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AI-based production and application of English multimode online reading using multi-criteria decision support system

Yifan Dong[1] · Xinyu Yu[2] · Abdullah Alharbi[3] · Sultan Ahmad[4]

Abstract

Reading and writing English have greater significance in learning oral English and comprehensive skills. Artificial Intelligence (AI) is important in many aspects of our lives, including education, healthcare, business, and so on. AI has allowed for significant advancements in the educational system. It has quickly risen to the top of the list of the most rapidly expanding educational technology disciplines. Through its creation, AI has contributed to the creation of new educational and knowledge techniques that are currently being researched across a wide range of fields. Chatbots, Robots' Assistant, Vidreader, Seeing AI, Classcraft, 3D holograms, and other AI-based programmes were developed to assist both teaching staff and students in using and improving the educational system. In the sphere of education, AI is focusing on sentimentalized artificial learning aids and smart instruction systems. The primary goal and objective of the education business is to construct an intelligent education system, which is now possible thanks to the development of teaching assistant robots, smart classrooms based on AI, and English teaching assistance, among other things. Artificial Intelligence techniques may now be employed at all stages of learning to improve the educational system. During the COVID-19 illness, students and teachers took their education and instruction online in a variety of ways. Learning can be done digitally so that folks do not fall behind in their education. The proposed study has considered multi-criteria decision support systems (MCDM) for AI-enabled production and application of English multimode online reading. This study has offered the application of the super decision tool to facilitate the experimental work. As a result of this, researchers will be able to find and design new solutions to the subject.

Keywords AI · English language · Online reading · Learning · Multimode

1 Introduction

When it comes to acquiring oral English and developing comprehensive abilities, reading and writing in English are more important. Artificial Intelligence (AI) is important in many aspects of our lives, including education, healthcare, business, and so on. AI has allowed for significant advancements in the educational system. It has quickly risen to the top of the list of the most rapidly expanding educational technology disciplines. AI has contributed in the creation of new educational and knowledge techniques that are currently being researched across a wide range of fields. Several research works are exist in the literature. Srihari et al. (2008) have proposed elaborate computing ways of marking such feedback using handwritten recognition and automatic marking tools. The objective is to allocate to separately handwritten feedback a mark that is like a human mark, although device handwritten

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recognition systems have a large record inaccuracies ratio. The techniques are based on pairing ways of document image examination as well as collected recognition using those of mechanized article marking. Outcomes using two methods of article marking, which are centered on learning from a human marked set, are explained. The first is based on latent semantic analysis which desires a realistic level of handwriting recognition presentation, while the second is based on customs of an artificial neural network that is built on features extracted from the handwriting image. A test-bed of articles printed in feedback to stimulate statewide interpretation knowledge assessments as well as marked by a human is used to sequence as well as weigh the approaches. Far and wide, accomplishment outcomes are never far away, commencing automatic marking centered on a faultless physical record, thus representing that handwritten article marking has a hands-on perspective.

Tafazoli and Gómez Parra (2017) have proposed that the enhancement in artificial intelligent tools in our routine lives give us more to students as well as linguistic instructors to take advantage of it. The goal of this subject is to introduce computer-assisted language learning as the first phase to employing AI to linguistic instructors as well as education. After this, the robot-assisted language learning fresh idea demonstrates mutual theoretically along with employed to display the recent styles in learning determinations of AI.

Almohammadi et al. (2017) have proposed that the adjustable learning schemes contained by the e-learning stage in reply to the element that the procedure of learning is dissimilar for each individual student. Therefore, it is serious to make correct learner profiles and patterns over examine of their efficacy status, learning level, their separate behavior qualities as well as abilities. The learned data can be effectively recycled as well as demoralized to emerge an adjustable education surrounding. This research project is a review of raised and relevant subjects to AI discipline approaches applied for adjustable learning systems contained by e-education, its benefits as well as drawbacks, along with a negotiation significance of relating those methods to get further smart as well as adjustable e-education surroundings. Chang and Hsu (2011) have focused on presenting mobile devices in a thorough interpretation progression as well as permissible purposes, which frequently come into being just to be simply in the linguistic lab along with making use of adaptables in all-purpose classrooms. To develop as well as advance the reading comprehension of English as a foreign language readers, a computer-assisted language learning system for usage on PDAs and others has emerged to help a synchronously thorough understanding progression in the usual classroom. Further, the research set on the ideal number of consumers in the individual settings for the

system to exert supreme resourcefully as well as to enhance learners' reading conceptions. As a whole, an average of 70% of students agreed that the system was helpful, while 75% of the learners agreed that the system was simple to use, along with 66% of learners' perceived satisfaction related to the system. In light of the path analysis technique, additional consumers' purposes were examined too.

The suggested research looked at multi-criteria decision support systems for AI-enabled English multimode online reading production and application. The implementation of the super decision tool to facilitate experimental work has been proposed in this study. Researchers will be able to uncover and design new solutions to the problem as a result of this.

2 Related work

Several approaches are existing in the literature associated with the applications of AI and machine learning in teaching. Yuchen (2021) has proposed a study that the speedy enhancement of the civilization, the English proficiency requirements for graduate learners become greater that brings big pressure as well challenges to English teaching of graduate learners. The broad use of IT has unlocked a fresh view in the discipline of education for postgraduate English teaching improvement. Getting the subject of postgraduate English writings as well as readings as a sample, this research negotiates the smart teaching way of postgraduate English subject design, which has concrete importance for enhancing the schooling effects of postgraduate English subject. Payr (2003) has proposed a study that an effort is prepared to methodology learning mediators from an instructional sight. Efforts to put its space from separate "schools" of education philosophies on the basis of a model as well as its focus at learning mediators as a faculty fellow of the global university: what is their part in the educational procedure as well as in what way they achieve it? This research proposed a foundation distinction among pedagogic parts for mediators which are "simulated" versus "emergent" roles, the first is modeled on any type of human educators while the second is fresh well as particular for online education procedures. It is determined that there continues numerous further development of novel learning mediators.

Kumar (2019) has proposed that the AI support made conceivable the mockup of the human intelligence method. Here, practical the altering role of Artificial Intelligence as well as its methods in novel learning model to make a modified schooling learning surroundings. Different topographies such as pattern, recognition and decision making are practical as well as education-founded systems along with directed machine learning for a whole education

Table 1 Summary of the approaches used

Reference No	Approach	Year
Qianjing et al. (2021)	AI- based english multimodal online reading mode	2021
Lu (2019)	Survey on evolution, models, applications and future trends of AI	2019
Kulkarni and Kirange (2019)	Survey on lip-reading techniques ofAI	2019
Alonso and Casalino (2019)	AI for human-centric data analysis in virtual learning	2019
Kim (2019)	AI chatbots for improving English grammar skills	2019
Bin and Mandal (2019)	English teaching practice based on AI	2019
Crescenzi-Lanna (2020)	Multimodal learning analytics research with young children	2020
Park and Kim (2011)	English as a second language learners in online reading tasks	2011
Zhang et al. (2020)	Multimodal intelligence	2020
Yufeia et al. (2020)	AI in education	2020
Yong (2020)	AI to higher vocational English teaching in the information	2020
Reaves (2019)	21st-century skills and the fourth Industrial Revolution	2019
Yu (2021)	Academic performance prediction of online education using Random Forest Algorithm and AI approaches	2021
Popenici and Kerr (2017)	Impact of AI on teaching and learning in higher education	2017
Peng (2021)	Analysis of online education model based on AI	2021
Kim et al. (2020)	My teacher is a machine	2020
Li et al. (2020)	AI technology in online education under the public epidemic crisis	2020
Sun et al. (2021)	Online intelligent English teaching platform based on AI	2021
Qin et al. (2020)	User trust in AI-based educational systems	2020
Liu and Kong (2021)	Teaching mode of College English based on AI	2021
Zou (2017)	College English teaching platform based on AI	2017
Zhu (2017)	AI in college English teaching	2017
An (2021)	English language in British and American literature based on AI	2021
Knox (2020)	AI and education in China	2020
Williamson (2020)	Digital laboratories of experimental knowledge production	2020
Lulu et al. (2021)	Integrated forestry English education network platform based on AI	2021
He and Sun (2021)	AI technology in computer aided art teaching	2021
Cai (2020)	Hybrid teaching mode of English writing based on AI	2020
Chang et al. (2010)	Humanoid robots as instructional tools for teaching a second language in primary school	2010
Meng-yue et al. (2020)	College English culture intelligence-aided teaching system and teaching pattern	2020
Papadopoulos et al. (2020)	Socially assistive robots in pre-tertiary education	2020
Schiff (2021)	Future of AI in education	2021
Tafazoli et al. (2017)	Robot-assisted language learning	2017
Almohammadi et al. (2017)	AI employed for adaptive educational systems within e-learning	2017
Chang and Hsu (2011)	Mobile-assisted synchronously collaborative translation–annotation system for English as a foreign language	2011
Yuchen (2021)	Teaching mode of English reading and writing course for postgraduate based on smart classroom	2021
Kumar (2019)	AI in imparting education and evaluating student performance	2019
Sidana (2019)	AI in the field of education	2019
Ulum (2020)	Computer-based test application in Turkish State University	2020
Bisht and Sharma (2021)	Course of education through AI in India	2021
Alfarsi et al. (2021)	Generic veiw of AI technology in education	2021
Nalbant (2021)	Importance of AI in education	2021
Villegas-Ch et al. (2020)	Online education model with the integration of machine learning and data analysis in an LMS	2020
Ciolacu et al. (2018)	Education 4.0-AI assisted higher education	2018
Villegas-Ch and Palacios-Pacheco (2020)	AI as a tool for an online education model	2020
Boichenko and Boichenko (2020)	Online education empowerment with AI tools	2020

Table 1 (continued)

Reference No	Approach	Year
Yanhua (2020)	AI in foreign language teaching	2020
Deng (2021)	Foreign language curriculum system in engineering majors in the age of AI	2021
Wang (2016)	Intelligent standardized english test systems with AI	2016
Yin (2021)	Impacts of AI technology on language teaching	2021
Lu (2019)	Survey on evolution, models, applications and future trends of AI	2019
Kulkarni and Kirange (2019)	Survey on lip-reading techniques of AI	2019
Alonso and Casalino (2019)	AI for human-centric data analysis in virtual learning	2019
Kim (2019)	AI chatbots for improving English grammar skills	2019
Bin and Mandal (2019)	English teaching practice based on AI	2019
Crescenzi-Lanna (2020)	Multimodal learning analytics research with young children	2020
Park and Kim (2011)	English as a second language learners in online reading tasks	2011
Zhang et al. (2020)	Multimodal intelligence	2020
Yufeia et al. (2020)	AI in education	2020
Yong (2020)	AI to higher vocational English teaching in the information	2020
Reaves (2019)	Twenty-first-century skills and the fourth Industrial Revolution	2019
Yu (2021)	Academic performance prediction of online education using Random Forest Algorithm and AI approaches	2021
Popenici and Kerr (2017)	Impact of AI on teaching and learning in higher education	2017
Peng (2021)	Analysis of online education model based on AI	2021
Kim et al. (2020)	My teacher is a machine	2020
Li et al. (2020)	AI technology in online education under the public epidemic crisis	2020
Sun et al. (2021)	Online intelligent English teaching platform based on AI	2021
Qin et al. (2020)	User trust in AI-based educational systems	2020
Liu and Kong (2021)	Teaching mode of College English based on AI	2021
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Zhu (2017)	AI in college English teaching	2017
An (2021)	English language in British and American literature based on AI	2021
Knox (2020)	AI and education in China	2020
Williamson (2020)	Digital laboratories of experimental knowledge production	2020
Lulu et al. 2021)	Integrated forestry English education network platform based on AI	2021
He and Sun (2021)	AI technology in computer-aided art teaching	2021
Cai (2020)	Hybrid teaching mode of English writing based on AI	2020
Chang et al. (2010)	Humanoid robots as instructional tools for teaching a second language in primary school	2010
Meng-yue et al. (2020)	College English culture intelligence-aided teaching system and teaching pattern	2020
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Yuchen 2021)	Teaching mode of english reading and writing course for postgraduate based on smart classroom	2021
Kumar (2019)	AI in imparting education and evaluating student performance	2019
Sidana (2019)	AI in the field of education	2019
Ulum (2020)	Computer-based test application in Turkish State University	2020
Bisht and Sharma (2021)	Course of education through AI in India	2021
Alfarsi et al. (2021)	Generic view of AI technology in education	2021
Nalbant (2021)	Importance of AI in education	2021
Villegas-Ch et al. (2020)	Online education model with the integration of machine learning and data analysis in an LMS	2020
Ciolacu et al. (2018)	Education 4.0-AI assisted higher education	2018

Table 1 (continued)

Reference No	Approach	Year
Villegas-Ch and Palacios-Pacheco (2020)	AI as a tool for an online education model	2020
Boichenko and Boichenko (2020)	Online education empowerment with AI tools	2020
Yanhua (2020)	AI in foreign language teaching	2020
Deng (2021)	Foreign language curriculum system in engineering majors in the age of AI	2021
Wang (2016)	Intelligent standardized English test systems with AI	2016
Yin (2021)	Impacts of AI technology on language teaching	2021

and the valuation method. On the basis of a knowledge-based system along with supervised machine learning, the comparative valuation of learners' achievements has been done. Sidana (2019) has proposed a detailed study which the goal of assessing the application of AI as well as efficiency in the discipline of education. Different functional researches were negotiated from the theoretical context viewpoint uses along with AI assessment. Augmented tools usage has been very encouraging. Different kinds of AI use in teaching, learning song, sketching, etc. have been verified effectively. Occasionally, no benefit of consuming the instrument above conservative schooling remained observed. Ulum (2020) has proposed a study that takes on a qualitative article design so as to gather the desired data. The judgments indicate that EFL higher institute learners emerged negative attitudes towards VET as well as that VET is not a trustworthy and lawful exam for the reason that similar interrogations were detected to seem in the computer-based exam. Furthermore, copying plus pasting the same sentences gives well conclusions which bring down the assessment cogency as well as its consistency. Next significant conclusion is that the test was stated to amount just memorial abilities, not linguistic abilities.

Bisht and Sharma (2021) have focused that how Artificial Intelligence uses bring changes in education for investors, specifically in emerging countries, like India. This research examines the AI's role in enhancing the teaching education procedure in the dissimilar topic, as well as how we allow it to get required results. The goal is to concentrate on the creative side with AI in institute education along with knowing the trials as its linked chances. Alfarsi et al. (2021) have proposed the subject of artificial intelligence formation as well as using advanced education along with exploration. This research demonstrates the necessity to forecast the integrates of AI in the advanced educational institutes, new technical improvements, as well as the bigger ratio of advanced education of AI tools, talked. The analysis concludes with highpoint the benefits of AI using machine learning, educational section equipment as well as improving the safety along with communication between learners. How to introduce these

schooling, learning, learners' help as well as management tools using AI growth? This research accomplishes to recognize the trials of relating in advanced education institutes along with learner learning as well as negotiates further ways for study. Nalbant (2021) has presented a study which aims to negotiate the inventions and emergent of AI in education also AI is an essential chunk of education, the accessibilities, benefits as well as drawbacks are also negotiated. In this analysis, the AI brought to particular learners for students learning life, as well as the involvement of students to their learning along with coaching, are analyzed too. Artificial Intelligence tools used in the world are stated also. Artificial Intelligence and its uses have also been analyzed plus studied.

In today's world, smart systems bring enhancement in human lifestyle as well as make available actual solutions for practical world issues. At this stage, education is one of the key departments where many Artificial Intelligence-based studies were performed. Kose (2015) has proposed a study to view the distance learning methods which are extremely connected with the uses of AI. Thus, in this paper, the researchers elaborate on the movements in the communication among AI and e-learning. The subject is a detailed description of existing developments of uses of "intelligent distance education" clarifications and also make available a little concentrate on the upcoming opportunities of AI as well as distance learning.

A virus-like COVID-19, due to this pandemic the interaction, communication, education, etc. everything has been changed and affected as well as call it a global emergency. Villegas-Ch et al. (2020) have presented a study that the combination of technologies like artificial intelligence as well as data examines, using LMS to enhance education. This goal is drawn in a novel ordinariness that looks for vigorous learning models, where definite undertakings are concluded in the computer-generated model, enclosed via equipment that lets to have computer-generated assistants give direction to learners in their education. Ciolacu et al. (2018) have proposed innovation to enhance education 4.0 through AI. At 1st collaborate AI-assisted advanced learning method with intelligent sensors

as well as portable systems for down-regulated education and at 2nd, to elaborate the outcome of 1st of learning 4.0 moralistic approach applied using learning analytics as well as a machine-learning procedure. The objective of this research is to estimate the learners' last score earlier than the contribution in the last examination. The researcher present an ERS armed-related physical data taken in combined education passage using a modified exam at the starting of the semester also adjustable education surrounding by N.A on the basis of Auto Tutor. It is observable that concentrating on learners' victory, as well as learners' practices, is a win–win situation for learners and teachers along with admin.

Villegas-Ch and Palacios-Pacheco (2020) have proposed a study that dynamic education pursues to create the learner the key performer of his personal learning, relate to it the learners are open to study what he be obligated as well as sort out in a suitable interval to his necessity. These desires develop when the learning evolution conforms to virtual learning patterns. Recent tools doing as good helpers to resolve these issues because using an application, they have the skills to cooperate with the public along with enhancing education procedures. AI interrelates users as well as acts out a person. This equipment let enhancing the administration of the learning method and also presented study goals to functional Chatbots to a learning management system in the virtual learning prototypical.

Boichenko and Boichenko (2020) have proposed a study that specific consideration is rewarded to the enhancement of smart Chatbots projected for consumption in the statement with learners of virtual subjects of learning web
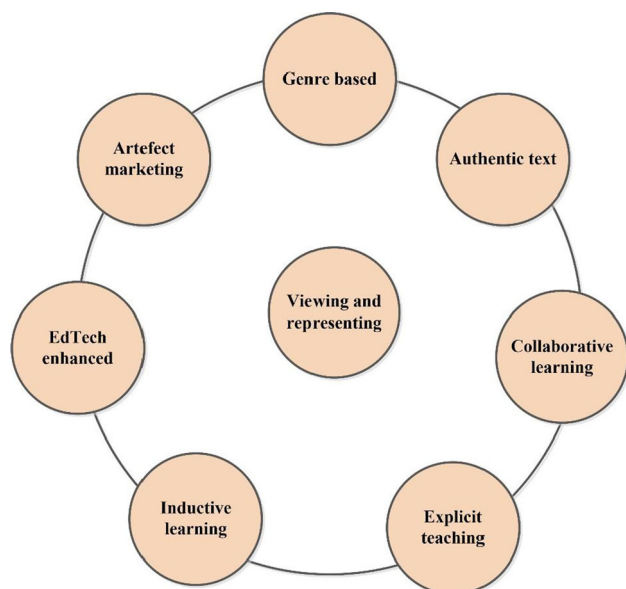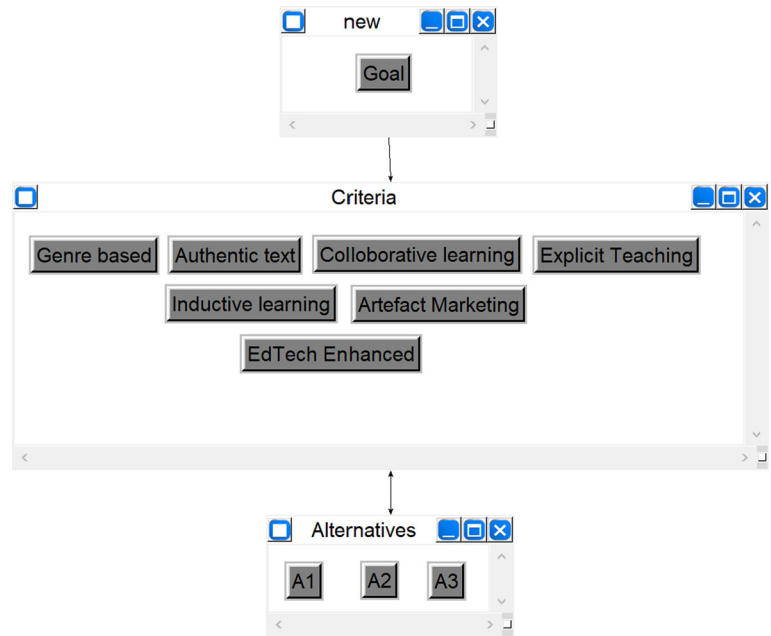
gateways. Technology usage of ontology creation foundation on automatic mining of perceptions as of exterior causes is presented, which led to the higher speeding up the development of the Chatbots intelligent elements. Used suitable semantic, words, grammar as well as chores demonstration must be measured. One of the key usages of AI in virtual learning systems is using Chatbots having described by the mentioned belongings. It suggests the usage of mainframe ontologies to certify the Chatbot's smartness. The perception mining from exterior data sources to construct the ontology was concluded. AI technology plays a key role in learning improvement. AI brought a lot of changes and trials into foreign linguistic schooling. Yanhua (2020) has proposed a study to examine the in-depth combination of foreign language schooling along with AI, as well as then from the foreign language students as well as tutors in the AI surrounding, additionally examines the uses of AI in foreign language teaching along with estimate the AI emergent in upcoming. The in-depth combination in the education of AI tools enhances the value as well as foreign language teaching efficiency.

3 English-learning assistance systems

Cuiye (2016) has proposed that the uses of AI in the education discipline for middle schools' English teaching upgrade method as well as brought many chances, smart English teaching surrounding for the construction of recent stages to increase the teaching skills of English tutors. AI professional method as well as natural language recognition method was used to develop an advanced teaching method for English course. The usage of the English course schooling method, to see that the teaching skills of English tutor's classrooms have been solid as well as learners' knowledge skills have been enhanced. AI can keep class surroundings tough collaborative, and in a discipline related to the enhancement of learners' behavior and education, passion is better too. The expert method as well as natural language recognition tools within the procedure of enhancing effective English tutors' teaching skills. Wanwu (2015) have proposed a study to analyze the possibility of the associate stage by examining the computer features as well as issues in English education. By integrating the AI and computer technology, an English education stage launches that make available facilities such as English word inspection, test carry out along with review configuration. Observation confirms that the learners' English skills are enhanced by the stage as well as stage enhance learners considerate on English education and assist learner update learner education approaches.

Deng (2021) has proposed that China has broad series of engineering learners' causes and in elevation value. AI has

Fig. 1 Pedagogical features in the systemic functional approach to teaching multimodal literacy

Fig. 2 Structure of the proposed approach using Super Decisions main windows

Fig. 3 Process of the comparisons of criteria with respect to alternative 1

entered into the manufacturing of education, brought chances for overseas semantic teaching to promote engineering abilities related to a worldwide viewpoint. In the AI generation, the development of overseas semantic curriculum methods in engineering primes must be kept advance-level syllabus teaching aims, enhance advanced schooling methods as well as raise the schooling valuation of big-challenges subjects direct via OBE learning perception to increase the private coaching value. Wang (2016) has proposed to study the associated AI standardized assessment system as well as usages the enhanced Genetic Algorithm to upgrade the guidelines for a smart assessment paper, and usages Fuzzy as well as Close equivalent to smart mark integrated with AI to strategy boosted consistent English test system. In addition, make sure of in-depth examines as well as relevant evaluation by the experimentation. The outcomes indicate that smart standardized test system not just confirmed the justice of checkup, decrease the examination charge, as well as evaluated the applicants' ability further efficiently too. AI brings a lot of opportunities in the field of education. Yin (2021) has proposed a study that first examines and studied the AI tools' enhancement as well as their role in College English Teaching. After this, it elaborates a deep combination of 2 well serve English teaching in the future; also after taking virtual classes survey during the COVID-19 virus, the research moves towards propositions for the AI tools' enhancement as well as uses in adapted College English Teaching. Table 1 gives summary of some of the approaches used.

Table 2 Unweighted matrix

	A1	A2	A3	Artefac	Authent	Collobo	EdTech	Explici	Genre b	Inducti	Goal
A1	0.00000	0.00000	0.00000	0.59363	0.19580	0.49339	0.16342	0.59363	0.31081	0.53961	0.00000
A2	0.00000	0.00000	0.00000	0.15706	0.31081	0.19580	0.53961	0.15706	0.49339	0.16342	0.00000
A3	0.00000	0.00000	0.00000	0.24931	0.49339	0.31081	0.29696	0.24931	0.19580	0.29696	0.00000
Artefac	0.05470	0.29586	0.03894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Authent	0.07151	0.19440	0.07924	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Collobo	0.13294	0.16755	0.10221	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
EdTech	0.12379	0.13269	0.13754	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Explici	0.15234	0.08720	0.16112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Genre b	0.21266	0.06485	0.23149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Inducti	0.25205	0.05744	0.24947	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Goal	0.00000	0.00000	0.00000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 3 Weighted matrix

	A1	A2	A3	Artefac	Authent	Collobo	EdTech	Explici	Genre b	Inducti	Goal
A1	0.00000	0.00000	0.00000	0.59363	0.19580	0.49339	0.16342	0.59363	0.31081	0.53961	0.00000
A2	0.00000	0.00000	0.00000	0.15706	0.31081	0.19580	0.53961	0.15706	0.49339	0.16342	0.00000
A3	0.00000	0.00000	0.00000	0.24931	0.49339	0.31081	0.29696	0.24931	0.19580	0.29696	0.00000
Artefac	0.05470	0.29586	0.03894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Authent	0.07151	0.19440	0.07924	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Collobo	0.13294	0.16755	0.10221	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
EdTech	0.12379	0.13 269	0.13754	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Explici	0.15234	0.08720	0.16112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Genre b	0.21266	0.06485	0.23149	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Inducti	0.25205	0.05744	0.24947	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.14286
Goal	0.00000	0.00000	0.00000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4 Limit matrix

	A1	A2	A3	Artefac	Authent	Collobo	EdTech	Explici	Genre b	Inducti	Goal
A1	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025	0.21025
A2	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458	0.14458
A3	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517	0.14517
Artefac	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993	0.05993
Authent	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464	0.05464
Collobo	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701	0.06701
EdTech	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518	0.06518
Explici	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803	0.06803
Genre b	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769	0.08769
Inducti	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752	0.09752
Goal	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Fig. 4 Experimental results of the cases of ideal, normal, and total
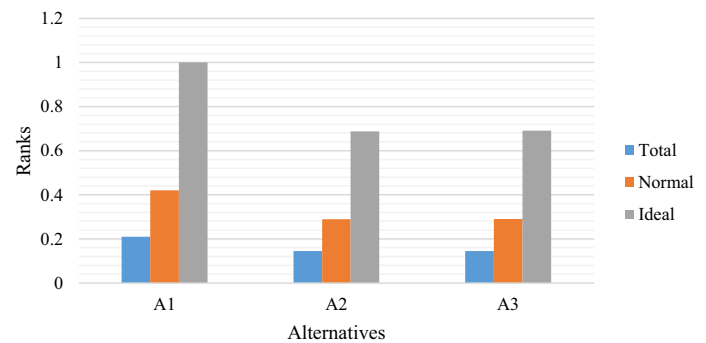
4 AI-based production and application of English multimode online reading using MCDM

The use of AI has allowed for substantial breakthroughs in the educational system. It has quickly ascended to the top of the list of the fastest-growing educational technology fields. AI has aided in the development of new educational and knowledge strategies that are currently under investigation in a variety of disciplines. AI is working on sentimentalized artificial learning aids and smart instruction systems in the field of education. The education industry's principal goal and ambition is to create an intelligent education system, which is now achievable thanks to the creation of teaching assistant robots, AI-based smart classrooms, and English teaching help, among other things. The purpose of the current study was to identify various features associated to the proposed study and to carry out the process of experiments. For this, the literature was studied and the pedagogical features in the systemic functional approach to teaching multimodal literacy are shown in Fig. 1. These features were considered as the significant features for the current study.

After identifying the various features from the literature, the experimental process for the proposed research was carried out in the Super decision tool. Figure 2 represents the hierarchical structure of the proposed approach. The process of the research was done using Super Decisions main windows. The figure contains the details of the goal, various criteria, and the possible alternatives.

Once the plotting of criteria, alternatives, and the goal was done then the comparisons among these were done to show details of different nodes with respect of alternatives, and so on. Figure 3 represents the process of the node comparison with respect of alternative A1.

The same process was done for rest of the criteria and alternatives. After completing the process of the comparison, the resultant values of each calculated matrix were brought into a single matrix called the unweighted matrix. Table 2 describes unweighted matrix.

Table 2 is converted in weighted matrix, so that the sum values of each Colum become or equal to 1. Table 3 shows the weighted matrix.

Table 3 is then converted into limit matrix, so that the final resultant value can occur. This matrix was obtained taking the power of the weighted matrix. Table 4 shows the limit matrix of the proposed research.

The resultant values of limit matrix are described in Fig. 4 according to the cases of ideal, normal, and total. Alternative (A1) shows the best among the available options.

5 Conclusion

AI has allowed for significant advancements in the educational system. It has quickly risen to the top of the list of the most rapidly expanding educational technology disciplines. Through its implementation, AI has contributed to the creation of new educational and knowledge techniques that are currently being researched across a wide range of fields. In the sphere of education, AI is focusing on sentimentalized artificial learning aids and smart instruction systems. The primary goal and objective of the education industry is to develop an intelligent education system, which is now possible thanks to the development of teaching assistant robots, smart classrooms based on AI, and English teaching assistance, among other things. Artificial Intelligence techniques may now be employed at all stages of learning to improve the educational system. During the COVID-19 illness, students and teachers took their education and instruction online in a variety of ways. The proposed study took into account an MCDM for AI-enabled English multimode online reading production and application. The application super decision tool was developed in this study to help with the experimental task. Researchers will be able to uncover and design new solutions in the field as a result of this.

Declarations

Conflict of interest The authors have no conflict of interest.

Ethical approval The paper does not deal with any ethical problems.

Informed consent We declare that all the authors have informed consent.

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