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AISS
ARTIFICIAL INTELLIGENCE FOR STUDIES AND SUPPORT IN HIGHER EDUCATION

Development of a virtual assistant for the selected study program

Contents

Introduction

The document is intended to discuss the cases for the chatbots design. Chatbots support smart learning in higher education. They automatically provide responses on behalf of academic staff and several services related to the higher education system. Moreover, the chatbot can be a smart assistant. All partners will have the access to the tool, which will be used for creating own chatbots scenarios.

Task

T3.1. Design of chatbots scenarios aims to design 4 chatbot scenarios - the aim of this task is to develop totally four scenarios directly related to the study process, that could assure a better quality of education and incensement of using intelligence technologies in education by developing virtual assistant i.e.:

(1) chatbot for courses guiding and support,

(2) chatbot for content material support,

(3) assessment,

(4) individual tasks support

Leading partner KTU. All partners will contribute to the task implementation. Deadline of R3.1, M9 - M13.

Virtual assistant will be fully online on M13 and will be evaluated by responsible partner KTU. QA2 reports will be prepared and presented to partners. Leading partner KTU. All partners will contribute to the task implementation. Deadline of QA2 – M13.

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Choosing study program

Scenario's design is directly related to the selected study program and courses in Multimedia subject. In the case we are selecting the modules for the scenarios to be implemented. Per partner.

Country /partner	Study program	Module
ES	Mechanical engineering	Programming
LT	Information systems	Multimedia technologies
DE	Engineering	Microcontrollers
PL	Digital media	Business models in digital media

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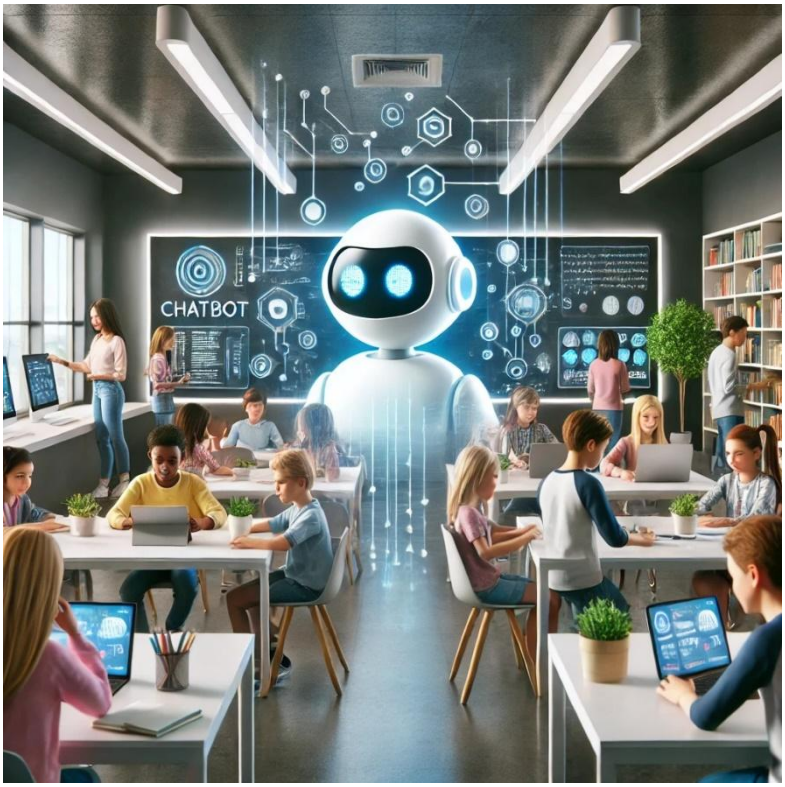
Design of chatbots scenarios



The chatbots scenarios a chatbot assist students with their learning, emphasizing AI's role in education [OpenAI. (2024). ChatGPT (Feb 13 version) [Large language model]. https://chat.openai.com].

Important:

The document provided scenarios for four courses: (1) Microcontrollers, (2) Multimedia technologies, (3) Programming, (4) Business models in digital media.

The scenarios are developed according to four purposes: (1) chatbot for courses guiding and support, (2) chatbot for content material support, (3) assessment, (4) individual tasks support.

Challenges of chatbots design and implementation

Designing chatbots for educational purposes presents several challenges that must be addressed to ensure their effectiveness and ethical implementation. Key challenges identified in the following literature include:

Adaptation to Student Needs ensure that chatbots are tailored to meet the emotional and learning requirements of students is crucial. This involves aligning the chatbot's functions with students' curricula and expectations, which can be complex and resource-intensive[1].

Accessibility and Availability related to designing chatbots that are accessible through various communication channels and available at all times requires careful planning and technical resources[1].

Conversational Quality is related to developing chatbots that can engage in grammatically correct, quick, and easy-to-understand interactions is essential for effective communication. Incorporating human-like conversational traits, such as humor and emoticons, can enhance user engagement but also presents design challenges[1].

Ethical and Privacy Concerns related to integrating AI chatbots in education raises issues related to data privacy, academic integrity, and potential biases in AI responses. Addressing these concerns requires establishing clear guidelines and regulations to ensure ethical development and deployment[2]

Integration with Pedagogical Strategies related to an aligning chatbot functionalities with specific learning theories and teaching styles is necessary to provide a coherent educational experience. This alignment can be challenging, as it requires a deep understanding of both pedagogical principles and technological capabilities[1].

[1] Ramandanis, D., & Xinogalos, S. (2023). Designing a Chatbot for Contemporary Education: A Systematic Literature Review. *Information*, *14*(9), 503. https://doi.org/10.3390/info14090503

[2] Labadze, L., Grigolia, M. & Machaidze, L. Role of AI chatbots in education: systematic literature review. *Int J Educ Technol High Educ* **20**, 56 (2023). https://doi.org/10.1186/s41239-023-00426-1

Addressing these challenges necessitates a multidisciplinary approach, involving collaboration among educators, developers, and policymakers to create chatbots that are pedagogically sound, user-friendly, and ethically responsible.

Chatbots support in educational platforms

Chatbots have become integral components of educational platforms, offering multifaceted support to both students and educators. Their roles encompass academic advising, career counseling, personalized mentoring, and assistance in resource navigation. These functionalities aim to enhance the educational experience by providing timely, personalized, and interactive support.

Educational chatbots serve as ***academic advisors*** by assisting students in course selection and academic planning. They analyze students' academic records and preferences to recommend suitable courses, ensuring alignment with their educational goals. For instance, chatbots can monitor a student's academic progress and alert them to potential challenges, facilitating early intervention strategies. Additionally, they provide information on institutional policies and regulations, aiding students in navigating administrative processes effectively[3]. Beyond academic guidance, chatbots offer ***career counseling*** services by helping students explore potential career paths and providing insights into various professions. They can alleviate the stress associated with career decision-making by delivering personalized responses to students' inquiries, creating a supportive environment for career exploration[1]. In the role of mentors, chatbots provide ***personalized feedback*** on students' learning progress. They supervise educational activities, suggest tailored exercises, and supply relevant materials to address individual learning needs. This personalized approach fosters a deeper understanding of subject matter and promotes self-regulated learning[3]. Chatbots ***assist students*** in efficiently navigating academic resources. They guide learners in searching for pertinent academic papers, evaluating the relevance of

[3] Guan, R., Raković, M., Chen, G. *et al.* How educational chatbots support self-regulated learning? A systematic review of the literature. *Educ Inf Technol* **30**, 4493–4518 (2025). https://doi.org/10.1007/s10639-024-12881-y

documents, and organizing study materials. By streamlining the research process, chatbots enhance students' ability to access and utilize information effectively. ***Chatbots support self-regulated learning*** by engaging students in goal setting, strategic planning, and progress monitoring. They prompt learners to reflect on their study habits, suggest effective learning strategies, and provide feedback on performance. This guidance encourages students to take ownership of their learning processes and develop essential self-regulation skills[3].

The integration of chatbots into educational settings involves various ***pedagogical approaches***, including exercises, role-playing, collaborative projects, and open-ended debates. These activities are designed to enhance interactivity, authenticity, and student engagement[4].

In summary, chatbots in educational platforms play a pivotal role in providing comprehensive support that encompasses academic advising, career counseling, personalized mentoring, resource navigation, and the facilitation of self-regulated learning. Their integration reflects a commitment to leveraging technology to enhance the educational journey, making learning more accessible, personalized, and effective.

STEM learning based on chatbots in higher education

Integrating chatbots into STEM (Science, Technology, Engineering, and Mathematics) education in higher education institutions has garnered significant attention, offering innovative avenues to enhance teaching and learning experiences. The primary aspects of chatbot support in this context encompass personalized learning assistance, increased student engagement, immediate feedback provision, and the facilitation of complex problem-solving skills.

Chatbots serve as virtual teaching assistants, providing tailored support to students by addressing individual queries and adapting to diverse learning paces. This personalization is particularly beneficial in STEM disciplines, where students often encounter intricate concepts requiring

[4] Zhang, R., Zou, D., & Cheng, G. (2023). A review of chatbot-assisted learning: pedagogical approaches, implementations, factors leading to effectiveness, theories, and future directions. *Interactive Learning Environments*, *32*(8), 4529–4557. https://doi.org/10.1080/10494820.2023.2202704

customized explanations. For example, a study conducted in Ghanaian higher education demonstrated that students who interacted with a chatbot exhibited improved academic performance compared to those who engaged solely with human instructors. The chatbot's ability to deliver immediate and personalized responses contributed to this enhancement in learning outcomes[5].

The interactive nature of chatbots fosters increased student engagement by simulating conversational experiences. In STEM education, this engagement is crucial for maintaining student interest and motivation, particularly when dealing with abstract or challenging subjects. By providing an accessible platform for students to pose questions and receive instant answers, chatbots help create a more dynamic and participatory learning environment. This approach aligns with findings from a meta-analysis indicating that text-based chatbots significantly enhance learning performance, especially in STEM disciplines[6].

Timely feedback is essential in the learning process, enabling students to identify and rectify misunderstandings promptly. Chatbots can offer immediate feedback on assessments, quizzes, and assignments, allowing students to learn from their mistakes in real-time. This instant feedback mechanism is particularly advantageous in STEM fields, where problem-solving and iterative learning are fundamental components. Moreover, the consistent availability of chatbots ensures that students have access to support outside traditional classroom hours, promoting continuous learning[7].

STEM education emphasizes the development of critical thinking and complex problem-solving abilities. Chatbots can guide students through problem-solving processes by prompting them with leading questions, offering hints, and encouraging analytical thinking. This scaffolding

[5] Essel, H.B., Vlachopoulos, D., Tachie-Menson, A. *et al.* The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education. *Int J Educ Technol High Educ* **19**, 57 (2022). https://doi.org/10.1186/s41239-022-00362-6

[6] Laun, M., & Wolff, F. (2025). Chatbots in education: Hype or help? A meta-analysis☆. *Learning and Individual Differences*, *119*, 102646

[7] Anjulo Lambebo, E., & Chen, H. L. (2024). Chatbots in higher education: a systematic review. *Interactive Learning Environments*, 1–27. https://doi.org/10.1080/10494820.2024.2436931

approach helps students build confidence and competence in tackling complex problems independently. Furthermore, chatbots can simulate real-world scenarios, allowing students to apply theoretical knowledge in practical contexts, thereby bridging the gap between theory and practice[7].

While the integration of chatbots in STEM education offers numerous benefits, it also presents certain challenges. Ensuring the accuracy and reliability of information provided by chatbots is paramount, as misinformation can hinder learning. Additionally, addressing ethical concerns related to data privacy and the potential for over-reliance on technology is crucial. Educators must also consider the varying levels of digital literacy among students and provide adequate support to ensure equitable access to chatbot-assisted learning[7].

The incorporation of chatbots into STEM education within higher education institutions holds significant promise for enhancing personalized learning, student engagement, immediate feedback, and complex problem-solving skills. However, careful consideration of associated challenges is essential to maximize their effectiveness and ensure a positive impact on student learning outcomes.

Automatic responses on behalf of academic feedback

Implementing chatbots to provide automatic academic feedback in higher education offers several significant benefits that enhance the learning experience.

Chatbots can deliver instant responses to student inquiries, allowing learners to quickly identify and address misunderstandings. This immediate feedback is crucial for reinforcing knowledge and promoting continuous learning. Studies have shown that students interacting with chatbots perform better academically compared to those relying solely on human instructors, highlighting the effectiveness of timely, personalized feedback[6].

The interactive nature of chatbots fosters increased student engagement by providing a conversational platform for learning. This engagement can lead to higher motivation levels, as students receive prompt assistance and feel supported in their educational journey. Research

indicates that chatbots can induce positive emotions, which are linked to improved learning motivation and outcomes[8].

Moreover, chatbots offer a scalable solution to provide consistent academic support to a large number of students simultaneously. This scalability ensures that all learners have equal access to assistance, regardless of class size or instructor availability. By being available 24/7, chatbots accommodate diverse learning schedules and needs, promoting inclusivity in education. By offering hints, resources, and feedback, chatbots encourage students to take control of their learning processes. This support fosters self-regulated learning, enabling students to set goals, monitor progress, and adjust strategies accordingly. Such autonomy is essential for developing lifelong learning skills. While the benefits are substantial, integrating chatbots for academic feedback also presents challenges. Ensuring the accuracy of information provided by chatbots is critical to maintain educational integrity. Additionally, addressing ethical concerns related to data privacy and preventing over-reliance on technology is necessary to create a balanced and effective learning environment.

The leveraging chatbots for automatic academic feedback is important for providing immediate, personalized support, enhancing student engagement, and promoting self-regulated learning. Careful implementation and ongoing evaluation are essential to maximize their potential and address associated challenges effectively.

A smart assistant by chatbots

Integrating chatbots as smart assistants in educational settings offers numerous advantages that enhance the learning experience for students and streamline administrative tasks for educators. Key aspects of their implementation include: personalized learning support, 24/7 availability and instant assistance, administrative task automation, enhanced student engagement, immediate feedback and assessment, support for students with disabilities, career guidance and counseling,

[8] Yin, J., Goh, TT. & Hu, Y. Interactions with educational chatbots: the impact of induced emotions and students' learning motivation. *Int J Educ Technol High Educ* **21**, 47 (2024). https://doi.org/10.1186/s41239-024-00480-3

data collection and analysis, language learning and translation assistance, ethical and privacy considerations.

Chatbots can deliver customized educational content tailored to individual student needs, adapting to various learning styles and paces. This personalization helps address specific challenges students may face, promoting a more effective learning process. Unlike human instructors, chatbots are available around the clock, providing immediate responses to student inquiries. This constant availability ensures that learners receive timely support, fostering continuous engagement and reducing frustration.

Educational chatbots can automate routine administrative duties such as scheduling, attendance tracking, and assignment reminders. By handling these tasks, chatbots free up educators' time, allowing them to focus more on teaching and student interaction.

Through interactive and conversational interfaces, chatbots make learning more engaging. They can incorporate elements like quizzes and gamification, motivating students to participate actively and making the educational experience more enjoyable. Chatbots can provide instant feedback on quizzes and assignments, enabling students to understand their mistakes and learn from them promptly. This immediate assessment helps in reinforcing concepts and improving knowledge retention.

AI-powered chatbots offer assistive technologies that help students with disabilities perform academic tasks more effectively. For instance, they can aid dyslexic students by reading text aloud or assisting with writing, thereby promoting inclusivity in education. Beyond academic support, chatbots can assist students in exploring career options, providing information on job opportunities, and offering guidance on resume writing and interview preparation. This support is crucial in helping students make informed decisions about their future. Chatbots can gather and analyze data on student performance and engagement, providing educators with valuable insights. This information can inform teaching strategies and identify areas where students may need additional support. For language learners, chatbots can facilitate conversational practice and provide real-time translation support, enhancing language acquisition and breaking down

communication barriers. While chatbots offer numerous benefits, it's essential to address ethical concerns, particularly regarding data privacy and security. Ensuring that chatbots comply with privacy regulations and protect student information is paramount.

Incorporating chatbots as smart assistants in education presents a transformative approach to teaching and learning. By providing personalized support, automating administrative tasks, and enhancing student engagement, chatbots contribute significantly to creating more efficient and inclusive educational environments.

Scenarios and opportunities

The integration of chatbots in educational settings has garnered significant attention, offering innovative avenues to enhance teaching and learning experiences. This literature review explores various scenarios and opportunities associated with the design and implementation of chatbots in education, drawing upon recent scientific studies. Chatbots have the potential to provide tailored educational experiences by adapting to individual student needs and learning paces. They can deliver customized content, answer queries, and offer explanations, thereby facilitating a more personalized learning journey. This adaptability is particularly beneficial in addressing diverse learning styles and requirements.

Beyond instructional support, chatbots can automate routine administrative tasks such as scheduling, attendance tracking, and disseminating course information. By handling these responsibilities, chatbots free up educators' time, allowing them to focus more on pedagogical strategies and student engagement[1]. The interactive nature of chatbots can significantly boost student engagement. By providing instant feedback and maintaining continuous communication, chatbots create a dynamic learning environment that encourages active participation and sustains student motivation. Chatbots can support the development of self-regulated learning skills by prompting students to set goals, monitor their progress, and reflect on their learning strategies. This guidance fosters autonomy and encourages learners to take ownership of their educational journey. Incorporating chatbots into collaborative learning scenarios can enhance

group interactions by mediating discussions, providing prompts, and ensuring that all group members are actively involved. This application promotes teamwork and the development of communication skills among students[9].

Despite the promising opportunities, the implementation of chatbots in education is not without challenges. Ensuring the accuracy and reliability of information provided by chatbots is critical, as misinformation can hinder learning. Additionally, addressing ethical concerns related to data privacy and the potential for over-reliance on technology is essential. Educators must also consider the varying levels of digital literacy among students and provide adequate support to ensure equitable access to chatbot-assisted learning[2].

However, the design and implementation of chatbots in education present numerous opportunities to enhance personalized learning, automate administrative tasks, and support self-regulated and collaborative learning. However, careful consideration of associated challenges and ongoing research are essential to maximize their effectiveness and ensure a positive impact on educational practices.

[9]Durall Gazulla, E., Martins, L. & Fernández-Ferrer, M. Designing learning technology collaboratively: Analysis of a chatbot co-design. *Educ Inf Technol* **28**, 109–134 (2023). https://doi.org/10.1007/s10639-022-11162-w

Course 1. "Microcontrollers" in Engineering study program

(1) chatbot for courses guiding and support

**should be taken into consideration pedagogical and technological aspects*

Cognii virtual assistant

https://www.cognii.com

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	Cognii's primary purpose is to support education by providing real-time, adaptive tutoring and assessment. It uses natural language conversations to help students improve their understanding of various subjects, especially in online learning environments. It can provide answers to open-ended questions, guide users through problem solving and provide immediate feedback to improve learning outcomes. For educators, it provides insight into student progress and understanding, helping to adapt curricula and personalise instruction.	**Face-to-Face (F2F) Learning** Cognii can be used in a traditional classroom environment: – **Instant feedback** During lessons or assessments, students can interact with the Cognii assistant on their devices (tablets, laptops) to receive real-time feedback on open-ended questions. This frees up teacher time for one-to-one interaction with students who need additional support. – **Classroom supplement** The assistant provides additional practice and individualised feedback to students outside of class time. – **Teacher Assistant** Teachers can use Cognii to assess students' responses, especially to
Features that a chatbot includes	– **Personalized Tutoring** Offers tailored guidance and feedback to each student. – **Instant Assessment** Evaluates open-response answers in real-time. – **Adaptive Learning** Adjusts the difficulty and type of questions based on the student's progress. – **Conversational Interface** Engages students in a dialogue to construct answers and receive feedback. – **Multiple Attempts**	

	Allows students to practice until they achieve mastery. – **Analytics for Educators** Provides detailed insights into student performance and learning gaps.	open-ended questions, helping them to identify where students are struggling without having to manually mark each response. **Blended Learning** Blended learning combines in-person instruction with online, self-paced learning. In this mode, Cognii can – **Flipped classroom** Support flipped classroom models by providing pre-class assignments and assessments that students complete online. – **In-Class Activities** Facilitate interactive activities during class, allowing teachers to focus on higher-order thinking skills. – **Continuous Assessment** Provide ongoing assessment and feedback to help students stay on track with their learning goals. – **Flexible access** Allow students to access learning materials and support both in and out of the classroom, ensuring continuity in their learning experience. **Distance Learning**
The technology used to develop the chatbot	– **Natural Language Processing (NLP)** Cognii uses advanced NLP to understand and evaluate student responses. This technology enables the chatbot to provide qualitative feedback and engage in meaningful educational conversations, similar to a human tutor. – **Machine Learning Algorithms** Cognii uses machine learning algorithms to continuously improve its understanding and responses. These algorithms analyse large amounts of data to learn patterns and make predictions, enabling the chatbot to provide accurate and personalised feedback. – **Adaptive learning systems** Cognii includes adaptive learning systems that adjust the difficulty and type of questions based on the student's progress. This ensures that the learning experience is tailored to each student's individual needs. – **Cloud computing** The chatbot uses cloud computing to ensure scalability and accessibility. This means it can handle a large number of users simultaneously and can be accessed from anywhere with an internet connection. – **Data security** Cognii uses robust encryption and security protocols to protect sensitive information.	
The target audience for the chatbot, including	**Students** – **Demographics:** Mostly students aged 10 to 25 years, especially those engaged in	

demographics, interests, and any other relevant characteristics	online learning or distance education, ranging from K-12 to higher education (university/college students). While primarily used in English-speaking regions, Cognii can be adapted for students across diverse geographic locations, particularly those engaged in online learning environments. – **Interests:** Students seeking additional help in areas such as math, science, writing, or critical thinking, especially for mastering concepts through practice and feedback; who prefer conversational and interactive methods rather than passive, lecture-based content. **Educators and Instructors** – **Demographics:** Teachers, tutors, and educational institutions who are looking for tools to assist with personalized instruction and assessments. – **Interests:** Educators interested in AI-driven solutions that help them track student progress, provide instant feedback, and offer more personalized support to their students. **Educational Institutions** – **Demographics:** Schools, universities, and e-learning platforms can integrate Cognii into their systems to enhance teaching and learning experiences. – **Interests:** Institutions looking for scalable solutions that can provide personalized learning to a large number of students without requiring a proportional increase in faculty; schools and universities that want to collect and analyze data on student performance to optimize their curriculums and teaching strategies.	In a fully online learning environment, Cognii can provide: – **24/7 availability** Provide round-the-clock support so students can learn at their own pace and on their own schedule. – **Personalised learning paths** Create customised learning paths based on individual student progress and performance. – **Interactive Lessons** Engage students with interactive lessons and real-time feedback, making online learning more dynamic and effective. – **Virtual Tutoring** Act as a virtual tutor, offering explanations, answering questions and guiding students through complex topics. – **Collaboration tools** Facilitate online discussions and collaborative projects, helping students stay connected and engaged with their peers.

The benefits of using the chatbot	– **Personalised learning experience** Students receive personalised instruction that adapts to their needs, making learning more effective. – **Improved Engagement** Conversational AI makes learning interactive and engaging compared to traditional learning methods. – **Instant Feedback** Learners can immediately see where they went wrong and correct themselves, leading to better retention of information. – **Scalable solutions** For educational institutions, Cognii provides a scalable way to deliver personalised education to large numbers of students.	
The availability of the chatbot	Cognii is available through integrations with educational platforms and Learning Management Systems (LMS). Schools, universities and online course providers can integrate Cognii into their digital infrastructure, and the chatbot can be customised to suit different curricula and academic needs. https://www.cognii.com	
Information on the support available	Cognii provides technical support to its institutional clients for integrating the virtual assistant into their learning systems, including: – **Online Resources:** tutorials, FAQs, and user guides. – **Customer Support:** Email and possibly live chat support for troubleshooting and assistance.	

(2) chatbot for content material support

**should be taken into consideration pedagogical and technological aspects*

D2L Lumi

https://www.d2l.com/lumi/

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The D2L Lumi chatbot is designed to enhance the educational experience by providing AI-driven support and resources. It aims to streamline the teaching and learning process, making it more efficient and engaging for both educators and students.	**Face-to-Face (F2F) Learning** – **Provide instant help** Provide instant help and support to students and instructors directly within the Brightspace platform, ensuring that questions and issues are resolved quickly and without disrupting the class. – **Interactive content creation** Help educators create engaging and interactive content, such as quizzes and exercises, to enhance classroom activities. – **Real-time feedback** Provide real-time feedback on student submissions and
Features that a chatbot includes	– **Content Creation** Generates quiz questions, assignment ideas, and discussion topics to aid educators in developing comprehensive course materials. – **Personalized Learning** Offers tailored recommendations and resources based on individual learning needs and progress. – **Administrative Support** Assists with scheduling, reminders, and other administrative tasks to help educators manage their workload more effectively. – **Instant Feedback** Provides immediate responses to student queries, helping them understand concepts and complete assignments more efficiently. – **Resource Integration** Seamlessly integrates with D2L's Brightspace platform, ensuring all resources and tools are easily accessible.	

The technology used to develop the chatbot	– **Natural Language Processing (NLP)** This allows the chatbot to understand and respond to user queries in a conversational manner. NLP helps in interpreting the context and intent behind user inputs, making interactions more intuitive and human-like. – **Generative AI** The chatbot uses generative AI to create quiz questions, assignment ideas, and discussion topics. This technology helps in producing diverse and relevant educational content quickly. – **Automated Responses** Generative AI also powers the chatbot's ability to provide instant answers to frequently asked questions, enhancing the efficiency of support provided to users. – **Integration with D2L Brightspace** The chatbot is integrated directly into the D2L Brightspace platform, allowing users to access its features without leaving their learning environment. This integration ensures that all resources and tools are easily accessible. – **Data Privacy and Security** D2L ensures that no customer data is used to train the language models, maintaining user privacy and control over their data.	activities to help students immediately understand their progress and areas for improvement. **Blended Learning** – **Seamless integration** Integrate seamlessly with both classroom and online components, providing a consistent learning experience across multiple environments. – **Adaptive learning** Adjust the level of difficulty and type of content based on student performance, ensuring personalised learning paths that meet individual needs. – **Educator Support** Help educators manage their courses more efficiently by automating routine tasks such as grading and content alignment. **Distance Learning** – **24/7 availability** Be available around the clock, giving students access to support and
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	**Educators** – **Demographics:** Teachers, professors, and instructional designers across K-12, higher education, and professional training programs. – **Interests:** Enhancing teaching efficiency, creating engaging course materials, and leveraging technology to improve student outcomes. **Students** – Demographics: Learners of all ages, from elementary school students to adult learners in	

	higher education and professional development courses. – Interests: Personalized learning experiences, instant feedback on assignments, and access to diverse educational resources. **Educational Institutions** – **Demographics**: Schools, colleges, universities, and training organizations. – **Interests:** Implementing advanced educational technologies, improving administrative efficiency, and providing high-quality learning experiences. **Administrators** – **Demographics:** School principals, deans, and educational administrators. – **Interests:** Streamlining administrative tasks, improving communication with students and staff, and enhancing overall institutional efficiency.	resources whenever they need them. – **Increase engagement** Create interactive and engaging online content that keeps students motivated and involved in the learning process. – **Predictive analytics** Use predictive analytics to identify at-risk learners early and provide targeted interventions to support their success. – **Comprehensive support** Offer comprehensive support options, including access to help documentation, live chat with support agents and community forums, all within the Brightspace platform.
The benefits of using the chatbot	– **Automated Content Creation** Quickly generates quiz questions, assignments, and discussion topics, saving educators significant time in preparing course materials. – **Instant Responses** Provides immediate answers to frequently asked questions, reducing the need for manual intervention and allowing users to get the information they need quickly. – **Enhanced Learning Experience** Offers tailored recommendations and resources based on individual learning needs and progress, helping students achieve better outcomes. – **Task Management** Assists with scheduling, reminders, and other administrative tasks, helping educators manage their workload more effectively. – **Resource Integration**	

	Seamlessly integrates with D2L's Brightspace platform, ensuring all resources and tools are easily accessible within the learning environment. – **24/7 Availability** The chatbot is available around the clock, providing support whenever it's needed, which is especially beneficial for students in different time zones. – **Reduced IT Load** By handling common queries and providing how-to guides, the chatbot helps reduce the volume of IT tickets and shortens wait times for support.	
The availability of the chatbot	The D2L Lumi chatbot, also known as Lumi Chat, is integrated directly into the D2L Brightspace platform. It is available as part of the End User Support Lite package. Users can access Lumi Chat through a pop-up window by clicking the speech bubble button located in the bottom right corner of their Brightspace session. https://www.d2l.com/lumi/	
Information on the support available	– **Integrated Help Documentation:** Lumi Chat provides immediate access to help documentation directly within the Brightspace platform. This allows users to find answers to their questions without leaving their current session. – **Live Support Agents:** If users need further assistance, they can contact a live support agent directly from Brightspace. This feature ensures that users can get personalized help when needed. – **Subscription Requirement:** Lumi Chat is available only to organizations that have subscribed to the End User Support Lite package. If your organization has not subscribed to this package, Lumi Chat may not be available.	

(3) assessment

**should be taken into consideration pedagogical and technological aspects*

ALEKS

www.aleks.com/

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	ALEKS (Assessment and Learning in Knowledge Spaces) is an intelligent learning and assessment platform designed to help students master course material in subjects like math, science, and business. It uses artificial intelligence to create personalized learning experiences.	**Face-to-Face (F2F) Learning** – **Supplement Classroom Instruction** Provide additional practice and personalized feedback to students outside of class hours, reinforcing what they learn during lessons. – **Assist Teachers** Help educators identify individual student needs and tailor their instruction accordingly by providing detailed reports on student progress and knowledge gaps. – **Interactive Stations** Be used at learning stations where students can engage with ALEKS for specific subjects or topics, allowing for differentiated instruction within the classroom.
Features that a chatbot includes	– **Knowledge Assessment** ALEKS starts with an initial assessment that identifies what a student knows and where they need help. The system then tailors learning modules to their specific needs. – **Adaptive learning path** Based on the assessment, ALEKS builds a personalised learning path. The platform continuously updates the learning path as the student progresses, ensuring that they are always working on areas where they can improve. – **Real-time feedback** ALEKS provides immediate feedback on exercises, allowing students to understand their mistakes and learn how to correct them. – **Progress Monitoring** ALEKS tracks student progress over time, showing both students and teachers how much they have mastered and what they still need to learn. – **Periodic knowledge checks**	

	To ensure long-term retention, ALEKS periodically tests students on previously mastered topics, reinforcing learning.	– **Homework Support** Offer guidance and instant feedback on homework assignments, helping students understand and correct their mistakes in real-time. **Blended Learning** – **Flipped classroom** Support flipped classroom models by providing pre-class assignments and assessments that students complete online, freeing up class time for deeper exploration of topics. – **In-Class Activities** Facilitate interactive activities during class, allowing teachers to focus on higher-order thinking skills and collaborative projects. – **Continuous Assessment** Provide ongoing assessment and feedback to help students stay on track with their learning goals and allow teachers to continually monitor progress. – **Flexible access** Allow students to access learning
The technology used to develop the chatbot	– **Artificial Intelligence (AI)** To adaptively assess student knowledge and create personalized learning paths. – **Knowledge Space Theory (KST)** A cognitive model that maps out the relationships between various concepts to determine what a learner is ready to learn next. – **Data Analytics** To track and analyze student progress over time and provide insights to both students and educators.	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	**Students** – **Demographics:** ALEKS is designed for students from elementary school to college, with its core audience being in the K-12 (10-18 years) and higher education (18-25 years) range. However, it can also be used by adult learners in continuing education programs. – **Interests:** Students who are focused on science, technology, engineering, and math (STEM) subjects. ALEKS is especially useful for students who are enrolled in online education, distance learning, or hybrid educational programs, where independent study is essential. **Educators and Instructors** – **Demographics:** Teachers, college professors, tutors, and academic administrators, who need a tool to assess and enhance student understanding of core math and science topics. Private tutors and academic support staff who want to provide personalized assistance to students based on their individual needs.	

	– **Interests:** Educators who are interested in using analytics and performance data to track student progress and identify areas where students need more support. **Educational Institutions** – **Demographics:** Public and private middle and high schools, colleges and universities, homeschool networks, especially those with a focus on STEM education or using digital learning platforms. – **Interests:** Institutions that want to offer customized learning experiences to large groups of students; institutions looking to improve test scores, reduce the need for remediation, and increase student retention in STEM-related courses.	materials and support both in and out of the classroom, ensuring continuity in their learning experience. **Distance Learning** – **24/7 availability** Around-the-clock support allows students to learn at their own pace and on their own schedule, which is critical for distance learners. – **Personalised learning paths** Create customised learning paths based on individual student progress and performance, ensuring each student receives the support they need to succeed. – **Interactive Lessons** Engage students with interactive lessons and real-time feedback, making online learning more dynamic and effective. – **Virtual tutoring** Act as a virtual tutor, offering explanations, answering questions and guiding students through complex topics, much like a human tutor would.
The benefits of using the chatbot	– **Personalised learning** ALEKS customises learning paths based on the student's knowledge, helping them to focus on the areas where they need the most help. This results in more efficient learning. – **Mastery-Based Learning** Helps ensure that students fully understand a concept before moving on to the next one, promoting long-term retention and a deeper understanding of the material. – **Self-paced learning** Students can work at their own pace, making ALEKS appropriate for a variety of learning environments, including independent study, home study and online courses. – **Instant feedback and assessment** Students receive immediate feedback on their progress, allowing them to quickly understand and correct mistakes.	
The availability of the chatbot	ALEKS is available as a web-based platform, which means it can be accessed through any	

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	device with internet connectivity, such as desktops, laptops, tablets, or smartphones. Many educational institutions integrate ALEKS into their curriculum to support personalized learning. ALEKS is also available for purchase by individual learners, particularly homeschoolers and online students who want to improve their knowledge in key subject areas. www.aleks.com/	– **Collaboration tools** Facilitate online discussions and collaborative projects, helping students stay connected and engaged with their peers, even in a remote learning environment.
Information on the support available	– **Technical Support:** Users can access help through the ALEKS website, including troubleshooting guides, FAQs, and a dedicated support team for technical issues. – **Training and Tutorials:** Educators and students can access tutorials on how to effectively use ALEKS, including setup guides, classroom integration strategies, and best practices for mastering the platform's features. – **Customer Service:** Direct customer service is available for institutional clients, including onboarding support for schools and districts implementing ALEKS on a large scale.	

(4) individual tasks support

**should be taken into consideration pedagogical and technological aspects*

Knewton

www.wiley.com/en-de/education/alta

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The Knewton virtual assistant, now integrated into Wiley's Alta, is designed to personalise the learning experience by using AI to tailor educational content to individual student needs. It helps users, especially students, by providing adaptive learning paths, instant feedback and continuous assessment to ensure mastery of subjects.	**Face-to-Face (F2F) Learning** – Supplement classroom instruction Provide additional practice and personalised feedback to students outside of class to reinforce what they learn in class. – Support assessment Teachers can use Knewton as an in-class assessment tool to gauge student understanding of key concepts. The system's adaptive quizzes can provide insight into student performance, helping teachers identify areas that need further one-to-one attention. – Teacher Insights Teachers can monitor student progress through Knewton's analytics. This allows them to tailor their teaching based on class performance. Teachers can use this data to adjust
Features that a chatbot includes	– Adaptive learning Knewton adjusts the difficulty and focus of content based on the student's performance and knowledge level. The chatbot dynamically adapts the learning experience for each user. – Real-time feedback and explanations The assistant provides immediate feedback on exercises, helping students understand where they went wrong and how to improve. – Personalised learning path The system customises learning materials and practice questions, recommending the next best steps for students based on their current progress and knowledge. – Progress tracking Students and teachers can monitor progress in real time, with detailed insights into performance, areas for improvement and mastery of specific topics.	

	– Integration of practice and assessment Knewton integrates both practice and assessment into its platform, ensuring that students have the opportunity to reinforce their learning through regular quizzes and practice sessions.	lesson plans or provide additional help to struggling students. – Homework support Provide guidance and immediate feedback on homework assignments to help students understand and correct their mistakes in real time. **Blended Learning** – Flipped classroom In a flipped classroom model, students can use Knewton to learn or review content at home and then apply what they've learned during in-class activities. For example, students can complete Knewton modules as homework to build foundational knowledge, which can then be explored through group discussion or problem solving in the classroom. – Seamless learning transitions Knewton allows students to move easily between online learning at home and in-class instruction. Adaptive learning paths evolve based on student performance both in and out of the classroom,
The technology used to develop the chatbot	– **Artificial Intelligence (AI) and Machine Learning technologies** These technologies enable the platform to analyse vast amounts of educational data, understand student performance and create personalised learning experiences. The AI component helps with adaptive questioning and instant feedback, while machine learning algorithms continuously improve the accuracy and effectiveness of the system. – **Adaptive learning algorithms** These algorithms process student interactions and analyse which topics the student understands and which need more attention. – **Data analysis and predictive modelling** Knewton collects and analyses vast amounts of data to predict future performance and suggest the best next steps for learning. – **Real-time performance analytics** The system monitors student activity in real time, allowing the chatbot to adjust content delivery and provide immediate feedback.	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	**Students** – **Demographics:** The primary audience is college and university students, but also includes high school students preparing for college-level work, especially in advanced subjects such as mathematics and science; adult learners returning to education or continuing their education in technical fields related to engineering or business.	

	Knewton's platform is available worldwide, but is particularly popular in the United States, Canada and parts of Europe, where adaptive learning and digital tools are being integrated into education systems. – Interests: Knewton is suitable for students studying STEM subjects, particularly those in math-heavy subjects such as Algebra, Statistics, Chemistry, Physics, Biology (with an emphasis on quantitative understanding), particularly in areas such as finance, economics and accounting, where mathematical and data-driven analysis is key. **Educators and Instructors** – Demographics: Professors and instructors in colleges and universities, particularly those teaching STEM subjects, math, or entry-level business courses. – Interests: Educators who want to use learning analytics to track student progress and adapt instruction based on real-time data insights; teachers in blended learning environments or fully online classrooms who need adaptive tools to support independent learning and assessment of student performance. **Educational Institutions** – Demographics: Knewton is widely used in higher education institutions, particularly in maths, science and business departments. Knewton is often integrated into online courses and learning management systems (LMS) to support distance learning. – Knewton is used by institutions across the United States, with growing adoption in other regions such as Canada, Europe and parts of Asia.	creating a continuous learning experience. – Practice and Review Students can work independently on Knewton to reinforce what they've learned in class. The system's personalised content focuses on areas where students need improvement, ensuring they come to class better prepared. – Data-driven instructio Teachers can track student progress using Knewton's real-time data analytics to understand which concepts students have mastered and where they are struggling. This information can be used to inform in-class instruction or one-on-one tutoring sessions. **Distance Learning** – Self-paced learning Knewton is particularly suited to distance learners as it allows students to work at their own pace, tackling subjects based on their individual progress. The platform's adaptive learning paths ensure

	– Interests: Schools, colleges and universities focused on improving student retention, graduation rates and success in STEM fields.	that each student works on material tailored to their current knowledge and needs. – **Real-time feedback** Students working remotely can complete exercises and quizzes within Knewton and receive immediate feedback to help them correct mistakes and deepen their understanding of concepts. This is critical for distance learners who may not have immediate access to a teacher for help. – **Periodic assessments** Knewton provides automated assessments and quizzes that track student progress, giving both students and teachers clear insight into learning outcomes. The system regularly checks knowledge retention to ensure long-term mastery. – **Tutor monitoring and support** Even in an online-only environment, teachers can monitor student performance through Knewton's dashboard. Teachers can identify which students need additional help and
The benefits of using the chatbot	– Improved learning outcomes – Personalised feedback helps students understand their mistakes and learn more effectively. – Cost Efficiency – Reduces the need for human tutors, making quality education more accessible. – Scalability – Can support large numbers of students simultaneously. – Engagement – Interactive and adaptive learning keeps students motivated and engaged. – Data-driven insights – For educators, Knewton provides valuable insights into student progress and areas of struggle, helping teachers adjust their teaching strategies based on real-time data.	
The availability of the chatbot	Knewton is available as a web-based platform, making it accessible from any internet-connected device, including laptops, tablets and smartphones. Knewton is frequently integrated into online courses and learning management systems (LMS) used by educational institutions, and is often embedded in college-level coursework as a primary learning and assessment tool. It is now part of Wiley's Alta, a complete courseware solution that combines adaptive learning with open educational resources (OER). www.wiley.com/en-de/education/alta	
Information on the support available	– **Technical support:** Users can access help from a dedicated customer support team, available through the Knewton website, to	

	resolve technical issues and answer questions about platform functionality. – **Help Centre and Tutorials:** Knewton provides detailed guides, tutorials and FAQs for both students and instructors to help them navigate the system and maximise its potential. – **Instructor Resources:** Instructors are provided with training materials, webinars, and support documents to help them integrate Knewton into their courses and understand how to effectively use the system's data analytics. – **Student Support:** Resources for students include how-to guides on using adaptive learning features, interpreting feedback, and making the most of personalised learning plans.	intervene with targeted support, even remotely.

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Course 2. "Multimedia technologies" in Information Systems study program

(1) chatbot for courses guiding and support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The chatbot presents the start and the end of the course, general introduction of the course: **Aim of the module** To provide students with knowledge of the main tasks in software project management, quality assurance principles in software development, activity planning and recording, and also to present tools for planning, version control and documentation. **Description of the module** Learners will be able to identify definition of multimedia technologies, functions of multimedia in open and distance learning. Learners will be able to analyze multimedia technologies, to develop audio- video materials, use videoconferencing, developing of graphical and animated materials. **Learning outcomes:** 1. Are able to explain understanding, purpose, possibilities and functions of multimedia. 2. Are able to explain principles of graphical material and animation delivering. 3. Are able to integrate multimedia into virtual learning environments.	**Blended (hybrid)** 1. Plan and Set Goals Define learning objectives: Know what you want to achieve. Create a schedule: Allocate time for both in-person and online learning activities. Set milestones: Break learning into achievable tasks. 2. Engage with Digital Resources Use learning platforms: Explore online learning management systems (LMS). Access multimedia content: Watch videos, listen to podcasts, and read articles. Participate in forums: Engage in online discussions and collaborative tasks. 3. Active Participation in Face-to-Face Sessions Attend regularly: Be

	4. Are able to analyse and systemize the information. 5. Know and understand the interaction of multimedia and virtual learning environments	consistent in attending in-person sessions. Collaborate with peers: Work on group projects and discussions. Ask questions: Seek clarifications and participate actively. 4. Develop Self-Directed Learning Skills Practice time management: Balance online and face-to-face learning time. Stay motivated: Use reminders and motivational techniques. Be tech-savvy: Familiarize yourself with relevant digital tools and apps. 5. Reflect and Evaluate Review your progress: Check whether learning goals are being met. Seek feedback: Get input from teachers and peers. Adjust learning strategies: Modify your approach if needed. 6. Build a Support System Connect with peers and mentors: Share experiences and challenges. Join learning communities: Participate in learning-focused social networks.
Features that a chatbot includes	1. Course card indegration 2. Important links for supporting integration 3. Learning material integration	**Blended (hybrid)** Hybrid learning is an educational approach that

		combines in-person classroom instruction with online learning activities, allowing for a flexible and blended learning experience.
The technology used to develop the chatbot	Chatbase, chatbase.com	For Blended (hybrid) learning.
The target audience for the chatbot, including demographic, interests, and any other relevant characteristics	Maaster degree students	**Blended (hybrid)** Students should engage actively in both in-person and online learning environments by attending classes, participating in discussions, and completing assignments on time. Effective time management and self-discipline are essential, as blended learning often requires students to balance independent online study with scheduled in-person sessions.
The benefits of using the chatbot	**24/7 Student Support** – Chatbots can offer round-the-clock assistance for students, answering questions about the curriculum, deadlines, assignments, or general program information. – They can help clarify common questions immediately, reducing the need for students to wait for responses from instructors or administrative staff. **Personalized Learning Assistance** – Chatbots can be designed to offer customized guidance, suggesting relevant multimedia	**Blended (hybrid) learning** will ensure 24/7 Student Suport.

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	resources, tutorials, or coursework based on a student's progress and areas where they need additional help. – With AI-driven responses, they can also provide more specific feedback on complex topics like animation, video editing, or interactive design. **Administrative and Logistics Support** – Chatbots can handle routine tasks like reminding students of upcoming deadlines, helping them with course registration, or providing links to important program resources. – This can significantly reduce administrative load and improve student compliance with deadlines and procedures. **Interactive Learning and Skill Development** – For multimedia students, a chatbot could assist in learning by quizzing them on multimedia concepts, providing instant feedback, or simulating interactive scenarios for skills like coding, graphic design, or storytelling. – It can be especially helpful in practice exercises, offering hints or helping troubleshoot issues students might encounter with multimedia software. **Feedback Collection and Program Improvement** – Chatbots can collect feedback at multiple points during the semester, allowing students to anonymously share their thoughts on the program's content, workload, and resources. – This feedback can help instructors and program directors to understand the students' needs and make improvements in real time. **Networking and Collaboration Support** – A chatbot can facilitate connections between students working on similar projects or with complementary skills, fostering collaboration. – It can recommend group study sessions, provide information about student-led events, or	

	suggest peers to work with based on students' profiles and interests. **Technical Support** – Since multimedia studies often require using specialized software, a chatbot can offer troubleshooting tips or direct students to relevant technical support resources, helping them resolve issues more quickly. – For example, it could provide quick answers about compatibility issues, exporting file formats, or specific functions within multimedia software. **Progress Tracking and Goal Setting** – The chatbot can keep track of student progress throughout the program and suggest adjustments in study habits or additional resources to support their development. – It can help students set learning goals, track their achievements, and motivate them to stay on track with personalized encouragement.	
The availability of the chatbot	AISS project LMS	Blended (hybrid)
Information on the support available	https://uais.cr.ktu.lt/ktuis/md$.card_ml?p_mdl_id=193853&lang=EN	Blended (hybrid)

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(2) chatbot for content material support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	The aim of the chatbot is to guide students on the learning material of the lessons	Blended (hybrid), Distance
Features that a chatbot includes		Blended (hybrid), Distance
The technology used to develop the chatbot	Chatbase, chatbase.com	Blended (hybrid), Distance
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Master degree students	Blended (hybrid), Distance
The benefits of using the chatbot	Using a chatbot in a fully distance master's degree program enhances learning by providing 24/7 academic and administrative support, offering instant answers to common queries. It boosts student engagement through personalized recommendations, reminders, and interactive feedback. Additionally, chatbots streamline administrative tasks like course registration and troubleshooting, ensuring a smoother learning experience.	Blended (hybrid), Distance
The availability of the chatbot	Online Florida University Moodle	Blended (hybrid), Distance

Information on the support available	Full learning material is added to train chatbot	Blended (hybrid), Distance

(3) assessment

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	**The main purpose of a chatbot in a master's degree program for assessment implementation** is to support students and instructors by automating routine tasks and enhancing the assessment process. It can help students by providing instant feedback on quizzes, clarifying assessment criteria, and sending deadline reminders. For instructors, the chatbot can assist with grading automation, tracking submissions, and generating progress reports. This streamlines the assessment workflow, reduces administrative workload, and ensures timely communication between students and faculty.	F2F, blended, distance
Features that a chatbot includes	– **Instant Responses:** It provides quick answers to students' queries related to courses, assignments, and deadlines. – **Personalized Support:** The chatbot can offer tailored study tips, feedback on progress, and reminders based on individual learning patterns. – **Automated Notifications:** It sends alerts about upcoming assessments, course updates, and important events. – **Interactive Assessments:** It facilitates quizzes, practice tests, and interactive learning activities with instant grading and feedback. – **Data Tracking and Reporting:** The chatbot tracks student performance, generates reports, and shares insights with instructors to support data-driven decision-making.	F2F, blended, distance

The technology used to develop the chatbot	Chatbase, chatbase.com	F2F, blended, distance
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Master degree students	F2F, blended, distance
The benefits of using the chatbot	Using a chatbot enhances learning by providing instant, 24/7 support for academic and administrative tasks, ensuring students stay informed and on track. It personalizes the learning experience through tailored recommendations, reminders, and interactive feedback. Additionally, chatbots improve efficiency by automating routine tasks like answering FAQs, tracking progress, and managing course-related communications.	F2F, blended, distance
The availability of the chatbot	Online in Florida University Moodle	F2F, blended, distance
Information on the support available	www	F2F, blended, distance

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(4) individual tasks support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	The chatbot aim is to help learners to implement practical assignments. Learners will be are able to integrate multimedia into virtual learning environments.	blended, distance
Features that a chatbot includes	Individual work, Laboratory work defence, Written and oral examination	blended, distance
The technology used to develop the chatbot	Chatbase, chatbase.com	blended, distance
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Master degree students of the study programme “Information Technologies”	blended, distance
The benefits of using the chatbot	Using a chatbot enhances learning by providing instant, 24/7 support for academic and administrative tasks, ensuring students stay informed and on track. It personalizes the learning experience through tailored recommendations, reminders, and interactive feedback. Additionally, chatbots improve efficiency by automating routine tasks like answering FAQs, tracking progress, and managing course-related communications.	blended, distance
The availability of the chatbot	Online in Florida University Moodle	blended, distance
Information on the support available	www	blended, distance

Course 3. "Programming" in Mechanical Engineering study program

(1) chatbot for courses guiding and support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	The aim of the chatbot is to provide students with guidance on the structure of the modules and conditions for completing the assignments.	**Distance learning** is an educational model that relies on remote interaction between students and teachers, using various technologies to overcome the barrier of physical distance. **Key aspects.** Distance learning has several key aspects that make it unique and effective: – **Flexibility** in Location and Time: Students can learn from any location, benefiting those in remote areas or with mobility limitations, and they can organize their own schedules, especially in asynchronous formats, accessing content and completing tasks at their convenience within set deadlines. – **Use of Technology for Teaching and Learning**: Learning platforms support content management, material delivery, forum interaction, and assessment; online communication tools enable student-teacher interaction in virtual environments; and multimedia resources like videos, podcasts, and infographics enrich educational content.
Features that a chatbot includes	– Integration of the course map – Important links to support integration – Integration of learning material	
The technology used to develop the chatbot	Chatbase., chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Bachelor's degree students in Mechanical engineering	
The benefits of using the chatbot	1. **24/7 accessibility with chat support:** Chatbots in education provide 24/7 support, allowing students and teachers to access information and assistance anytime, enhancing continuous learning. 2. **Increase student engagement through chatbot interactions:** Educational chatbots engage students through interactive	

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	conversations and personalized interactions, making learning more immersive and motivating them to explore new topics. 3. **Personalized learning**: AI chatbots analyze students' learning habits and difficulties to deliver personalized, adaptive learning experiences that cater to individual needs, enhancing understanding both in and outside the classroom. 4. **Improve administrative efficiency:** Educational chatbots offer a convenient, efficient alternative to in-person administrative support, allowing prospective and current students to get instant answers to their questions by simply texting. Chatbots can assist with admissions inquiries, course details, fee structure, financial aid, campus events, and institutional news, streamlining processes and enhancing the overall student experience. 5. **Multilingual Support Integrated**: Multilingual chatbots foster inclusivity by bridging language gaps, allowing students from diverse linguistic backgrounds to learn and engage effectively in their preferred language. This support creates a more connected and enriching educational experience for a	– **Synchronous and asynchronous teaching modalities**: Synchronous learning involves real-time classes, such as video conferences and chats, allowing immediate interaction, questions, and live activities within set schedules. In contrast, asynchronous learning lets students work at their own pace, accessing recorded lectures, readings, exercises, and forums whenever convenient, without needing to coordinate schedules with teachers or classmates. – **Autonomy and independent learning:** Distance learning requires students to manage their time effectively, taking responsibility for completing tasks, which builds self-management, discipline, and organization. Additionally, students engage in self-directed learning by independently seeking, organizing, and processing information, which enhances their research and problem-solving skills. **Online evaluation.** Evaluation is challenging, as it must be continuous, varied, and reliable. Some effective methods include: – **Formative assessments**: short quizzes and questionnaires in each module, allowing progress to be monitored and learning to be adjusted as needed. – **Collaborative projects**: Encouraging group work allows assessment of practical skills and students' ability to work in teams.

	globally diverse student community. 6. **Improve Feedback Collection**: regular feedback is crucial for educational institutions across various aspects. Chatbots can efficiently collect feedback from all stakeholders after each interaction, helping schools identify issues and improve their performance.	– **Rubric assessment**: Specify clear and detailed criteria for assessing performance, allowing students to know what is expected of them and receive specific feedback. **Active methodologies and collaborative learning.** Although students work from a distance, collaborative learning and active methodologies are essential to maintain participation and interest: – **Flipped Classroom**: students review materials prior to live sessions, which are dedicated to discussion, resolving doubts and doing practical exercises. – **Discussion forums and peer-to-peer learning**: Discussion forums encourage collaboration and the exchange of ideas. With the peer-to-peer learning model, students can evaluate and comment on each other's work, which reinforces their understanding. – **Case studies and real-world problems**: Working with real-world situations allows students to apply what they have learned and develop problem-solving skills. – **Gamification**: Integrating gamification elements, such as points, rewards and levels, can increase student motivation and engagement. – **Project-based learning** (PBL): Students work on real projects that require them to apply what they have learned in a practical way, promoting deeper understanding.
The availability of the chatbot	Florida Oberta (AISS project Learning Management System)	
Information on the support available	– FAQ Handling: Chatbots provide prompt responses to frequently asked questions about the content. – Content Discovery: Chatbots guide users to relevant articles, videos, or resources. – Troubleshooting: Chatbots provide detailed, step-by-step assistance for technical content. – Content Recommendations: Chatbots suggest relevant materials based on user interests or behaviour.	

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(2) chatbot for content material support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The objective of the chatbot is to provide students with support on the learning material by responding to their questions and interests in relation to the subject being taught.	**Distance learning** is an educational model that relies on remote interaction between students and teachers, using various technologies to overcome the barrier of physical distance. **Key aspects.** Distance learning has several key aspects that make it unique and effective: – **Flexibility in Location and Time:** Students can learn from any location, benefiting those in remote areas or with mobility limitations, and they can organize their own schedules, especially in asynchronous formats, accessing content and completing tasks at their convenience within set deadlines. – **Use of Technology for Teaching and Learning:** Learning platforms support content management, material delivery, forum interaction, and assessment; online communication tools enable student-teacher interaction in virtual
Features that a chatbot includes	– Chatbots use NLP to understand and respond to user questions in a conversational way. – Chatbots can be connected to knowledge databases to quickly retrieve relevant information. – Chatbots allow creating custom chatbots tailored to your specific content.	
The technology used to develop the chatbot	**Chatbase**, a platform that allows users to create custom AI chatbots by training them on specific data sources, such as uploaded documents, websites, or databases. It supports businesses and educational institutions in building interactive chatbots that can engage with visitors, answer questions, and collect feedback in real time. The platform is highly customizable, offering options to adjust the chatbot's personality, tone, and appearance. chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Bachelor's degree students in Mechanical Engineering	

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The benefits of using the chatbot	1. **24/7 Availability:** Chatbots provide instant support around the clock, enabling users to access content at any time. 2. **Scalability:** Chatbots can handle high volumes of queries simultaneously, allowing you to scale your content support efficiently. 3. **Multilingual Support:** Some chatbots offer automatic translation, enabling global content support.	environments; and multimedia resources like videos, podcasts, and infographics enrich educational content. – **Synchronous and asynchronous teaching modalities**: Synchronous learning involves real-time classes, such as video conferences and chats, allowing immediate interaction, questions, and live activities within set schedules. In contrast, asynchronous learning lets students work at their own pace, accessing recorded lectures, readings, exercises, and forums whenever convenient, without needing to coordinate schedules with teachers or classmates. – **Autonomy and independent learning:** Distance learning requires students to manage their time effectively, taking responsibility for completing tasks, which builds self-management, discipline, and organization. Additionally, students engage in self-directed learning by independently seeking, organizing, and processing information, which enhances their
The availability of the chatbot	Florida Oberta: https://www.floridaoberta.com/login/index.php	
Information on the support available	– **FAQ Handling:** Chatbots provide prompt responses to frequently asked questions about the content. – **Content Discovery:** Chatbots guide users to relevant articles, videos, or resources. – **Troubleshooting:** Chatbots provide detailed, step-by-step assistance for technical content. – **Content Recommendations:** Chatbots suggest relevant materials based on user interests or behaviour.	

		research and problem-solving skills. **Online evaluation.** Evaluation is challenging, as it must be continuous, varied, and reliable. Some effective methods include: – **Formative assessments**: short quizzes and questionnaires in each module, allowing progress to be monitored and learning to be adjusted as needed. – **Collaborative projects**: Encouraging group work allows assessment of practical skills and students' ability to work in teams. – **Rubric assessment**: Specify clear and detailed criteria for assessing performance, allowing students to know what is expected of them and receive specific feedback. **Active methodologies and collaborative learning.** Although students work from a distance, collaborative learning and active methodologies are essential to maintain participation and interest: – **Flipped Classroom**: students review materials prior to live sessions, which are dedicated to discussion, resolving doubts and doing practical exercises.

		– **Discussion forums and peer-to-peer learning**: Discussion forums encourage collaboration and the exchange of ideas. With the peer-to-peer learning model, students can evaluate and comment on each other's work, which reinforces their understanding. – **Case studies and real-world problems**: Working with real-world situations allows students to apply what they have learned and develop problem-solving skills. – **Gamification**: Integrating gamification elements, such as points, rewards and levels, can increase student motivation and engagement. – **Project-based learning** (PBL): Students work on real projects that require them to apply what they have learned in a practical way, promoting deeper understanding.

(3) assessment

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The objective of the chatbot is to provide an interactive and automated tool that facilitates continuous, immediate, and personalized assessment for students.	**Distance learning** is an educational model that relies on remote interaction between students and teachers, using various technologies to overcome the barrier of physical distance. **Key aspects.** Distance learning has several key aspects that make it unique and effective: • **Flexibility in Location and Time:** Students can learn from any location, benefiting those in remote areas or with mobility limitations, and they can organize their own schedules, especially in asynchronous formats, accessing content and completing tasks at their convenience within set deadlines. – **Use of Technology for Teaching and Learning**: Learning platforms support content management, material delivery, forum interaction, and assessment; online communication tools enable student-teacher interaction in virtual environments; and multimedia resources like
Features that a chatbot includes	1. **Automated Assessment and Immediate Feedback**: Enables administration of quizzes and multiple-choice or true/false tests, providing instant feedback with explanations or improvement suggestions after incorrect answers. 2. **Progress Monitoring and Analysis:** Collects and analyzes student performance in real time, generating detailed reports to help teachers and students identify learning patterns and areas for improvement. 3. **Adaptability and Personalization of Assessments:** Adjusts question difficulty based on student performance, providing an adaptive evaluation experience with personalized content and activities tailored to each student's knowledge and needs. 4. **Administrative Task Automation:** Sends automatic reminders for deadlines, results, and periodic feedback management, while creating and storing evaluation records to easily track progress over time. 5. **Ease of Access and Usability:** User-friendly interface accessible from various devices and platforms, with self-assessment functionality that enables students to take tests anytime, anywhere, promoting autonomous learning.	

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	6. **Report and Statistics Generation:** Provides detailed reports and data visualization on individual and group performance, offering clear metrics to help teachers assess student progress and adjust teaching strategies. 7. **Motivational Features:** Integrates gamification elements like virtual rewards, scores, and challenges to keep students motivated, along with encouragement and recognition messages for achievements or progress.	videos, podcasts, and infographics enrich educational content. – **Synchronous and asynchronous teaching modalities**: Synchronous learning involves real-time classes, such as video conferences and chats, allowing immediate interaction, questions, and live activities within set schedules. In contrast, asynchronous learning lets students work at their own pace, accessing recorded lectures, readings, exercises, and forums whenever convenient, without needing to coordinate schedules with teachers or classmates. – **Autonomy and independent learning:** Distance learning requires students to manage their time effectively, taking responsibility for completing tasks, which builds self-management, discipline, and organization. Additionally, students engage in self-directed learning by independently seeking, organizing, and processing information, which enhances their research and problem-solving skills. **Online evaluation.** Evaluation is challenging, as it must be
The technology used to develop the chatbot	**Chatbase**, a platform that allows users to create custom AI chatbots by training them on specific data sources, such as uploaded documents, websites, or databases. It supports businesses and educational institutions in building interactive chatbots that can engage with visitors, answer questions, and collect feedback in real time. The platform is highly customizable, offering options to adjust the chatbot's personality, tone, and appearance. chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Bachelor's degree students in Mechanical Engineering	
The benefits of using the chatbot	1. **Immediate Feedback and Real-Time Learning:** The chatbot provides instant feedback, helping students identify and correct errors immediately, enhancing concept understanding and accelerating	

	learning without waiting for the next class or teacher review. 2. **Continuous Assessment and Progress Tracking:** The chatbot offers continuous evaluation, allowing progress monitoring throughout the course with detailed performance analysis, helping both teachers and students identify strengths and areas for improvement. 3. **Adaptation to Individual Needs:** Chatbots adjust questions and exercises based on each student's knowledge level and progress, providing personalized learning that addresses specific needs and prevents frustration or boredom. 4. **Promoting Autonomy and Active Learning:** Enables students to self-assess and practice independently, fostering autonomous learning and the development of self-evaluation and self-regulation skills. 5. **Student Motivation and Engagement:** By incorporating gamification elements like achievements, rewards, and motivational messages, the chatbot keeps students engaged, viewing assessment as a tool for personal growth rather than just an exam. 6. **Accessibility and Flexibility:** Students can access the chatbot anytime, anywhere, allowing them to study and practice at their own pace and on schedules that fit their needs, especially beneficial in remote or hybrid learning environments. 7. **Facilitates Early Detection of Learning Difficulties**: By monitoring performance in real time, the chatbot helps identify learning challenges early, allowing teachers to intervene promptly and provide additional support to prevent students from falling behind.	continuous, varied, and reliable. Some effective methods include: – **Formative assessments**: short quizzes and questionnaires in each module, allowing progress to be monitored and learning to be adjusted as needed. – **Collaborative projects**: Encouraging group work allows assessment of practical skills and students' ability to work in teams. – **Rubric assessment**: Specify clear and detailed criteria for assessing performance, allowing students to know what is expected of them and receive specific feedback. **Active methodologies and collaborative learning.** Although students work from a distance, collaborative learning and active methodologies are essential to maintain participation and interest: – **Flipped Classroom**: students review materials prior to live sessions, which are dedicated to discussion, resolving doubts and doing practical exercises. – **Discussion forums and peer-to-peer learning**: Discussion forums encourage collaboration and the exchange of ideas. With the peer-to-peer learning model, students can evaluate and

The availability of the chatbot	Florida Oberta: https://www.floridaoberta.com/login/index.php	comment on each other's work, which reinforces their understanding. – **Case studies and real-world problems**: Working with real-world situations allows students to apply what they have learned and develop problem-solving skills. – **Gamification**: Integrating gamification elements, such as points, rewards and levels, can increase student motivation and engagement. – **Project-based learning** (PBL): Students work on real projects that require them to apply what they have learned in a practical way, promoting deeper understanding.
Information on the support available	– **FAQ Handling:** Chatbots provide prompt responses to frequently asked questions about the content. – **Content Discovery:** Chatbots guide users to relevant articles, videos, or resources. – **Troubleshooting:** Chatbots provide detailed, step-by-step assistance for technical content. – **Content Recommendations:** Chatbots suggest relevant materials based on user interests or behaviour.	

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(4) individual tasks support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	**The objective of the chatbot** is to provide learners with an accessible and personalized tool to help them resolve doubts, provide guidance, and offer additional resources as they complete their assignments autonomously.	**Distance learning** is an educational model that relies on remote interaction between students and teachers, using various technologies to overcome the barrier of physical distance. **Key aspects.** Distance learning has several key aspects that make it unique and effective: – **Flexibility in Location and Time:** Students can learn from any location, benefiting those in remote areas or with mobility limitations, and they can organize their own schedules, especially in asynchronous formats, accessing content and completing tasks at their convenience within set deadlines. – **Use of Technology for Teaching and Learning:** Learning platforms support content management, material delivery, forum interaction, and assessment; online communication tools enable student-teacher
Features that a chatbot includes	1. **Real-Time Doubt Resolution:** Capable of answering questions instantly about concepts, task instructions, and specific problems, guiding students in understanding the topics. 2. **Step-by-Step Guidance:** Provides functionality to guide students in problem-solving through steps or suggestions, without giving direct answers, promoting active learning and problem-solving skills. 3. **Support Resource Recommendations:** Suggests additional materials such as readings, videos, or exercises related to the task, reinforcing learning and helping students complete their assignments. 4. **Reminders and Organization:** Provides automatic reminders of due dates and task organization, helping students plan their time and stay on track with their responsibilities. 5. **Self-Assessment and Additional Practice:** Provides self-assessment exercises and extra practice to help students check their understanding and build confidence in the topic. 6. **Motivational and Recognition Messages:** Provides encouragement, virtual achievements, or rewards to keep students motivated, making them feel supported and	

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	encouraged throughout their learning process. 7. **Adaptation to Individual Needs:** Ability to adjust the difficulty level and type of support based on the student's performance and needs, offering personalized assistance.	interaction in virtual environments; and multimedia resources like videos, podcasts, and infographics enrich educational content. – **Synchronous and asynchronous teaching modalities**: Synchronous learning involves real-time classes, such as video conferences and chats, allowing immediate interaction, questions, and live activities within set schedules. In contrast, asynchronous learning lets students work at their own pace, accessing recorded lectures, readings, exercises, and forums whenever convenient, without needing to coordinate schedules with teachers or classmates. – **Autonomy and independent learning:** Distance learning requires students to manage their time effectively, taking responsibility for completing tasks, which builds self-management, discipline, and organization. Additionally, students engage in self-directed learning by independently seeking, organizing, and processing information, which
The technology used to develop the chatbot	**Chatbase**, a platform that allows users to create custom AI chatbots by training them on specific data sources, such as uploaded documents, websites, or databases. It supports businesses and educational institutions in building interactive chatbots that can engage with visitors, answer questions, and collect feedback in real time. The platform is highly customizable, offering options to adjust the chatbot's personality, tone, and appearance. chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Bachelor's degree students in Mechanical Engineering	
The benefits of using the chatbot	1. **Immediate and Accessible Assistance:** Students can resolve doubts in real time, without relying on the professor's schedule, promoting autonomy. 2. **Fostering Autonomy and Self-Learning:** By guiding students step by step and suggesting resources, the chatbot enhances their ability to solve problems and study independently. 3. **Time Management and Organization:** With reminders and task planning assistance, students learn to manage their time better and meet deadlines.	

	4. **Personalized and Adaptive Support:** The chatbot adjusts difficulty and support based on the student's needs, providing a tailored learning experience. 5. **Reinforcement of Learning Outside the Classroom:** Additional resources and self-assessment exercises strengthen students' understanding and preparation, consolidating their learning.	enhances their research and problem-solving skills. **Online evaluation.** Evaluation is challenging, as it must be continuous, varied, and reliable. Some effective methods include: – **Formative assessments**: short quizzes and questionnaires in each module, allowing progress to be monitored and learning to be adjusted as needed. – **Collaborative projects**: Encouraging group work allows assessment of practical skills and students' ability to work in teams. – **Rubric assessment**: Specify clear and detailed criteria for assessing performance, allowing students to know what is expected of them and receive specific feedback. **Active methodologies and collaborative learning.** Although students work from a distance, collaborative learning and active methodologies are essential to maintain participation and interest: – **Flipped Classroom**: students review materials prior to live sessions, which are dedicated to discussion,
The availability of the chatbot	Florida Oberta: https://www.floridaoberta.com/login/index.php	
Information on the support available	– **FAQ Handling**: Chatbots provide prompt responses to frequently asked questions about the content. – **Supplementary Learning Resources**: Chatbots suggest additional materials like readings, videos, interactive exercises, or educational links that complement the task topic, reinforcing learning and aiding in the understanding of complex subjects. – **Step-by-Step Problem Solving Guide**: Chatbots offer a guided approach that leads students through the problem-solving process, encouraging active learning without giving direct answers. – **Task and Deadline Reminders**: Chatbots send notifications about due dates and task reminders, helping students manage their time efficiently and avoid forgetting academic commitments. – **Task Organization Assistance:** Chatbots help organize pending activities with task lists, time management tips, and suggestions for breaking larger tasks into smaller steps, making planning easier and reducing workload. – **Adaptive Help Based on Understanding Level:** Chatbot adjusts the complexity of responses or guidance based on the student's	

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	knowledge or performance, ensuring support is tailored to each user's level for a personalized experience.	resolving doubts and doing practical exercises. – **Discussion forums and peer-to-peer learning**: Discussion forums encourage collaboration and the exchange of ideas. With the peer-to-peer learning model, students can evaluate and comment on each other's work, which reinforces their understanding. – **Case studies and real-world problems**: Working with real-world situations allows students to apply what they have learned and develop problem-solving skills. – **Gamification**: Integrating gamification elements, such as points, rewards and levels, can increase student motivation and engagement. – **Project-based learning** (PBL): Students work on real projects that require them to apply what they have learned in a practical way, promoting deeper understanding.

Course 4. "Business models" in Digital media study program

(1) chatbot for courses guiding and support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The purpose of a chatbot in education is to support students and teachers in the learning process, enabling easy access to knowledge and organizing learning. The chatbot answers students' questions, explains difficult topics and creates interactive exercises to help consolidate knowledge. It can also support language learning by offering grammar and translation tasks and conversation exercises. It helps organize learning by reminding students of assignments and deadlines, which strengthens students' independence. Chatbot supports teachers by creating learning materials, which speeds up progress assessment and motivates students to learn at a convenient time.	**Distance learning** takes place entirely in a virtual environment, with no physical contact between teacher and student. Students use learning platforms, video conferencing, multimedia materials and interactive tools. This method is particularly beneficial for people who need to combine study with work, live in remote locations or prefer a flexible approach to education. Distance learning allows for fully remote learning, adapted to today's digital challenges. Key benefits of distance learning include: 1. **time and location flexibility**. Distance learning allows students to access learning materials and classes from anywhere and at a time that is convenient for them, which is especially beneficial for those who work or live in remote locations. 2. **individual pace of learning**. This method allows students to adjust the pace of learning to their own needs, allowing them to absorb knowledge more efficiently and repeat more difficult content.

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		3. **access to global educational** resources. Distance learning provides the opportunity to use materials, courses and lectures available on international educational platforms, which broadens the scope of available knowledge. 4. **development of digital** competence. The use of technological tools in the process of distance learning promotes the development of skills in working with modern technologies, which is important in a rapidly changing work environment. 5. **cost reduction**. Distance learning eliminates the need for travel, accommodation or rental of teaching rooms, making it more economical for both students and educational institutions. **Blended learning** combines the advantages of traditional face-to-face teaching with the flexibility and access to digital resources, enabling more effective and individualized learning. Students can benefit from face-to-face interaction with teachers during face-to-face classes, while supplementing their knowledge by independently using online materials. This method promotes better use of time and resources, adapting the teaching process to the diverse needs of students and increasing their engagement through interactive content. **The major blended learning models include:**

		1. **Rotation Model** -in this model, students alternate between on-site activities and online learning, according to a set schedule. It can include various forms, such as topic stations, where students move between activities, or a day rotation, where some days take place at school and some online. 2. **Enriched Virtual Model** - in this approach, the majority of activities take place online, but students have occasional stationary sessions that focus on key aspects that require face-to-face interaction, such as workshops, consultations or exams. 3. **Flex Model** -in the flex model, the main part of the learning process takes place online, with the teacher acting as a mentor and supporting students on a one-on-one basis when needed. Students have the opportunity to plan and execute their tasks on their own, and the physical space serves as a learning support and a place for consultation.
Features that a chatbot includes	1. **Learning support and access to knowledge** - Chatbot answers students' questions, explaining complex issues in an accessible way, allowing them to better understand the material and complete their knowledge at any time. 2. **Organization and time management** - Chatbot reminds students of due dates for midterms, exams and important academic events,	

	supporting students in effective study planning and task completion. 3. **Interactive learning and knowledge testing tools** - Creates quizzes, tests and other forms of exercises that allow students to independently check their progress and consolidate their knowledge on the fly. 4. **Language learning support** - Offers grammar and vocabulary exercises and conversation practice opportunities to foster students' language skills. 5. **Progress monitoring and personalization of learning** - Analyzes students' progress and adjusts materials and difficulty level to tailor the learning process to individual needs, which increases learning efficiency.	
The technology used to develop the chatbot	The education chatbot relies on natural language processing (NLP) technologies to analyze and generate customized responses. It uses deep learning models, such as transformers (e.g., GPT), trained on extensive text datasets, allowing them to recognize context and query intent. Machine learning algorithms support personalization of dialogue and adaptation of responses to the user's level of knowledge. Integration of artificial intelligence with user interfaces and educational content management systems allows students to interact directly and access relevant resources in real time. With advanced analytics, the chatbot monitors the user's progress, supporting the individualization of the learning process.	

The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	The target audience for an educational chatbot is mainly students and young adults, typically between the ages of 18 and 30, including those in college and taking online courses. They are characterized by openness to technology and prefer flexible forms of learning that are available regardless of time and place, making 24/7 chatbots an attractive tool. Their interests include academic and professional development, acquiring specialized knowledge and improving skills such as foreign languages and analytical competence. Access to personalized content and interactivity for effective, self-directed learning are also key for them.	
The benefits of using the chatbot	1. **24/7 availability** - The chatbot allows students to access knowledge and educational support at any time, which promotes flexible study planning and is especially important for self-students. 2. **Personalization of the learning process** - Thanks to machine learning algorithms, the chatbot adapts the content and difficulty level to the individual user's needs, which increases the efficiency of knowledge acquisition. 3. **Interactivity and engagement** - The use of interactive methods, such as quizzes, educational games and simulations, supports active learning and motivates students to continue their development. 4. **Reduction of teachers' workload** - Chatbot automates routine tasks such as answering questions or	

	grading tests, allowing teachers to focus on more complex teaching aspects. 5. **Developing digital skills** - Using chatbot technology supports students in developing digital competencies, which are crucial in the modern educational and professional environment.	
The availability of the chatbot	https://ekursy.cyfronet.pl/mod/page/view.php?id=25801	
Information on the support available	1. **24/7 availability and responsiveness** - Chatbots provide instant learning support at any time of the day, enabling students to learn at their convenience, regardless of the time constraints of traditional support systems. 2. **Individualizing the learning process** - Through the use of artificial intelligence technology, chatbots tailor educational content to the user's knowledge level, learning style and specific needs, offering personalized learning support. 3. **Help organize learning** - Chatbots support educational planning by reminding users of assignments, exams and deadlines, as well as helping them manage their time, making the learning process more efficient.	

(2) chatbot for content material support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	**Description**	**Suggested for learning method: F2F, blended, distance**
The purpose of the chatbot and what it can help users with	Chatbot helps students assimilate educational material by answering questions about the topic being taught. Chatbot provides instant answers to questions, which speeds up understanding of difficult topics and eliminates unnecessary searching for information.	**Distance learning** takes place entirely in a virtual environment, with no physical contact between teacher and student. Students use learning platforms, video conferencing, multimedia materials and interactive tools. This method is particularly beneficial for people who need to combine study with work, live in remote locations or prefer a flexible approach to education. **Distance learning** allows for fully remote learning, adapted to today's digital challenges. Key benefits of distance learning include: 1. **time and location flexibility**. Distance learning allows students to access learning materials and classes from anywhere and at a time that is convenient for them, which is especially beneficial for those who work or live in remote locations. 2. **individual pace of learning**. This method allows students to adjust the pace of learning to their own needs, allowing them to absorb knowledge more efficiently and repeat more difficult content. 3. **access to global educational resources**. Distance learning provides the opportunity to use materials, courses and lectures available on international educational platforms, which

		broadens the scope of available knowledge. 4. **development of digital competence**. The use of technological tools in the process of distance learning promotes the development of skills in working with modern technologies, which is important in a rapidly changing work environment. 5. **cost reduction.** Distance learning eliminates the need for travel, accommodation or rental of teaching rooms, making it more economical for both students and educational institutions. **Blended learning** combines the advantages of traditional face-to-face teaching with the flexibility and access to digital resources, enabling more effective and individualized learning. Students can benefit from face-to-face interaction with teachers during face-to-face classes, while supplementing their knowledge by independently using online materials. This method promotes better use of time and resources, adapting the teaching process to the diverse needs of students and increasing their engagement through interactive content. **The major blended learning models include:** 1. **Rotation Model** -in this model, students alternate between on-site activities and online learning, according to a set schedule. It can include various forms, such as topic

		stations, where students move between activities, or a day rotation, where some days take place at school and some online. 2. **Enriched Virtual Model** - in this approach, the majority of activities take place online, but students have occasional stationary sessions that focus on key aspects that require face-to-face interaction, such as workshops, consultations or exams. 3. **Flex Model** -in the flex model, the main part of the learning process takes place online, with the teacher acting as a mentor and supporting students on a one-on-one basis when needed. Students have the opportunity to plan and execute their tasks on their own, and the physical space serves as a learning support and a place for consultation.
Features that a chatbot includes	Chatbot includes features that enable interactive communication with the user, answering questions and explaining difficult topics in real time. It can generate educational materials such as tests, quizzes and exercises, supporting the learning and consolidation of knowledge. Thanks to artificial intelligence technology, the chatbot personalizes content, adjusting it to the user's level of knowledge and individual needs. In addition, it reminds the user of important deadlines, such as exams or assignments, helping to organize learning. The chatbot also analyzes the user's progress, identifying difficulties and suggesting appropriate learning resources.	

The technology used to develop the chatbot	Chatbase, chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Digital media students	
The benefits of using the chatbot	**Benefits of using a chatbot:** synchronous support and interactive online guidance. – Based on previous interactions with the user, the chatbot can recommend appropriate learning materials, assignments or topics, tailored to the student's individual level of knowledge and interests. – For students who are learning in a foreign language, the chatbot can offer multilingual support, allowing them to communicate in the language they are most comfortable with. – By integrating with popular learning platforms such as Moodle or other learning management systems (LMS), the chatbot can seamlessly provide updates, monitor student progress and facilitate access to assessments, creating an integrated learning environment. – Automatic reminders and learning organization - The chatbot can send users reminders about upcoming deadlines, assignments or exams,	

	helping them organize their time efficiently and preventing learning delays. – Personalized learning paths - Based on analysis of a student's test scores and activities, the chatbot can customize a learning plan, suggesting materials and exercises to help close knowledge gaps and further develop competencies.	
The availability of the chatbot	https://ekursy.cyfronet.pl/mod/page/view.php?id=25801	
Information on the support available	1. **24/7 availability and responsiveness** - Chatbots provide instant learning support at any time of the day, enabling students to learn at their convenience, regardless of the time constraints of traditional support systems. 2. **Individualizing the learning process** - Through the use of artificial intelligence technology, chatbots tailor educational content to the user's knowledge level, learning style and specific needs, offering personalized learning support. 3. **Help organize learning** - Chatbots support educational planning by reminding users of assignments, exams and deadlines, as well as helping them manage their time, making the learning process more efficient.	

(3) assessment

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	The use of a chatbot in education helps with student self-assessment.	**Distance learning** takes place entirely in a virtual environment, with no physical contact between teacher and student. Students use learning platforms, video conferencing, multimedia materials and interactive tools. This method is particularly beneficial for people who need to combine study with work, live in remote locations or prefer a flexible approach to education. Distance learning allows for fully remote learning, adapted to today's digital challenges. Key benefits of distance learning include: 1. **time and location flexibility.** Distance learning allows students to access learning materials and classes from anywhere and at a time that is convenient for them, which is especially beneficial for those who work or live in remote locations. 2. individual pace of learning. This method allows students to adjust the pace of learning to their own needs, allowing them to absorb knowledge more efficiently and repeat more difficult content. 3. **access to global educational resources.** Distance learning provides the opportunity to use materials, courses and lectures available on international educational platforms, which broadens the scope of available knowledge.

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		4. **development of digital competence.** The use of technological tools in the process of distance learning promotes the development of skills in working with modern technologies, which is important in a rapidly changing work environment. 5. **cost reduction.** Distance learning eliminates the need for travel, accommodation or rental of teaching rooms, making it more economical for both students and educational institutions. **Blended learning** combines the advantages of traditional face-to-face teaching with the flexibility and access to digital resources, enabling more effective and individualized learning. Students can benefit from face-to-face interaction with teachers during face-to-face classes, while supplementing their knowledge by independently using online materials. This method promotes better use of time and resources, adapting the teaching process to the diverse needs of students and increasing their engagement through interactive content. **The major blended learning models include:** 1. **Rotation Model** -in this model, students alternate between on-site activities and online learning, according to a set schedule. It can include various forms, such as topic stations, where students move between activities, or a day rotation, where some days take place at school and some online.

		2. **Enriched Virtual Model -** in this approach, the majority of activities take place online, but students have occasional stationary sessions that focus on key aspects that require face-to-face interaction, such as workshops, consultations or exams. 3. **Flex Model** -in the flex model, the main part of the learning process takes place online, with the teacher acting as a mentor and supporting students on a one-on-one basis when needed. Students have the opportunity to plan and execute their tasks on their own, and the physical space serves as a learning support and a place for consultation.
Features that a chatbot includes	Chatbot can support students' self-study and self-assessment in a variety of ways: 1. **Personalized material recommendations**- Chatbot analyzes the student's past activity and suggests learning materials that match their level of knowledge and areas that need further exploration. 2. **Interactive quizzes and tests**- Chatbot generates quizzes and tests that help students consolidate material and assess their knowledge on the fly. After solving the test, it gives detailed feedback, indicating strengths and weaknesses. 3. **Real-time Exercises** - Chatbot allows students to solve tasks and interactive exercises that allow them to test their skills on their own and get results quickly. 4. **Automatic repetitions and reminders** - Chatbot reminds students of material to be repeated,	

	tasks to be completed and deadlines, which helps students organize their learning and systematically acquire knowledge. 5. **Progress tracking** - Chatbot monitors a student's performance on tests and assignments, showing them development and areas that need more attention, which promotes effective self-assessment. 6. **Personalized learning plans** - Based on analysis of test scores and activities, the chatbot can create personalized learning plans, helping students focus on the most important topics and set goals to achieve. 7. **Lesson Planning and Resource Suggestions -** The chatbot will suggest teaching resources, activities and ideas in line with curriculum standards, saving teachers preparation time 8. **Immediate help and clarification** - When in doubt, the chatbot can immediately provide clarification on more difficult issues, allowing the student to explore problems on their own without having to wait for the teacher's help.	
The technology used to develop the chatbot	Chatbase, chatbase.com	
The target audience for the chatbot, including demographics, interests, and	Digital media students	

any other relevant characteristics		
The benefits of using the chatbot	1. **24/7 availability and responsiveness** - Chatbots provide instant learning support at any time of the day, enabling students to learn at their convenience, regardless of the time constraints of traditional support systems. 2. **Individualizing the learning process** - Through the use of artificial intelligence technology, chatbots tailor educational content to the user's knowledge level, learning style and specific needs, offering personalized learning support. 3. **Help organize learning** - Chatbots support educational planning by reminding users of assignments, exams and deadlines, as well as helping them manage their time, making the learning process more efficient.	
The availability of the chatbot	https://ekursy.cyfronet.pl/mod/page/view.php?id=25801	
Information on the support available	1. **24/7 availability and responsiveness** - Chatbots provide instant learning support at any time of the day, enabling students to learn at their convenience, regardless of the time constraints of traditional support systems. 2. **Individualizing the learning process** - Through the use of artificial intelligence technology, chatbots tailor educational content to the user's knowledge level, learning style	

	and specific needs, offering personalized learning support. 3. **Help organize learning** - Chatbots support educational planning by reminding users of assignments, exams and deadlines, as well as helping them manage their time, making the learning process more efficient.	

(4) individual tasks support

**should be taken into consideration pedagogical and technological aspects*

Main criteria of the chatbot	Description	Suggested for learning method: F2F, blended, distance
The purpose of the chatbot and what it can help users with	**The chatbot's goal** is to individualize the learning process by helping people complete individual tasks.	**Distance learning** takes place entirely in a virtual environment, with no physical contact between teacher and student. Students use learning platforms, video conferencing, multimedia materials and interactive tools. This method is particularly beneficial for people who need to combine study with work, live in remote locations or prefer a flexible approach to education. **Distance learning** allows for fully remote learning, adapted to today's digital challenges. **Key benefits of distance learning include:** 1. **time and location flexibility**. Distance learning allows students to access learning materials and classes from anywhere and at a time that is convenient for them, which is especially beneficial for those who work or live in remote locations. 2. **individual pace of learning.** This method allows students to adjust the pace of learning to their own needs, allowing them to absorb knowledge more efficiently and repeat more difficult content. 3. **access to global educational resources.** Distance learning provides the opportunity to use materials, courses and lectures available on international educational platforms, which broadens the scope of available knowledge**.**

		4. **development of digital competence.** The use of technological tools in the process of distance learning promotes the development of skills in working with modern technologies, which is important in a rapidly changing work environment. 5. **cost reduction.** Distance learning eliminates the need for travel, accommodation or rental of teaching rooms, making it more economical for both students and educational institutions. **Blended learning** combines the advantages of traditional face-to-face teaching with the flexibility and access to digital resources, enabling more effective and individualized learning. Students can benefit from face-to-face interaction with teachers during face-to-face classes, while supplementing their knowledge by independently using online materials. This method promotes better use of time and resources, adapting the teaching process to the diverse needs of students and increasing their engagement through interactive content. **The major blended learning models include:** 1. **Rotation Model** -in this model, students alternate between on-site activities and online learning, according to a set schedule. It can include various forms, such as topic stations, where students move between activities, or a day rotation, where some days take place at school and some online. 2. **Enriched Virtual Model** - in this approach, the majority of activities take

		place online, but students have occasional stationary sessions that focus on key aspects that require face-to-face interaction, such as workshops, consultations or exams. 3. **Flex Model** -in the flex model, the main part of the learning process takes place online, with the teacher acting as a mentor and supporting students on a one-on-one basis when needed. Students have the opportunity to plan and execute their tasks on their own, and the physical space serves as a learning support and a place for consultation.
Features that a chatbot includes	**The goal of the module** is to create an educational system that integrates a variety of resources and teaching materials.	
The technology used to develop the chatbot	Chatbase, chatbase.com	
The target audience for the chatbot, including demographics, interests, and any other relevant characteristics	Digital media students	
The benefits of using the chatbot	1. **24/7 availability and responsiveness** - Chatbots provide instant learning support at any time of the day, enabling students to learn at their convenience,	

	regardless of the time constraints of traditional support systems. 2. **Individualizing the learning process** - Through the use of artificial intelligence technology, chatbots tailor educational content to the user's knowledge level, learning style and specific needs, offering personalized learning support. 3. **Help organize learning** - Chatbots support educational planning by reminding users of assignments, exams and deadlines, as well as helping them manage their time, making the learning process more efficient.	
The availability of the chatbot	https://ekursy.cyfronet.pl/mod/page/view.php?id=25801	
Information on the support available	**Personalized Study Aids:** Chatbots recommend videos, articles, or quizzes tailored to the topic, helping students dive deeper into complex ideas. **Interactive Problem Solving:** Chatbots guide learners through challenges step-by-step, fostering critical thinking without simply providing the answers. **Deadline Alerts:** Automated reminders ensure students stay on track with assignments and upcoming deadlines, reducing the risk of late submissions. **On-Demand Resources:** Access links to tutorials, practice exercises, and digital tools to enhance understanding of key concepts.