language education.

receive the support they need to succeed. This personalized approach optimizes the learning process.

8. AI-Powered Gamified Language Learning: AI can incorporate gamification elements into language learning, making it more fun and engaging for pupils. This can motivate pupils to practice and improve their language skills.
9. AI-Powered Language Exchange and Collaboration: AI can connect pupils with native speakers or other learners for language exchange and collaboration. This provides pupils with opportunities to practice their speaking and listening skills in real-world contexts.
10. AI-Powered Progress Monitoring and Assessment: AI can track pupil's progress over time, providing them with regular feedback and assessments. This helps pupils identify their strengths and weaknesses and make informed decisions about their learning goals.

By integrating AI into the foreign language classroom in these ways, pupils can interact with AI directly as a personalized learning partner, enhancing their language acquisition journey and paving the way for greater fluency, confidence, and cultural understanding.

ChatGPT and Bard both emphasise the potential for AI to offer personalised learning paths, real-time language practice, language skill development, conversational language learning, immediate corrections, cultural and contextual learning, gamified language learning, and adaptive assessments. Both AIs recognise the potential of AI to provide personalised language learning experiences for students, which was mentioned repeatedly in their previous responses.

In addition, ChatGPT focuses on the opportunities for AI to serve as a real-time language practice partner, adaptive assessments, cultural and contextual learning, multimodal learning experiences, speech recognition technology, and support for diverse learners. It also emphasises the importance of a balanced approach, highlighting the

value of human interaction, and the guidance of a skilled language teacher in the language learning experience.

Moreover, Bard emphasises the opportunities for AI to offer, AI-assisted conversation practice, AI-powered grammar and vocabulary feedback, AI-generated cultural resources, AI-powered error analysis and correction, AI-powered adaptive learning (both AIs have mentioned this multiple times up to this point), AI-powered language exchange and collaboration, and AI-powered progress monitoring and assessment.

ChatGPT's and Bard's responses to the question of AI as a direct learning partner highlight the importance of real-time language practice, conversational language learning and immediate correction, all of which are interrelated. Prior to the emergence of AI, it was not possible for language learners to have constant access to native speakers for conversation or linguistic guidance. The presence of AI has improved language learning by providing learners with reliable information about their language output, offering grammatical corrections, and enabling written or oral communication with an AI (Rusmiyanto et al. 2023). Corrections are available immediately and at any time, making it easier to perfect language skills at any level, from beginner to proficient. The use of gamification in the communication with an AI, as has been noted by both ChatGPT and Bard, is an attractive aspect.

2.7 The Importance of Teaching and Learning Foreign Languages in the Future Despite the Presence of AI

With AI translation and even real-time interpreting assured (Delorme Benites 2023), there may be less need to learn foreign languages. Therefore, during the interview, the two AIs were asked whether they thought it would be worthwhile to learn foreign languages in the future:

Question 8:

Will language learning still be necessary? Now that students have instant access to content-generating AI and language-providing apps like Google Translate, will they need to learn foreign languages at all? In the future, it will be possible to interact with people of other languages without either of them speaking the other's language.

ChatGPT:

While AI and language translation apps like Google Translate offer powerful tools for communication across languages, foreign language teaching remains crucial for several reasons, and learning a foreign language is likely to continue being necessary. Here are key points to consider:

Cultural Understanding:

- Foreign language learning goes beyond

Bard:

While AI tools like language translation apps and content-generating AI are making it easier than ever to communicate with people from different cultures, foreign language teaching will still be essential for several reasons:

1. Accuracy and Fluency: AI translation tools are not always accurate, and they can sometimes produce unnatural or

just linguistic proficiency; it involves gaining insights into different cultures, traditions, and ways of thinking. This cultural understanding is essential for effective communication, collaboration, and navigating global contexts.

Complex Communication:

- While AI tools can assist in basic communication and translation, they may struggle with complex language nuances, idioms, and cultural references. Learning a foreign language enables individuals to engage in more nuanced and sophisticated communication.

Personal and Professional Development:

- Proficiency in a foreign language is often viewed as a valuable skill in personal and professional development. It opens up opportunities for international travel, cross-cultural collaboration, and career advancement in a globalized world.

Relationship Building:

- Learning a foreign language fosters stronger connections and relationships. The effort to speak another person's language is often appreciated and can contribute to building trust, empathy, and meaningful interpersonal connections.

Language as a Tool for Critical Thinking:

- Learning a foreign language enhances cognitive abilities, including critical thinking and problem-solving skills. It challenges individuals to think in different linguistic frameworks, promoting mental flexibility and creativity.

Global Citizenship:

- Foreign language learning contributes to the development of global citizens who are aware of and engaged with the broader world. It promotes a sense of empathy, tolerance, and an understanding of diverse perspectives.

Travel and Exploration:

- Proficiency in a foreign language enhances the travel experience. It allows individuals to immerse themselves in local cultures, communicate effectively while traveling, and navigate various situations more confidently.

awkward-sounding language. Human language learners, on the other hand, can develop a deeper understanding of the nuances and subtleties of a language, allowing them to express themselves more accurately and fluently.

2. Cultural Understanding: AI tools can provide access to cultural information, but they cannot replace the personal connection and empathy that human language learners develop when they immerse themselves in a different culture. By interacting with native speakers and experiencing the culture first-hand, language learners can gain a deeper understanding of the values, customs, and traditions of another society.
3. Critical Thinking and Problem-Solving Skills: While AI tools can provide immediate answers and solutions, they do not develop the critical thinking and problem-solving skills that are essential for effective communication. Language learners need to be able to analyze information, identify context, and adapt their communication accordingly.
4. Creative Expression and Innovation: AI tools can generate creative text formats, but they cannot replicate the creativity and innovation that human language learners bring to their communication. Language learners can express themselves in original and meaningful ways, using language to explore new ideas and perspectives.
5. Global Citizenship and Intercultural Communication: Language learning is not just about acquiring a new set of words and grammar rules; it's about building bridges between cultures and promoting global understanding. Language learners can develop empathy for people from different backgrounds, fostering intercultural communication and collaboration.

In the future, AI tools may play an even greater role in language education, provid-

Maintaining Language Diversity:

- Learning and preserving different languages contribute to maintaining linguistic diversity. Each language carries unique cultural and historical significance, and language education plays a role in preserving this diversity.

Effective Communication in Various Contexts:

- AI tools may struggle to adapt to specific communication contexts, such as professional settings, academic environments, or diplomatic exchanges. Learning a foreign language equips individuals to communicate effectively in diverse situations.

Learning Beyond Translation:

- Language learning involves more than translation. It includes grasping the nuances of expression, understanding cultural subtleties, and acquiring the ability to use language creatively. These aspects go beyond the capabilities of current AI tools.

While AI can assist in language-related tasks, the human element in communication, cultural understanding, and the ability to navigate complex social interactions remains crucial. Foreign language teaching continues to provide a holistic approach to language learning, emphasizing not only linguistic proficiency but also the broader skills and knowledge that come with understanding and using a foreign language. As technology evolves, the role of language teachers may adapt, incorporating AI tools to enhance the learning experience while maintaining the importance of human guidance and cultural context in language education.

ChatGPT and Bard agree that foreign language teaching will still be necessary, despite the availability of AI tools like Google Translate, DeepL and other comparable apps. They both emphasise the importance of cultural understanding, language as a tool for critical thinking, global citizenship, the human element in communication, and effective communication in various contexts.

ChatGPT highlights personal and professional development, relationship building, travel and exploration, maintaining language diversity and the fact that language learning goes beyond translation.

Bard adds the following points: accuracy and fluency, creative expression and innovation, and the future role of AI in language education.

ing personalized learning experiences, interactive exercises, and access to native speakers. However, human language teachers will still be needed to provide the human connection, cultural insights, critical thinking skills, and creativity that are essential for effective communication and understanding in an increasingly globalized world.

In conclusion, while AI tools are making it easier to communicate with people from different languages, foreign language teaching will remain essential for developing the skills and knowledge that are necessary for effective communication, cultural understanding, and global citizenship. AI tools can complement human language teaching, but they cannot replace the human element that is crucial for truly understanding and appreciating other cultures.

The points mentioned by both AIs clearly indicate the most important aspects of this question, i.e. the human element in communication and language learning. Although AI tools can aid in language-related tasks, they cannot substitute the cultural understanding, empathy, and meaningful connections that come with learning a foreign language. Language teachers play and will continue playing a crucial role in providing guidance, cultural context, and the broader skills and knowledge that go beyond linguistic proficiency. AI tools can enhance the learning experience, but the human element remains essential for truly understanding and appreciating other cultures. While this analysis is realistic from today's point of view, it is important to recognise that the future is uncertain, especially as AI continues to learn exponentially every day.

2.8 The Impact of AI on Student Assessment

With AI's ability to correct language errors, improve style and even generate content, assessing student performance is becoming increasingly difficult (Berthele & Udry 2023, Delorme Benites 2023). For this reason, the impact of AI on student assessment was covered in the next question:

Question 9:

How will AI affect student assessment? For example, if students are asked to write an English essay, they can have their work done by you. If they have to give presentations, they can have their complete presentations done by AI, including perfect content and correct language, to give just two examples. So how do you assess the performance of individual students when there are you and other AIs in the world?

ChatGPT:

The integration of AI in student assessment introduces both opportunities and challenges. While AI can assist in certain aspects of assessment, there are considerations to ensure fair, meaningful, and comprehensive evaluation of individual students. Here are some consequences and considerations regarding student assessment in the presence of AI:

Opportunities:

Automated Grading:

- AI can automate the grading of objective assessments, such as multiple-choice questions, providing instant feedback to students and saving teachers time on routine grading tasks.

Language Proficiency Evaluation:

- AI-driven tools can assess language proficiency, including grammar, vocabulary,

Bard:

The emergence of AI has the potential to reshape student assessment in several ways. On the one hand, AI tools can automate many tasks that are currently done manually by teachers, such as grading essays, providing feedback, and generating rubrics. This can free up teachers' time to focus on more personalized instruction and support for students.

On the other hand, AI tools also raise concerns about fairness and validity in assessment. For example, if students can use AI to generate their essays or presentations, it can be difficult to assess their true understanding of the material. Additionally, AI tools may not always be able to capture the nuances of human language and creativity, which can affect the assessment of essays, creative writing, and other tasks that require

and writing skills. Automated language assessment can provide insights into a student's language abilities, helping tailor instruction to individual needs.

Data-Driven Insights:

- AI analytics can generate data-driven insights into student performance trends, identifying areas of strength and weakness. This information can inform instructional strategies and interventions to enhance learning outcomes.

Adaptive Assessments:

- AI can adapt assessments based on individual student performance, providing more challenging questions for high-performing students and additional support for those who may be struggling. This adaptive approach tailors assessments to the unique needs of each student.

Challenges and Considerations:

Authenticity and Originality:

- The ease with which students can access AI-generated content raises concerns about the authenticity and originality of their work. Teachers must implement strategies to ensure that assessments reflect the students' own understanding and effort.

Complex Problem-Solving Evaluation:

- AI may struggle to assess complex problem-solving skills that require critical thinking, creativity, and application of knowledge in unique ways. Assessments that involve higher-order thinking may still require human evaluation.

Ethical Use of AI:

- There is a need for educating students about the ethical use of AI in assessments. Emphasizing the importance of integrity, original thinking, and responsible technology use is crucial.

Combating Plagiarism:

- Teachers need to employ plagiarism detection tools and strategies to identify instances where students may submit AI-generated or copied content. Clear policies and consequences for academic dishonesty are essential.

these skills.

To address these challenges, educators and developers are exploring new methods for using AI in assessment that are more fair and valid. These methods include:

- Using AI to identify patterns in student work, such as common errors or strengths. This information can be used to provide targeted feedback to students and help them identify areas for improvement.
- Developing AI models that are trained on large datasets of student work to learn how to identify different levels of proficiency. This can help to ensure that assessments are more objective and consistent.
- Using AI to generate realistic but flawed prompts or tasks that students cannot easily replicate with AI tools. This can help to assess students' ability to think critically and creatively.

In addition to these technical solutions, educators can also use a variety of strategies to mitigate the potential negative impacts of AI on student assessment:

- Educating students about the limitations of AI and encouraging them to use it responsibly. This can help to ensure that students understand that AI is a tool to assist their learning, not a replacement for it.
- Integrating AI tools into assessment in a way that does not replace the human element of teaching. Teachers should continue to play a central role in assessing student work, providing feedback, and creating engaging learning experiences.
- Using AI tools to complement other assessment methods, such as formative assessments, portfolios, and teacher observation. This can help to provide a more holistic assessment of student learning.

By carefully considering the potential bene-

Holistic Evaluation:

- AI may focus on specific aspects of student performance, such as language proficiency or objective knowledge. However, holistic evaluation should also consider other skills, including interpersonal skills, communication, and collaborative abilities that AI may not easily assess.

fits and risks of AI, educators can harness its power to enhance student assessment while maintaining the integrity and fairness of the process.

Adaptation to Subjectivity:

- Some assessments, such as essays, presentations, or projects, involve subjective evaluation that considers creativity, expression, and unique perspectives. Subjective aspects may be challenging for AI to assess accurately.

Preparation for Real-World Challenges:

- Assessments should prepare students for real-world challenges where collaboration, critical thinking, and problem-solving are essential. Balancing AI-driven assessments with tasks that mirror real-world expectations is important.

Individualized Feedback:

- While AI can provide automated feedback, the personal touch of individualized feedback from teachers remains important. Teachers play a key role in offering constructive feedback that addresses students' specific strengths and areas for improvement.

In summary, while AI can streamline certain aspects of student assessment, it is essential to maintain a balanced approach that combines the strengths of AI with the nuanced and holistic evaluation provided by human educators. Establishing clear guidelines, fostering ethical use, and leveraging AI as a tool to support rather than replace human judgment are key considerations for the future of student assessment

Both Chat GPT and Bard discuss the opportunities and challenges associated with the integration of AI in student assessment. Here, neither of the AIs specifically refer to language assessment. They acknowledge that AI can automate certain aspects of assessment, such as grading objective assessments and evaluating language proficiency. Additionally, both highlight the potential for AI to provide feedback on the importance of authenticity and holistic evaluation in the presence of AI.

Chat GPT provides a comprehensive list of opportunities and challenges related to AI in student assessment. The opportunities mentioned include automated grading,

language proficiency evaluation, data-driven insights, and adaptive assessments. The challenges and considerations discussed include authenticity and originality, complex problem-solving evaluation, ethical use of AI, combating plagiarism, holistic evaluation, adaptation to subjectivity, preparation for real-world challenges, and individualised feedback.

Bard mentions the automation of tasks such as grading essays, and generating rubrics. The answer highlights concerns about fairness and validity in assessment when students use AI to generate their work. Bard suggests using AI to identify patterns in student work, developing AI models trained on large datasets, and generating realistic but flawed prompts or tasks. Bard's answer also emphasises the importance of educating students about the limitations of AI, integrating AI tools without replacing the human element, and using AI to complement other assessment methods.

Overall, both ChatGPT and Bard answer the problem raised in the question, i.e. that in the presence of AI, student performance is extremely difficult, if not impossible, to assess, only partially, by dwelling on the advantages of AI in the area of student assessment. Bard explores this issue in more depth and tries to make fruitful suggestions, such as formative assessment and teacher observation. That said, the most important point surely is the need for a balanced approach that combines the strengths of AI with the nuanced and holistic evaluation provided by human examiners. It is only if teachers give away their power and competence to assess students' (language) performance: teachers not only play a crucial role in providing constructive feedback that addresses students' specific strengths and areas for improvement, they may also be the only ones to set the assessment criteria and the ways in which they can be met. AI can only support the assessment work of human beings. Teachers must remain the ultimate decision-makers and not leave their students to the power of AI. This is a crucial point to remember for the future.

The interview with ChatGPT and Bard concluded with a discussion of the potential impact of AI on language methodology.

2.9 Shifting Significance: The Impact of AI on Foreign Language Methodology

The question below asks about the areas of language methodology that may gain or lose importance with the emergence of AI:

Question 10:

Which areas of foreign language methodology will become more important and which will become less important with the advent of artificial intelligence?

ChatGPT:

The integration of artificial intelligence (AI) into foreign language teaching introduces transformative possibilities in language methodology. The impact on various areas can be

Bard:

The advent of artificial intelligence (AI) is rapidly transforming foreign language methodology. While AI will not replace the role of teachers, it will significantly impact the way

nuanced, with some becoming more crucial and others potentially less emphasized.

Areas that may become more important:

Adaptive Learning Strategies:

- With AI's ability to assess individual learner needs and adapt content accordingly, personalized learning strategies will gain prominence. Tailoring instruction to students' proficiency levels, learning styles, and pace will become a central focus, enhancing overall effectiveness.

Data-Driven Instruction:

- AI's capacity to analyze vast amounts of data can empower educators with valuable insights into student performance and learning patterns. Utilizing data-driven approaches, teachers can make informed decisions, identifying areas of improvement and customizing lesson plans to address specific challenges.

Task-Based Language Teaching (TBLT):

- AI can facilitate immersive, task-based language teaching through interactive simulations and real-world scenarios. Language learners can engage in practical tasks, such as virtual conversations or problem-solving exercises, fostering application-oriented language skills.

Multimodal Learning Experiences:

- AI technologies, including virtual reality (VR) and augmented reality (AR), can create immersive and multimodal learning experiences. Incorporating these technologies into language instruction can enhance comprehension and cultural understanding, making lessons more engaging and memorable.

Continuous Assessment and Feedback:

- AI-driven continuous assessment tools can provide instant feedback to learners, enabling timely correction and reinforcement. This real-time feedback loop promotes a dynamic learning environment, allowing students to track their progress and address language challenges promptly.

Areas that may become less emphasized:

Rote Memorization:

- AI's focus on adaptive learning and contextual understanding may reduce the emphasis on rote memorization of vocabulary

languages are taught and learned.

Areas of foreign language methodology that will become more important with AI

- Human interaction and cultural immersion: AI cannot replace the human element in language learning, such as the ability to provide personalized feedback and engage in meaningful interactions with learners. AI systems can, however, be used to create virtual environments that simulate real-world interactions, providing learners with opportunities to practice their language skills in immersive environments.
- Dynamic assessment and personalized instruction: AI can be used to assess learners' individual needs and strengths, tailoring instruction to their specific levels and learning styles. This personalized approach can help learners to progress more quickly and effectively.
- Real-time feedback and correction: AI systems can provide immediate feedback on learners' language production, enabling them to identify and correct their mistakes. This real-time feedback can help learners to develop their language skills more rapidly.
- Adaptive learning: AI can be used to create adaptive learning systems that adjust to learners' progress, providing them with the most challenging and appropriate material for their level of proficiency. This adaptive approach can help learners to reach their full potential.

Areas of foreign language methodology that will become less important with AI

- Traditional classroom teaching: AI systems can automate many of the tasks that teachers traditionally perform, such as providing grammar rules, translating text, and correcting quizzes. This automation could free up teachers to focus on more personalized and creative teaching methods.
- Mechanical drills and rote memorization: AI can be used to create more engaging and interactive language learning exer-

and grammar rules. Learners can benefit from more dynamic and context-driven approaches rather than relying solely on memorization.

Traditional Classroom Dynamics:

- The traditional role of the teacher as the primary source of information may evolve. With AI serving as a resource for content delivery, teachers may increasingly transition towards facilitating discussions, guiding collaborative projects, and providing individualized support based on AI-generated insights.

Static Teaching Materials:

- Static, one-size-fits-all teaching materials may become less prevalent as AI enables the creation and recommendation of dynamic and adaptive content. Educators may shift towards utilizing a variety of multimedia resources, adjusting materials based on real-time learner needs.

Uniform Instructional Pace:

- AI's adaptive learning capabilities challenge the idea of a uniform instructional pace for all students. Traditional methods that assume a fixed progression rate may be reconsidered, allowing for more flexibility and individualization in pacing to accommodate diverse learning speeds.

Considerations:

It's important to note that while AI can enhance various aspects of language methodology, human expertise remains crucial. Teachers play a pivotal role in guiding and supporting learners, fostering critical thinking, and navigating the ethical considerations associated with AI in education. The effective integration of AI should complement, not replace, the rich pedagogical insights that human educators bring to the language learning experience. As the field evolves, a balanced and collaborative approach between AI and human instructors will likely yield the most effective results.

For both ChatGPT and Bard, the areas of adaptive learning strategies, personalised instruction, real-time feedback and correction, and dynamic and continuous assessment will become increasingly important with the advent of artificial intelligence.

ChatGPT also sees these areas as gaining in importance due to AI: data-driven instruction, task-based language teaching, and multimodal learning experiences.

cises, such as role-playing games and virtual simulations. This increased engagement can help learners to retain information more effectively.

- Repetitive practice: AI can be used to provide learners with personalized feedback and correction on their language production, reducing the need for repetitive practice. This can free up learners to focus on more productive and engaging language learning activities.

Overall, the advent of AI is likely to revolutionize foreign language methodology. AI systems can be used to automate many of the tasks that teachers traditionally perform, provide learners with personalized feedback and correction, and create more engaging and interactive language learning experiences. As AI systems become more sophisticated, they will continue to play an increasingly important role in foreign language education.

For Bard, these areas will become more important: human interaction and cultural immersion, and dynamic assessment and personalised instruction.

Among the areas mentioned by both AIs, adaptive learning strategies and dynamic and continuous assessment are certainly the most important ones. It is no coincidence that personalisation, which also means individualisation, was mentioned repeatedly by both AIs, especially when such chatbots are used as active learning partners for students.

Assessment, at the other end of the learning continuum, will certainly change more than ever before, with forms of testing such as presentations, homewritten essays and, at university level, term papers and bachelor and master theses becoming obsolete as they can already be almost entirely prepared by AI.

For both AIs, the following areas will, not surprisingly, be less emphasised: traditional classroom teaching and rote memorisation.

ChatGPT adds static teaching materials and a uniform pace of teaching. Bardt, on the other hand, considers that repetitive practice will be negligible in the future.

While traditional classroom teaching has been declining in importance for some time, with task-based learning becoming more prevalent, this trend will continue and accelerate now that teachers and students have access to AI chatbots. This assessment is based not only on the methodological possibilities offered by AI, but also on motivational aspects: students may be more open to interacting with AI than to listening to some teachers' monologues.

3 Conclusions

The interview presented and analysed in this article has yielded significant results. These results will now be presented, with some limitations taken into consideration.

Both AI systems have a tendency to repeat certain concepts, such as the personalisation of learning, in different contexts. While this repetition can reinforce key ideas, it also limits the diversity of perspectives presented.

Moreover, the AI-generated answers demonstrate a theoretical nature, lacking concrete examples. It should be noted that the AIs were not explicitly requested to provide examples. However, a thorough reflection on these responses will allow for valuable insights to enhance understanding of the topic.

At times, the responses provided by the two AIs are not exclusively related to foreign language teaching, but rather comprise a wider range of topics. While this may somewhat diminish the validity of the results, it also highlights the relevance of several points discussed for other subjects taught in schools and universities.

It is important to note that the estimations and analyses presented here should not be the only source of information. Teachers should supplement these insights with their own expertise, pedagogical approaches, and additional resources. This inter-

view with ChatGPT and Bard can, however, provide teachers with supplementary insights into the matter and complement their own ideas, as well as ideas presented by human experts in the respective fields.

This interview documents the current state of the art displayed by AIs. A comparison between the present state of the art and that of AI in the future will be worthwhile. It is expected that future AIs will be even more advanced and better informed than they are now.

A functional approach to identifying the key aspects of foreign language methodology in the era of AI resides in comparing the common answers generated by two relevant AI systems, as we have done in our analysis. These aspects are listed below:

Areas	Points Mentioned by ChatGPT and Bard
AI as a paradigm shift in foreign language teaching and methodology	Personalisation Immersive language exposure
Areas most affected by AI	Personalisation Interaction
The role of the language teacher	Positive aspects: <ul style="list-style-type: none"> • Personalised learning experiences Negative aspects: <ul style="list-style-type: none"> • Ethical aspects • Potential overemphasis on technology • Depersonalisation of education • Possible replacement of teachers by AI
The language teacher as the authority in the classroom	Importance of teachers' expertise and the human element in the learning process Complementary nature of AI and the teacher
Potential benefits for lesson preparation	Personalised content recommendations Adaptive learning platforms
The role of the language student	Adaptive learning experiences
AI as a learning partner for students	Real-time language practice Conversational language learning Immediate correction
The importance of teaching and learning foreign languages in the future	The human element in communication and language learning

The Impact of AI on Student Assessment	Difficulties in Assessing Student Performance
The Impact of AI on Foreign Language Methodology	Adaptive learning strategies Dynamic and continuous assessment

Table 1: Key Aspects of AI in Foreign Language Teaching

Although ChatGPT's and Bard's answers are informative and insightful, it is important to acknowledge their limitations. Both AIs operate within their own matrix, but demonstrate impressive depth in their handling of interview questions. They address an informed audience rather than a novice audience. Therefore, instructors may find the information provided by these AIs to be a valuable supplement to their own knowledge and experience.

The two AIs interviewed take a broad view of language teaching and offer a varied analysis. Their assessments may overlap with or go beyond those of human experts. Their judgements can be seen as relevant and realistic, even if they sometimes seem a little idealistic. Finally, this interview with ChatGPT and Bard has shown that AI systems can be a valuable partner to language instructors once they turn to them with questions of a theoretical or practical nature.

References

Adams, C. et al. (2023). Ethical principles for artificial intelligence in K-12 education. In: *Computers and Education: Artificial Intelligence 4*, 100131 (<https://doi.org/10.1016/j.caeai.2023.100131>; 15-12-2023).

Belda-Medina, José & José Ramón Calvo-Ferrer (2022). Using Chatbots as AI Conversational Partners in Language Learning. In: *Applied Sciences 12* (17), 8427 (doi: 10.3390/app12178427; 15-12-2023).

Berthele, Raphael & Isabelle Udry (2023). Welche fremdsprachlichen Lernziele der Schulen können mit digitalen Tools aber ohne Lernen erreicht werden? Simply playing the ostrich will not help in the long run. In: *Zeitschrift für Interkulturellen Fremdsprachenunterricht 28* (1) (doi: 10.48694/zif.3519; 27-12-2023)

Culbertson, Jennifer (2023). Artificial Language Learning. In: *PsyArXiv*, 24 Mar. 2023. (<https://osf.io/preprints/psyarxiv/vg4mk>; 15-12-2023).

Chisega-Negrilă, Ana-Maria (2023). The New Revolution in Language Learning: The Power of Artificial Intelligence and Education 4.0. In: *Bulletin of "Carol I" National Defense University 12* (2), 16-27 (doi: 10.53477/2284-9378-23-17; 15-12-2023).

Crompton, H., & D. Burke (2023). Artificial intelligence in higher education: the state of the field. In: *International Journal of Educational Technology in Higher Education 20* (1), 1-22 (DOI:10.1186/s41239-023-00392-8; 15-12-2023).

- Delorme Benites, Alice (2023). Wenn die Künstliche Intelligenz die Schulbank drückt : Einblicke in die Funktionsweise, Potenziale und Gefahren von KI im Fremdsprachenunterricht. *Internationale Delegiertenkonferenz IDK „Mensch und Maschine beim Deutschlehren und -lernen: ein Wechselverhältnis“*, Winterthur, Schweiz, 14.-17. August 2023.
- Hyangeun, Ji et al. (2022). A systematic review of conversational AI in language education: focusing on the collaboration with human teachers. In: *Journal of Research on Technology in Education* 55 (1), 48-63 (doi: 10.1080/15391523.2022.2142873; 12-12-2023).
- Hockly, Nicky (2023). Artificial Intelligence in English Language Teaching: The Good, the Bad and the Ugly. In: *RELC Journal* 54 (2) (doi: 10.1177/00336882231168504; 12-12-2023).
- Ji, Hyangeun et al. (2022). A systematic review of conversational AI in language education: focusing on the collaboration with human teachers. In: *Journal of research on technology in education*, 55 (1), 48-63 (doi: 10.1080/15391523.2022.2142873; 15-12-2023).
- Kushmar, Lesia et al. (2022). Artificial Intelligence in Language Learning: What Are We Afraid of. In: *Arab World English Journal* 8, 262-273 (doi: 10.24093/awej/call8.18; 15-12-2023).
- Lai, Arthur (2016). Mobile immersion: an experiment using mobile instant messenger to support second-language learning. *Interactive Learning Environments*. In: *Interactive Learning Environments* 24 (2), 277-290 (10.1080/10494820.2015.1113706; 15-12-2023).
- Liu, Mingyang (2023). Exploring the Application of Artificial Intelligence in Foreign Language Teaching: Challenges and Future Development. SHS web of conferences 168, 03025 (doi: 10.1051/shsconf/202316803025; 12-12-2023).
- Miao, Fengchun & Wayne Holmes (2023). *Guidance for Generative AI in Education and Research*. Paris: UNESCO (<https://unesdoc.unesco.org/ark:/48223/pf00003>; 27.12.2023).
- Mollick, Ethan R. & Mollick, Lilach (2023). Using AI to Implement Effective Teaching Strategies in Classrooms: Five Strategies, Including Prompts. In: *The Wharton School Research Paper* (<http://dx.doi.org/10.2139/ssrn.4391243>; 10-12-2023).
- Motlagh, N. Y. et al. (2023). The Impact of Artificial Intelligence on the Evolution of Digital Education: A Comparative Study of OpenAI Text Generation Tools including ChatGPT, Bing Chat, Bard, and Ernie. In: *arXiv:2309.02029* (<https://doi.org/10.48550/arXiv.2309.02029>; 19-12-2023).
- Pokrivčáková, Silvia (2019). Preparing teachers for the application of AI-powered technologies in foreign language education. In: *Journal of Language and Cultural Education* 7 (3), 135-153 (doi: 10.2478/JOLACE-2019-0025; 15-12-2023).
- Rugaiyah, Rugaiyah (2023). The Potential of Artificial Intelligence in Improving Linguistic Competence: A Systematic Literature Review. In: *Arkus* 9 (2), 319-324 (doi: 10.37275/arkus.v9i2.313; 12-12-2023).
- Rusmiyanto et al. (2023): The Role Of Artificial Intelligence (AI) In Developing English Language Learner's Communication Skills. In: *Journal on Education* 6 (1) 750-757 (2990-Article Text-6887-1-10-20230525; 12-12-2023).
- Sotomayor Cantos, Karina Fernanda et al. (2023). Artificial Intelligence in Language Teach-

- ing and Learning. In: *Ciencia Latina Revista – Científica Multidisciplinar* 7 (4), 5629-5638 (<https://ciencialatina.org/index.php/cienciala/article/view/7368/111111>; 12-12-2023).
- Vogt, Katrin & Nicole Flindt (2023). Artificial intelligence and the future of language teacher education. A critical review of the use of AI tools in the foreign language classroom. In: Hohaus, P. & J.-F. Heeren (Eds.): *Innovating the future of teacher education*. Leiden: Brill, 179-199. (https://doi.org/10.1163.9789004678545_008; 15-12-2023).
- Wikipedia (2023). *ChatGPT*. (<https://en.wikipedia.org/wiki/ChatGPT>; 29-12-2023).
- Wikipedia (2023a). *Bard (chatbot)*. ([https://en.wikipedia.org/wiki/Bard_\(chatbot\)](https://en.wikipedia.org/wiki/Bard_(chatbot)); 29-12-2023).
- Winaitham, Wichura (2022). The Scientific Review of AI Functions of Enhancement English Learning and Teaching. In: *IEEE*, 148-152 (doi: 10.1109/ICTC55196.2022.9952632; 12-12-2023).
- Yang, H. & S. Kyun. (2022). The Current Research Trend of Artificial Intelligence in Language Learning: A Systematic Empirical Literature Review from an Activity Theory Perspective. In: *Australasian Journal of Educational Technology* 38 (5), 180-181 (doi:10.14742/ajet.7492; 15-12-2023).

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Interview

10 Questions for Professor David Crystal



(Photo courtesy of David Crystal)

Professor David Crystal, the world-renowned British linguist, author, and educationalist, has made significant contributions to the field of linguistics, especially in the study of English language. Presently Honorary Professor of Linguistics at Bangor University, he has written, co-written, and edited more than 120 books on a diverse range of topics. He has also published multiple books on linguistics and the English language for general readers, which use a combination of graphics and short essays to present technical material in an easily understandable way.

Born on July 6, 1941, in Lisburn, Northern Ireland, he spent his early years in Holyhead, North Wales. His passion for language was evident from an early age. In 1966, he obtained his doctorate in English studies from the University of London.

David Crystal's expertise extends to various aspects of language, including phonetics, phonology, morphology, syntax, semantics, and pragmatics. He has published extensively on these topics, producing numerous books and articles that have gained worldwide recognition. His works demystify language complexities, making them accessible to a broad audience, including educators, students, and the general public.

David Crystal's passion for language extends beyond academic pursuits. He has been actively involved in promoting language awareness and fostering public appreciation of linguistics. He has chaired numerous international conferences, served on editorial boards of prominent linguistics journals, and regularly contributes to radio and television programs. His engaging style and insightful comment-

ary have made him a popular figure in the linguistic community.

His contributions to Shakespeare studies are particularly noteworthy. He has written extensively on the language of Shakespeare's plays, providing insights into their historical context, linguistic nuances, and enduring impact on English. His works, in several cases together with his son Ben, have contributed to a greater understanding of Shakespeare's genius and the profound influence of his language on the development of English.

David Crystal's involvement in Shakespeare productions has further complemented his academic endeavours. He has served as a consultant for various theatre productions, providing expert guidance on the linguistic authenticity and historical accuracy of the language used. His insights have helped to ensure that Shakespeare's works are performed with sensitivity and authenticity, preserving their linguistic richness and cultural significance.

JLLT: Professor Crystal, without exaggeration, it can be said that you are one of the leading researchers in linguistics and the communication of linguistic findings to the general public. You have agreed to answer ten highly relevant questions about your domain for JLLT, which will allow our readers to gain insight into the world of language and linguistics and be inspired by your viewpoints and approaches. Our first question refers to linguistics itself.

What are the practical applications of linguistic research in areas such as language teaching, from your perspective?

David Crystal: Linguistics is the science of language study - so anyone who studies the facts of language in a systematic and objective way is, in effect, doing linguistics. Language learners are especially likely to engage with the subject, because their task makes them aware of the differences between their first language and the language(s) they are learning. As soon as they try to understand the differences, and think about why they are there, they are doing linguistics. And once they start thinking about one or two languages, it's a short step to start thinking about them all, and wondering about what generalisations might be made about the human faculty of language. And suddenly they're in the world of De Saussure, Chomsky, et al.

The notion of 'practical application' sends us in a different direction: *applied* linguistics. This is the domain which focuses specifically on the challenges or problems facing people who have to use language, especially professionally, and brings the theories, methods, and findings of linguistics to their aid. There are many areas of everyday life that have been helped in this way, as any applied linguistics journal (such as JLLT) or conference illustrates. For instance, I spent many years applying findings from the linguistic description of English and child language acquisition to the field of speech pathology, and this approach has since been taken up and applied to over 30 other languages.¹ And several more years were devoted to applying semantics, pragmatics, and other branches of linguistics to investigating the prob-

lems raised by internet search-engines.² And of course, in language teaching and learning there's now a huge literature on those areas that have been illuminated by a linguistic perspective.

Language teachers, above all, need the facts of a language to be able to teach them; and because language changes so much over time, and varies so much from place to place, it can be difficult to keep up with what is happening - which is where descriptive linguistic studies play an important part. But it's not just the facts of a language that are relevant: it's the *explanation* of the facts that teachers find useful, as it helps them answer the questions their students come up with. Why does this particular feature of grammar, pronunciation, spelling, punctuation... work in the way it does? Not all the answers are known, but it is linguistics that has provided many of the answers that we already have. The challenge for applied linguists, of course, is to find ways of explaining the facts in a way that will be understood by teachers with less awareness of linguistic terminology. Applied linguists are always finding they are having to tell half-truths – omitting aspects of the explanation that they would make if they were talking to fellow-linguists. But, at a basic descriptive level, there's no barrier to appreciating the findings about usage presented by – for example – the field of corpus linguistics, especially when they inform about ongoing language change.

An illustration is the way in which some English modal verbs are currently changing their use. Corpora³ show very clearly that *shall*, *must*, and *may* have all had a significant reduction in frequency of use since the 1980s, especially in American English, in both speech and writing. They've been replaced by semi-modal constructions, such as *have to*, *be going to*, and *want to* - in colloquial speech *hafta*, *gonna*, and *wanna*. You can feel the difference if you compare *must* and *have to* in expressing an obligation. *You must be more careful* sounds authoritarian: 'I'm telling you'. *You have to be more careful* is more sympathetic: 'I'm worried about you'. There seems to be a lessening of the strength of a commitment. Is this part of a social and psychological change taking place towards equality and seeing the other point of view - a less egocentric view of the world? It's the kind of talking point that can add extra interest to a lesson on this area of grammar.

JLLT: As someone who has carried out research into language and the internet, could you elaborate on the ways in which online communication platforms have influenced language, culture, and identity?

David Crystal: It's too early to say what the long-term influence could be. After all, the internet has only become part of everyday lives since the mid-1990s - 30 years or so, which is an eye-blink in the history of language. And the field changes so rapidly that it's difficult to make linguistic generalisations with any confidence. The example that always comes to my mind is Twitter, which began in 2006 as an online short-messaging service. Users were given a prompt ('What are you doing?') which elicited replies that favoured present tenses and first-person pronouns, and these features would have been a prominent part of any generalisation about the linguistic character of that medium. But in November 2009, Twitter changed its prompt (to 'What's happening?'), which immediately elicited other pronominal forms and tenses, so the earlier generalisation was now of interest only to historical linguists! Soon after, other features emerged, such as the hashtag, whose function also went through an evolu-

tion, from originally being a classificatory tool (*#Hamlet* would collate all messages with that label) to one that identified messages felt to be of special importance to the sender - and by implication, to any readers (*#I'm seeing Hamlet this week*). Other changes, such as to the permitted length of a message, abbreviatory conventions for links to websites, and new monitoring criteria, continue to demonstrate the evolving linguistic character of the medium. And it remains to be seen what impact artificial intelligence will have (see further below).

Every platform I explored brought to light similar issues - and here it should be borne in mind that my work in this area was in the 1990s and early 2000s, so I have nothing to say about what may be going on in more recent social media. I have never ticked or tocked, for example: that is for a new generation of linguists to explore. But I wouldn't expect the findings to be radically different from those that emerged in the early days of electronic communication. Language, culture, and identity? Identity was there from the outset - not only in the technological character of the various media, with their identifiable interactive and visual conventions, but in the way individual users introduced linguistic idiosyncrasies, such as nonstandard spellings, new abbreviations, novel upper-case and lower-case choices, and minimal or exaggerated punctuation - all eagerly exploited by others in their online community. Culture was a part of this, seen notably in code-mixing, where a chatroom might, for example, contain a high proportion of Spanish/English mixes or a combination of standard English and local dialect vocabulary (see further below).

Nor do I expect there to be any change in the way the internet has influenced the form of individual languages - which so far has been hardly at all. Electronic communication has of course provided us with many new methods of communicating, such as hypertext linking, cutting and pasting, and the ability to interact simultaneously with several correspondents, but the actual amount of linguistic change has hitherto been minimal.⁴ We've seen several distinctive new styles, as in blogs, short messaging, and email forms of address (*Hi dave*). A few thousand new words have been added to the language (*blog, blogger, blogosphere, bloglessness...*) along with a sprinkling of abbreviations (such as *LOL* - but not as many as people think). Grammar hasn't changed at all, despite a couple of short-lived morphological innovations in the 1990s, such as extending the use of the rare *-en* plural (as in *oxen*) to new items (as in *VAXen* for more than one VAX computer). And even the more noticeable orthographic developments, such as the use of multiple punctuation marks (*really????!!!*), haven't radically changed the graphology. In short, the language we use online now is virtually the same as the language that was being used before the internet arrived. Any impression to the contrary is the result of an over-reaction to the early novelties of internet expression. People were struck by the new features, not realising that many of these were temporary fashions that would leave no permanent footprint; for example, most of the abbreviations that were popular in the early days of text-messaging have now disappeared. What we have seen, then, is an increase in the stylistic richness of language - as with any new technology. We saw the same sort of growth in mediums of expression (new vocabulary, genres, and so on) when printing, the telephone, and broadcasting arrived.

I doubt whether the latest technological developments are likely to alter this scenario, but it's early days, so we must wait and see. The internet has hitherto been a predominantly graphic medium, and is adapting to a medium in which spoken commu-

nication will be pre-eminent. What happens to speech in such circumstances? There are changes, as has already been noted in relation to platforms such as Zoom, where the lack of simultaneous feedback (the use of reaction signals, such as *oh? yes, really?, mhm...*) has made users adapt their conversational strategy, but it's too soon to say whether these changes will be long-lasting, as people become more experienced in using the medium. Similarly, spoken interaction with computers – including car navigation systems, phone answering services (*press 1 for..., press 2 for...*), computer dictation, oral translation devices (such as Babelfish), and digital assistants (such as Siri) – is at a primitive stage, and we have to learn new communicative strategies to elicit acceptable responses, such as speaking more slowly or moderating a broad regional accent; but these will become less necessary as the systems become more sophisticated.

Gaining that sophistication is another area where linguistic awareness can make a major contribution. What accent should we give a robot? Early studies suggest that the factors involved are the same as those already noted in sociolinguistic studies, such as accommodation. In one project, people reacted more positively to a robot giving medical advice when the machine spoke in their regional accent.⁵ But there are many domains awaiting research answers, such as why car drivers find some voices more comfortable than others, when their navigation system gives them instructions. And it will be interesting to see if artificial intelligence alters these scenarios. Again, I think it unlikely. AI is fed by existing language data, so it will do no more than hold a mirror up to what is already 'out there'. But it's worth pointing out that the linguistic character of that mirror will be influenced by the location of the large companies investing in AI. If most of these are American, for example, we will see more American English (spelling, punctuation, vocabulary, grammar) in contexts where traditionally other dialects would be usual. And it remains to be seen whether other languages than English will develop an AI presence comparable to what we have seen so far in the internet, which has become an increasingly multilingual medium over the past 30 years. When the internet began, the only language with a significant presence was English. That language is still the dominant voice – reflecting the global situation, which I'll discuss shortly – but around 500 languages have a noticeable presence now,⁶ and perhaps another thousand are dipping their linguistic toes into the internet water, including (especially in social media) several minority and endangered languages. But with over 6000 languages in the world, and an appreciable but unknown number of dialects, there is a long way to go before the electronic world replicates the linguistic diversity of the planet.

JLLT: You have explored the concept of 'language death' and efforts to revitalise endangered languages. What progress or challenges have you observed in language preservation efforts, and what role does linguistics play in this context?

David Crystal: I should preface my response by saying that this 'exploration' has been indirect: I've never personally carried out 'field linguistics' of the kind that many linguists spend their lives doing, often in challenging conditions. My role has been to stand on their shoulders and present their work to a readership who otherwise might not be aware of (a) the crisis facing the world's linguistic diversity, and (b) what linguists are doing to document and (where possible) revitalise endangered languages.

The primary role is of course documentation, with the clock ticking, especially in relation to languages where there's little or no intergenerational transmission, so that good linguistic descriptions are needed as a matter of urgency. This sounds like a straightforward matter – the kind of descriptive task that a linguist might carry out, into any language, working from the comfort of an office or home computer and library. The main message from endangerment studies over the past twenty years has been that the tasks of documentation and revitalisation raise issues that no linguist working happily on syntax in Old English is ever likely to encounter. The papers in recent collections have begun to elucidate these issues, and to introduce a new realism in the subject which was hardly ever present in the 1990s.⁷

One talks about 'languages' dying' but it is last speakers who actually die, and the task of recording their speech in a sensitive, responsible, and rewarding way has been one of the challenges. Another has been the recognition of the social and political realities that surround speakers. There may be personal and tribal conflicts of interest within a community, economic issues, and often radically different views about what is needed to enable a language to survive. There will be community sensitivities, as elders may not wish all of its knowledge to be made available to outsiders. Individual linguists, with limited time and money, can't record everything, so decisions have to be made about priorities: what variety of the language is to be the primary focus - or varieties, in the case of languages where there is systematic variation between groups, such as male and female speech.

The responses of an informant need to be accepted with caution, as often native speakers are poor at giving accurate cultural descriptions or definitions, especially when the entity is one, such as the description of a plant and its properties, that requires a degree of botanical specificity. How many of us would be able to give a precise description of a plant if asked to do so by an enquiring linguist? Lexicographers know how difficult it is to come up with clear definitions of lexical items. So one of the realisations in recent years is that linguists should not work alone, in documenting an endangered language, but need to work with botanists, zoologists, climatologists, pharmacologists, and others (see further below). In other words, there needs to be synergy between linguistic and encyclopaedic specialisms, if such notions as 'knowledge legacy' and 'cultural identity' are to be fruitfully explored. And we mustn't forget the ethical and legal issues relating to consultants or informants from the community, ensuring informed consent, respecting privacy, and establishing ownership, rights, and access to data.

Then again, who are the competent speakers? We know from our own languages that some people are more eloquent than others, and some have poor expressive skills. Fluency may vary among speaking, listening, reading, and writing. Among the few speakers of an endangered language there may be some with a speech handicap, such as a stammer. There may be a diaspora community whose language will inevitably differ from that of the home country. The community itself may have views about their language which may not be representative of the linguistic realities: there are always prescriptive and purist attitudes to be dealt with, especially when the elders have an ideology of a pure ancestral code that has to be respected. In such situations, the speech of younger people may be dismissed as incorrect. I've often encountered this situation in Wales, where teenagers speak a Welsh that includes, for example, more English loanwords than would be found in the traditional language, or

internet slang, and are criticised for doing so. The point is serious, as intergenerational transmission is the one critical factor in ensuring the survival of an endangered language. The teenagers are the parents of the next generation, and if they are put off from speaking their home language, the situation is serious indeed.

These issues represent both progress and challenge, and point the way towards something that is still a long way off: a sociolinguistically and pragmatically grounded theory of language endangerment. More case studies are needed to enable comparisons to be made among endangered situations, which can differ greatly. And at the same time, linguists can contribute to the broader issue of how to foster a public awareness of the crisis facing the world's languages that is comparable to what already exists in relation to ecodiversity. Ask a random sample of people if they know about the plight of plants and animals, and they will probably all say yes; ask them if they know about the plight of languages, and in my experience hardly any will say yes, unless they happen to live in one of the affected areas themselves. Here, linguists have an important role in keeping people up-to-date with research developments. When I wrote *Language Death* (2000), the received wisdom was that there were around 7000 languages in the world (a figure derived from the *Ethnologue* project), about half of which (estimates ranged from 15 to 90 percent) were likely to disappear in the course of the present century - which suggested a language death on average every two weeks. The guesses varied so much because there had been so few regional language surveys by the end of the 1990s. That situation has improved, thanks to UNESCO and other initiatives, so that a recent major review suggests that the death estimate is now one every three months or so, with the figure of 7000 very much in need of revision (I say 'over 6000' above). It is still a crisis, whose order of magnitude is far greater than the extinction rate being experienced in the biological world. Publicity is crucial, and the case for instituting language prizes and awards, and creating language museums, which can help provide that publicity, is as strong as ever (see further below). Apart from anything else, language documentation and revitalisation needs financial support, and fund-raising is essential to support the organisations that are doing their best to help, such as the Foundation for Endangered Languages in the UK.⁸

JLLT: In your book "English as a Global Language," you discuss the rise of English as a global *lingua franca*. How has this phenomenon developed, and what impact does it have on linguistic diversity and language policies worldwide?

David Crystal: I talk about the reasons for its development in the book - the political, industrial, economic, and cultural factors that have been, at various points in history, a primary stimulus for the global spread of English, so I won't repeat those issues here. What's especially interesting, to my mind, is to note what has happened since its publication in 1997 and its second edition in 2003. There hasn't been a third edition, but such a development *has* taken place for another book in which global English plays an important role, my *Cambridge Encyclopedia of the English Language*, which has a similar publication history - first edition 1995, second in 2003, and now a third edition in 2019.

For the latest edition I replicated the statistical estimates of global English usage,

country by country. It's evident that the growth in usage is still significant – from 1.5 billion English users in 1995 to 2 billion by 2003 and 2.3 billion by 2019. But what I find especially interesting about that last figure is how it suggests a slowing down in the rate of increase. The growth between the first two editions was half a billion in eight years - roughly 600,000 a year. If that rate of increase had continued over the 16 years between 2003 and 2019 I would expect the later total to be nearer 3 billion, and 2.3 is a long way from that.

What accounts for the apparent slowing down? Perhaps there is a natural limit to the number of people worldwide who need to master a global *lingua franca*. Perhaps new translation technology has reduced the incentive to learn another language. Perhaps political pressure to use a local *lingua franca* has reduced the motivation to acquire English. There will be other factors. If the trend continues, an investigation of these hypotheses will prompt a new direction in English language research.

However, none of this seems to have slowed the maturation of global English varieties. Note the term 'maturation', which I use instead of 'emergence', in the context of increased linguistic diversity. As with all aspects of language, there are two sides: form and function. Hitherto, the focus in descriptive studies has been largely on the identification of the formal features that identify a 'new English' – features of phonology, orthography, grammar, vocabulary, and discourse. Relatively little attention has been paid to the sociolinguistic and stylistic function of these features within a community, how these features are evaluated and used, and whether they are accompanied by metalinguistic commentary.

In relation to this last point, my impression is that there's a growing confidence in the prestige of these 'new Englishes' within their local communities. I first noticed this with the development of 'new literatures' – poetry, novels, stories, plays, and other genres in which the distinctive English(es) of a region were being represented. At first, authors wrote somewhat apologetically, evidently feeling it necessary to explain what the local English was. A character in a novel or short story would say something, and the speech would be glossed with such metalinguistic expressions as 'said Raum in his Krio idiom'. This kind of explicitness is much less likely to be encountered today. Having introduced a situation and characters, authors are more likely to present their speech without any further identification, though sometimes adding endnote glosses to explain regional usage, as in Suhayl Saadi's *Psychoraag*, with its mix of Standard British English, Scottish English, and Urdu. It's a clear indication of growing maturity in a new variety.

Literature is one of the institutions that characterise a society. Others include the broadcasting media, the internet, and reference publishing (such as dictionaries, encyclopaedias, and style guides). Another indication of maturity is when a new variety of English (or any language) is given the same kind of treatment as is routine in such established varieties as British and American English. Developments of this kind are too wide-ranging and expensive to be left entirely to individual organisations. A concern to foster linguistic institutionalisation needs to be part of a country's language policy. And of course, any such policy mustn't forget the issues addressed in the previous question, for the rise of global and international *lingua francas* is one of the factors underlying language endangerment, and establishing a balance between international and indigenous languages remains a major challenge in many countries.

JLLT: In your extensive career, you have written about the English language, including its history and evolution. Please identify a major change that the English language has undergone in recent decades. What trends do you anticipate for the near future?

David Crystal: One of the most important trends arises out of the global situation referred to in the previous question. Each of the international varieties has developed a local vocabulary of several thousand items reflecting the cultural identity of the community, and these can present a challenge to international understanding. This is a familiar experience in relation to British and American English - car *boot / trunk, bonnet / hood*, etc - but such regional usages are now increasingly seen and heard from all over the English-speaking world, especially online; so it's important to build a more systematic approach to cultural awareness into teaching practice than has been the case in the past.

A cultural lexicon is an important feature of any variety of world English. People unconsciously introduce expressions into their conversation that reflect their culture. In British English, for example, one might hear someone moaning about the M25 motorway, and not understand why (because of the many traffic jams) or saying that their watch 'isn't Bond Street', and miss the allusion (Bond Street has some of the most expensive shops in London). If you know the cultural background, you have no problem; if you don't, the sentence is uninterpretable. Now, 'translate' these examples into the culture of other parts of the English-speaking world. What is the M25 or Bond Street of your culture?

This kind of cultural opaqueness can leave a learner bemused – and by 'learner' here, I include not only second language learners, but second-dialect learners as well. I, for example, have often been at a loss when talking to Americans who unconsciously drop idioms from baseball into their conversation, such as 'That was from out of left field', referring to an unexpected situation. Increased familiarity with American English has reduced this problem for many, but the comprehension barrier remains significant for parts of the world where the local English is less often encountered. And even with the most widely used varieties there is an ongoing problem due to lexical change.

A group of people chatting in their variety of English in any part of the world would make similar allusions to their culture that outsiders would find opaque. Introducing a cultural dimension into a syllabus is thus an important goal, for any varieties of World English that students are likely to encounter, either through travel or (more likely) through online visits or interactions. Elsewhere, I've presented the case for an international crowd-sourced cultural lexicon.⁹ It remains a challenge.

Here's a fuller example of recent cultural change in English, from a conversation I heard in a doctor's surgery waiting-room:

First Lady: Anything wrong?

Second Lady: No, just an *MOT*.

First Lady: Oh good. I had one a month ago.

Second Lady: Did you pass?

First Lady: Yes, fine.

Looking up *MOT* in a dictionary may not help. You will learn that it stands for *Ministry of Transport*, and – if you're lucky – be told that it's pronounced /ɛm əv ti:/, never /mɒt/ (so the indefinite article is an). People in the UK who own a vehicle that is three years old are obliged by law to have it tested annually to ensure it is safe, road-worthy, and not emitting an excessive amount of gas through the exhaust pipe. This is an *MOT test*, usually abbreviated to simply *MOT*. The only exemption is a vehicle built or first registered more than 40 years ago which has had no major changes. The name of the test has stayed the same, even though the name of the relevant government ministry was changed to Department for Transport in 2002. So we are likely to hear people say such things as 'My car has to have its MOT next week', 'Have you got the old MOT certificate?', and 'It's passed / failed its MOT.'

However, the ladies in the surgery weren't talking about their cars. They were referring to a routine check-up on health or well-being. And this notion has been increasingly applied to a wide variety of situations. A government pensions website is headed 'Mid-life MOT: take control of your future' - and the page explains:

The mid-life MOT is a package of support that gives you access to free, professional and independent guidance to help you with pension planning, working options and staying healthy.

An online horticulturist (Auntie Planty Garden Advice) offers a Garden MOT - 'I can spend time with you in your garden giving you an inventory of the goodies and bad-dies, and what you can do to make your new garden sparkle all year round.' Another Web headline is from an organisation called the Sleep Council: 'Bed MOT – Do I need a new bed?' Then there's this fine example from *The Telegraph* (31 July 2018): 'Does your marriage need an MOT?' And in 2024, there are many sites offering us an MOT for our desktop, laptop, tablet, or phone.

JLLT: Linguistics is often at the forefront of addressing language-related challenges in education. What recommendations do you have for educators based on linguistic research, especially in the context of language acquisition and literacy?

David Crystal: I take 'educators' in the broadest sense, to include not only school-teachers, but parents, relatives, and any kind of caretaker. And one of the most important recommendations for all, to my mind, is the importance of relating reading (and writing) to speaking (and listening). To become fluent readers, children need to read about what they like to talk about, and talk about what they like to read. There needs to be a bridge between reading and speaking, and this is provided by the people who are reading with them. Whether it's the child who is reading aloud, or the adult, it's a perfect situation to talk *about* what is in the book, and to relate the story or topic to their own world, and to the language(s) they already know. Nor need the caretakers face this task alone, these days, thanks to the emergence of 'listen and read books' - or 'read-along books', as they're often called: digitally enhanced books which allow children to hear what they read and to read what they hear. The oppor-

tunities to engage in this way with a wide range of stories and topics are far greater than could ever be provided by any one parent or teacher.

Several benefits arise by bringing reading and speaking together. Children learn how unfamiliar or irregularly spelled words and names are to be pronounced - a feature especially appreciated by second-language learners and by those who experience difficulty in reading. They are taken down avenues of reading they might not otherwise have entered, finding new genres and being exposed to new experiences - and are often motivated to try reading a book at a more advanced level. But for joint reading to be successful, full attention needs to be paid to the story, so that moments can be seized where the events or characters can be linked to the child's own background. Research also suggests that interactive reading is especially helpful when it includes actions that the readers can perform. With print books, the activities might be opening a window on a page, pressing a symbol to produce a noise, activating a pop-up structure, or simply pointing to words or pictures. With a book on a screen, tapping, swiping, dragging, and other touching activities can produce animation, sound effects, and colour changes, and enable searches to find a favourite passage. Online audio can be interactive too, as when a narrator asks a question, gives an instruction, or offers a reaction to what the reader has done. It can be reinforced by visual effects, such as highlighting text while it is being read aloud.¹⁰

I think the most relevant finding from research into child language acquisition is the emphasis on directed speech. There can be a lot of speech in a child's environment - from the radio or television, or from adults or other children talking - but little of this background is going to help language develop. By contrast, we see the greatest progress when someone focuses on what children are trying to say, provides some feedback, and gives them time to respond. It's the same when reading aloud with a child. Pages can be so full of interesting detail that the young reader can get lost within them. Colourful pictures can overwhelm the written text - which is where the reading task actually lies. Adults can help by gently directing the child's attention to the words and the relevant parts of the pictures, and making occasional comments on the way the story is unfolding, and always giving the child time to talk about what's happening in the story.

The aim in all this is to make children feel that reading is as comfortable an experience as listening is, even when they are reading by themselves. And to achieve this, it helps if activities are incorporated within the content of a book. These might take the form of asking readers a question, or setting a challenge. They might be allowed to choose among possible lines of development, as in a video game, or among alternative story-endings. They might be given the option of personalising their books, such as by adding their name or photograph, or being given an opportunity to draw or write (or type) annotations. It all fosters a sense of intimacy between the reader and the text. We call this 'a love of reading'.

Ownership is the ultimate aim. 'The author has written this story for ME!' After reading a story, children should feel that it has become a part of their life. And this may mean not accepting the way the narrator has told it. A character can have all kinds of voices, accents, and idiosyncrasies, and children have the right to try out their own interpretation, and decide that it is better. (Adults feel the same way when they watch a film of a favourite novel and say that an actor's portrayal of a character was nothing

like what they imagined that character to be.) There's nothing wrong with children feeling that they have a better way of telling a story, or giving it a different ending. And those that think like this may, one day, be the novelists of the future.

JLLT: In your exploration of language play and creativity, you touch upon the artistic aspects of language. How can linguistic creativity be harnessed in educational settings, and what role does it play in fostering language development?

David Crystal: Linguistics has, rightly, focused on the two primary forces (or functions) that drive language: the need for mutual intelligibility, and the need to express identity. The former promotes the growth of standard dialects, national languages, pidgins, and international lingua francas. The latter promotes the growth of regional, social, and occupational accents and dialects, global varieties, literary genres, code-mixing, and multilingualism. But in recent decades it's been rewarding to see a third force receive the attention it deserves: the ludic function of language - or 'language play', as it's usually called - where speech, writing, and signing are manipulated solely for purposes of aesthetics, artistry, entertainment, or to demonstrate personal creativity. This function promotes the growth of linguistic humour (jokes, puns), literary deviance (especially in poetry), rhetorical flourishes in oratory, novel effects in advertising, and distinctiveness in any domain where the aim is to be 'different' from cultural norms.

There have now been many studies of ludicity in child language acquisition, as it appears from the earliest days in caretaker speech ('baby-talk'), and then in lullabies, nursery rhymes and jingles, childish nonsense words, and the innumerable orthographic variations seen in comics, games, and early readers.¹¹ We hear it too in the read-along books mentioned in the answer to the previous question. Vocal play makes a book come alive, and provides an imaginative experience that can be very powerful, especially when distinctive voices are needed for fictional characters. Listening to how others tell their stories is also a useful lesson, as it fosters the development of oral performance skills. With good models to follow, children develop their ability to read with confidence, pace, feeling, and variety.¹²

The notion of creativity in 'language development' of course isn't restricted to the early years of language acquisition and literacy. It applies to all ages and circumstances - most noticeably in literary genres. British novelist Robert Graves once put it succinctly, with reference to poetry: "A poet has to master the main grammatical rules before daring to bend or break them". His point can be generalised, for we can bend and break the rules of any aspect of language, not just grammar. We can play with pronunciation, spelling, punctuation, vocabulary, and any other aspect of language in order to create novel effects. This is something humans seem to do instinctively, online or offline, as it has been observed in any language that has been studied.¹³ And such playfulness is by no means solely the province of the native speaker. Second-language learners display a desirable confidence when, having mastered a rule in their target language, they then dare to bend or break it, for effect. And all can learn from the master of language play, William Shakespeare.

JLLT: The recent book *Everyday Shakespeare: Lines for Life* (London: Murray, 2023), you published with your son Ben, introduces Shakespearean lines for contemporary use. How does this book bridge the gap between Early Modern English and modern language, and what insights does it offer into the adaptability of Shakespearean language in everyday communication and, possibly, the English language classroom?

David Crystal: I think the first thing to be said is that the 'gap' isn't that great. We are, after all, talking about 'Early Modern' English, not 'Middle' or 'Old' English, where the gap is indeed notable. I once made a calculation of the amount of lexical and grammatical difference.¹⁴ Of the approaching million words in the Shakespeare canon, what percentage are words that are no longer in use or that have changed their meaning in a way that makes them difficult to understand? The answer is only about 5 percent. And if we compare his use of syntax and morphology to the number of grammatical points (about 3500) listed in a good modern reference grammar - I used the 'Quirk grammar',¹⁵ which I knew intimately, having compiled its index - I found, again, only 5 percent of difference. The perception of difficulty in Shakespeare is not due to these basic properties of language, but arises rather from conceptual issues – for example, knowing who were the divinities of ancient Greece or Rome – and from the economy of expression that emerges when spoken language is manipulated to fit the metre of a poetic line. The impression of difficulty is also fostered by teaching orientated towards the need to pass exams, where students are presented with editions that are full of 'notes' that have to be learned, and are told they need to know the precise meaning of every word (something that we don't insist upon in everyday conversation, where, for example, we can call someone *a blithering idiot* without having any clear idea about the meaning of *blithering*). While that depth of awareness is a desirable long-term goal, it is hugely off-putting when youngsters experience Shakespeare (or any playwright) only as a reading experience. Rather, Shakespeare should first be experienced on the stage, not the page.

This is the kind of background which motivated Ben and me to compile this new book. Both of us had been steeped in Shakespeare – he as an actor and director, me as a historical linguist and a fellow of Shakespeare's Globe in London – and we had collaborated on several projects, such as the glossary and language companion *Shakespeare's Words* (also at www.shakespeareswords.com) and in productions of plays in original pronunciation. We were struck by the way we would often drop Shakespearean expressions into our everyday conversation. For instance, I was once weeding the garden, and Ben arrived offering to help: 'For this relief, much thanks' I said (from the opening scene of *Hamlet*). We wondered just how many lines from the plays and poems would have that kind of everyday relevance, so we each read through the canon looking for them, and found close to 5000, from which we selected 1000 for our book - 366 lead quotes for each day of the year, and the remainder occurring in the associated commentaries.

Everyday lines do indeed, in our view, provide a bridge between then and now. Most could have been written yesterday. 'Better three hours too soon than a minute too late' (from *The Merry Wives of Windsor*) could apply to anyone needing to get to a meeting or to catch a train. 'Wisely and slow. They stumble that run fast' (from *Romeo and Juliet*) is great advice for anyone rushing to get a job done. And some resonate especially with children. Which of them hasn't had night-time fears? 'In the

night, imagining some fear, How easy is a bush supposed a bear' (from *A Midsummer Night's Dream*). The book has been out for some months now, and teachers have already told us how these quotes can stimulate a lively classroom discussion. And it prompts a curiosity about Shakespeare. Who said that first? Why did they say it? Can we see the play...?

JLLT: The study of intonation and prosody has been a part of your research. How do these elements contribute to our understanding of spoken language, and what implications do they have for language teaching and artificial intelligence applications?

David Crystal: Yes, this was my first linguistic love, fuelled by my first job as a research assistant on Randolph Quirk's Survey of English Usage. As the only phonetician on the project, I was tasked with making the prosodic transcription of the recordings of spoken English that were the basis of his innovative approach to grammar, which previously had been dominated by the written language. A wide range of genres was involved - everyday conversation, radio discussions, television advertisements, sermons...¹⁶ The consequence was the discovery that the traditional system of intonation analysis – as developed by Daniel Jones and his students, and known in the ELT world through books by Roger Kingdon, O'Connor and Arnold, and others – was inadequate to describe the remarkable array of prosodic variation and tones of voice used by the speakers. Quirk and I wrote up the approach in *Systems of Prosodic and Paralinguistic Features in English* (1964) – my first foray into the world of linguistic publication. It opened my ears to the crucial role played by the nonsegmental (or suprasegmental) features of language as a means of expressing, not just the attitudinal meaning well described by those ELT authors, but also the way these features underpin so many aspects of grammar – not only the familiar contrasts such as the tonal contrast between statement and question, but effects that hadn't been described before, such as the use of low pitch range and an increase in speed identifying a piece of parenthetical speech. It was also clear that these features play a central role in the marking of identity, in regional accents and spoken styles, such as the contrast between formal and informal speech, or the array of vocal effects that identify different kinds of sports commentary.

Teachers have told me that becoming aware of the range of prosodic and paralinguistic features is especially relevant in relation to the teaching of comprehension, especially where cultural meanings differ – as when, for example, a giggling tone of voice is interpreted as embarrassment (as in Japanese) instead of jocularity (as in English). Not all have to be formally taught. I imagine that the dramatic prosodic features that identify a football commentary will be encountered in any language that exploits this domain, without needing any teacher intervention to explain them. And the same applies to speech production, where some features will be acquired simply by transferring what is already part of the learner's first language (such as whispering, giggling, or speaking more loudly or quietly). But there is a core of prosody that does need formal attention, such as the way pitch and pause identify the contrast in English (and some other languages) between restrictive and nonrestrictive relative clauses (*my brother, who's abroad, has sent me a letter* (I have only one brother) vs *my brother who's abroad has sent me a letter* (my other brothers haven't).

The challenge for artificial intelligence is to replicate the nonsegmental system accurately in all its semantic and social variability. The examples I've heard so far, based on the acoustic analysis of speech samples of individuals, have been very convincing: a sentence read in the voice of a celebrity does indeed sound like that celebrity. I've also heard examples where a particular distinctive feature of a celebrity voice quality (such as a nasal tone or a gruff voice) has been extracted and inserted into another voice, to make that person sound like the celebrity. But these are relatively straightforward techniques. Generalising from individuals to community norms, without stereotyping, is a much greater challenge, and it remains to be seen how successful AI will be. In some ways it's the Survey of English (or other languages) Usage all over again, but on an infinitely larger scale.

JLLT: Linguistics is increasingly interdisciplinary. How can collaboration with other disciplines enrich linguistic research and its applications?

David Crystal: All I can say is that, each time I've collaborated in this way, I've learned something new about my subject, and also seen how dependent applied linguistics is on other areas of expertise if it's to be successful in its endeavours. I've already mentioned the way other disciplines are increasingly involved in the field of endangerment linguistics. Clinical linguistics needs input from medical, psychological, and therapeutic practitioners if hypotheses about the nature of language disability are to be tested. ELT professionals need classroom equipment, technological aids, and the teaching materials provided by publishers. Research into historical phonology is enhanced when its hypotheses about plausible reconstructions are modelled by actors and voice coaches, as in the case of Shakespearean 'original pronunciation' productions. And while the initiative for a particular application may come from a non-linguistic domain, the development of that application can be dependent on the technology in the enquiring domain, as in the case of internet linguistics.

I illustrate from one project within that last domain, where the initial challenge was to solve the problem of misplaced online advertisements. A news report about a street stabbing was accompanied by ads saying 'buy your knives here' – clearly generated by an algorithm that was unable to make the semantic distinction between *knife* in the sense of 'weapon' and in the sense of 'cutlery'. The solution was to provide a lexical analysis in which all cases of potential ambiguity were identified and labelled, such as *depression* [psychiatric], [economic], [geological], [climatological]. It was a large and lengthy project, requiring the services of a team of lexicographers. But its implementation required a range of other disciplines, notably software developers and website designers, and not forgetting the disciplines that underpin all research projects, such as accountancy (to control the budget), lawyers (for contracts, patenting), and business consultancy. Then, when the result of the research has been turned into a product,¹⁷ it has to be sold, which requires people from marketing, advertising, and other agencies.

Yes, the history of linguistics, over the past half-century, has been increasingly collaborative – psycholinguists with psychologists and psychiatrists; sociolinguists with anthropologists, ethnographers, and sociologists; neurolinguists with neurologists and other medical specialists. Smaller domains of linguistic enquiry show a similar

reaching out, such as forensic linguistics, working with law enforcement and legal personnel; or theolinguistics, where studies of religious language are enhanced by input from biblical scholars, liturgists, literary historians, and specialists in ancient languages.¹⁸ I don't see any of this changing as linguistics evolves in new directions.

JLLT: Looking ahead, what emerging trends or areas of study do you believe will shape the future of linguistics, and how can the discipline adapt to address the evolving linguistic landscape?

David Crystal: I never try to predict the future, when it comes to linguistic issues. Who in 1950 would have predicted the linguistics of 1960, following Chomsky's *Syntactic Structures*? Who in 1980 would have predicted the arrival and impact of the subject we now know of as pragmatics? And unpredictable forces give rise to new areas of study, such as the way the pandemic fostered a greater use of online platforms, with an associated growth of interest in the character of interactive communication, in a field that has yet to be named (zoomlinguistics?). It's obvious that artificial intelligence, robotics, and brain imaging will stimulate new directions of linguistic enquiry, as is implicit in some of my remarks above. And if 'they' land on earth, or probes encounter 'them' on other planets, the field of xenolinguistics (aka exolinguistics or astrolinguistics) will suddenly grow beyond the realm of science fiction. But, to my mind, any thoughts about an evolving linguistic landscape need to be related to wider issues.

All academic disciplines are subject to contemporary cultural norms and expectations, and one of the most noticeable trends today is what goes under the heading of 'public engagement'. Academia needs to demonstrate its value to society, not least because it is society that pays its salaries! This isn't difficult to do, in principle, in the case of linguistics, as interest in language is so universal, but it does take an outlay of time and energy that can be challenging to find. Engaging with the media is one important way, especially offering a corrective to mistaken ideas about language. Writing up accounts of research for the nonspecialist reader is another. And devising institutions that keep language (and thus linguistics) in the public eye and ear is a third.

This last point deserves further comment, as it's the area which has hitherto been least successful. How do fields such as natural history, science, and the arts maintain a public presence? One way is through museums, galleries, and exhibitions. London, for example, has a Science Museum, a Natural History Museum, and an array of art galleries. But it has no Language Museum (or House, or Gallery) – nor do most other cities. An exception is Washington DC, where Planet Word opened in October 2020. There have been no shortage of initiatives, such as the proposal for a World of Language proposal for London in the late 1990s¹⁹ and the Casa de les Llengües for Barcelona in the 2000s, but these have failed for a mixture of economic and political reasons. Similarly, proposals for a major language prize, comparable in status to Nobel prizes or Oscars, have never been taken up. I remain optimistic that the linguistic landscape of the 21st century will be enhanced by progress in such ways.

JLLT:

Dear Professor Crystal, we feel very honoured and would like to express our sincere gratitude to you for giving us such an insightful interview. Your words have once again emphasised the significance of applied linguistics and the support it can provide to all of us who use language on a daily basis, often without awareness of its underlying rules and mechanisms. Thank you for this enlightening information. We wish you all the best and look forward to your upcoming projects and activities.

Notes

- 1 Martin J Ball, David Crystal & Paul Fletcher (Eds) (2019). *Assessing Grammar: the Languages of LARSP* (2011); *Profiling Grammar: More Languages of LARSP* (2016); *Grammatical Profiles: Further Languages of LARSP*. All published by Multilingual Matters. See further below.
- 2 'Searchlinguistics', in the section 'Technology and Language' in *The Encyclopedia of Applied Linguistics* (Wiley 2012). See further below.
- 3 See the listing at <https://www.english-corpora.org>.
- 4 See further my *Internet Linguistics* (Routledge 2011), chapter 4.
- 5 Tamagawa, R., C. Watson, I. H. Kuo, B. A. Macdonald & E. Broadbent (2011): The effects of synthesized voice accents on user perceptions of robots: In: *International Journal of Social Robotics* 3 (3), 253-262.
- 6 According to online sites such as <https://whoseknowledge.org>.
- 7 See K. L. Rehg & L. Campbell (Eds.). *The Oxford Handbook of Endangered Languages* (Oxford University Press 2018); Derhemi, Eda & Christopher Moseley (Eds.): *Endangered Languages in the 21st Century*. Routledge 2022.
- 8 See <https://www.ogmios.org>.
- 9 'I don't get it'. Researching the cultural lexicon of global Englishes. In: Alexander Onysko (Ed.): *Research Developments in World Englishes*. Bloomsbury 2021, 173-198.
- 10 Baron, Naomi S. (2021). *How We Read Now: Strategic Choices for Print, Screen, and Audio*. Oxford: Oxford University Press.
- 11 See my *Language Play* (Penguin 1998, chapter 6; updated e-book edition 2013 on the Crystal Publishing page at www.davidcrystal.com).
- 12 Beard Roger & Andrew Burrell (2020). *Language Play and Children's Literacy*. London: Institute of Education Press.
- 13 An early account is Kirshenblatt-Gimblett. B. (Ed.). *Speech Play*. Philadelphia: University of Pennsylvania Press.
- 14 *Think on my Words: Exploring Shakespeare's Language*. Cambridge: Cambridge University Press 2008, chapter 1.

- 15 Randolph Quirk, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik, *A Comprehensive Grammar of the English Language* (Longman, 1985).
- 16 David Crystal & Derek Davy, *Investigating English Style* (Longman, 1969).
- 17 See SiteScreen, as developed by adpepper media, 2006:
<https://adpeppergroup.com/en/news-en/ad-pepper-media-deploys-revolutionary-site-screening-technology/>
- 18 For example, Stephen Pihlaja (ed.) *Analysing Religious Discourse* (Cambridge University Press, 2021).
- 19 'A London language museum', *Museum International* 238, 2008, 80-87.

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Manuscripts are welcome in English, German, French, Spanish, or Italian. Every article should come with an abstract of around 10 lines. English articles should be accompanied by an abstract in one of the other languages mentioned.

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