

Assessing the Current Situations and Proposing Solutions to Promote the Roles of Medical Students in Digital Transformation at the Le Huu Trac University of Medicine and Pharmacy Nowadays

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Abstract— This paper provides an overview of the current participation of medical students in digital transformation at the Le Huu Trac University of Medicine and Pharmacy, focusing on their level of awareness, ability to apply digital techniques in learning and training, and common difficulties they face on the way. Based on this assessment, the paper proposes basic solutions to improve digital capacity, enhance the digital learning environment, and promote the active role of students in the digital transformation process of the Le Huu Trac University of Medicine and Pharmacy today.

Keywords— Digital transformation; medical students; Le Huu Trac University of Medicine and Pharmacy.

I. INTRODUCTION

In the context of recent years, digital transformation has emerged as an inevitable trend, exerting a profound impact on various fields, especially education and training. At the Le Huu Trac University of Medicine and Pharmacy, in response to the Politburo's Resolution No. 57-NQ/TW dated December 22, 2024, on breakthroughs in science, technology, innovation, and national digital transformation, and the Central Military Commission's Resolution No. 3488-NQ/QUTW on digital transformation in the military, the Party Committee and Board of Directors have identified digital transformation as a key task. This aims to modernize training, scientific research, and students management, in line with the Ministry of National Defense's orientation on applying digital technology to develop military human resources.

In the training environment of the Le Huu Trac University of Medicine and Pharmacy, digital transformation is both an objective requirement and a condition for forming a new generation of military doctors with technological competence, capable of meeting professional demands in new conditions.

Medical students play a central role in this process, as they directly participate in digital activities and are also the main beneficiaries of the new training model.

In recent years, medical students have shown positive changes in accessing the digital environment: improved digital skills, greater learning initiative, and more active use of digital learning materials, clinical simulations, and training management platforms.

But in other hand, practical implementation still reveals limitations, such as uneven digital competence among students,

a lack of initiative in learning among some students, and digital infrastructure that does not fully come to learning and research needs.

Based on this rationale, assessing the current state of digital transformation and proposing feasible solutions to enhance the role of medical students has become an urgent requirement, contributing to the improvement of training quality and the successful development of a digital learning environment at the Le Huu Trac University of Medicine and Pharmacy, thereby contributing to the improvement of training quality for military doctors in response to the demands of current and future missions.

II. SUBJECTS AND METHODS

A. Research Subjects

The research subject of this thesis is the current situation of the role of medical students in digital transformation at Le Huu Trac University of Medicine and Pharmacy.

B. Research Methods

This study employs several primary research methods, including questionnaire-based surveys, analysis and synthesis, and comparative methods, in order to collect, process, and evaluate data in an objective and scientific manner.

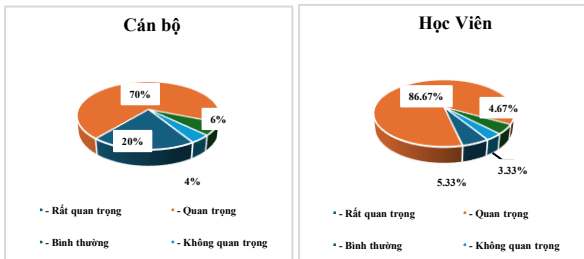
III. RESULTS AND DISCUSSION

A. Current Role of Military Medical Students in Digital Transformation at the Le Huu Trac University of Medicine and Pharmacy

➤ Awareness and Responsibility of Military Medical Students

The survey results demonstrate that awareness and responsibility constitute a fundamental basis for promoting the role of military medical students in the digital transformation process at the Military Medical Academy. As presented in 1st Square, a substantial majority of students perceive their role in digital transformation as significant, with 5.33% assessing it as very important and 86.67% as important. This finding reflects a relatively high level of awareness among students regarding the necessity and relevance of digital transformation in contemporary medical education.

This perception is consistent with assessments provided by academic managers, of whom 91% acknowledge that students exhibit a high sense of responsibility in implementing digital transformation tasks. These results suggest that digital transformation has gradually been internalized by most students as an integral component of their learning, training, and professional development responsibilities. Nevertheless, the data also indicate that a small proportion of students still evaluate their role at a moderate or low level, implying that awareness and responsibility have not yet been fully unified across the entire student body. Such disparities may partly limit the depth and effectiveness of students' engagement in digital transformation activities.

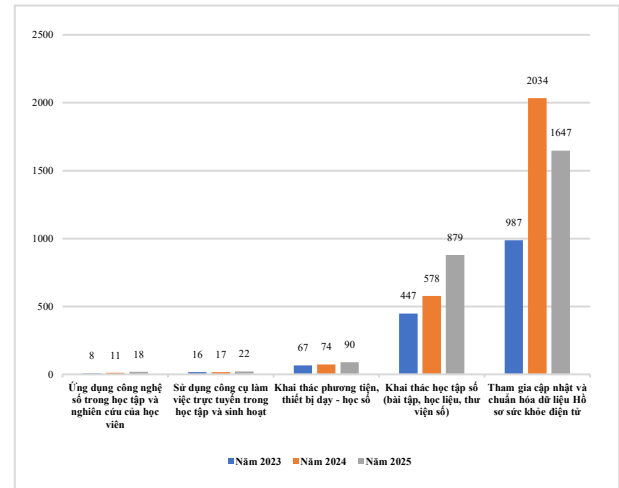


1st Square. Awareness of staff and students regarding the role of students in digital transformation

➤ Application of Digital Technologies in Learning and Training

Data shown in 2nd Square reveal a clear and sustained increase in the application of digital technologies by military medical students over recent years. Students have increasingly utilized digital learning management systems, electronic teaching materials, online collaboration tools, and modern digital teaching equipment to support their learning and training activities. Particularly notable is the indicator related to accessing digital learning resources, including assignments, digital materials, and digital libraries, which increased by 3.5 times. This result highlights a significant improvement in students' capacity to exploit digital learning environments.

In addition to general learning activities, digital technologies have been widely applied in clinical training contexts. Students actively use clinical simulation software, virtual case studies, 3D simulation tools, and online learning platforms to enhance diagnostic thinking and clinical decision-making skills. The marked increase in students' participation in updating and standardizing electronic health record data further illustrates their increasingly proactive role in operating and maintaining the Academy's digital systems. Overall, these findings indicate that digital transformation has positively contributed to improving learning accessibility, flexibility, and the integration of theoretical knowledge with practical application. However, the level of digital technology use remains uneven, as some students continue to limit their engagement to basic digital functions.

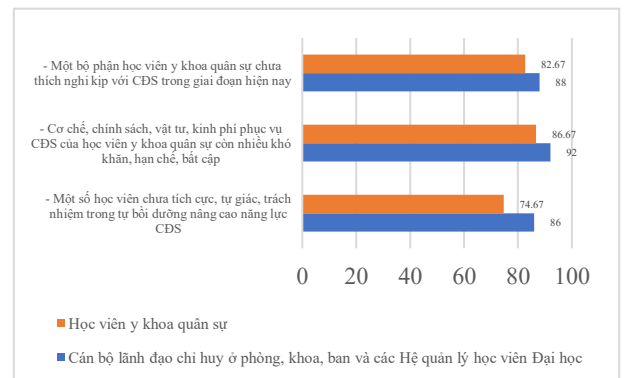


2nd square. Level of digital technology application by students over the years

➤ Learning Outcomes and Task Performance in the Context of Digital Transformation

As reflected in Table 3, the majority of military medical students demonstrate satisfactory learning outcomes and task performance within the digital learning environment. Annual results show that more than 10% of students complete assigned tasks at an excellent level, while over 84% fulfill tasks well. These figures suggest that the application of digital technologies has supported students in managing academic requirements more effectively and has contributed to maintaining stable learning and training outcomes.

Despite these positive results, the data also reveal that a small proportion of students achieve only moderate levels of task completion. This finding indicates the existence of differences in digital competence, learning habits, and self-directed learning capacity among students. Although digital transformation has created favorable conditions for enhancing learning effectiveness, its benefits have not yet been fully realized by all students to the same extent.



3rd Square. Task completion results of medical students

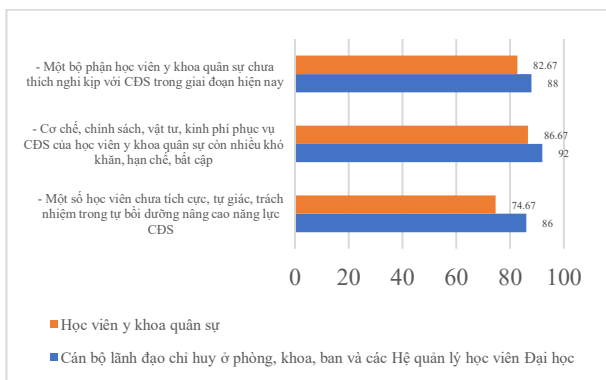
➤ Limitations and Factors Affecting the Role of Students in Digital Transformation

Alongside the achievements noted above, Table 4 highlights several factors that continue to constrain the effective

performance of military medical students' roles in digital transformation. A proportion of students still have an incomplete understanding of the objectives and content of digital transformation and tend to equate it primarily with conventional information technology application. In some cases, participation in digital transformation activities remains formalistic, with limited collaboration and mutual support.

Survey results indicate that 86% of managers and 74.67% of students identify insufficient self-discipline in developing digital competence as a major limiting factor. Heavy academic and training workloads reduce opportunities for independent digital practice, while disparities in access to digital resources and learning conditions further widen differences among students. Moreover, incomplete synchronization of policies, support mechanisms, and investment conditions in certain units has reduced motivation and limited students' capacity to actively engage in digital transformation activities.

Taken together, these findings suggest that while military medical students have increasingly affirmed their role in the digital transformation process, further efforts are required to enhance consistency in awareness, strengthen digital competence, and create more favorable conditions for students to fully realize their potential in the Academy's digital transformation.



4th Square. Causes limiting the role of medical students

B. Discussion of Research Findings

The findings presented in Section III.A provide a comprehensive picture of the current role of military medical students in the digital transformation process at the Military Medical Academy and allow for several important academic discussions.

First, the generally high level of awareness and responsibility among students and academic staff represents a positive foundation for the implementation of digital transformation. The fact that most students recognize their role as important indicates that digital transformation has gradually shifted from being perceived as a purely technical task to becoming an integral component of educational reform. This finding is consistent with contemporary studies on digital transformation in higher education, which emphasize awareness as a prerequisite for meaningful participation and sustainable implementation. However, the presence of a small group of students with limited awareness suggests that institutional communication and orientation efforts need to be

further strengthened to ensure consistency across the student body.

Second, the increasing application of digital technologies in learning and training demonstrates that digital transformation has begun to exert a tangible impact on students' learning practices. The expanded use of digital learning platforms, electronic learning resources, and simulation-based tools reflects a transition toward more flexible, learner-centered, and technology-supported educational models. In the context of medical education, where the integration of theory and practice is essential, the widespread use of clinical simulation and digital case-based learning represents a particularly significant development. These findings align with previous research indicating that digital tools can enhance clinical reasoning, decision-making skills, and learning autonomy among medical students.

Nevertheless, the uneven levels of digital technology application among students point to a structural challenge in the digital transformation process. While some students actively exploit advanced digital tools and platforms, others remain limited to basic applications. This disparity suggests that digital transformation outcomes are closely linked not only to infrastructure availability but also to students' self-directed learning capacity, digital literacy, and the level of guidance provided by instructors. Without targeted support measures, digital transformation may inadvertently widen gaps in learning effectiveness among students.

Third, the generally positive learning outcomes and task performance observed in the digital environment indicate that digital transformation has not disrupted academic stability but has instead supported students in meeting training requirements. The maintenance of high rates of task completion reflects the compatibility between digital learning tools and the existing training structure at the Academy. However, the persistence of a group of students with moderate performance levels suggests that digital transformation alone cannot automatically improve learning outcomes. Rather, its effectiveness depends on how well digital tools are integrated into pedagogical design and how actively students engage with them.

Finally, the identified limitations and underlying causes highlight the complex and multifaceted nature of students' roles in digital transformation. Factors such as heavy academic workloads, limited time for independent digital practice, and insufficient self-discipline in skill development constrain students' ability to fully realize their potential. In addition, incomplete synchronization of policies, resources, and incentive mechanisms reduces motivation and limits opportunities for deeper engagement. These findings suggest that promoting students' roles in digital transformation requires not only technological solutions but also organizational, pedagogical, and motivational adjustments.

In summary, the research findings confirm that military medical students play an increasingly important role in the digital transformation process at the Military Medical Academy. While significant progress has been achieved in terms of awareness, participation, and application of digital technologies, existing disparities and limitations indicate that

further improvements are necessary. Addressing these issues will be essential to ensuring that digital transformation contributes effectively and sustainably to the quality of medical education and training in the military context.

IV. CONCLUSION

This study examined the current role of military medical students in the digital transformation process at the Military Medical Academy. The research findings indicate that military medical students have increasingly affirmed their role as active participants in digital transformation, particularly in learning, training, and the application of digital technologies.

Overall, students demonstrate a relatively high level of awareness regarding the importance and necessity of digital transformation in medical education. This awareness is accompanied by a generally strong sense of responsibility in implementing digital learning tasks and complying with institutional digital requirements. The widespread application of digital platforms, electronic learning resources, and simulation-based tools has contributed to enhancing learning accessibility, flexibility, and the integration of theoretical knowledge with clinical practice.

At the same time, the study reveals that the effectiveness of students' roles in digital transformation remains uneven. Differences in digital competence, self-directed learning capacity, and levels of engagement persist among students. While many students actively exploit digital technologies, a proportion remain limited to basic applications and participate in digital transformation activities in a more passive or formalistic manner. In addition, constraints related to heavy academic workloads, limited time for independent digital practice, and incomplete synchronization of support mechanisms continue to affect students' ability to fully realize their potential.

Based on these findings, it can be concluded that digital transformation at the Military Medical Academy has achieved

positive initial outcomes but has not yet fully leveraged the capabilities of all military medical students. To ensure the sustainability and effectiveness of digital transformation in medical education, greater emphasis should be placed on enhancing digital competence, strengthening awareness and motivation, and creating favorable conditions that encourage active participation and innovation among students.

In conclusion, promoting the role of military medical students in digital transformation is a critical factor in improving the quality of training at the Military Medical Academy. Continued efforts to address existing limitations and to support students in adapting to and contributing to the digital learning environment will be essential for the successful advancement of digital transformation in military medical education.

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