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The Current State of AI Tool Adoption in Teaching at Hanoi Industrial and Trade University

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ABSTRACT: This study analyzes the current situation of applying selected AI tools in teaching at Hanoi Industrial and Trade University in the context of digital transformation in higher education. Data were collected from 142 valid survey responses, in-depth interviews with 10 lecturers, and a preliminary pedagogical experiment. The results show that 98 out of 142 lecturers had used AI, mainly for content searching and lesson planning; meanwhile, advanced applications such as designing interactive learning materials, grading assignments, and creating AI assistants remained limited. Preliminary experimental results suggest that AI may contribute to reducing lesson preparation time, increasing interaction, and improving students' learning outcomes. Based on these findings, the article proposes developing lecturers' AI competencies, issuing guidelines for safe AI use, and strengthening infrastructure to support implementation.

KEYWORDS: artificial intelligence, AI tools, university teaching, digital transformation, lecturers' competencies.

1. INTRODUCTION

Amid the digital transformation of higher education, artificial intelligence (AI) is becoming an important tool for lecture design, learning-material development, learning-activity organization, and assessment [3], [8]. However, the effectiveness of AI integration depends not only on proficiency with technological tools but also on lecturers' pedagogical competence, ability to verify information, and academic responsibility [4], [5], [6]. In Vietnam, AI adoption in university teaching remains at an early stage. Some lecturers already use AI for brainstorming, lesson preparation, learning-resource design, and question development, yet adoption is uneven. Many still struggle to select appropriate tools, formulate effective prompts, and control the quality of AI-generated content [1], [7]. Hanoi Industrial and Trade University is promoting pedagogical innovation as part of its digital transformation. An assessment of AI use in teaching at the institution is therefore needed to identify adoption levels, purposes of use, challenges, preliminary effects, and appropriate support measures. The educational significance of these developments lies in the distinction between generating instructional content and improving the learning process. A tool may quickly produce a lecture outline, a set of questions, or a presentation; however, the resulting materials contribute to teaching quality only when lecturers evaluate their accuracy, appropriateness, cognitive demand, and alignment with intended learning outcomes. This distinction is particularly important for institutions in which AI uptake is occurring through individual experimentation rather than a coordinated pedagogical strategy. Consequently, an assessment of adoption should address not merely whether a lecturer has used AI, but also the purpose of use, perceived proficiency, practical constraints, and the safeguards applied before classroom use. The present study focuses on the teaching practices of lecturers rather than on institutional claims about AI effectiveness. It treats AI as a potential instructional support mechanism whose outcomes depend on human judgment, instructional context, and the suitability of specific tasks. This perspective provides a basis for interpreting the survey and interview evidence without assuming that higher adoption automatically results in higher educational quality. It also allows preliminary classroom observations to be discussed as exploratory findings requiring further verification.

2. RESEARCH CONTENT

2.1. Theoretical foundations of ai in university teaching

In education, AI refers to the use of intelligent technologies to support teaching, learning management, and learner assessment [3], [8]. In higher education, AI can support lecturers in four principal areas: preparing learning materials and teaching plans; designing interactive activities; supporting testing and assessment; and developing chatbots or learning assistants for students [2], [3], [4]. Research on AI in education highlights its potential for personalized learning, resource generation, automated feedback, and enhanced interaction [3], [8]. Nevertheless, its effectiveness depends on how lecturers align technological tools with learning objectives, disciplinary content, and teaching methods. The technological pedagogical content knowledge (TPACK) framework emphasizes that technology is effective when appropriately integrated with subject-matter and pedagogical knowledge [5]. Likewise, DigCompEdu links educators' digital competence to instructional design, assessment, and learner support in digital environments [1].

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Beyond technical competence, AI use in teaching raises issues of academic integrity, data protection, and responsible practice [4], [6]. Lecturers need to select suitable tools, design prompts, verify AI-generated outputs, and guide students to use AI as a learning aid rather than as a substitute for independent thinking [7]. Against this theoretical background, this paper examines lecturers' adoption of AI, purposes of use, proficiency levels, influencing factors, preliminary experimental findings, and implications for the digital transformation of university teaching. From a pedagogical perspective, the four application areas differ in both their potential benefits and their risks. Content preparation may reduce repetitive drafting work, whereas interactive learning activities require lecturers to anticipate how students will engage with the materials. Assessment-related uses demand stronger controls over validity, marking criteria, transparency, and fairness. Learning assistants introduce additional questions concerning the reliability of responses and the handling of student information. These differences suggest that a single measure of AI use cannot adequately characterize the maturity of AI integration in teaching. The analysis therefore distinguishes application frequency from reported skill levels and from the instructional responsibilities that remain with lecturers.

TPACK and DigCompEdu provide complementary lenses for interpreting this distinction [1], [5]. TPACK emphasizes the fit among disciplinary content, pedagogy, and technology, while DigCompEdu situates digital tools within teaching, assessment, learner support, and professional practice. Together, they suggest that an AI-generated product should be evaluated against a teaching objective, not merely its visual sophistication or speed of production. Responsible use also requires checking factual claims and references, protecting learner information, and making a reasoned decision about whether the output should enter a teaching activity [4], [6].

2.2. Research methods and survey design

The study employed both quantitative and qualitative methods. Quantitative data were collected using a questionnaire administered to lecturers teaching theoretical courses or courses combining theory with cognitively oriented practical activities. The questionnaire addressed AI awareness, tools used, intended purposes, proficiency levels, implementation challenges, and institutional support needs. Before the main survey, its content was reviewed for alignment with the research objectives and the university's teaching context. The survey was conducted in August 2025. At that time, the university employed 172 lecturers. Of 145 questionnaires returned, 142 valid responses were included in the analysis. Data were summarized using frequencies, percentages, and mean scores for selected proficiency indicators.

In addition, in-depth interviews were conducted with ten lecturers to explore underlying reasons, barriers, and experiences of AI use in teaching. Interviewees were purposively selected to represent different adoption levels: non-users, users reporting limited effectiveness, and relatively frequent users. A preliminary pedagogical experiment was also conducted in a course taught by the author. Lessons incorporating AI were compared with lessons without AI assistance using four indicators: lecturer preparation time, cognitive-test scores, on-time task completion, and student learning interactions.

The quantitative analysis is descriptive and does not attempt to estimate causal relationships between AI use and teaching outcomes. The 142 valid questionnaires describe the responding lecturers at the time of data collection; subgroup findings should not be read as estimates for other universities. Percentages for specific application purposes in Table 1 use the 98 lecturers who reported using AI as the denominator, and respondents could select more than one purpose. Accordingly, the percentages across rows are not expected to sum to 100%. The interviews provide contextual explanations rather than representative prevalence estimates, while the classroom experiment supplies only preliminary comparative observations.

For the experimental component, the comparison concerns a limited instructional setting rather than a randomized trial. Measures such as preparation time, task completion, test scores, and classroom exchanges capture different dimensions of teaching and learning and should be interpreted separately. In particular, a reduction in preparation time cannot by itself establish a corresponding improvement in student achievement. Without information sufficient for statistical adjustment, the analysis avoids attributing observed differences solely to AI. These methodological boundaries are retained throughout the discussion and recommendations.

2.3. Findings on ai adoption in teaching

2.3.1. Lecturers' AI adoption levels

Survey results show that 98 of the 142 lecturers had used at least one AI tool to support teaching, representing approximately 69%. The remainder had either not used AI at all or had not applied it to specific teaching activities.

Table 1. Lecturers' use of AI by purpose

Purpose category	AI use criterion	Number of lecturers	Share among AI users
Learning materials / lesson preparation	Content search / teaching-plan development	98	100.0%
Learning materials / lesson preparation	Lecture slide design	15	15.3%
Learning materials / lesson preparation	Image design	28	28.6%
Learning materials / lesson preparation	Lesson-summary infographic creation	8	8.2%
Learning materials / lesson preparation	Mind-map creation	18	18.4%
Interactive learning tools	Text-to-video conversion	12	12.2%
Interactive learning tools	Lesson-overview video creation	5	5.1%
Interactive learning tools	Game creation	30	30.6%
Testing and assessment	Test-paper generation	23	23.5%
Testing and assessment	Test grading	1	1.0%
AI assistant	AI learning-assistant development	1	1.0%

Source: Compiled from survey results.

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Table 1 indicates that lecturers most frequently employ AI during lesson preparation, especially for information retrieval and teaching-plan development. These tasks are relatively accessible, involve fewer immediate risks, and fit early patterns of AI use. By contrast, activities requiring more advanced instructional design, such as producing infographics, lesson-overview videos, automated grading, or AI learning assistants, have low adoption rates. Thus, AI use at the university is still concentrated on content preparation rather than being extensively integrated into interactive teaching and learning assessment.

The distribution of purposes in Table 1 also suggests a progression in the complexity of tasks undertaken. Information searching and planning are often carried out individually before class, allowing lecturers time to revise an output. In contrast, an interactive game, a student-facing assistant, or automated marking may affect learners immediately and requires additional testing and safeguards. The fact that 30 AI users reported game creation, compared with one reporting automated grading and one reporting assistant development, should therefore be interpreted as variation in application requirements rather than simply a deficit in motivation. These activities involve different levels of technical configuration, pedagogical validation, and accountability.

2.3.2. Lecturers' proficiency in using AI

Survey findings suggest uneven AI proficiency among lecturers. For content and teaching-plan preparation, the mean proficiency score was 2.63 for searching for content and developing teaching plans, 2.93 for slide design, 2.86 for image creation, 3.50 for infographic production, and 3.28 for mind-map creation.

These results suggest that lecturers have acquired basic AI skills, although relatively few demonstrate advanced proficiency. No indicator recorded a score of 5. This points to a need for advanced professional development addressing not only tool operation but also prompt engineering, output verification, and the transformation of AI-generated materials into pedagogically appropriate resources.

For interactive learning tools, proficiency was more favorable on certain indicators: 3.67 for video creation, 3.20 for lesson-overview videos, and 2.87 for game creation. Nevertheless, actual uptake remained limited: only 12 lecturers used AI for text-to-video conversion, five produced lesson-overview videos, and 30 designed games. Relatively high mean proficiency scores on some activities should therefore not be interpreted as evidence of widespread institutional adoption.

For testing and assessment, AI was used primarily to generate test questions: 23 lecturers reported this purpose, with a mean proficiency score of 2.96. Only one lecturer used AI for grading. This pattern indicates caution toward tasks involving scores, fairness, and academic accountability.

Mean proficiency scores should also be considered alongside the number of respondents undertaking each activity. For example, an activity used by only a small subset of lecturers may show a comparatively favorable mean among those users without indicating that the wider teaching workforce is proficient in it. Similarly, differences between content preparation, visual design, and assessment do not necessarily form a single, comparable competency scale. These findings support differentiated training pathways: introductory workshops on task formulation and verification, practical sessions on instructional design, and specialist training on assessment or learner-support applications. The purpose is to move from isolated tool operation toward repeatable and auditable teaching practices.

2.3.3. In-depth interview findings on AI adoption

The ten in-depth interviews revealed considerable variation in AI adoption. Four lecturers had not used AI in teaching, four had used it without achieving high effectiveness, and only two used it relatively frequently and reported initial benefits in selected professional tasks.

Table 2. Lecturers' AI use based on in-depth interviews

Lecturer group	Number	Share	Main characteristics
Not used AI in teaching	4/10	40%	Uncertain which tools to start with; concerned about accuracy, academic ethics, and content control
Used AI with limited effectiveness	4/10	40%	Mainly use AI for ideas, question drafting, and summarization; limited skills in prompting and instructional integration
Relatively frequent AI users	2/10	20%	Use AI to support plans, learning materials, questions, and activities; outputs still require verification and revision

Source: Compiled from in-depth interviews.

Table 2 elaborates on the quantitative findings. Some lecturers had experimented with AI but had not yet integrated it systematically into instruction. Many used it to generate ideas or draft content quickly. Even relatively frequent users emphasized the need to verify and revise AI outputs. AI should therefore not be treated as an automatic replacement for lecturers' professional judgment.

The three interview groups should not be understood as fixed categories of lecturer competence. A non-user may have sound concerns about academic integrity or may lack adequate technical support, while a frequent user may still need help assessing the validity of AI-generated material. The interviews instead point to different support needs. Non-users may benefit from guided demonstrations using familiar course tasks; occasional users may need structured prompt templates and review criteria; and frequent users may be ready to develop and share vetted examples with colleagues. This graduated approach can reduce the likelihood that professional development serves only those who are already confident using AI.

2.3.4. Factors influencing AI adoption

The interviews revealed multiple factors influencing lecturers' AI competence. Prompt-design skills and the ability to exploit AI outputs were mentioned most often (8/10). Awareness of AI's roles and limitations was mentioned by 7/10, as was selecting tools suited to teaching tasks (7/10). Six of ten interviewees identified difficulties aligning AI use with learning objectives and pedagogical methods.

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These findings suggest that the challenge is not simply knowing that a tool exists, but using it appropriately for the task, objective, and course context. A lecturer may know ChatGPT or Gemini but obtain unusable outputs when prompts are vague. Similarly, a lecturer may successfully produce videos or games, yet those resources may contribute little to learning unless closely aligned with lesson objectives.

Technological infrastructure also constitutes a barrier. Four of the ten interviewees reported disruptions involving computers, classroom displays, unstable internet connections, or unexpected server restarts. Such incidents interrupt teaching and may further discourage lecturers who already lack confidence in AI tools.

The reported barriers also reveal that AI adoption is partly an organizational issue. Clear prompts, appropriate tool selection, and output validation are personal capabilities, but reliable classrooms, access arrangements, and institutional guidance cannot be supplied by individual lecturers alone. Where the connection or display system fails, a well-designed AI-assisted activity may become impractical regardless of the teacher's preparation. A sustainable implementation approach should therefore provide alternative offline teaching materials, a defined point of contact for technical assistance, and procedures for checking generated content before instruction. These measures are proposed responses to the reported difficulties, not interventions that were tested in the present study.

2.3.5. Preliminary experimental findings

The preliminary pedagogical experiment explored the potential effects of AI-supported teaching. The most visible benefits concerned lecture preparation and organization. Total time spent on the measured teaching tasks fell from 920 to 175 minutes, a reduction of 745 minutes, or 80.9%.

Table 3. Comparison of teaching-task time with and without AI support

Activity	Without AI (min/lesson)	With AI (min/lesson)	Time saved (min)	Time saved (%)
Search and synthesize resources	120	30	90	75%
Design lecture slides	150	30	120	80%
Create mind maps / lesson summaries	20	5	15	75%
Develop questions	70	15	55	78.57%
Design learning activities / games	90	10	80	88.89%
Create lesson-overview videos	150	20	130	86.67%
Create videos	60	10	50	83.33%
Prepare tests	90	20	70	77.78%
Answer students' basic questions	60	0	60	100%
Total	920	175	745	80.9%

Source: Compiled from research data.

Table 3 shows substantial time savings in repetitive or standardizable activities. Designing learning activities or games saved 88.89% of the time, preparing lesson-overview videos saved 86.67%, creating individual videos saved 83.33%, and developing test papers saved 77.78%. These results do not imply that AI can replace lecturers, who must still verify content, revise materials, and ensure alignment with learning objectives. Preliminary student outcomes were also favorable. The AI-supported lesson group achieved an average cognitive-test score of 8.15, compared with 7.25 in the lesson without AI. On-time worksheet submission reached 93.75% in the AI-supported lesson versus 65.63% in the other lesson. The mean number of questions and learning exchanges per student per lesson was 1.625 with AI support, compared with 0.031 without AI support.

These findings suggest that AI may encourage interaction and more active student participation. Interpretation nevertheless requires caution: the preliminary experiment covered only one course and a limited sample. No inferential statistical tests were conducted to establish the significance of the observed differences. The results should therefore be regarded as initial evidence rather than generalized conclusions.

Table 3 aggregates several distinct tasks rather than reporting a controlled estimate of time savings across the university. The total reduction from 920 to 175 minutes describes the activities and comparison reported in the preliminary experiment. It should not be generalized as a typical saving for every lecturer or course. In particular, the zero minutes reported for answering basic student questions in the AI-supported condition should be interpreted within that measurement setup; it does not imply that lecturers have no continuing responsibility to respond to students. Time used to inspect AI outputs, correct inaccuracies, and review generated assessments should be considered in future studies in order to estimate net workload effects.

The observed differences in student outcomes are potentially relevant but remain exploratory. Higher average test scores, a greater share of on-time worksheet submissions, and more recorded exchanges may reflect the instructional design, the learners, the specific lesson, or other circumstances in addition to AI support. Because the study did not report an inferential test or a design that isolates these influences, it would be inappropriate to claim a demonstrated causal improvement. A subsequent study could use comparable lesson objectives, clearly defined outcome

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measures, pre-intervention baselines, and a suitable comparison design; the resulting evidence could then inform decisions about whether and where AI-supported methods should be scaled.

2.4. Implications for the digital transformation of university teaching

The survey, interviews, and preliminary experiment highlight several issues for the digital transformation of teaching at Hanoi Industrial and Trade University. First, lecturers' AI competencies are uneven. Some already use AI to retrieve information, draft questions, or develop lecture ideas, whereas others have difficulty writing clear prompts or understanding AI limitations. This creates two opposing tendencies: excessive expectations of AI and reluctance to adopt it. Neither facilitates pedagogical innovation. Second, AI use remains concentrated on basic activities. Survey data show that content searching and lesson planning are the most common applications. Advanced uses, including interactive material design, grading, learning-outcome analysis, and AI assistant development, are uncommon. Digital transformation should therefore extend beyond introducing tools to offering task-specific professional development. Training on AI-assisted test development, for example, requires a different focus from training on educational games or learning assistants. Third, content quality assurance, academic integrity, and data protection are essential. AI can generate material quickly, but its outputs may be inaccurate, insufficiently referenced, or unsuitable for a particular course. Using such outputs without verification increases professional risk; allowing students to rely on AI to complete assignments may undermine academic integrity. Institutions therefore need clear policies on permitted and prohibited uses and on disclosing AI assistance in learning activities. Fourth, effective adoption requires adequate infrastructure and institutional support. Reliable internet access, suitable equipment, tool accounts, and timely technical assistance are important for classroom implementation. Shared repositories of teaching resources, prompt libraries, and forums for exchanging experience can also help embed AI in routine practice rather than confining it to short-lived initiatives.

Based on these issues, the paper proposes a systematic and responsible workflow for integrating AI into university teaching.

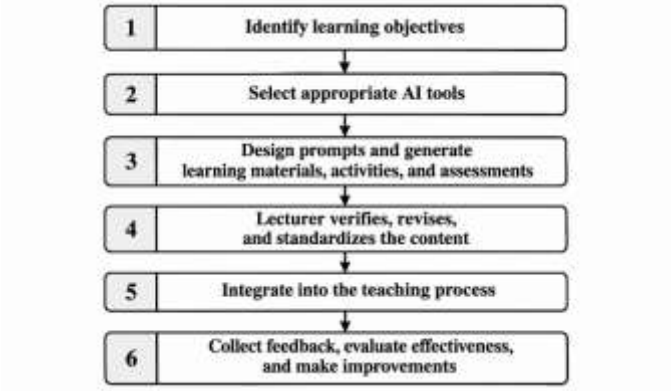

Figure 1. Workflow for responsible AI integration into university teaching
Source: Proposed by the author based on the research findings.

Figure 1 emphasizes lecturers' oversight. AI does not occupy the final decision-making position; it supports selected stages of the process. Lecturers remain responsible for setting learning objectives, selecting tools, validating outputs, and approving the materials used in class. The workflow is consistent with learner-centered teaching and responsible AI use.

An implementation strategy should align tool choice with a defined pedagogical problem and the available evidence. For instance, a lecturer preparing an assessment may use AI to draft alternative items, but must still check syllabus alignment, difficulty, uniqueness of the correct answer, marking guidance, and possible biases. For resource generation, the checking process should cover disciplinary accuracy, readability, copyright considerations, and suitability for the target students. For student-facing activities, clear instructions should specify when AI assistance is permitted and when independent work is required. These practices offer a practical interpretation of the author's proposed workflow rather than an additional validated experimental result.

At the institutional level, implementation can be organized as a sequence of needs assessment, professional development, carefully scoped pilots, and periodic evaluation. The evaluation process should record both benefits and costs: time saved after verification, usability during class, student engagement, accessibility, error correction, and technical support demands. Feedback from lecturers and learners can guide revision of prompts, materials, and rules of use. Such a cycle would allow the university to develop a shared repository of verified examples while preserving lecturers' responsibility for final instructional decisions. It would also help distinguish promising uses from applications that add complexity without improving teaching practice.

3. CONCLUSION AND RECOMMENDATIONS

3.1. Conclusions

The study examined the adoption of selected AI tools in teaching at Hanoi Industrial and Trade University. Of 142 surveyed lecturers, 98 had used at least one AI tool in their teaching activities. Use was concentrated on information retrieval and lesson planning, while interactive resource design, assessment, grading, and learning assistants remained limited. Interviews and the preliminary experiment indicate that adoption is shaped by awareness, prompt-design skills, tool selection, pedagogical integration, and infrastructure. Initial experimental findings suggest potential reductions in lesson preparation time, improved task completion, and increased student interaction. However, the experiment was limited in scope and did not include statistical significance testing; further validation is required.

Overall, the descriptive survey establishes that AI had already entered the teaching practices of a substantial proportion of respondents, but that its use was concentrated in relatively basic tasks. Interview evidence adds insight into the skills and infrastructure conditions shaping

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adoption, while the preliminary experiment suggests questions worthy of more rigorous evaluation. The findings are thus most appropriately understood as a baseline for pedagogical and institutional development. They support a measured transition from individual experimentation toward informed, accountable, and curriculum-aligned AI integration, without treating preliminary observations as definitive evidence of instructional impact.

3.2. Recommendations

Based on these findings, the university should establish task-oriented professional development in AI competence, issue guidelines for safe and accountable AI use, and improve technological infrastructure and technical support. Lecturers should actively develop prompt-design skills, verify information, and adapt AI-assisted materials to their teaching contexts. Students should be guided to employ AI as a learning aid while avoiding dependency and preserving independent thinking.

Recommendations should be implemented with an explicit division of responsibilities. University leadership can establish minimum safeguards, access arrangements, and opportunities for professional exchange; academic units can identify subject-specific use cases and check alignment with assessment regulations; lecturers can validate all materials before deployment and disclose AI assistance when relevant; and students can be taught to question outputs and protect personal data. Future research should evaluate these arrangements across different courses, report sample characteristics and procedures more fully, and use designs capable of assessing both pedagogical outcomes and the additional time required for quality assurance. Such evidence would allow stronger conclusions about the conditions under which AI contributes to sustainable teaching improvement.

REFERENCES

1) European Commission. (2017). European framework for the digital competence of educators: DigCompEdu. Publications Office of the European Union. https://doi.org/10.2760/159770
2) Følstad, A., & Brandtzaeg, P. B. (2017). Chatbots and the new world of HCI. Interactions, 24(4), 38–42. https://doi.org/10.1145/3085558
3) Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial intelligence in education: Promises and implications for teaching and learning. Center for Curriculum Redesign. https://curriculumredesign.org/wp-content/uploads/AIED-Book-Excerpt-CCR.pdf
4) Miao, F., & Holmes, W. (2023). Guidance for generative AI in education and research. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386693
5) Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x
6) UNESCO. (2024a). AI competency framework for teachers. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000391104
7) UNESCO. (2024b). AI competency framework for students. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000391105
8) Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education: Where are the educators? International Journal of Educational Technology in Higher Education, 16, 39. https://doi.org/10.1186/s41239-019-0171-0

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