The development and implementation of a video and AI-enhanced language learning platform

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Die Integration authentischer Videos und KI-gestützter Funktionen in den Englischunterricht birgt ein grosses Potenzial für personalisiertes, motivierendes und inklusives Lernen. Vor diesem Hintergrund wurde an der Pädagogischen Hochschule Luzern die digitale Sprachlernplattform TONY entwickelt und im Rahmen eines Forschungsprojekts empirisch untersucht. Ziel der Plattform ist es, den Englischunterricht für Jugendliche durch differenzierbare, multimodale Lernressourcen zu bereichern und Lehrpersonen bei der Gestaltung heterogener Klassen zu unterstützen. In Phase I wurde TONY mit interaktiven, authentischen YouTube-Videos und H5P-basierten Umfragen umgesetzt und in realen Sekundarschulklassen evaluiert. Die Ergebnisse zeigten, dass die Differenzierung die Motivation und das Engagement der Lernenden steigern. Aufbauend auf diesen Erkenntnissen wurde TONY im November 2022 um eine KI-gestützte Chatbot-Funktion auf Basis von ChatGPT erweitert, um individualisierte Sprachinteraktionen zu fördern. Die Analyse führte zu drei zentralen Erkenntnissen: (1) Authentische Materialien fördern die Lernmotivation, (2) multimediale und multimodale Anpassungsfunktionen erleichtern Differenzierung und stärken die Autonomie der Lernenden, und (3) KI-gesteuerte Funktionen haben das Potenzial, den Sprachunterricht von Differenzierung zu Personalisierung zu verlagern. Die Studie liefert praxisnahe Impulse für die Weiterentwicklung digitaler Lernumgebungen und betont die Notwendigkeit weiterer Forschung zu den langfristigen Auswirkungen KI-gestützter Sprachlernplattformen auf Lernfortschritte und Bildungsqualität.

Stichwörter:
KI in der Bildung, Sprachenlernen, Videos, personalisiertes Lernen, Schülerengagement, Motivation.

Keywords:
AI in education, language learning, videos, personalised learning, student engagement, motivation.

1. Introduction

Digital tools are transforming teaching and learning across disciplines, with particularly notable developments in foreign language education. These developments have opened up vast new possibilities for language learning and teaching while simultaneously presenting significant challenges (OECD 2024a; OECD, 2024b).

A key concept driving these transformations is multimodality, which refers to the use of multiple modes such as text, images, audio and video to create and

convey meaning (Kress 2007; Jewitt 2013). When integrated effectively, multimodal resources can address various learning needs and, by engaging multiple senses, offer learners immersive opportunities to access real-world materials and experiences (Perez & Rodgers 2019; Anis & Khan 2023). Since 2022, the rise of generative AI has accelerated this transformation, creating opportunities for personalised learning and real-time feedback (Chiu et al. 2023; Rebolledo Font De La Vall & González Araya 2023). These advancements have the potential to address diverse educational needs and ensure inclusive support for all learners (Anis & Khan 2023). However, broader challenges such as data privacy, algorithmic transparency and mitigating biases in AI must also be addressed to ensure ethical and equitable learning opportunities (Council of Europe n.d.), although these aspects were not the focus of the present study.

In response to these opportunities and challenges, the TONY language learning platform was developed in 2021 as part of a research project at the University of Teacher Education Lucerne. Designed for secondary classrooms in Central Switzerland, TONY offers an innovative approach to language education by integrating real-world language input from videos with interactive tools to enhance engagement, personalisation and cultural competence. The analysis of the platform was guided by the following research questions: *How do students and teachers perceive and interact with the features of the TONY language platform in terms of usability, engagement, and pedagogical value?* Sub-questions included: *How do students perceive the relevance and motivational impact of authentic video materials? In what ways do teachers and students use the platform's features to support differentiated learning? What suggestions do users have for improving the platform's usability and educational effectiveness?* The platform was later expanded to include AI-driven features, further enhancing its adaptability and interactivity.

This paper begins by outlining the theoretical background on multimodal resources and AI in language learning, with a focus on authentic videos and conversational AI tools. It describes the development and initial evaluation of TONY, followed by its further enhancement with AI-driven features, the impact of which will be assessed in a subsequent study. The paper concludes with implications for AI in education and recommendations for future research.

2. The role of video and AI in multimedia and multimodal language education

It is important to distinguish multimodality from multimedia. The distinction between these two concepts primarily revolves around the terms "modes" and "media." According to Kress (2007), multimodality refers to the use of various communication modes – linguistic, visual, aural, gestural and spatial – to convey meaning. In contrast, media are defined as the tools and material that deliver multimodal components. Examples of media range from traditional forms such

as books, radio and television, to digital tools such as videos, audio recordings and interactive tools (Lauer 2009). For instance, interactive tools like H5P or language learning platforms that embed quizzes, clickable elements and real-time feedback into video content enable learners to actively engage with multimodal material. Building on these capabilities, the integration of artificial intelligence (AI) further enhances such tools by enabling dynamic, adaptive interactions that personalise the learning experience based on real-time learner input and behaviour (Jian 2023).

In the following section, the study delves deeper into *authentic videos* and *AI-driven chatbots*, as these elements are central to the present work.

2.1 Impact of authentic videos on language learning

The integration of authentic video content and culturally appropriate materials has gained significant attention for its potential for language learning (Ahmed 2017). Authentic materials are defined as real-world language samples created for non-pedagogical purposes (Harmer 2005; Zyzik 2020). Unlike traditional classroom materials, which often rely on scripted or simplified language, authentic videos expose learners to natural speech patterns, varied accents and culturally embedded expressions, enriching both their linguistic proficiency and their intercultural competence (Gilmore 2007). In this context, authentic videos are defined as video content originally created for native speakers in real-world settings, rather than for instructional purposes. By providing real-world examples of language use, these materials enable learners to connect language learning to authentic contexts, a key principle in communicative language teaching (Richards 2006).

In addition to their linguistic benefits, authentic videos provide rich multimodal input that addresses diverse learning preferences and cognitive needs. Subtitled videos, for example, allow learners to link spoken and written language to visual cues, improving comprehension and vocabulary acquisition (Perez & Rodgers 2019). This multimodality goes significantly beyond subtitles, encompassing elements such as facial expressions, gestures and contextual visual cues. However, this section focuses on subtitled input, given its relevance for linking spoken and written language and its documented impact on comprehension and vocabulary acquisition. A meta-analysis by Perez & Rodgers (2019) reveals consistent positive effects of subtitles on comprehension and vocabulary learning, confirming the value of integrating these tools into language education. Moreover, many video-based platforms enable learners or teachers to select videos based on proficiency level or thematic relevance, thereby allowing for a certain degree of content personalisation. This adaptability – such as selecting slower-paced videos for beginners or culturally familiar topics for specific learner groups – supports differentiated instruction. As Mamba (2024) states, authentic materials enhance language education by aligning with learners' daily experiences, encouraging

active participation and deeper engagement. In this way, adapting content to learners' backgrounds and proficiency levels promotes inclusivity and can enhance learning outcomes while fostering greater educational equity (Mamba 2024).

Moreover, students have positive attitudes towards the use of authentic video excerpts in the language classroom, as the spontaneity and contextualisation of these videos create a realistic simulation that significantly boosts their motivation to participate in class activities (Toleuzhan et al. 2023; Yassin 2024; Zabitgil Gülseren & Araz 2024).

2.2 Impact of AI-driven chatbots on language learning

The rapid advancement of AI is reshaping education, bringing about a paradigm shift in traditional teaching methods and enabling personalised learning tailored to the unique needs, abilities, knowledge and learning styles of individual students (Jian 2023). Personalised learning lacks a singular definition, but it is generally characterised by its focus on understanding the unique needs and goals of each student and tailoring instruction to meet those specific requirements (Pane et al. 2017). Despite its potential, personalised e-learning remains difficult to implement for many educators, primarily due to limited time resources, insufficient technical expertise and the inherent complexity of tailoring content to heterogeneous learner needs (O'Donnell et al. 2015).

A key innovation in this context is the use of AI-powered chatbots. These virtual assistants provide interactive, personalised support, answering questions, guiding learners and enhancing educational processes. A systematic literature review by Labadze et al. (2023) highlights significant benefits of AI-powered tools for both students and educators. For students, these tools assist with homework, provide personalised feedback and support the development of writing, problem-solving and collaborative skills. AI technologies provide educators with time-saving support while enhancing their pedagogical practices.

In language education in particular, chatbots are also valuable for creating anxiety-free environments where learners can practise conversational skills without fear of judgement, thus reducing performance anxiety and fostering fluency (Hapsari & Wu 2022). Generative AI tools further enhance language learning by simulating culturally relevant scenarios, such as ordering food or navigating a city, helping learners acquire functional skills (Rebolledo Font De La Vall & González Araya 2023).

A meta-analysis of 31 studies confirms the effectiveness of chatbots in supporting second and foreign language acquisition, showing a medium overall effect ($g = 0.608$) on learning outcomes, as well as benefits for affective factors such as motivation and confidence (Wang et al. 2024). Similarly, a recent systematic review highlights that chatbots positively influence learners' skills,

motivation and autonomy, while fostering key competencies such as speaking, writing and vocabulary (Cislowska & Pena-Acuna 2024).

Despite these advantages, several challenges persist. AI systems may provide inaccurate or biased information, making it essential for educators to monitor their use closely (Labadze et al. 2023). Moreover, overreliance on AI tools can hinder the development of critical thinking and independent problem-solving (Hapsari & Wu 2022). While Godwin-Jones (2025) acknowledges the value of AI tools such as chatbots as supportive companions, he emphasises that they should enhance – rather than replace – human interaction.

Ethical concerns, such as data privacy and security, are particularly pressing, especially when sensitive learner information is involved. In addition, the increasing use of AI in education raises urgent questions about academic integrity and plagiarism, as students may be tempted to rely on AI-generated content rather than engage in original work (Chan & Hu 2023). Another often overlooked concern is sustainability: the energy consumption associated with training and operating large AI models contributes significantly to carbon emissions. As Moyano-Fernández and Rueda (2023) emphasise, integrating AI into education requires careful attention to environmental ethics; hence, institutions are urged to consider not only pedagogical but also ecological implications.

3. Method and findings

Building on research-backed benefits, the authors developed the TONY platform to meet the demand for multimodal language learning in secondary schools. Featuring authentic YouTube videos tailored to proficiency levels, it offers engaging, classroom-aligned content. Later, AI-driven features were added to enhance personalisation and interactivity. The next section details the development and evaluation of the platform.

3.1 Method

The study used a design-based research (DBR) approach, which enabled iterative improvements based on systematic feedback from students and teachers in real-world classroom settings. DBR is well suited for educational technology research such as this, as it allows for continual refinement and adjustments in response to real-time observations (Reinmann 2005).

This approach reflects a broader shift in educational research towards development-oriented methodologies that aim to produce evidence-based innovations for educational practice. As Tulodziecki (2017) highlights, DBR not only involves the empirical evaluation of learning environments but also their theory-informed design. The goal is to enable the gradual improvement of both the product (in this case, the TONY platform) and the theoretical understanding of teaching and learning with digital media.

The iterative cycle of DBR seamlessly aligned with the phased development of TONY, allowing its features to be directly shaped by the needs of secondary school classrooms (fig. 1). The development process of the platform was carried out as follows:

1. Phase I: Development and empirical evaluation of the platform, focusing on interactive authentic video content and its educational impact. This phase included the following steps:
    - **Analysis:** A review of current research in the field of video-based language learning provided the theoretical foundation for the platform's design. In addition, a student survey was conducted to explore learners' needs, preferences and interests in relation to authentic video content. This empirical needs analysis helped ensure that the selected materials would not only align with pedagogical principles but also resonate with the learners' lived experiences and motivations.
    - **Design:** A first prototype of the TONY platform was developed, featuring curated authentic YouTube videos, interactive comprehension tasks and integrated opinion surveys to foster engagement and reflection.
    - **Testing:** The platform was implemented in secondary school classrooms, allowing students and teachers to interact with the content in authentic learning situations.
    - **Empirical evaluation:** Using qualitative content analysis based on interviews, feedback from students and teachers was collected and analysed to identify recurring themes related to engagement, differentiation and usability.
    - **Refinement:** Based on this evaluation, targeted adjustments were made to enhance both the pedagogical and technical design of the platform.
2. Phase II: Integration of AI functionality (ChatGPT4) to enhance interactivity and personalisation

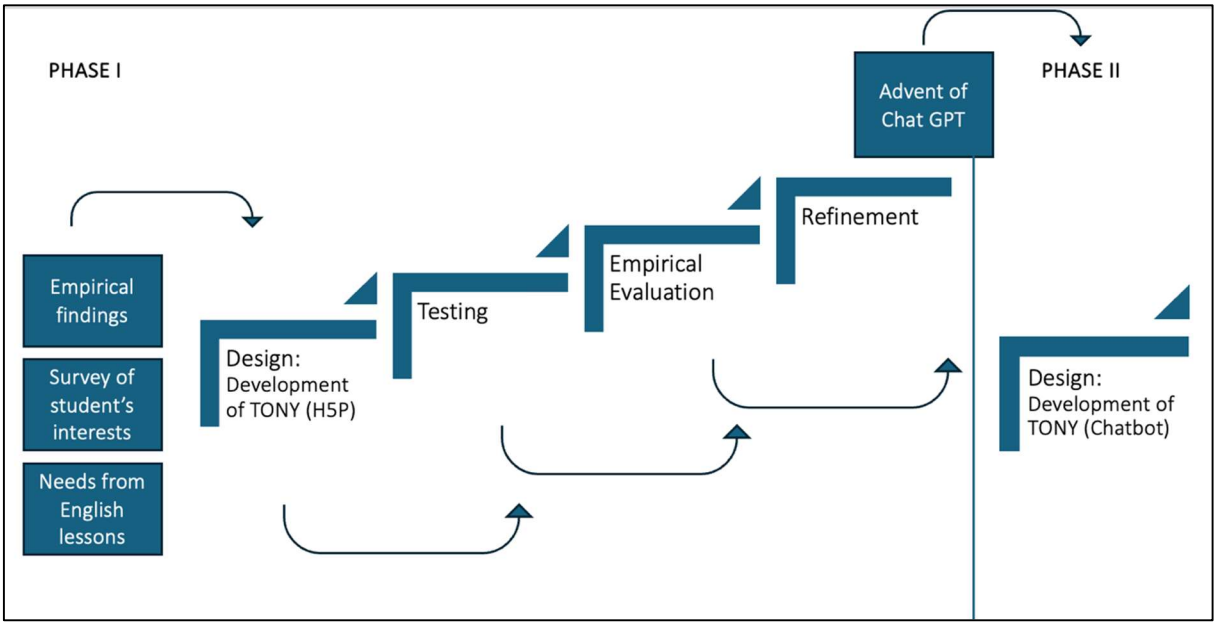

Fig. 1: Development of the TONY platform

3.2 Development of the TONY platform with H5P

The initial TONY platform was developed using over 100 carefully selected YouTube videos, chosen for their linguistic and contextual relevance (fig. 2). The selection process was led by the project team, including language education students and practising secondary English teachers. To ensure a wide range of authentic input, various YouTube video genres were considered such as vlogs, unboxing videos, how-to videos, top 10 videos, comedy, challenge videos, reaction videos, DIY, campaign videos, advertisements, Q&A videos, gaming videos, short films and "homemade" user-generated content. Selection criteria included alignment with teenagers' lives, suitable linguistic complexity (e.g. vocabulary, syntax, and idiomatic expressions), cultural relevance, clear audio, engaging visuals and classroom suitability. Subtitled videos were prioritised for accessibility and comprehension. Finding videos that could be used independently by students, without requiring extensive teacher mediation or sensitive classroom discussion (e.g. on stereotypes) proved challenging. A ranking system and a survey of 52 learners were used to refine the selection by identifying and excluding poorly received videos. The participants were from three different classes in Central Switzerland, consisting of 29 female and 23 male students. This iterative process ensured that the final content balanced teenagers' interests with educational value.

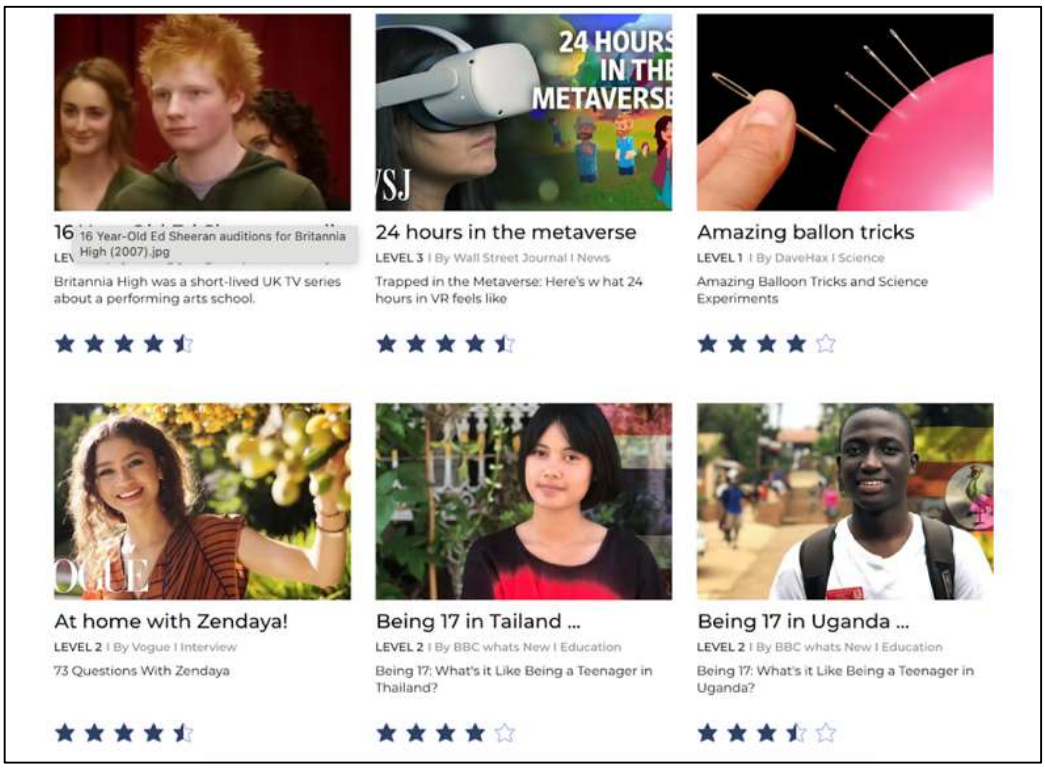

Fig. 2: Video selection interface with ratings

The videos were categorised into three language proficiency levels according to the Common European Framework of Reference, level 1 (A1-A2), level 2 (B1-B2) and level 3 (C1-C2), using benchmarks such as lexical diversity, speech rate and grammatical structures (fig. 3).

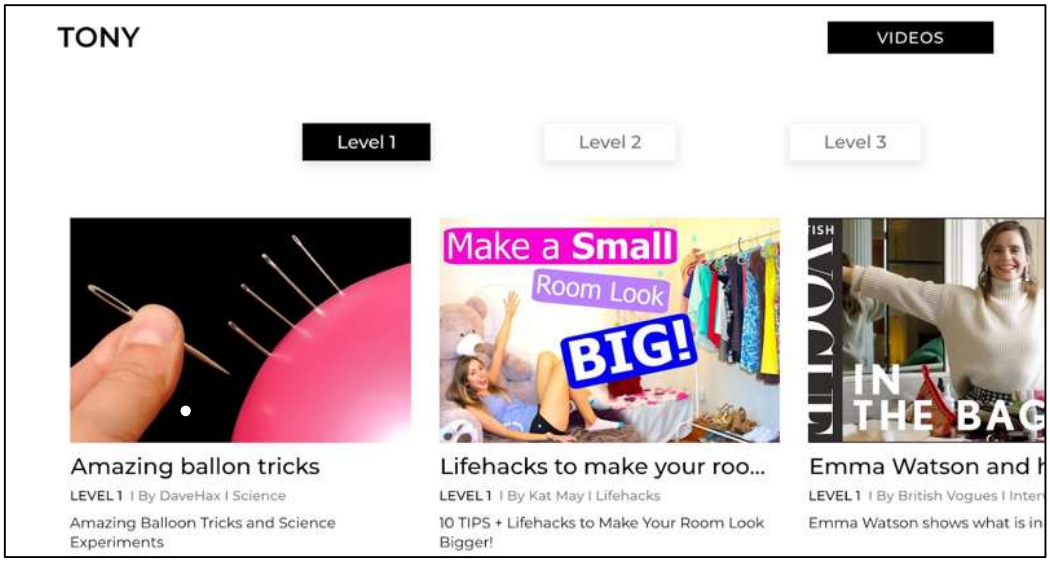

Fig. 3: Language level options for video selection

To enhance interactivity, the videos were enriched with H5P, an open-source tool for creating multimodal-rich content. Features like embedded questions, clickable hotspots and links were integrated directly into the videos to actively

engage learners. Key moments were paused to present tailored, level-specific questions. After watching the videos, integrated opinion surveys encouraged learners to reflect on the themes (fig. 4). For example, after watching a video on bullying, a question popped up asking learners, "Have you ever been bullied?" with options like "yes", "no" or "not sure". Learners selected their answer and immediately compare their responses graphically to those of their peers, fostering connection and critical thinking.

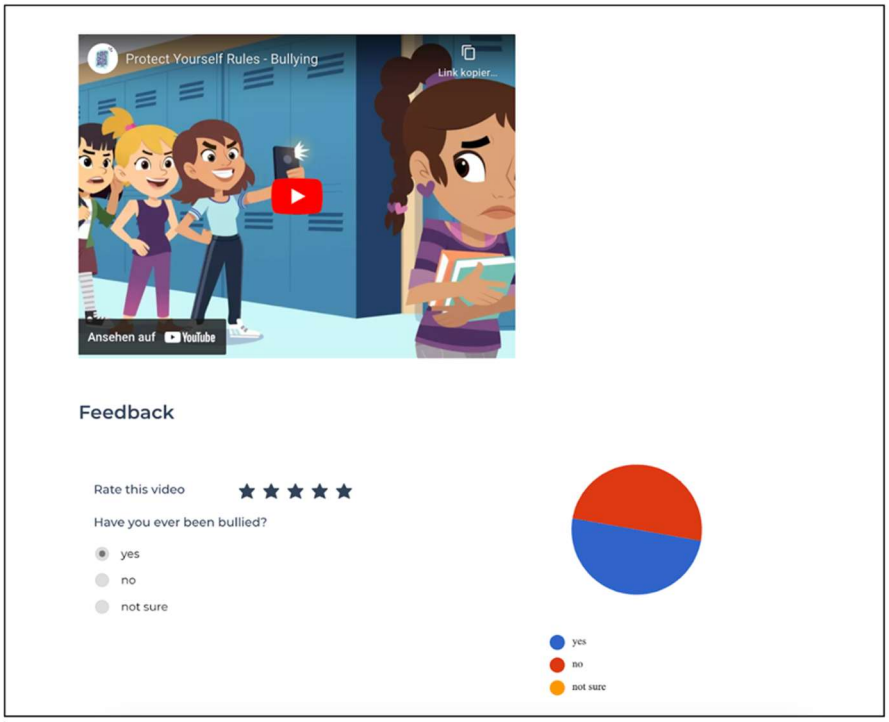

Fig. 4: Feedback and opinion question interface for bullying video

3.3 Testing and empirical evaluation

3.3.1 Sample and data collection

The platform was tested in real-world classroom settings. Data were collected through semi-structured interviews.

A purposive sampling strategy was employed to select participants from three secondary schools in Central Switzerland. The sample included 28 students (aged 12–16) from three schools and four English language teachers from all three schools. The schools were chosen to reflect a variety of teaching environments, focusing on their openness to innovation and a balance between urban and rural settings for a comprehensive evaluation. The sample was designed to represent a heterogeneous group in terms of school levels (grades 7 and 8), ensuring that the platform's adaptability across diverse educational contexts could be thoroughly evaluated. Data collection took place between November 2022 and July 2023.

This phase included four semi-structured interviews with teachers (n = 4) and 14 group interviews, each involving two students (n = 28). All interviews were conducted in Standard German. While the interviews were open in structure, an interview guide was used to ensure consistency and to prompt reflection on key areas.

The interview guide was informed by four overarching thematic areas: (1) learners' motivation and engagement with the platform, (2) perceived usefulness and adaptability of the materials (e.g. levels, subtitles and interactive features), (3) reflections on learning outcomes and competencies (e.g. vocabulary acquisition, listening comprehension), and (4) suggestions for improvement and potential use in teaching practice. While the interviews were open-ended in nature, these themes helped shape the design of the initial guiding questions and follow-up prompts.

For instance, students were asked what they liked or disliked about the platform, whether they felt they had learnt something from the videos, and how they perceived the integration of the materials in regular classroom teaching. Open-ended questions such as "What do you like about the Tony platform?", "Where do you think you learnt the most?", or "How could the platform be improved?" were chosen to elicit reflective and experience-based responses. Additional prompts occasionally explored specific skill areas or how the platform was used (e.g. alone or with peers).

These methods were selected for their ability to elicit detailed qualitative data and to capture participants' subjective experiences with the TONY platform.

3.3.2 Data analysis

To systematically analyse the qualitative feedback gathered from both students and teachers, the authors carried out a qualitative content analysis (Mayring 2015). Predefined categories were applied to the data material to filter out specific aspects. The coding categories were developed deductively, based on the research questions, interview prompts, and the pedagogical focus of the TONY platform, as well as inductively from the answers of the students. The following categories reflect central themes of interest:

- Motivation and engagement: affective and cognitive responses to the learning experience with the platform.
- Perceptions of differentiation: learners' and teachers' views on how the platform addressed diverse language levels and preferences.
- Recommendations for improvements: participants' concrete suggestions for enhancing the platform's features and usability.

A coding process was implemented to identify recurring themes and patterns within these categories. It followed an iterative and reflective approach, where responses were read multiple times to ensure accurate theme identification.

This process aimed to capture how students and teachers experienced working with TONY. Responses were analysed using thematic analysis, where individual comments were coded. These codes were then grouped into the predefined categories to provide a structured understanding of the feedback (Mayring 2015). Each category was assigned multiple codes, which encapsulated specific points raised by participants. For instance, within the category "Motivation and Engagement," codes such as "Relevance of Content" or "Interest in Culture" represented students' appreciation for the real-life applicability of TONY's video content.

The coding was conducted manually by the two researchers, without the use of qualitative data analysis software or formal inter-coder reliability testing. Although this approach allowed for practical handling of the data, it must be acknowledged as a methodological limitation, especially in terms of transparency and replicability. To reduce potential bias, coding decisions and preliminary interpretations were regularly discussed within the research team. These exchanges served as a form of peer review and supported a more consistent and reflective analysis. All original quotes were in Standard German and were translated into English, using machine translation (DeepL) as a basis, and subsequently edited for accuracy, clarity and tone. The thematic categories and codes are listed in table 1.

Thematic category	**Code**	**Example quotes from students (S) and teachers (T)**
Motivation and engagement	Relevance of content	*"The videos make it feel like I'm learning real English, not just textbook stuff." (S 4, 15.11.22)*
	Relevance to real-life situations	*"The videos provide practical language exposure that students find relevant and engaging." (T 2, 18.1.23)*
	Interest in other cultures	*"It's interesting to learn about what it's like being a teenager in Thailand." (S 4, 15.11.22)*
	Increased engagement through visual content	*"Even the quieter students are more engaged with the video content." (T 2, 18.1.23)*
Perceptions of differentiation	Self-paced review of video content	*"I can watch the videos again if I don't understand everything the first time." (S 27, 18.1.23)*
	Challenging yet accessible content	*"Some parts are difficult, but I like being able to go back and try to understand." (S, 1, 15.11.22)*

	Support for different proficiency levels	*"The platform helps keep my more advanced students engaged and challenged." (T 3, 14.6.23)*
	Flexibility in differentiated instruction	*"TONY gives me more freedom to create dynamic classroom activities." (T 2, 18.1.23)*
Recommendations for improvement	Expanding video content variety	*"More variety in videos would be great, like different accents or different topics." (S, 12, 18.1.23)*
	Additional support resources	*"Some additional resources or subtitles would help with more difficult content." (S 14, 18.1.23)*
	Interactive exercises linked to videos	*"It would be nice to have exercises that go along with the videos to practise what we just learnt." (S 2, 15.11.22)*

Table 1: Thematic categories and codes

3.4 Results of Phase I

3.4.1 Motivation and engagement

The results of phase I revealed that all 28 students responded positively to TONY's use of authentic YouTube videos. Eleven students reported that the video content felt relevant to their lives, making the language learning experience more enjoyable. Student 22 (18.1.2023) noted, *"We usually just learn from our course book, and it gets so repetitive and feels unnatural. But the videos make everything feel more natural, like real-life English, not something forced or fake."* Student 18 (18.1.2023) highlighted how the videos helped him understand cultural contexts, saying, *"It was so interesting to see how teens from other countries, like America or Australia, talk in English – it felt real, not textbook stuff. Real teen slang."* Student 5 (15.11.22) shared, *"It was really interesting to see and compare the lives of teenagers from Thailand and Uganda with my own. It made me realise that some teen problems are the same no matter where you are in the world."* The positive feedback from the students and the overall findings are consistent with studies such as that of Zabitgil Gülseren & Araz (2024), which demonstrate the motivational power of authentic videos in fostering learner motivation.

Teachers observed that the TONY platform increased classroom participation and engagement, especially among usually quieter students. *"I've noticed that even the quieter students are more engaged with the video content. It brings language to life in a way that our usual materials don't,"* commented Teacher 3 (14.6.2023). Despite the concern of one teacher about excessive screen time, all four teachers noted that the platform's authentic videos made discussions more dynamic and collaborative. *"Students are more involved and eager to*

discuss video content," Teacher 2 (18.1.23) observed. All agreed that this enhanced interaction created a supportive environment that encouraged participation and expression. As noted by Mamba (2024), such alignment of educational resources with students' backgrounds, understood here as their everyday interests, youth culture and digital media habits, fosters an inclusive atmosphere where every learner can thrive.

Overall, both students and teachers described the videos as relatable and visually engaging. According to the teachers, this seemed to increase students' willingness to participate, as the content enabled learners to connect with the language on a personal level and sparked discussions around cultural differences and real-life language use. While students did not explicitly speak about higher engagement, their positive comments suggest that they found the learning experience more enjoyable and relevant. This aligns with Gilmore's (2007) findings, which suggest that authentic materials can support language learning by bridging the gap between classroom language and real-life communication.

3.4.2 Perceptions of differentiation

Feedback from students and teachers on the TONY platform underscores its capacity to facilitate differentiated learning, effectively accommodating various proficiency levels, learning speeds and individual preferences such as the option to turn on or off English subtitles, depending on their comprehension level. The platform's adaptability allows students to engage with content at their own pace, with options to revisit challenging parts. *"I can watch the videos again if I don't understand everything the first time,"* mentioned Student 27 (18.1.2023), highlighting the value of this feature in supporting self-paced learning. Ortega et al. (2018) highlight the significance of implementing tiered lessons in language classroom instruction. This method ensures that each student receives educational content that is appropriately challenging and engaging for their specific stage of learning.

Teachers appreciated the platform's capacity to support diverse learners' needs in mixed-level classes. Teacher 2 noted (18.1.2023), *"The videos let students explore language at their own pace, which is ideal for mixed-level classes. This flexibility aids students who require more time and allows advanced learners to progress independently."*

Twenty-one students commented on the choice of content, with most expressing appreciation for being able to select from a range of topics that matched their interests. According to nine students, the integration of interactive features and opinion questions made the learning experience more engaging and gave them a greater sense of involvement, as they could actively express their views and interact with the content.

Furthermore, two teachers used TONY's video content as inspiration for task-based learning activities. This supports the idea of Hass (2016) that good teaching is an interplay of phases of communal, social interaction and phases of individualised work on tasks that are adapted to their proficiency levels, interests or learning pace. For instance, Teacher 1 incorporated the video "Amazing Balloon Tricks" into her class's curriculum, designing a classroom task where students could create and play their own games based on the video. This method proved motivational and enjoyable for students according to the two teachers, aligning with findings from Zabitgil Gülseren & Araz (2024) that authentic content can make language teaching more effective and enjoyable by engaging students in creative and meaningful activities.

3.4.3 Recommendations for improvement

While the feedback was predominantly positive on motivation, personalisation and classroom management, both students and teachers suggested areas where TONY could be improved. The students requested a greater variety of video content, specifically including diverse accents and conversational scenarios. Student 12 noted, *"More variety in videos would be great, like different accents or different topics"* (S 12, 18.1.23). This feedback highlighted a desire for even more exposure to the diversity of real-world dialects of English. Six students mentioned that they would have preferred a bigger range of videos.

All four teachers expressed interest in additional support resources to help students with challenging video segments. "*Additional resources or scaffolds would help with more complex content, for example vocabulary"* teacher 3 (14.6.23) suggested. Furthermore, eight students mentioned a desire for more interactive exercises tied to the videos, with student 2 (15.11.22) stating, "*It would be nice to have exercises that go along with the videos to practise what we just learnt*."

To address the challenge of educators facing difficulties in creating personalised e-learning activities, as mentioned by O'Donnell et al. (2015), these recommendations informed the development of the platform in Phase II.

4. Further developments

In response to the findings from Phase I and the release of OpenAI's ChatGPT in November 2022, an AI-driven chatbot was integrated into the TONY platform (fig. 5). After watching a selected video, students are presented with a prompt related to the video content, inviting them to reflect on or share their opinions about what they have seen. Prompts are instruction given to a large language model (LLM) to enforce rules, automate processes, and ensure specific qualities (and quantities) of the output generated (White et al. 2023). This initial prompt serves as the entry point for the chatbot interaction. From there, students can engage in a written dialogue with the AI, which responds dynamically based on

their input. The integration of the Chatbot introduced challenges, particularly in designing prompts that effectively engaged students. The focus was on creating entry-level questions that connected to students' real-world experiences while remaining aligned with the topic of the video. These initial prompts were followed by content-based questions intended to match to the linguistic complexity of the video, such as B2 level according to the Common European Framework of Reference (Council of Europe 2001). However, it should be noted that while such prompting can guide ChatGPT's output to some extent, recent findings suggest that reliably generating text aligned with specific CEFR levels remains challenging. Uchida (2025) found notable discrepancies between AI-generated texts and CEFR-aligned textbook standards, particularly around the B1/B2 threshold.

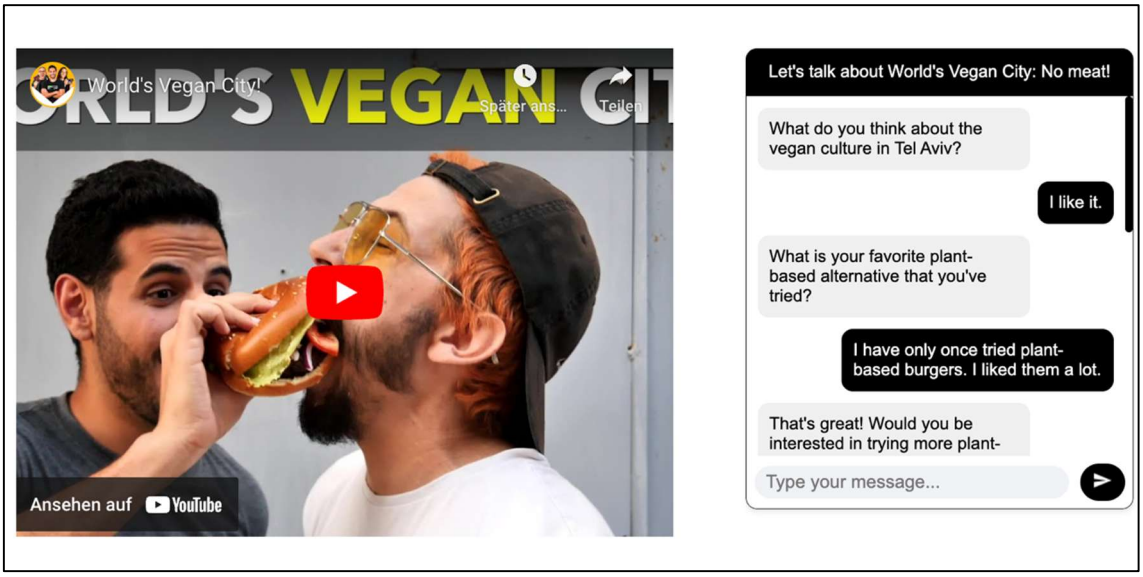

Fig. 5: Interactive chatbot interface for vegan culture video

In addition, the idea was for the chatbot interactions to feel authentic, encouraging meaningful engagement rather than mechanical exchanges. The chatbot was programmed to first pose relatable questions tied to the video content, focusing on students' opinions, experiences and feelings about the corresponding topic. This was followed by content-specific questions to deepen understanding of the video's message. Care was taken to ensure that the exchange aligned with the linguistic level of the video. The chatbot was designed to maintain the target language throughout the interaction, meaning students could not switch to another language (e.g. writing in German) and receive a response in that language. In addition, safeguards were implemented to encourage respectful and constructive dialogue, fostering a supportive learning environment.

Another challenge lies in the integration of ChatGPT into the TONY platform, as it continues to raise critical ethical and data protection concerns, key issues in

any AI application for education. While ChatGPT has already been incorporated, addressing the ethical implications and ensuring robust data privacy remains challenging (Zhou et al. 2023). In the current version of the platform, no concrete steps have yet been implemented to mitigate these concerns, highlighting the need for further development and ethical safeguards in future iterations. However, these aspects will be systematically addressed as part of a newly launched follow-up project.

Despite the challenges, one of the key advantages is the automation of question generation (Chan et al. 2023). Unlike the earlier version, where questions had to be created manually, the AI system now adaptively generates questions that align with the content and language level of the video.

In its second phase, the platform maintained core features like video selection and opinion surveys. These elements ensured continuity and leveraged the platform's strengths. This improvement aimed to refine the TONY learning experience by including innovative technology.

An evaluation of Phase II is planned and will employ qualitative techniques to provide a comprehensive assessment of the impact of TONY on student engagement and learning outcomes. The evaluation will include semi-structured interviews and focus groups with participants. This will facilitate deeper insights into the personal experiences and perceptions of the students and the teachers.

5. Discussion and conclusion

The TONY platform was developed to enhance secondary English language learning by integrating authentic video content with interactive, multimodal features. The first phase focused on supporting motivation, engagement and differentiation through real-world video input and embedded learner interaction. During the initial development and evaluation phase, both students and teachers reported a noticeable increase in learner motivation and engagement, suggesting that the use of authentic videos and interactive features on the platform may positively influence classroom participation. Some students reported increased enthusiasm for English lessons, which may be attributed to the inclusion of authentic and culturally relevant materials, although this connection remains interpretative based on the qualitative data. Teachers also noted that the platform supported participation by quieter students and helped them address varying proficiency levels in mixed-ability classrooms. In addition, the platform provided teachers with inspiration for designing cooperative exercises. These outcomes demonstrate the potential of the TONY platform to create a more engaging and differentiated educational experience. Building on these findings, the study presents two key insights derived from the empirical evaluation of platform's initial implementation, followed by a forward-looking discussion on the potential of AI-driven enhancements:

1. *The use of authentic materials enhances motivation in language education, as learners are exposed to real-world contexts that make the learning process more relevant and engaging:* This study underscores the pivotal role of authentic materials in enhancing student motivation, fostering cultural understanding and promoting overall engagement. Participants highlighted the way exposure to real-world contexts through multimedia resources, such as videos featuring native speakers, made the learning process more relevant and meaningful. This aligns with previous research by Toleuzhan et al. (2023), Yassin (2024) and Zabitgil Gülseren & Araz (2024), which found that authentic content can enhance learner motivation by creating a sense of personal relevance and connection to the target language.
2. *Multimedia and multimodal customisation features effectively address diverse learners' needs and enhance engagement and autonomy through tailored educational pathways:* While authentic materials enhance motivation, their effectiveness stems largely from the specific implementation on the TONY platform. Interactive customisation features such as self-paced video playback, proficiency-level options, subtitle options and opinion polls played a crucial role in making the content accessible to a wide range of learners. While these features are not multimodal in themselves, they enable learners to flexibly access and interact with content that is inherently multimodal, involving text, spoken language, visual elements and contextual cues. They ensure, for example, that students can engage with the material at their own pace, addressing diverse needs and promoting inclusivity by reducing barriers to participation. This design supports diverse learning preferences and cognitive needs by allowing learners to engage with multiple semiotic modes in personalised ways. Such adaptive features are increasingly recognised for their potential to support differentiated learning and promote learner autonomy (Orsi Koch Delgado et al. 2020; Tapalova & Zhiyenbayeva 2022). By immersing learners in authentic, contextualised materials, the platform accommodates diverse learning needs. Such an environment empowers students to take ownership of their education, enhancing confidence and autonomy. These approaches are supported the findings of Perez & Rodgers (2019) and Anis & Khan (2023), who note that learner-centred, adaptive environments reduce disparities and promote sustained engagement, thereby fostering a supportive and equitable learning environment. The use of authentic, multimodal materials in TONY exemplifies how such platforms provide learners with a rich, immersive experience that aligns with communicative language teaching (CLT) principles (Richards 2006; Gilmore 2007; Perez & Rodgers 2019).

3. Looking ahead: *AI-driven features have the potential to shift education from differentiated language learning classes to personalised ones, catering specifically to the individual needs of each student:* While this study did not evaluate the AI-enhanced version of the TONY platform, existing research highlights the potential of AI-driven tools to personalise and enrich language learning. For example, findings from Sutrisno et al. (2024) suggest that multimodal tools combining text, audio, video and AI-driven interactivity can significantly enhance learner engagement. Similarly, Anis & Khan (2023) and Labadze et al. (2023) emphasise that AI-enabled personalisation fosters adaptive learning environments that support diverse learners and promote digital literacy. These insights informed the development of Phase II of the TONY platform, which integrates an AI-driven chatbot intended to personalise learning by dynamically responding to students' individual language levels and input.

   While these changes hold promise, it is important to emphasise that the potential benefits of the AI component in the TONY platform remain hypothetical at this stage, as no empirical evaluation of Phase II has yet been conducted. The chatbot feature aims to simulate real-world conversation and adapt in real time to learners' responses – moving the platform from differentiated instruction, based on level-appropriate video selection, towards more personalised learning interactions. However, whether this shift meaningfully enhances learner outcomes and engagement remains an open question. The upcoming evaluation of Phase II will provide essential insights into the effectiveness and limitations of this AI-enhanced approach.

Furthermore, the growing presence of AI-generated content in language education raises critical questions for future development. Traditionally, authenticity referred to using real-world materials reflecting native speakers' language and cultural norms, while intercultural competence emphasised engagement with diverse cultural perspectives (Harmer 2005; Deardorff 2009). However, with the proliferation of AI-generated dialogues and videos, these notions are being questioned. Recent research has shown that while AI-generated dialogues can mimic linguistic interactions with precision, they often miss the emotional depth and cultural context inherent in human communication (Prabhakaran et al. 2022). Similarly, AI-generated videos may depict cultural scenarios convincingly but might fail to convey the lived experiences, sociocultural nuances and deeper meanings that characterise truly authentic cultural artefacts. The lack of critical examination in the current literature on these topics reveals a significant research gap. This emerging tension highlights the importance of critically reassessing how we define authenticity and intercultural competence in AI-enhanced learning environments like TONY.

Although TONY currently relies on real-world YouTube content, future developments may include synthetic materials, which would necessitate clear pedagogical criteria to evaluate their appropriateness and cultural validity.

In summary, this study illustrates the potential of using authentic materials to foster motivation, engagement and inclusivity in secondary language education. Findings from the empirical evaluation of Phase I of the TONY platform suggest that carefully curated, contextually relevant video content, paired with interactive customisation features, can enhance learners' sense of relevance and autonomy. These design features support differentiated learning and help address the diverse needs of students.

While the integration of AI-driven features represents a promising next step, their impact on personalised learning remains hypothetical at this stage. Phase II of the platform introduces an AI-powered chatbot, which aims to tailor interactions based on students' individual responses. Future research will be essential to evaluate the pedagogical effectiveness and limitations of this component and to further investigate how AI might enhance learner outcomes in multimodal learning environments.

AI Use Declaration

The authors used machine translation to generate initial English drafts of interview quotations from German; all translations were subsequently edited for accuracy and tone. In Phase II design of the TONY platform (described but not evaluated in this article), the team prototyped prompt templates for an integrated large language model (LLM) chatbot (OpenAI ChatGPT-4) and performed limited internal testing with synthetic examples. AI tools were used to assist with refinement for qualitative analysis and coding. No text, figures, or results generated by AI are presented as original research findings.

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