Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

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Google Scholar profile

Generated 2026-06-07 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Criterion 5 (original contributions of major significance). It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

2,540	2,722	32	60
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

94.5% independent of 2,397 classified citing papers

Citation type	Count
Independent	2,265
Self-citation	61
Co-author	71
Same-institution	0

143 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established a foundational framework for identifying theory-application gaps in AI education, subsequently expanding this analysis to language education with highly cited, independent scholarly uptake.

The researcher's contribution centers on a seminal 2020 paper addressing application and theory gaps during the rise of artificial intelligence in education. This core work serves as the foundation for a sustained line of inquiry into the structural challenges of integrating AI into pedagogical settings.

Originality is inferred from the chronological progression from general AI education to specific domains. The titles suggest the researcher identified a critical disconnect between theoretical AI capabilities and practical educational application. The follow-up work appears to extend this framework to language education, indicating a systematic effort to map research issues and applications within a specialized subfield.

Significance is demonstrated by substantial citation metrics and broad independent adoption. The core paper has accumulated 1749 citations, while the follow-up work has garnered 941 citations. Crucially, 94.5% of citing papers originate from independent researchers, indicating that this line of work has become a standard reference point for the broader academic community rather than a niche or self-referential output.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 137 · **10 flagged influential by Semantic Scholar**

CORE PAPER

Application and theory gaps during the rise of artificial intelligence in education

2020 · 1,749 citations (GS)

Field-normalised: 781 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Revolutionizing education with AI: Exploring the transformative potential of ChatGPT.	Bahçeşehir University, İzmir University of Economics, Özyeğin University	Turkey	**Influential**
2	The perception by university students of the use of ChatGPT in education	FPT University	Vietnam	—
3	Chatbots in education and research: A critical examination of ethical implications and solutions	University of Ottawa	Canada	—
4	Artificial intelligence in online higher education: A systematic review of empirical research from 2011 to 2020	Zhejiang University	China	**Influential**
5	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	Chongqing College of Mobile Communication	China	—
6	Impact of AI assistance on student agency	The University of Queensland, University College London, University of South Australia	Australia, United Kingdom	—
7	Teachers' AI digital competencies and twenty-first century skills in the post-pandemic world	The Hong Kong University of Science and Technology, The University of Hong Kong, University of Hong Kong	China, Hong Kong	—

No.	Citing paper	Citing institution(s)	Country	S2
8	Acceptance of artificial intelligence among pre-service teachers: a multigroup analysis	University of Erlangen–Nuremberg	Germany	—
9	Exploring the potential impact of artificial intelligence (AI) on international students in higher education: Generative AI, chatbots, analytics, and international …	Emporia State University, University of Bari Aldo Moro, University of Foggia	Greece, Italy, United States	—
10	Enhancing Continuous Professional Development for Science Teachers with Machine Learning Activities	—	—	—
11	Investigating the Impact of the AI-Supported 5E (AI-s5E) Instructional Model on Spatial Ability	Cukurova University, Mersin Üniversitesi	Turkey	—
12	Using AI-empowered assessments and personalized recommendations to promote online collaborative learning performance	Beijing Normal University, California University of Pennsylvania	China, United States	—
13	AI AS CO-CREATOR: EXPLORING INDONESIAN EFL TEACHERS' COLLABORATION WITH AI IN CONTENT DEVELOPMENT	—	—	Influential
14	Human and AI support in higher education: a hybrid model for an enhanced learning experience	Fayoum University, Rustaq College of Education, Suez University	Egypt, Oman	—
15	Leveraging Machine Learning Techniques to Investigate Media and Information Literacy Competence in Tackling Disinformation	Central University of Ecuador, Università degli Studi della Tuscia, University of Córdoba	Ecuador, Italy, Spain	—
16	Matematik Eğitiminde Üretken Yapay Zeka Araçlarının İncelenmesi: Araç Özellikleri, Kullanım Amaçları ve Etkileri	Trabzon University	Turkey	—
17	Setting an Agenda for Urban AI Adaptivity in Urban Planning and Architecture E-learning	Ain Shams University, German University in Cairo, Obour Institutes	Egypt	—
18	A framework for the application of AI in higher education in association with APPETD and Swiss Institute for Management and Innovation	Health Science Academy (South Africa)	South Africa	—
19	ChatGPT Unveiled: Understanding Perceptions of Academic Integrity in Higher Education - A Qualitative Approach	Lebanese American University	Lebanon	—
20	How Do Prompts Shape Preservice Teachers' Reflections? A Case Study in an Online Technology Integration Class	—	—	—
21	Lifelong Learning Companion: Development Milestones in an AI-Based, Cross-Platform Companion App for Lifelong Learning Optimization	—	—	—
22	БІЛІМ БЕРУ ЖҮЙЕСІНДЕ ЖАСАНДЫ ИНТЕЛЛЕКТІНІҚОЛДАНУ	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
23	Advancing an Integrative AI-assisted Adaptive Learning Environment for Teacher Education: Case of the BRICS Countries	—	—	Influential
24	Üniversitelerde Yapay Zekanın Kullanım Alanları: Potansiyel Yararları ve Olası Zorluklar	Çanakkale Onsekiz Mart Üniversitesi	Turkey	—
25	Transformation, support needs and AI, in K-12 education	—	—	—
26	From Excitement to Anxiety: Exploring English as a Foreign Language Learners' Emotional Experiences in the Artificial Intelligence-Powered Classrooms	Chaohu University, Golestan University	China, Iran	—
27	BASIC VALUE OF EDUCATION IN THE ERA OF ARTIFICIAL INTELLIGENCE (AI)	Universitas Muhammadiyah Tapanuli Selatan	Indonesia	—
28	Sistemas de Aprendizaje Adaptativo: revisión sistemática de técnicas y tendencias	Gabriel René Moreno Autonomous University	Bolivia	—
29	An Empirical Study of Adaptive Feedback to Enhance Cognitive Ability in Programming Learning among College Students: A Perspective Based on Multimodal Data Analysis	Zhejiang Normal University	China	—
30	Transforming Education in the AI Era: A Technology–Organization–Environment Framework Inquiry into Public Discourse	Macao Polytechnic University	China	—

Showing the 30 most-cited of 105 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Trends, research issues and applications of artificial intelligence in language education

2023 · Educational Technology & Society 26 (1), 112-131, 2023 · 941 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A systematic review of the first year of publications on ChatGPT and language education: Examining research on ChatGPT's use in language learning and …	University of Jordan	Jordan	—
2	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	Chongqing College of Mobile Communication	China	—
3	Exploring students' perspectives on generative AI-assisted academic writing	Old Dominion University	United States	—
4	Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions	Golestan University, University of Kurdistan	Iran	—

No.	Citing paper	Citing institution(s)	Country	S2
5	Large language models in education: A focus on the complementary relationship between human teachers and ChatGPT	Indiana University Bloomington, University of Nottingham Ningbo China	China, United States	—
6	Exploring the potential of an AI-based Chatbot (ChatGPT) in enhancing English as a Foreign Language (EFL) teaching: perceptions of EFL Faculty Members	North Private College of Nursing	Saudi Arabia	—
7	Artificial intelligence for teaching and learning in schools: The need for pedagogical intelligence	North Carolina State University, Pontificia Universidad Católica de Chile	Chile, United States	—
8	Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students	Central South University, North Minzu University	China	—
9	Exploring the potential of artificial intelligence tools in educational measurement and assessment	University of Calabar	Nigeria	—
10	Using AI-driven chatbots to foster Chinese EFL students' academic engagement: An intervention study	Henan University, North China University of Water Resources and Electric Power	China	—
11	Effects of higher education institutes' artificial intelligence capability on students' self-efficacy, creativity and learning performance	—	—	—
12	Large language models in education: A focus on the complementary relationship between human teachers and ChatGPT	—	—	—
13	Exploring the potential of an AI-based Chatbot (ChatGPT) in enhancing English as a Foreign Language (EFL) teaching: perceptions of EFL Faculty Members	—	—	—
14	Exploring students' perspectives on generative AI-assisted academic writing	—	—	—
15	Understanding self-directed learning in AI-Assisted writing: A mixed methods study of post-secondary learners	—	—	—
16	Using AI-driven chatbots to foster Chinese EFL students' academic engagement: An intervention study	—	—	—
17	Artificial intelligence for teaching and learning in schools: The need for pedagogical intelligence	—	—	—
18	Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students	—	—	—
19	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	—	—	—

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FOLLOW-UP WORK

Trends, research issues and applications of artificial intelligence in language education

2023 · Educational Technology & Society 26 (1), 112-131, 2023 · 941 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A systematic review of the first year of publications on ChatGPT and language education: Examining research on ChatGPT's use in language learning and ...	University of Jordan	Jordan	—
2	Understanding self-directed learning in AI-Assisted writing: A mixed methods study of post-secondary learners	Boston College, Colby College, Indiana University	United States	—
3	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	Chongqing College of Mobile Communication	China	—
4	Generative artificial intelligence in the metaverse era	Uppsala University	Sweden	—
5	Exploring students' perspectives on generative AI-assisted academic writing	Old Dominion University	United States	—
6	Improving EFL learners' speaking skills and willingness to communicate via artificial intelligence-mediated interactions	Golestan University, University of Kurdistan	Iran	—
7	Large language models in education: A focus on the complementary relationship between human teachers and ChatGPT	Indiana University Bloomington, University of Nottingham Ningbo China	China, United States	—
8	Exploring the potential of an AI-based Chatbot (ChatGPT) in enhancing English as a Foreign Language (EFL) teaching: perceptions of EFL Faculty Members	North Private College of Nursing	Saudi Arabia	—
9	The impact of AI-enhanced natural language processing tools on writing proficiency: An analysis of language precision, content summarization, and creative writing ...	Zhengzhou University of Light Industry	China	—
10	Effects of higher education institutes' artificial intelligence capability on students' self-efficacy, creativity and learning performance	Zhejiang Wanli University	China	—
11	Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students	Central South University, North Minzu University	China	—
12	Exploring the potential of artificial intelligence tools in educational measurement and assessment	University of Calabar	Nigeria	—
13	Using AI-driven chatbots to foster Chinese EFL students' academic engagement: An intervention study	Henan University, North China University of Water Resources and Electric Power	China	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher established a foundational framework for longitudinal bibliometric analysis in educational technology, pioneering the use of structural topic modeling to map field evolution and subsequently extending this methodology to assess the trajectory of artificial intelligence in education.

CLAIM: The researcher's contribution centers on developing and applying advanced bibliometric methods to trace the historical evolution of educational technologies. This line of work is anchored by a 2020 core paper that utilized structural topic modeling to analyze four decades of literature in Computers & Education, establishing a methodological baseline for retrospective field analysis.

ORIGINALITY: The titles suggest a progression from general educational technology trends to specific sub-fields, notably artificial intelligence. By publishing a follow-up study in 2022 focusing on two decades of AI in education, the researcher appears to have extended the initial methodological framework to address emerging technological shifts. This indicates a novel application of structural topic modeling to identify latent topics and trends within rapidly evolving educational domains, moving beyond simple citation counts to semantic analysis of field development.

SIGNIFICANCE: The impact of this work is evidenced by substantial citation metrics. The core 2020 paper has accumulated 625 citations, while the 2022 follow-up on AI in education has garnered 1,294 citations, indicating rapid and significant uptake by the academic community. Furthermore, citation independence analysis reveals that 94.5% of the 2,397 classified citing papers originate from independent researchers, demonstrating that this methodological approach has been widely adopted and validated by the broader scholarly community outside the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 148 · **5 flagged influential by Semantic Scholar**

CORE PAPER

Detecting latent topics and trends in educational technologies over four decades using structural topic modeling: A retrospective of all volumes of Computers & Education

2020 · 625 citations (GS)

Field-normalised: 375 Semantic Scholar citations place it in the top 1% of Computer Science papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Understanding the role of digital technologies in education: A review	Galgotias University, Govind Ballabh Pant University of Agriculture and Technology, Jamia Millia Islamia	India	—
2	AI-enabled adaptive learning systems: A systematic mapping of the literature	University of Agder	Norway	—
3	A conceptual framework for determining metaverse adoption in higher institutions of gulf area: An empirical study using hybrid SEM-ANN approach	Al-Buraimi University College, Sultan Idris Education University, University of Salford	Malaysia, Oman, United Arab Emirates	—
4	Roles and research trends of artificial intelligence in higher education: A systematic review of the top 50 most-cited articles	National Yunlin University of Science and Technology	Taiwan	—
5	Automatic feedback in online learning environments: A systematic literature review	King Abdulaziz University, Monash University, Universidade Federal de Pernambuco	Australia, Brazil, Saudi Arabia	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Educational applications of artificial intelligence in simulation-based learning: A systematic mapping review	Florida State University	United States	—
7	A contemplative overview of smart communities: a hybrid analytical approach	Indian Institute of Management Rohtak, O. P. Jindal Global University	India	—
8	Students' perceptions of an extensive blended learning implementation: the effects of instructional design and interaction	Universidad Autónoma de Chile	Chile	—
9	Realtime online courses mutated amid the COVID-19 pandemic: Empirical study in hospitality program	City University of Macau, Hong Kong Polytechnic University, Shunde Polytechnic	China, Hong Kong	—
10	Virtual reality assisted engineering education: A multimedia learning perspective	University of Georgia, University of Wuppertal	Germany, United States	—
11	Visual search patterns, information selection strategies, and information anxiety for online information problem solving	National Taiwan Normal University, National Taiwan University of Science and Technology	Taiwan	—
12	Quantifying variability in predictions of student performance: Examining the impact of bootstrap resampling in data pipelines	Stony Brook University	United States	—
13	From Reels to Robots: Exploring the Influence of Social Media on Student Engagement and Interest in STEAM Fields in Pakistan	Government College University	Pakistan	—
14	Measuring Equity-Promoting Behaviors in Digital Teaching Simulations: A Topic Modeling Approach	Massachusetts Institute of Technology	United States	**Influential**
15	Structural topic model-based comparative review of human pose estimation research in the United States and China	LongHua Hospital Shanghai University of Traditional Chinese Medicine, Shanghai University, University of Auckland	China, New Zealand	—
16	Exploring Semantic Web Tools in Education to Boost Learning and Improve Organizational Efficiency	Central China Normal University, Nanchang University, Zhuhai Institute of Advanced Technology	China	—
17	Topic Modelling using Latent Dirichlet Allocation (LDA) to Investigate the Latent Topics of Mathematical Creative Thinking Research in Indonesia	University of Bengkulu	Indonesia	—
18	Teachers' Beliefs about the Use of Simulations in Inquiry-based Science Teaching in Mozambique	University of KwaZulu-Natal	South Africa	—
19	Academic development of multimodal learning analytics: a bibliometric analysis	San Diego State University, University of Florida	United States	—
20	Dynamics of Scientific Discourse on Artificial Intelligence in Education: Bibliometric Analysis and Thematic Modeling	Lipetsk State Pedagogical University	Russia	—

No.	Citing paper	Citing institution(s)	Country	S2
21	Twenty years of research on technology in mathematics education at CERME: a literature review based on a data science approach	Aalborg University, University of Copenhagen	Denmark	Influential
22	Bibliometric Analysis to Reveal Research Evolution and Educational Technology Trends in Civil Engineering Education	State University of Jakarta, Yogyakarta State University	Indonesia	—
23	Incorporating structural topic modeling into short text analysis	National Taiwan University	Taiwan	—
24	The Effectiveness of Hypernatural Video-Based Learning Media in Enhancing Students' Digital Literacy in Social Studies	Institut Agama Islam Negeri Parepare	Indonesia	—
25	Landscape Pattern and Aquatic Ecosystems: Emerging Trends and Future Directions	University of Florida, University of Fort Lauderdale	United States	—
26	Four paradigms in learning analytics: Why paradigm convergence matters	Monash University, University of Pennsylvania	Australia, United States	—
27	Factors and conditions that affect the goodness of machine learning models for predicting the success of learning	Budapest University of Economics and Business, University of Dunaújváros	Hungary	—
28	Systematic review of science curriculum concepts within TPACK studies from Türkiye	Milli Eğitim Bakanliği, Ondokuz Mayıs University	Turkey	—
29	Microlearning in Diverse Contexts: A Bibliometric Analysis	Seattle Pacific University, The University of Texas at Austin, University of Michigan	United States	—
30	Using Twitter to understand spatial-temporal changes in urban green space topics based on structural topic modelling	National University of Singapore, University of Leeds	Singapore, United Kingdom	—

Showing the 30 most-cited of 80 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Two decades of artificial intelligence in education

2022 · Educational Technology & Society 25 (1), 28-47, 2022 · 1,294 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A meta systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour	University College London	United Kingdom	—
2	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	Chongqing College of Mobile Communication	China	—
3	Exploring the potential impact of artificial intelligence (AI) on international students in higher education: Generative AI, chatbots, analytics, and international ...	Emporia State University, University of Bari Aldo Moro, University of Foggia	Greece, Italy, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
4	AI-driven adaptive learning for sustainable educational transformation	Financial University, Kuban State University, Moscow State University of Psychology & Education	Russia, United States, Uzbekistan	—
5	Application of generative artificial intelligence (GenAI) in language teaching and learning: A scoping literature review	University of Hong Kong	China	—
6	Towards Intelligent-TPACK: An empirical study on teachers' professional knowledge to ethically integrate artificial intelligence (AI)-based tools into education	University of Oulu	Finland	—
7	Educational technology: Exploring the convergence of technology and pedagogy through mobility, interactivity, AI, and learning tools	Indian Institute of Technology Kharagpur	India	—
8	Teachers' AI-TPACK: Exploring the relationship between knowledge elements	Beijing Normal University, East China Normal University, Guangxi Normal University	China	—
9	A review of AI teaching and learning from 2000 to 2020	Nanyang Technological University, The University of Hong Kong, University of Hong Kong	China, Hong Kong, Singapore	—
10	Generative artificial intelligence in higher education: Exploring ways of harnessing pedagogical practices with the assistance of ChatGPT	National and Kapodistrian University of Athens	Greece	—
11	Examining artificial intelligence literacy among pre-service teachers for future classrooms	National Open University of Nigeria, National University of Lesotho, Tai Solarin University of Education	Lesotho, Nigeria, South Africa	—
12	Integrating AI in education: Opportunities, challenges, and ethical considerations	University of Strathclyde	United Kingdom	—
13	Artificial intelligence in education research during 2013–2023: A review based on bibliometric analysis	Nanjing Normal University, University of Georgia	China, United States	—
14	The influence of emerging technologies on distance education	Institute of Fundamental Technological Research, Jagiellonian University	Poland	—
15	MMATrans: Muscle movement aware representation learning for facial expression recognition via transformers	Central China Normal University, City University of Hong Kong, University of Hong Kong	China	—
16	Artificial intelligence in early childhood education: A scoping review	Education University of Hong Kong, University of Hong Kong	China	—
17	Hybrid intelligence: Human–AI coevolution and learning.	University of Oulu	Finland	—
18	A critical evaluation, challenges, and future perspectives of using artificial intelligence and emerging technologies in smart classrooms	Cyprus University of Technology	Cyprus	—
19	AI Revolutionizing 5G and Next-Generation Networks	University "St. Kliment Ohridski" - Bitola	North Macedonia	—

No.	Citing paper	Citing institution(s)	Country	S2
20	Business-Driven Data Model for Consistent Software Robot Monitoring in 24/7 Environments	University of Eastern Finland	Finland	—
21	Image analysis considering textual correlations enables accurate user switching tendency prediction	China Telecom, Shenyang Ligong University, University of Portsmouth	China, United Kingdom	—
22	MSMCC: Multi-Small Model Coordination Center for Accelerating Network Intelligence*	—	—	—
23	Machine Learning & Wi-Fi: Unveiling the Path Towards AI/ML-Native IEEE 802.11 Networks	—	—	—
24	6G Network Business Support System	MSRA	—	—
25	AI revolutionizing industries worldwide: A comprehensive overview of its diverse applications	—	—	—
26	Evaluation of the application of Seq2Seq towards the automatic derivation of a set of APIs that satisfy requirements from only ambiguous requirements	NTT (Japan)	Japan	—
27	Distributed Trust for Collaborative Network Management: Leveraging DLT in Multi-SDN Controller Environments	Centre Tecnologic de Telecomunicacions de Catalunya	Spain	—
28	RLOps: Development Life-Cycle of Reinforcement Learning Aided Open RAN	BT, InterDigital Communications, Inc., University of Bristol	United Kingdom, United States	—
29	AI-Native transformation for next-generation Telecommunication Networks	Ericsson (Hungary)	Hungary	—
30	Image Classification with Noisy and Unlabeled Samples	Harbin Institute of Technology, National Institute of Informatics, University of North Carolina at Charlotte	China, Japan, United States	—

Showing the 30 most-cited of 54 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

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2	Artificial intelligence in language instruction: impact on English learning achievement, L2 motivation, and self-regulated learning	Chongqing College of Mobile Communication	China	—
3	Exploring the potential impact of artificial intelligence (AI) on international students in higher	Emporia State University, University of Bari Aldo Moro, University of Foggia	Greece, Italy, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
	education: Generative AI, chatbots, analytics, and international …			
4	AI-driven adaptive learning for sustainable educational transformation	Financial University, Kuban State University, Moscow State University of Psychology & Education	Russia, United States, Uzbekistan	—
5	Application of generative artificial intelligence (GenAI) in language teaching and learning: A scoping literature review	University of Hong Kong	China	—
6	Towards Intelligent-TPACK: An empirical study on teachers' professional knowledge to ethically integrate artificial intelligence (AI)-based tools into education	University of Oulu	Finland	—
7	Educational technology: Exploring the convergence of technology and pedagogy through mobility, interactivity, AI, and learning tools	Indian Institute of Technology Kharagpur	India	—
8	Teachers' AI-TPACK: Exploring the relationship between knowledge elements	Beijing Normal University, East China Normal University, Guangxi Normal University	China	—
9	A review of AI teaching and learning from 2000 to 2020	Nanyang Technological University, The University of Hong Kong, University of Hong Kong	China, Hong Kong, Singapore	—
10	Generative artificial intelligence in higher education: Exploring ways of harnessing pedagogical practices with the assistance of ChatGPT	National and Kapodistrian University of Athens	Greece	—
11	Education 4.0 and 5.0: Integrating artificial intelligence (AI) for personalized and adaptive learning	K J Somaiya Medical College, Swami Vivekanand College of Pharmacy, University of Mumbai	India	—
12	Examining artificial intelligence literacy among pre-service teachers for future classrooms	National Open University of Nigeria, National University of Lesotho, Tai Solarin University of Education	Lesotho, Nigeria, South Africa	—
13	Integrating AI in education: Opportunities, challenges, and ethical considerations	University of Strathclyde	United Kingdom	—
14	Revolutionizing education through AI: a comprehensive review of enhancing learning experiences	Crystal Technology and Industries (United States), University of Ulster	United Kingdom, United States	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 3

Claim — Contribution 3

The researcher established a foundational framework for digital game-based vocabulary learning, subsequently expanding the field through critical reviews of automated feedback mechanisms and self-regulated learning strategies.

The researcher's contribution centers on advancing the theoretical and practical understanding of digital game-based vocabulary learning. This line of work is anchored by the seminal 2021 paper, 'Digital game-based vocabulary learning: where are we and where are we going?', which appears to have served as a pivotal reference point for the field, accumulating 547 citations. The titles suggest this core work provided a comprehensive assessment of the state of the art and future directions, establishing a baseline for subsequent inquiry.

Originality in this body of work is inferred from the strategic expansion into specific pedagogical mechanisms following the initial broad overview. The 2024 follow-up papers indicate a deepening focus on critical components of the learning process: one review examines 'AWE feedback' types and outcomes, while the other addresses 'self-regulated second language learning' strategies and teacher support. This progression suggests the researcher moved from mapping the general landscape of game-based learning to dissecting the specific cognitive and instructional variables—such as feedback quality and learner autonomy —that drive effectiveness within that landscape.

The significance of this contribution is evidenced by substantial independent uptake. The core paper's 547 citations, combined with the strong citation counts for the 2024 follow-ups (205 and 160 respectively), indicate sustained scholarly interest. Crucially, with 94.5% of citing papers originating from independent researchers, the work demonstrates broad impact beyond the researcher's immediate circle, suggesting it has become a standard reference for scholars investigating technology-enhanced language acquisition.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 222 · **14 flagged influential by Semantic Scholar**

CORE PAPER

Digital game-based vocabulary learning: where are we and where are we going?

2021 · 547 citations (GS)

Field-normalised: 281 Semantic Scholar citations place it in the top 1% of Education papers from 2021 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Using gamification in EFL vocabulary learning and learners' attitudes toward gamification use	New Valley University	Egypt	—
2	EFL learners' flow experience and incidental vocabulary learning during text-based game tasks: The moderating role of working memory capacity	—	—	—
3	The influence of digital technologies on the improvement of communication skills of students in the process of foreign languages studying (in non-linguistic higher educational institutions)	—	—	—
4	'Take me to a virtual trip if you want me to write better!': the impact of Google Expeditions on EFL learners' writing motivation and performance	—	—	—
5	The Implementation of Telegram in Reading Class to Improve Students' Skimming and Scanning Skills	—	—	—
6	Artificial intelligence in EFL higher education: effects on academic performance and social competence	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Do mobile games improve language learning? A meta-analysis	—	—	—
8	Game on! Digital Gaming and Augmented Reality/Virtual Reality in Language Learning	—	—	—
9	Exploring the Role of Motivation in Self-Regulated Digital Game-Based Vocabulary Learning Among Saudi EFL Learners: A Structural Equation Modelling Approach to Attention, Relevance, Confidence and Satisfaction	—	—	—
10	Eğitimde Yapay Zekâ ve Oyunlaştırma: Ortaokul Öğrencilerinin Yapay Zeka Farkındalik Düzeylerinin Belirlenmesi	—	—	—
11	Problem Based Learning E-Module for Facilitating Sociology Learning in the Digital Era	—	—	—
12	KONSEP HOMO LUDENS DALAM PEMBELAJARAN BAHASA INDONESIA BERBASIS PERMAINAN: KAJIAN NARATIVE LITERATURE REVIEW	—	—	—
13	Mobile Assisted-Language Learning to Improve Students' Lexical Resources via the Use of Wayground Application	—	—	—
14	THE INFLUENCE OF NARRATIVE-BASED VIDEO GAMES ENGAGEMENT ON ENGLISH VOCABULARY MASTERY: A NARRATIVE INQUIRY	—	—	—
15	Enhancing English reading motivation and performance via the ARCS model: an empirical study using the ARCS motivation scale	—	—	—
16	Digital Language Learning (DLL): Insights from Behavior, Cognition, and the Brain	—	—	—
17	Leveraging Computer-Aided Education for Enhanced Learning: Innovations, Benefits, and Challenges in the Medical Sector	—	—	—
18	Biomechanics intervention promotes college students' English vocabulary acquisition and mental health	—	—	—
19	Digital Games for Language Learning: A Scoping Review	—	—	—
20	The effect of gamification on vocabulary learning (learning English as a second language) among the fifth-grade elementary school students	—	—	—
21	Joyful problem-based learning with traditional games to foster 21st century skills and science achievement	—	—	—
22	Design and Simulation of Computer Aided Chinese Vocabulary Evaluation System	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
23	Beyond scores: a systematic review of learning and psychological outcomes of digital game-based language learning (2010–2025)	—	—	—
24	Gaming the Classroom: Identifying Mathematics Teacher's Disposition, Support, and Efficacy in Digital Game-Based Learning Integration	—	—	—
25	Using games to improve learning vocabulary for non-English-majored students at Bac Lieu university	—	—	—
26	Effects of two mobile-assisted language learning apps on L2 receptive and productive vocabulary knowledge: A mixed-methods study	—	—	—
27	The Teaching of EFL Vocabulary through Anticipatory Learning Strategy in Islamic Higher Education Context in Indonesia	—	—	—
28	The Effects of Mobile Game Based Application on High School Students' TOEIC Vocabulary Learning	—	—	—
29	Developing a gamified AI-enabled online learning application to improve students' perception of university physics	—	—	—
30	Teacher Prototypes in Technology-Enhanced Instruction in Elementary School Second Language Acquisition: Comparing Routine and Emergency Learning in Different Cultures	—	—	—

Showing the 30 most-cited of 81 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

A review of AWE feedback: Types, learning outcomes, and implications

2024 · 205 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	GAI vs. AWE in writing feedback: a comparison from student engagement perspective	Hefei University of Technology	China	—
2	A systematic review of research on AI in language education: Current status and future implications	—	—	—
3	A systematic review of collaborative mobile-assisted language learning (C-MALL) practices using bibliometric, content, and scientometric analyses	Universiti Putra Malaysia	Malaysia	—
4	Elucidating university students' intentions to seek automated writing feedback from	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
	Grammarly: toward perceptual and systemic predictors			
5	CHATGPT, SMART WRITING ASSISTANT CHATBOT FOR STUDENTS: AN ANALYSIS OF ITS DRAWBACKS	—	—	—
6	Journal of Response to Writing Journal of Response to Writing	—	—	—
7	Interaction and dialogue: Integration and application of artificial intelligence in blended mode writing feedback	—	—	—
8	A systematic review of reading self-efficacy in second or foreign language learning	—	—	—
9	Incorporating ChatGPT as an automated written corrective feedback tool into L2 writing class	—	—	—
10	A Comparison of Automated Corrective Feedback and Traditional Corrective Feedback: A Review Study	—	—	—
11	Artificial Intelligence for Language Learning: A Systematic Review of its Design, Theoretical Foundations, Implementation, and Impact	—	—	—
12	Integrating move analysis and sentence reconstruction in automated writing evaluation for L2 academic writers	—	—	—
13	A Comprehensive Evaluation of Machine Learning Models for Sentiment Analysis in Employee Reviews	—	—	—
14	Exploring the Effectiveness of Large-Scale Automated Writing Evaluation Implementation on State Test Performance Using Generalised Boosted Modelling	—	—	—
15	Effectiveness of large language models in automated evaluation of argumentative essays: finetuning vs. zero-shot prompting	—	—	—
16	From access to mastery: Integrating AI in blended learning for equitable, inclusive, and accessible music theory educations	—	—	—
17	Towards automated writing evaluation: A comprehensive review with bibliometric, scientometric, and meta-analytic approaches	—	—	**Influential**
18	Effectiveness of Generative AI in Automated Written Corrective Feedback With Prompting	—	—	—
19	The impact of self-revision, machine translation, and ChatGPT on L2 writing: Raters' assessments, linguistic complexity, and error correction	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
20	Can GenAI-empowered feedback promote L2 learners' self-regulation strategic behavior and writing performance?	—	—	—
21	The influence of GenAI on the effectiveness of argumentative writing in higher education: evidence from a quasi-experimental study in China	—	—	—
22	Using AI-supported peer review to enhance feedback literacy: An investigation of students' revision of feedback on peers' essays	—	—	—
23	Impact of prompt sophistication on ChatGPT's output for automated written corrective feedback	—	—	—
24	Predictors of middle school students' perceptions of automated writing evaluation	—	—	**Influential**
25	A meta-synthesis of automatic writing evaluation research: trends and developments over a decade	—	—	—
26	Integrating automatic speech recognition and automated writing evaluation to reduce speaking anxiety and enhance speaking competence among Chinese EFL learners	—	—	**Influential**
27	Language Teaching Research Quarterly	—	—	—
28	University students' engagement with generative AI-supported automated writing evaluation (AWE) feedback	—	—	—
29	Unveiling Patterns of Interaction With Automated Feedback in Writing Mentor and Their Relationships With Use Goals and Writing Outcomes	—	—	—
30	Timed second language writing performance: effects of perceived teacher vs perceived automated feedback	—	—	—

Showing the 30 most-cited of 74 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Self-regulated second language learning: A review of types and benefits of strategies, modes of teacher support, and pedagogical implications

2024 · 160 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	ChatGPT for self-regulated language learning: University English as a foreign language students' practices and perceptions	Himeji Dokkyo University, Nagoya University, Sagami Women's University	Japan	—

No.	Citing paper	Citing institution(s)	Country	S2
2	On a path to becoming more self-regulated: Reflective journals' impact on Chinese English as a foreign language students' self-regulated writing strategy use	Tsinghua University	China	—
3	Exploring the interplay of digital storytelling, L2 speaking skills, self-regulation, and anxiety in an IELTS preparation course	Shandong University	China	—
4	Teacher-Student Interpersonal Behaviours and GenAI Feedback on Students' Achievement Emotions in EFL Writing: An Intervention Study	—	—	—
5	A scoping review of empirical studies on generative artificial intelligence in language education	—	—	—
6	Moodle as a catalyst for English proficiency: Evidence from a mixed-methods study of non-English majors	—	—	—
7	Effects of GenAI-empowered interactive support on university EFL students' self-regulated strategy use and engagement in reading	—	—	—
8	Emotion regulation in English language learning: The roles of cognitive reappraisal and expressive suppression among Algerian EFL students	—	—	—
9	Exploring the Interplay of Self-Regulated Learning, Critical Thinking, and Scientific Communication: Insights from International Biology Learners	—	—	—
10	AI-Mediated Communication in EFL Classrooms: The Role of Technical and Pedagogical Stimuli and the Mediating Effects of AI Literacy and Enjoyment	—	—	—
11	Examining the Importance of Context Education in the Translation Process (A Descriptive Analytical Study)	—	—	—
12	Cubic effects of autonomous and controlled motivation on L2 self-regulated writing strategies: A polynomial regression analysis	—	—	—
13	Exploring the Ecological Background of Learning Turkish as a Second Language: Insights from Zumbo's Framework	—	—	—
14	Understanding Online Power Dynamics in Higher Education: Teachers' Conceptual Realization and Students' Perceptions of Teaching Effectiveness	—	—	—
15	Unveiling task value and self-regulated language learning strategies among Japanese learners of English	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
16	Understanding self-regulated grammar learning with LLM chatbot support: An epistemic network analysis of grammar learning strategy patterns	—	—	—
17	EFL Students' Practices of Self-Regulated Language Learning in Speaking	—	—	—
18	A comparative study of expert, AI, and no external feedback on mathematics teacher learning outcomes in reflective practice	—	—	—
19	Modeling the relationships among teacher instruction, learner belief, and learning strategies in Chinese character learning by alphabetic learners	—	—	Influential
20	Leveraging self-regulation theory in mobile learning: learning behaviours, outcomes, and their interconnections among university students of varied prior knowledge levels	—	—	—
21	Exploring the effects of (un)familiar environments on MALL task writing performance, EFL writing proficiency, and learner perceptions	—	—	—
22	The Cross-Linguistic Transfer of Self-Regulated Learning Strategy Use From L1 to L2: The Moderating Role of L2 Learning Motivation and Exposure	—	—	—
23	A self-regulation perspective on L2 grit development and its impact on language achievement	—	—	—
24	Foreign language learners' autonomy, self-regulated learning strategy and pedagogical preferences among Chinese college students	—	—	—
25	Technology in Language Teaching & Learning	—	—	—
26	A tri-phenomenon perspective to mitigate MOOCs' high dropout rates: the role of technical, pedagogical, and contextual factors on language learners' L2 motivational selves, and learning approaches to MOOC	University of Valencia	—	—
27	Unpacking MATESOL students' self-regulated learning strategy use in an EAP course	—	—	—
28	Interplay of mindfulness, motivation, and self-regulation in predicting L2 achievement: A mixed-methods study.	—	—	—
29	Exploring L2 writing motivation in AI-mediated EFL contexts: The role of teacher affective support, AI literacy, and self-efficacy through the lens of self-determination theory	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
30	Feedback and self-regulation in L2 writing: A research timeline of formative assessment practices	—	—	—

Showing the 30 most-cited of 67 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Education University of Hong Kong	Hong Kong	SCImago #4054 · THE =195 · QS =530	43
Hong Kong Polytechnic University	Hong Kong	SCImago #256 · THE 80 · QS 54	21
The Education University of Hong Kong	Hong Kong	THE =195 · QS =530	14
Macao Polytechnic University	Macao	SCImago #8827 · QS 901-950	12
University of Hong Kong	China	SCImago #195 · THE 33 · QS 11	12
Lingnan University	Hong Kong	SCImago #5171	12
The Open University of Hong Kong	—	—	10
Zhejiang University	China	SCImago #6 · THE 39 · QS 49	9
Kansai University	Japan	SCImago #6698 · THE 1501+	8
Hong Kong Metropolitan University	Hong Kong	SCImago #5356 · QS 781-790	7
Nanyang Technological University	Singapore	SCImago #137	7
The University of Hong Kong	Hong Kong	SCImago #195 · THE 33 · QS 11	7
National Taiwan University of Science and Technology	Taiwan	SCImago #2249 · THE 401–500 · QS =345	7
Indiana University Bloomington	United States	SCImago #798 · QS =306	7
Najran University	Saudi Arabia	SCImago #4276 · THE 801–1000	7

Geographic distribution of citing authors

Country	Citing papers
China	263
United States	112
Indonesia	76
Hong Kong	64
Turkey	46
United Kingdom	38
Saudi Arabia	36
Japan	26
India	25

Country	Citing papers
Iran	24
Taiwan	23
Australia	22

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Application and theory gaps during the rise of artificial intelligence in education	137	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	Detecting latent topics and trends in educational technologies over four decades using	148	8 CFR 204.5(h)(3)(v) — Criterion 5

Contribution	Core paper	Indep. cites	Supports
	structural topic modeling: A retrospective of all volumes of Computers & Education		
Contribution 3	Digital game-based vocabulary learning: where are we and where are we going?	222	8 CFR 204.5(h)(3)(v) — Criterion 5