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Analysis of University Students' Learning Behaviour against the Background of DeepSeek's Viral Popularity

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Abstract: Facing the wildly popular DeepSeek and the surge of AI development, the behavior of university students' learning is gradually changing. Therefore, it is of great significance to explore this new phenomenon deeply. This study uses questionnaire and face-to-face interview methods to collect information from university students by questionnaire, and then analyzes the collected information from the perspectives of applied economics and educational technology. This study found that there are four features of students' learning behavior: using intelligent tools, lowering learning threshold, efficient learning and learning in the environment of AI. The reasons for these phenomena are analyzed from the perspective of technical society and individual psychology. This study also found that there are some problems in the process of students' learning behavior, such as over-reliance on AI, risk of academic ethics and other problems. Finally, this study puts forward some corresponding suggestions for guiding the scientific learning behavior of students from the perspective of society, school, family and individual. These suggestions are valuable for the healthy development of AI.

Keywords: DeepSeek; AI-Assisted Learning; University Student Learning Behaviour; Learning Recommendations

1. Introduction

With the gradual popularity of artificial intelligence technology in education, the university students' learning mode are rapidly "human-machine collaboration" in addition to traditional self-study mode, and the viral popularity of DeepSeek in 2025. As the frequent users of DeepSeek, the learning behaviours of university students have exploratory characteristics and dependent. Therefore, based on the applied economics and educational technology, this paper aims to study the university students' learning behaviours in the viral popularity of DeepSeek, explores the characteristics and psychological features of university students' learning behaviours in the AI era, discusses the manifestation and causes of university students' learning behaviours in the AI era and explores the possible problems, and puts forward some suggestions on cultivating and guiding the scientifically reasonable learning behaviours of university students in the AI era.

2. Characteristics of University Students' Learning Behaviour Amidst DeepSeek's Viral Popularity in the AI Era

As the main body of university learning, university students have following clear features of learning with the help of intelligent learning tools such as DeepSeek. Firstly, learning tools become intelligent. Students are not depending on one single tool for learning, but using Deepseek and other AI tools to help them with learning. Secondly, the threshold of learning is greatly lowered. Students do not need any professional knowledge in related fields, just need to speak and ordinary device to complete professional learning. Thirdly, efficiency is the key. By using DeepSeek and other AI tools, students do not need to handle tedious tasks such as compiling materials and drafting, but release their minds to think more. Fourthly, the whole process of learning is surrounded by AI. From consolidation of knowledge points of courses to supporting students' studies in academic research.

3. Causes of University Student Learning Patterns Amidst DeepSeek's Viral Popularity

3.1 Technical Dimensions

3.1.1 Robust technical capabilities

Against the backdrop of DeepSeek's widespread adoption among university students for academic purposes, its robust technical capabilities form the core appeal, directly addressing the diverse and in-depth learning requirements of this demographic. The tool possesses multimodal interaction capabilities, enabling not only precise handling of text-based learning needs but also efficient parsing of specialised content such as code, formulas, and charts. This perfectly aligns with niche learning scenarios including STEM-based derivations, humanities literature analysis, and professional software operation. Simultaneously, its deep semantic understanding technology overcomes the limitations of fragmented information inherent in traditional search tools. It automatically integrates cross-source knowledge and organises logical threads based on the user's query intent. Furthermore, tailored to individual students' learning foundations and progress, it employs algorithms to deliver personalised content recommendations and real-time feedback. These robust capabilities precisely address the pain points of "low efficiency, scattered focus, and insufficient depth" in university learning, forming the key technological driver for integrating DeepSeek into the learning process.[1]

3.1.2 Lowered access barriers

Technological advancements have substantially lowered the barrier to using artificial intelligence, making it significantly more accessible to university students. Previously, AI research required deep mathematical and computer science knowledge alongside substantial computational resources, rendering it inaccessible to most. Current technological developments enable users to obtain professional results through simple language queries without needing to train models from scratch. Taking DeepSeek as an example, its proprietary technical architecture, robust performance, and Chinese language adaptability enable efficient and accurate handling of Chinese-language tasks and complex scenarios, while also substantially reducing service costs. Users need only download the software and input commands to retrieve information or complete tasks such as writing or programming. This low barrier to entry allows university students to conveniently utilise it for learning assistance without complex preparation, thereby driving widespread adoption of DeepSeek in their daily academic routines.

3.2 Societal Level

3.2.1 Social atmosphere of innovation

The widely accepted global social ethos is that technology innovation is the primary driver of social progress. As a technologically strategic technology leading the next technological revolution and industrial transformation, artificial intelligence is entering every aspect of society. This entry drives technological innovation and new social ethos.

With its technological, cost and open-source benefits, DeepSeek is widely used in critical areas such as education and health care.

This technological innovation and AI prioritisation social ethos leads governments to follow a corresponding policy and implement policy while society believes that the DeepSeek-assisted learning is effective.[2] So that the students in universities use it to avoid behind in the technological revolution.

3.2.2 Intense competitive environment

University student's pressures from academic and internship would be taken up by time and labour cost. It is a limited way of learning to cope with the competition. As DeepSeek is an efficient content processor, it will automate the repetitive and procedural works that are time-consuming and labourious. So students no longer need to do labourious work and can devote themselves in more creative work.Faced with increasing employment competition and rapid technology development, more students resort to DeepSeek learning - either to enhance their competitive edge or because they know how to master this technology is the beginning of the future and success in career.

3.2.3 digitalisation trends in education

In the internet era, the process of education digitalisation is irreversible, and the impact of AI rapid development on the way of learning plays a key role. AI is no longer a secondary tool, and it has entered the key link of teaching process, such as teaching plan, teaching way, and promote the education system reform in all levels of education contents and education system and mode. More and more higher education schools begin to apply intelligent teaching tools gradually, and the teaching efficiency improves greatly.[3] DeepSeek overcomes its own strength and strong sense of patriotism brought by "domestically made", and

has been widely used by users after its release. In this wave of wave, university students are gradually adapting to the learning environment in the active or passive way, and how to use DeepSeek is a new and effective way.

3.3 Individual Psychological Level

3.3.1 Learning paradigm

The concept of learning represents the learner's core understanding of knowledge's essence and the learning process itself. Its transformation directly triggers systemic changes in learning paradigms. The traditional concept of learning centres on "knowledge reception and memorisation," viewing learning as a passive process of internalising information. In contrast, the concept of learning in the era of artificial intelligence has shifted towards "human-machine collaborative knowledge construction," recognising learning as an active process of generating wisdom through technological tools. This transformation profoundly impacts learning practices: university students embracing this new paradigm proactively integrate DeepSeek into their knowledge construction workflow. By delegating foundational tasks like data synthesis and logical structuring to the tool, they concentrate on deep critical thinking and innovative expression, significantly enhancing learning efficiency and knowledge conversion quality. As Xia Liangliang et al. (2025) observed in their generative AI contextual study, students who explicitly adopt an "AI-assisted, human-led" approach demonstrate superior learning agency and knowledge application capabilities compared to those adhering to traditional learning paradigms.[4]

3.3.2 Learner psychology

Learner psychology is a real-time regulation system for learning activities: learners' cognitive and emotional behaviors significantly affect learning psychology's effectiveness during task accomplishment. From the perspective of cognitive psychology, DeepSeek maintains the balance of learning psychology by resolving cognitive conflict. Based on Piaget's cognitive development theory, when university students confront complex learning tasks, they usually have difficulty in transferring new information into existing cognitive schemas. To assist students in realizing cognitive accommodation, DeepSeek decomposes problems and generates stepwise solutions. In the process of literature analysis, the generated thematic clusters from the tool reduce the difficulty of information integration. Therefore, students do not experience cognitive overload, which may induce task aversion. From the perspective of emotion, the tool's personalised feedback mechanism enhances students' learning autonomy: students have higher self-efficacy when they set instructions independently and select learning paths on their own. Furthermore, the responsive efficiency of the tool alleviates students' anxiety caused by deadlines, and thus enhances their psychological stability during learning.

3.3.3 Learning motivation

Learning motivation can link psychological needs to learning behaviour, and its type and strength directly impact on students' participation and learning. Based on self-determination theory, learning motivation driven by AI includes intrinsic and extrinsic motivation, where the satisfaction of competence needs is the most intense. For university students, DeepSeek's simple-to-use functionality fulfils their intrinsic desire for knowledge exploration, and further triggers extrinsic motivation by improving functionality and competitiveness of task completion. Students confront fierce competition for grades and internships through using the tool. Satisfied extrinsic motivation of university students can be viewed as an "efficiency enabler". Both intrinsic and extrinsic dual motivation drives the students' learning behaviour from "passive compliance" to "proactive planning". Research findings show that students with satisfied competence needs fulfilled in the motivational system spent significantly longer time on their study and completed the tasks to a higher quality.

4. Primary Challenges in University Students' Use of AI Tools like DeepSeek for Learning.

Through questionnaire surveys and face-to-face interviews, it was found that while university students can leverage technology to enhance efficiency when using AI for learning, a series of prominent issues have also been exposed. These span multiple dimensions including technological application, academic ethics, and learning structure, specifically manifested as follows:

4.1 Technical Aspects

As the power of AI tools such as DeepSeek improves, the use of AI tools in higher education will increase. It brings convenience for finding information and organising knowledge, and the user will fall into the cognitive bias of "reaping benefits without effort", gradually reducing the ability to distinguish information and the desire to explore independently, and it is impossible to explore knowledge alone, and filter out knowledge by digesting it independently.[5] The proportion of undergraduate respondents who use "directly copy study materials generated by AI" accounts for 30-40%. Most of these students have used mainstream AI tools such as DeepSeek. This shows that when university students use AI to learn, they are prone to being misled by the self-consistent logic of AI. They are dependent on the content generated by AI, and lack of independent thinking and critical consciousness. This leads to the emergence of irrational learning behaviour of "copying answers verbatim". This seriously undermines the actual effectiveness of learning knowledge.[6] In addition, the phenomenon of "AI Hallucinations" (meaning that the content generated by AI is reasonable but false) is also serious. University students are less likely to distinguish misinformation, making them more likely to entrench false knowledge.

4.2 Ethical Dimensions

Some university students, constrained by their weak information retrieval habits, inefficient integration of available resources, and practical issues like "no viable research output" or "poor availability of learning resources," gradually develop poor study habits that indirectly lead to academic ethical risks.

Survey results show a significant existence of an "information gap" among this group of users, making it hard to efficiently filter and utilize various learning resources, and a lack of systematic awareness and capability of integrating resources.

This capability deficit manifests in two types of problematic behaviours. On one hand, some students use behaviours that violate academic ethical principles, e.g. directly plagiarising the results from AI, or even fabricating research data, to simply finish tasks ahead of time. On the other hand, under the influence of peer groups, some students use irrational learning behaviour, e.g. following the crowd to use AI for ghost writing or completing assignments.

Even though most students agree to the significance of "efficient use of resources", mental inertia forces them to simply apply the content directly provided by AI rather than actively using AI to facilitate learning, which in turn promotes the proliferation of academic misconduct.

4.3 Teaching Level

At the teaching end, two prominent misalignment issues in the use of AI for learning by university students outside class have become evident, greatly limiting learning quality and skills development.

Firstly, there is a marked misalignment in learning structures. This is mainly reflected in an imbalance in the use of AI functions, where the ratio of "using AI to complete assignments" to "searching for learning information via AI" is severely skewed. There are even university students who, on the surface, are using AI tools to "search for learning information", but in fact, have turned them into a convenient tool for completing assigned tasks, completely ignoring AI's value in opening up knowledge horizons and enhancing understanding of subjects.

From the perspective of demand, survey results are also very clear: when university students use AI for searching, their motivation for using AI is largely concentrated on "how to swiftly complete learning tasks", rather than on "how to use AI to construct a knowledge system". This task-effect-first mentality, which enables students to gradually complete homework as fast as possible, also gradually weakens their motivation to actively explore ways to solve problems and construct knowledge systems actively. It causes them to develop an irrational learning motivation of "learning only to complete tasks", and thus deviate from the positioning of AI as a learning assistant and make learning into a passive process of completing tasks.

On this basis, when faced with the emergence of generative AI tools (such as DeepSeek), the academic integrity of university students using AI to write papers is also increasingly questionable. The practice of university students using AI to write academic papers is increasingly common, and most students have an increasing tendency and willingness towards "AI-written essays".

However, due to a lack of clarity on the "boundaries of using AI to learn", some students directly copy text from AI as their own, abandoning the process of independently thinking, logically organizing, and refining content. More worrying is how the "instant feedback" function of AI tools entrench this dependence. Students can quickly get a "finished answer" without spending time on argumentation logic and expression optimization. If they are dependent on this learning model for a long time, it will eventually stagnate and impair their critical thinking skills.[7] Survey results are also clear: most university students have not yet formed the correct understanding that "AI is only used as a learning aid". Their gradual dependence gradually weakens their core abilities in independent thinking and original creation. This not only deviates from the basic goal of AI learning, but also goes against the basic goal of higher education, which is to cultivate innovative talent, and thus threatens the quality of talent cultivation.

5. Recommendations for Cultivating and Guiding Scientific Learning Behaviour Among University Students in the AI Era

With generative AI entering the education field, great changes can be observed in teaching, content generation and learning. However, this also brings about some problems such as over-reliance on technology, superficial application of AI in education and low literacy of AI among educators and students. Therefore, through the concerted efforts of society, institutions, families and individuals, a detailed guidance framework should be formed to promote the healthy development of AI-assisted learning.

Firstly, at the societal level, a complete set of rules and resource support for technology application should be established. Rules should be made for specialised regulations on the application of generative AI in education. The specific standards of data privacy protection, algorithm black box and content moderation should be clarified to avoid the technology misusing and deviating its original intention at the institutional level. Meanwhile, enterprises and universities should be encouraged to cooperate deeply in specialised AI large models in education and construction of high-quality and reusable teaching resource repositories so that high-quality educational resources can cross space and resources and achieve universal coverage. In addition, media should be used and public education should be carried out to popularise the basic principles of AI technology and the range of its appropriate use. This will help all kinds of social groups, especially university students, to use AI in a scientific and critical way, thereby creating a rational environment for AI-assisted learning [8].

As the main body that implements education and the place where education is implemented, schools should change their ways of teaching and build a capacity system. On the one hand, it should actively promote a new type of "human-machine collaboration" teaching model with the tripartite cooperation between teachers, AI and students. By using AI tools, teachers and students can automatically generate personalised learning content, make accurate diagnosis on students' learning effect and provide students with interactive tutoring in time. This improves teaching efficiency and increases response to students' needs. On the other hand, teachers' AI literacy should be improved through specialised training and industry-academic cooperation in teaching. Teachers should understand the functions and value of AI tools and develop the ability to become solution designers, process facilitators and outcome evaluators in AI-assisted teaching. Meanwhile, improvement in AI teaching resources and assessment should be carried out. This includes construction of teaching files containing instructional support cases and code templates, development of multi-level evaluation system based on learning process data. This will change the current situation where assessment focuses on single knowledge point acquisition and expands it to a comprehensive development of competence to meet the needs of talent training in the AI era[9-10].

As an important learning environment, families need to take on the responsibility of offering rational guidance and shaping good habits. Parents need to follow their children throughout the whole process of AI-assisted learning and communicate with their children to help them understand the limitations of AI-assisted learning and avoid the trap of blindly believing in AI-assisted learning or over-relying on it. In addition, they also need to create an environment of digital literacy education at home. By learning together and discussing hot

issues, they can help students establish a general understanding of AI technology, cultivate the ability to distinguish information and promote independent thinking.

In addition, communication with schools is also very important. By communicating with teachers in time, parents can understand their children's performance and problems in AI-assisted learning in a timely manner and adjust the role of families in promoting the development of standardized, scientific AI-assisted learning.

As the agents of their own learning, university students need to enhance their awareness of self-directed learning and technological application skills actively.

Firstly, students should recognize that AI is a tool. University students should give priority to independent learning and maintain an inquiring attitude towards knowledge. This can avoid the decline of basic subject performance and the ability of critical thinking due to the convenience of technology.

Secondly, students should actively learn the basic principles and usage methods of AI technology. They should focus on learning how to verify and critically use AI-generated information. They should learn to do deep thinking and create new applications with the help of AI tools instead of passively relying on the output results of the tool. In addition, it is also important to actively participate in course projects, academic competitions, practical training and other AI-related activities. By doing this, students can accumulate practical experience in using the tool in real situations, enhance the ability to apply AI to solve practical learning and research problems, and promote the coordinated development of personal abilities and technology tools.

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