Artificial Intelligence As A Tool To Develop Strategic Management Enhancing Atmosphere Conducive To Learning: A Case Study At BTIS*

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ABSTRACT

The objective of this research is to explore the integration of Artificial Intelligence (AI) into strategic management processes to enhance the learning atmosphere within a school setting. By focusing on a case study at British Thai International School at Chiangkham - Phayao (BTIS), the study examines strategic management implementations that foster a conducive learning environment. The research employs a mixed-methods approach, utilizing both quantitative and qualitative data from questionnaires and interviews with various stakeholders, including 19 students, 11 teachers and 2 administrators. The research results find 1. AI serves as an effective tool for analyzing and defining strategic management policies that enhance atmosphere conducive to learning. 2. The potential challenges and opportunities associated with the use of AI in strategic management for educational purposes. 3. The development of a framework for school administrators to improve the learning atmosphere, thereby supporting the well-being and satisfaction of the school community. These contribute to the existing body of knowledge on AI's role in strategic management and its impact on creating a nurturing educational environment.

Keywords: Artificial Intelligence; Strategic Management; Learning Atmosphere

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การใช้ปัญญาประดิษฐ์เป็นเครื่องมือในการพัฒนาการจัดการเชิงกลยุทธ์ที่เสริมสร้างบรรยากาศที่เอื้อต่อการเรียนรู้: กรณีศึกษาที่ BTIS

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บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อสำรวจการบูรณาการปัญญาประดิษฐ์ (AI) เข้ากับกระบวนการจัดการเชิงกลยุทธ์เพื่อเพิ่มบรรยากาศการเรียนรู้ภายในโรงเรียน การศึกษานี้มุ่งเน้นไปที่กรณีศึกษาที่ Britisih Thai International School at Chiangkham – Phayo (BTIS) โดยจะตรวจสอบการใช้งานการจัดการเชิงกลยุทธ์ที่ส่งเสริมสภาพแวดล้อมที่เอื้ออำนวยต่อการเรียนรู้ การวิจัยใช้วิธีการผสมผสานโดยใช้ข้อมูลทั้งเชิงปริมาณและเชิงคุณภาพจากแบบสอบถามและการสัมภาษณ์ผู้มีส่วนได้ส่วนเสียต่างๆ ดังนี้ นักเรียน 19 คน ครู 11 คน และผู้บริหาร 2 คน ผลการวิจัยพบว่า 1. AI ทำหน้าที่เป็นเครื่องมือที่มีประสิทธิภาพในการวิเคราะห์และกำหนดนโยบายการจัดการเชิงกลยุทธ์ที่เสริมสร้างบรรยากาศที่เอื้อต่อการเรียนรู้ 2. ความท้าทายและโอกาสที่อาจเกิดขึ้นที่เกี่ยวข้องกับการใช้ AI ในการจัดการเชิงกลยุทธ์เพื่อการศึกษา 3. การพัฒนากรอบการทำงานสำหรับผู้บริหารโรงเรียนเพื่อปรับปรุงบรรยากาศการเรียนรู้ ซึ่งจะช่วยสนับสนุนความเป็นอยู่ที่ดีและความพึงพอใจของชุมชนโรงเรียน สิ่งเหล่านี้มีส่วนทำให้เกิดองค์ความรู้ที่มีอยู่เกี่ยวกับบทบาทของ AI ในการจัดการเชิงกลยุทธ์ และผลกระทบต่อการสร้างสภาพแวดล้อมทางการศึกษา

คำสำคัญ: ปัญญาประดิษฐ์; กระบวนการจัดการเชิงกลยุทธ์; บรรยากาศการเรียนรู้

Introduction

Artificial intelligence (AI) is the field of computer science that aims to create machines that can perform tasks that normally require human intelligence, such as reasoning, learning, decision making, and creativity (Kaplan & Haenlein, 2019). AI has many advantages, such as solving complex problems, enhancing productivity, improving quality of life, and creating new opportunities for innovation and growth (Brynjolfsson & McAfee, 2016; Davenport & Ronanki, 2018). AI is transforming various domains and industries, such as healthcare, education, business, and entertainment (Lee, 2018; Phan et al., 2017).

AI can enhance learning and strategic management. Learning is key for human development and social change (Faraj et al., 2018; George et al., 2014; Keding, 2020; Ferràs-Hernández, 2018; Gunasekaran et al., 2017). Strategic management, which defines and implements an organization’s goals, involves SWOT analysis, strategy formulation, and

performance evaluation, and is crucial for organizational success (Keding, 2020; Ferràs-Hernández, 2018; Davenport & Ronanki, 2018).

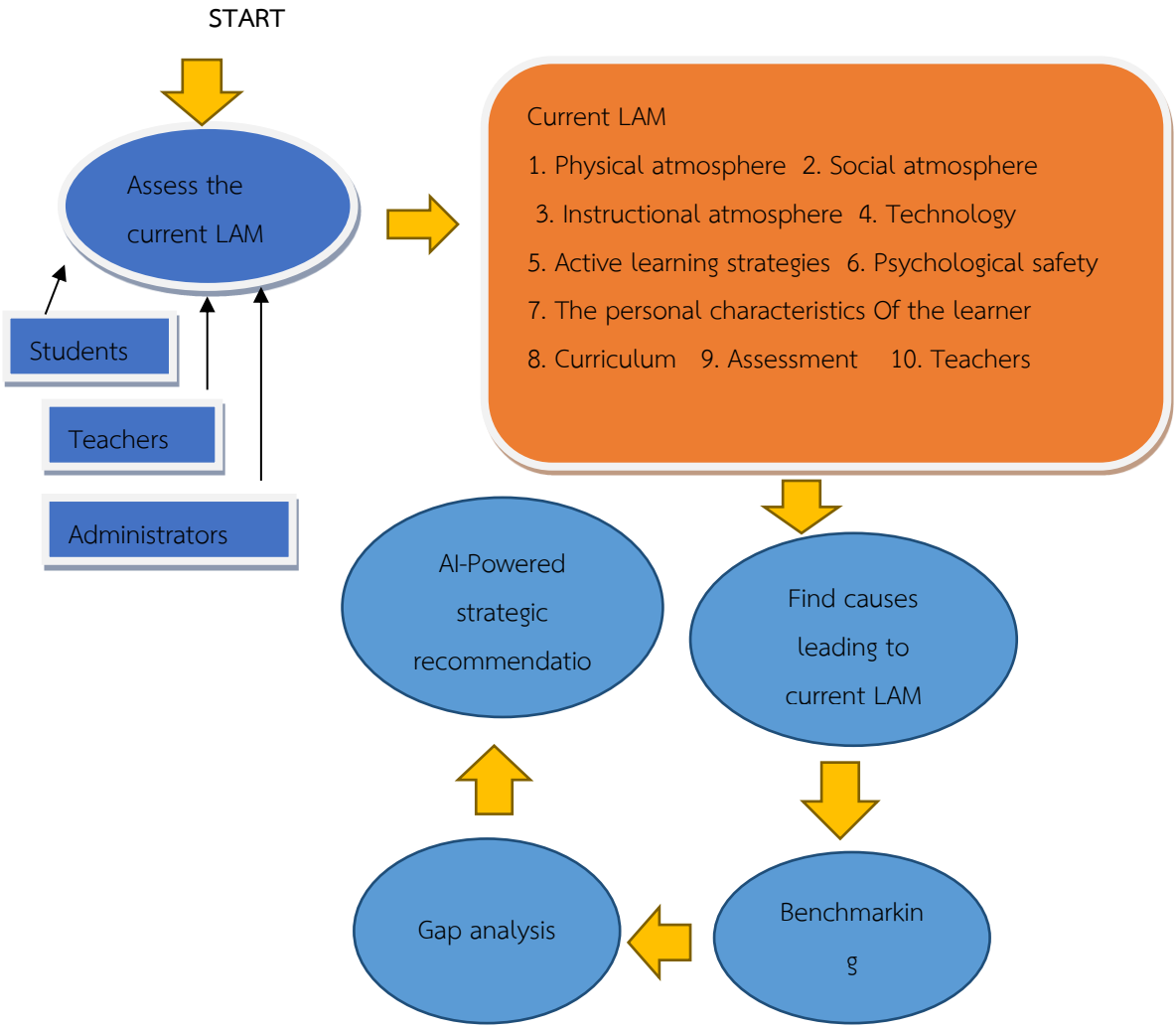
This research explores AI and strategic management's role in learning atmospheres, focusing on the physical, social, and psychological environment that influences learning outcomes and learner and teacher satisfaction (Keding, 2020). It proposes a framework for administrators to use AI in strategic management to create a conducive learning environment at BTIS. The paper uses a mixed-methods approach, collecting data from questionnaires and interviews with school stakeholders.

Research objective

To provide a framework for the school's administrators to improve the learning atmosphere by integrating AI into strategic management processes.

Conceptual Framework

This framework outlines a data-driven approach to improve LAM at BTIS, encompassing various stakeholders and utilizing AI for strategic recommendations.



1. Current LAM Assessment:

- Data Collection: Conduct surveys with teachers, students, and administrators using questionnaires to understand their perceptions of the current LAM across 10 elements; namely, the physical setting, the social atmosphere, the instructional atmosphere, technology, active learning strategies, psychological safety, students' characteristics, assessment, curriculum and teachers.
- Interviews and Focus Groups: Delve deeper to understand the underlying causes of strengths and weaknesses in the current LAM through interviews and focus groups with various stakeholders.

2. The desired future vision involves benchmarking, where LAM in leading education systems like Finland, Singapore, and New Zealand is analyzed to identify best practices and desirable future qualities for BTIS's LAM. This is followed by a gap analysis, which includes a comparative analysis. Here, the findings from the current LAM assessment are compared with the desired future vision, identifying specific gaps in each element.

3. AI-powered Strategic Recommendations: Leveraging data involves using AI algorithms to analyze comprehensive data collected through surveys, interviews, and gap analysis. The aim is to suggest strategic interventions to address identified gaps. This includes creating tailored action plans for different stakeholders, recommending resource allocation, devising implementation strategies, and establishing evaluation frameworks to track progress.

Research Methodology

This research employs Community-Based Participatory Research (CBPR) and a convergent method to study strategic management for conducive learning atmospheres. The methodology includes four steps: namely, measuring the learning atmosphere at BTIS; identifying influencing factors; comparing BTIS's learning atmosphere with leading educational countries; and defining strategic actions to improve BTIS's learning atmosphere.

Population

The research involved collecting data from a sample of participants who were selected based on their roles and involvement in the learning process. The population consisted of 2 administrators, 14 teachers, and 80 students. The research aimed to explore the perceptions and experiences of these participants regarding the strengths and challenges of the new Learning Atmosphere Management, as well as their suggestions for improvement.

Sample

The research involved collecting data from a sample of participants consisting of 2 administrators selected from their direct involvement in learning process, 11 teachers selected from full-time teachers both Thai and English speakers, and 19 students selected from different grade levels and their understanding of the questions. The research aimed to explore the perceptions and experiences of these participants regarding the strengths and challenges of the new Learning Atmosphere Management (LAM), as well as their suggestions for improvement.

Research Instrument

The research instrument used in this study is a questionnaire that aims to measure the LAM at BTIS. The questionnaire consists of rating scale opinion that cover various

aspects of the learning environment. The questionnaire was designed based on the literature review and the research objectives. To ensure the validity and reliability of the questionnaire, it was first submitted to four experts in the field of education for their evaluation and feedback. The questionnaire was then revised according to the experts' suggestions and comments. Next, the questionnaire was administered to a pilot group of 30 students and teachers from BISN to test its reliability and clarity. The results of the pilot test were analyzed using Cronbach's alpha coefficient and descriptive statistics. The final version of the questionnaire was then distributed to a sample of 32 students, teachers and administrators from BTIS. The data collected from the questionnaire was supplemented by AI-powered questions for interview and focus-group interview, which were conducted with a subset of the respondents to gain more insights into their perceptions and experiences of the learning atmosphere at BTIS.

Data Collection

The data collection of this study involved two methods: questionnaires and interviews. The questionnaires were administered online using Google Forms to assess the current LAM at BTIS. The response rate was 100%. After the current LAM at BTIS was assessed, the interviews were conducted to find the causes of the current LAM at BTIS. The interviews were divided into two types: individual and focus-group. The individual interviews were conducted with 6 students, 5 teachers and 1 administrator. The individual interviews were conducted face-to-face and lasted for about 20 minutes each. The focus-group interviews were conducted with 5 groups of 5-7 participants each. The focus-group interviews were conducted face-to-face and lasted for about 30 minutes each. The interviews were recorded and transcribed for data analysis.

Data Analysis

The data analysis of this study consisted of two phases: quantitative and qualitative. In the first phase, the questionnaires were given to assess the current LAM at BTIS. The questionnaires contained items that measured the respondents' perceptions and satisfaction of various aspects of the learning environment. The data from the questionnaires were analyzed using descriptive statistics, such as mean and standard deviation, to obtain the overall and group scores of the LAM at BTIS. The results of the quantitative analysis revealed the strengths and weaknesses of the LAM at BTIS, as well as the gaps and discrepancies between the different groups of respondents. In the second phase, the interview and focus-group interview were conducted to find the causes of the current LAM at BTIS. The interview and focus-group interview involved a subset of the respondents. The data from the interview and focus-group interview were analyzed using content analysis. The results of the qualitative analysis provided deeper insights and explanations for the quantitative findings, as well as the challenges and opportunities for improving the LAM at BTIS.

Research Findings

The survey results suggest that while teachers and administrators generally have a positive view of the learning atmosphere, there are areas where students' perceptions could be improved, particularly in technology, psychological safety, and personal interactions. Based on focus-group and individual interviews, several issues were identified: the physical environment is characterized by messy and noisy classrooms; the social environment is impacted by excessive mobile phone use, leading to isolation and poor behavior; the instructional atmosphere suffers from bias, creating a hostile learning environment; active

learning is hindered by a lack of engagement and challenges; personal characteristics include a lack of motivation and determination; and assessments reveal poor English skills and underperformance in written exams.

Based on quantitative data and qualitative data, the BTIS framework aims to enhance the educational environment by leveraging AI in strategic management. By conducting thorough assessments of the school's learning atmosphere and utilizing AI tools, administrators can identify areas for improvement and set new objectives. This data-driven approach allows for the development of targeted project plans, addressing all ten elements of the learning environment to foster a more effective and engaging atmosphere for students.

1. Goals: BTIS strives to improve student engagement, offer international education with cultural preservation, enhance interaction, and improve student proficiency in programming. It also aims to align administration with goals, reduce dropout rates, and increase parent and student satisfaction.
2. Strategic Objectives:
   - o LAM: Develop a framework for managing the learning environment in the AI age.
   - o School self-assessment: Identify areas for improvement, including marketing, classroom management, data analysis, parent communication, professional development, language and behavior, student self-efficacy, and extracurricular activities.
   - o Benchmarking: Focus on student engagement, curriculum, culture, and policy consistency.
   - o School climate surveys: Explore factors influencing student engagement, such as ADHD, school ethos, English language barriers, and physical environment.
   - o Strategic map: Prepare students for the future by promoting sustainability, collaboration, communication, critical thinking, self-directed learning, and metacognition.
3. Project Plans:
   - o Physical environment improvement: Enhance cleanliness, safety, sustainability, and student well-being.
   - o Social environment improvement: Improve the quality of teaching and learning through teacher support, feedback, student engagement, motivation, and parental perception.
   - o Instructional environment improvement: Focus on curriculum design, supportive learning, student engagement, celebration of achievements, real-world application of skills, and teacher effectiveness.
   - o Technology in education: Align with mission, ensure resource availability and reliable infrastructure, provide professional development, and promote student engagement.
   - o Active learning strategies: Encourage equal group participation, positive group climate, effective conflict resolution, task management, communication, growth mindset, and student empowerment.
   - o Psychological safety improvement: Promote inclusive language, address communication issues, integrate anti-bullying and diversity education, and implement anti-bullying policies.
   - o Personal characteristics of the learner: Foster parent and peer collaboration, student self-awareness, meaningful activities, timely feedback, student autonomy, motivation, self-efficacy assessment, and growth mindset.
   - o Curriculum improvement: Focus on relevance, standards alignment, language interventions, fair assessments, and inclusivity.

- Assessment improvement: Implement diverse assessments, provide clear feedback, and ensure data-driven decision-making.
- Teacher improvement: Offer a seminar program with differentiated content, clear learning outcomes, and ongoing professional development.

Conclusion

This research has demonstrated the transformative power of AI in crafting strategic management for improved learning atmosphere within BTIS. The case study revealed AI's effectiveness in analyzing and defining strategies that foster learner-centeredness, collaboration, innovation, diversity, and inclusion – hallmarks of an ideal learning environment.

Beyond its efficiency and analytical prowess, AI offers unique advantages:

- Data-driven insights: AI delves deep into the collected data from surveys, interviews, and gap analyses, uncovering hidden patterns and relationships that human analysis might miss. This comprehensive understanding informs the development of targeted and impactful strategies.
- Tailored solutions: AI personalizes recommendations to address the specific needs of different stakeholders. This ensures interventions are relevant and maximize their impact.
- Dynamic adaptation: AI can continuously analyze and learn from new data, allowing for ongoing refinement of strategies to adapt to changing needs and trends.

While challenges exist, such as data privacy concerns, the opportunities presented by AI outweigh them. By embracing this powerful tool, BTIS administrators can:

- Develop informed strategies: AI-backed insights empower administrators to make data-driven decisions, ensuring strategies are evidence-based and address root causes of current limitations.
- Optimize resource allocation: AI can pinpoint areas where resources are underutilized or overstretched, allowing for efficient allocation to maximize their impact on improving the learning atmosphere.
- Accelerate progress: AI's ability to analyze vast amounts of data and suggest solutions rapidly translates to faster implementation of improvement initiatives, leading to quicker gains in learning outcomes.

In conclusion, this research solidifies AI's position as a powerful tool for school administrators like those at BTIS. By leveraging its unique capabilities, BTIS can unlock the potential for a transformed learning atmosphere, one that fosters student success, engagement, and a love for learning. The future of education is data-driven, and AI provides the key to unlock its true potential. BTIS, by embracing this innovative approach, can become a leader in creating a learning environment that empowers students and thrives in the ever-evolving educational landscape.

Discussion

The research findings of "Artificial Intelligence As A Tool To Develop Strategic Management Enhancing Atmosphere Conducive To Learning: A Case Study At BTIS" resonate with the growing body of research highlighting the potential of AI as a powerful tool for strategic management, ultimately aiming to improve learning environments. This discussion explores this intersection, drawing on relevant research papers and theory to support the notion of AI as a transformative force in strategic management and its impact on learning.

AI revolutionizes strategic management by facilitating data-driven decisions, enhancing resource distribution, and personalizing education, as evidenced by Brynjolfsson & McAfee (2014), Ruhe (2019), and Jovanovic et al. (2016). It also streamlines administrative tasks, enriching educator-student interactions (Hewlett & Luce, 2020). However, it's crucial to address AI's ethical challenges responsibly (Alai-Tafti, 2023).

In conclusion, the BTIS case study confirms AI's role in advancing strategic management within education. It underscores AI's ability to improve decision-making, streamline operations, and tailor learning, fostering an improved educational environment. Yet, ethical use and careful deployment are crucial for its effective adoption.

Suggestions

The research findings from the study titled “Artificial Intelligence As A Tool To Develop Strategic Management Enhancing Atmosphere Conducive To Learning: A Case Study At BTIS” offer valuable insights into how AI can positively impact schools and enhance the learning environment. Here are some practical suggestions for leveraging these findings:

1. Data-Driven Decision Making:
    - Resource Allocation: Utilize AI to analyze data on student performance, attendance, and engagement. This can inform decisions related to allocating resources effectively.
    - Curriculum Development: AI can identify gaps in the curriculum and recommend adjustments based on student needs and learning outcomes.
    - Pedagogical Approaches: Leverage AI insights to adapt teaching methods, ensuring they align with student learning preferences and maximize effectiveness.
2. Automating Administrative Tasks:
    - Scheduling and Timetabling: Implement AI algorithms to optimize class schedules, teacher assignments, and extracurricular activities.
    - Grading and Assessment: AI can automate grading processes, providing timely feedback to students.
    - Reporting and Analytics: Generate real-time reports on student progress, attendance, and behavior using AI-powered dashboards.
3. Personalized Learning:
    - Adaptive Learning Platforms: Deploy AI-driven platforms that tailor content and difficulty levels to individual student abilities. These systems adjust in real time, ensuring each student receives a customized learning experience.
    - Intelligent Tutoring Systems: Offer personalized support outside the classroom. AI tutors can address specific student queries, reinforce concepts, and provide additional practice.
    - Learning Analytics: Continuously monitor student performance using AI analytics. Identify struggling students early and intervene with targeted support.

By integrating AI strategically, schools can create a more efficient, personalized, and supportive learning environment. It’s essential to collaborate with educators, administrators, and students to ensure successful implementation and maximize the benefits of AI in education

Suggestion for the future research

To enhance the research and make it more robust, future researchers can consider investigating the following areas or variables:

1. Long-Term Impact: Explore the long-term effects of implementing AI in strategic management for learning environments. Investigate whether the positive outcomes observed in the short term persist over extended periods.
2. Ethical Considerations: Examine ethical implications related to AI adoption. Investigate issues such as data privacy, bias, transparency, and accountability.
3. Teacher Training and Support: Investigate the impact of AI on teacher professional development. How can educators be trained to effectively use AI tools?
4. Student Engagement and Motivation: Explore how AI-powered personalized learning impacts student engagement, motivation, and satisfaction. Investigate whether tailored content enhances student interest and participation.
5. Cost-Benefit Analysis: Conduct a comprehensive cost-benefit analysis of AI implementation. Consider both financial costs and benefits.
6. Stakeholder Perspectives: Gather insights from various stakeholders regarding their perceptions of AI in education. Understand their expectations, concerns, and experiences.
7. Comparative Studies: Compare AI-driven strategic management with traditional approaches. Investigate whether AI outperforms existing methods in terms of efficiency, effectiveness, and student outcomes.
8. Contextual Factors: Consider contextual variables such as school size, location, student demographics, and available resources. How do these factors influence the impact of AI on learning environments?
9. Implementation Strategies: Explore best practices for introducing AI tools in schools. Investigate successful implementation models, change management strategies, and scalability.
10. Feedback Mechanisms: Investigate real-time feedback loops between AI systems and educators. How can continuous feedback improve decision-making and enhance the learning atmosphere?

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