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DEVELOPING DIGITAL TRANSFORMATION MANAGEMENT COMPETENCY FOR FUNCTIONAL DEPARTMENT HEADS OF PROVINCIAL DEPARTMENTS OF EDUCATION AND TRAINING: CURRENT SITUATION AND EXPERIMENTAL

Phan Thanh Cong [1]

[1] VNU, University of Education

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Abstract

This paper examines the current state of training for functional department heads of provincial Departments of Education and Training (DOETs) in Vietnam and tests the effectiveness of a competency-based intervention in digital transformation management competency. Drawing on a survey of 1,015 respondents across eight provinces and cities, findings reveal systemic weaknesses in post-training evaluation (M = 2.82), use of training results in performance appraisal (M = 2.86), and post-training monitoring (M = 2.99). An experimental training program conducted with 43 managers at Ninh Binh Province DOET demonstrated measurable gains in applied competencies – notably AI-assisted document drafting (2.91 → 3.60) and data reliability assessment (2.72 → 3.40) – while deep data analysis competencies require longer development pathways. The paper recommends three directions: competency-framework-aligned training design, tiered training programs by competency level, and post-training evaluation mechanisms linked to job performance outcomes.

Keywords: *digital transformation management competency; functional department heads; Department of Education and Training; competency-based training; competency framework.*

I. Introduction

Digital transformation in education is no longer a trend but a mandatory requirement in state management of education in Vietnam, institutionalized through Decision No. 749/QD-TTg (2020) approving the National Digital Transformation Program and Decision No. 131/QD-TTg (2022) (Government of Vietnam, 2022) on digital transformation in education and training through 2025, with a vision to 2030. Politburo Resolution No. 57-NQ/TW (2024) further emphasizes the acceleration of science, technology, and innovation, placing increasingly high demands on the management competencies of educational staff.

In this context, functional department heads of provincial Departments of Education and Training (DOETs) play a pivotal role in policy advisory, implementation, and coordi-

nation of state management of education at the provincial level. Particularly, under the two-tier local government model established by Decree No. 45/2025/ND-CP and related decrees on decentralization in education management (Decree No. 142/2025/ND-CP, Decree No. 143/2025/ND-CP), the scope of responsibilities and complexity of administrative work for these officials have significantly increased. Digital transformation management competency – encompassing strategic awareness, use of digital technology, and data exploitation for advisory purposes – has become one of the core competencies that functional department heads must consistently develop.

However, current practice reveals significant limitations. A survey of 1,015 managers and specialists across eight provinces and cities representative of three regions shows that existing training activities primarily focus on sending staff to postgraduate programs and organizing short-term courses, while post-training evaluation and monitoring of practical application remain weak. Notably, the systematic development of digital transformation management competency for functional department heads – aligned with competency frameworks and job position requirements – has yet to be implemented.

This paper presents findings on the current state of training and the results of an experimental training intervention in digital transformation management competency for functional department heads of the DOET of Ninh Binh Province, using a competency-based approach. Based on these findings, it proposes implications for developing this group of officials in the context of ongoing educational management reform.

II. LITERATURe REVIEW

2.1. Digital transformation management competency and competency-based training for functional department heads of DOETs

Competency and competency framework of functional department heads of DOETs

Competency refers to the combination of knowledge, skills, and personal qualities demonstrated through specific behaviors that enable an individual to perform their assigned duties effectively (*Le Quan, 2016*). Accordingly, competency is not merely a latent potential but a measurable characteristic reflected through job performance behaviors, encompassing knowledge, skills, attitudes, and essential qualities required to fulfill tasks efficiently (*Tran Huu Hoan et al, 2017)*.

A competency framework is a description of the necessary and sufficient competencies for the successful execution of a role, position, group, unit, or organization (David D. Dubois & William J. Rothwell, 2004). In human resource management practice, a competency framework serves as the basis for workforce development activities including succession planning, recruitment, appointment, training and development, evaluation, and reward (*Le Quan, 2016)*. For functional department heads of DOETs, a competency framework is a structured system of competency standards – comprising both general and specialized competency groups specific to each management domain – with concrete indicators and behavioral descriptors that guide the selection, appointment, utilization, evaluation, and development of personnel to meet the demands of educational management in the current context.

Digital transformation management competency of functional department heads of DOETs

Digital transformation in state management of education is not simply the application of information technology but a comprehensive restructuring of management, coordination, and advisory practices on the basis of data and digital technologies. In this context, digital transformation management competency of functional department heads is understood as the integration of dispositions, knowledge, and skills needed to recognize the requirements of digital transformation, organize and manage work in digital environments, and exploit and analyze data to support advisory and management decision-making effectively.

Based on the specific characteristics of the functional department head position in DOETs and the requirements of digital transformation in education governance, digital transformation management competency is defined as comprising four component groups: (1) Attitudes and disposition toward digital transformation in management; (2)

Strategic awareness and thinking about digital transformation; (3) Competency in using digital technology for management and administration; and (4) Competency in data exploitation and analysis for management. These four competency groups are dialectically interrelated: dispositions and attitudes provide the motivational foundation; strategic awareness guides action; and digital and data competencies constitute the concrete behavioral manifestations that can be observed and measured in professional practice.

Competency-based training in digital transformation management for functional department heads

Competency-based training is a purposefully organized learning process aligned with a competency framework and the requirements of specific job positions, aimed at supplementing, updating, and enhancing competencies that fall short of required standards *(Pham Van Son & Nguyen Thi Tuyet, 2015)*. Unlike knowledge-transmission approaches, competency-based training takes learning outcomes – specifically, changes in job performance behaviors – as the measure of effectiveness, and connects training content to real-world work situations of the learners (*Nguyen Xuan Dung, 2016)*.

For functional department heads of DOETs, competency-based training in digital transformation management must adhere to several core principles: grounding training in needs assessments linked to job position competency frameworks; designing content by competency group with specific, assessable behavioral indicators; prioritizing direct hands-on practice tied to real management scenarios; and establishing post-training evaluation mechanisms to measure the degree to which knowledge and skills are translated into management competency in practice.

III. RESEARCH METHODOLOGY

This study employed a mixed-methods approach combining quantitative and qualitative methods to examine the current state of training for digital transformation management competency among functional department heads of provincial Departments of Education and Training (DOETs) and to evaluate the effectiveness of an experimental intervention program. Quantitative data were collected through a survey of 1,015 managers and specialists from eight provinces and cities representing the three regions of Vietnam, including Lao Cai, Lang Son, Ninh Binh, Hanoi, Da Nang, Ho Chi Minh City, Dong Nai, and Can Tho. The sample consisted of four respondent groups: provincial leaders and DOET directors, functional department heads, deputy department heads, and specialists. A five-point Likert scale was used to assess 12 indicators related to current training practices.

In addition, the study conducted a one-group pre-test/post-test experiment involving 43 functional department heads and deputy department heads from the Ninh Binh province DOET. The assessment instrument included 22 indicators across four groups of digital transformation management competencies. Qualitative data were collected through observation, analysis of learning products, and in-depth interviews with selected participants to clarify changes in awareness, skills, and practical application after the training intervention

IV. RESEARCH RESULTS

4.1. Current state of training for functional department heads of DOETs: findings from a survey across eight provinces and cities

To assess the current state of training for functional department heads of DOETs, the study surveyed 1,015 managers and specialists across eight provinces and cities representative of three regions: Lao Cai, Lang Son, Ninh Binh, Hanoi, Da Nang, Ho Chi Minh City, Dong Nai, and Can Tho – representing varying levels of socioeconomic development. Respondents comprised four groups: provincial leadership and DOET directors (61 respondents – Group 1); functional department heads (65 – Group 2); deputy department heads (199 – Group 3); and departmental specialists (690 – Group 4). A five-point Likert scale was used, with 1 being the lowest and 5 the highest.

Survey results across 12 indicators of training practice (Table 1) show mean scores ranging from 2.82 to 3.58 – reflecting a moderate level of implementation. This indicates that training activities have established certain routines but are not yet comprehensive and consistently effective.

Table 1. *Survey results on the current state of training for functional department heads of DOETs*

No.	Content	Group 1	Group 2	Group 3	Group 4	Overall Mean
4.1	Building training and development policies for department heads	3.34	3.22	3.12	3.32	3.25
4.2	Assessing training needs and classifying training participants	3.46	3.26	3.03	3.28	3.26
4.3	Developing periodic training plans for department heads and successors	3.41	3.25	3.02	3.32	3.25
4.4	Organizing short-term training courses to enhance capacity	3.41	3.25	3.32	3.21	3.29
4.5	Sending department heads to short-term training organized by higher authorities	3.31	3.34	3.48	3.15	3.32
4.6	Sending department heads to post-graduate training programs	3.54	3.63	3.70	3.45	3.58
4.7	Organizing study visits and experience-sharing activities	3.41	3.32	3.18	3.22	3.28
4.8	Providing financial support for training participation	2.95	3.08	3.22	2.83	3.02
4.9	Evaluating training outcomes of department heads	2.85	2.86	2.90	2.67	2.82
4.10	Using training results as a criterion in performance evaluation	3.00	2.86	2.74	2.85	2.86
4.11	Regularly reviewing and reflecting on training organization	3.28	3.15	2.94	3.08	3.11
4.12	Monitoring and supervising post-training performance	3.07	2.97	3.02	2.92	2.99

Source: Author's survey data

Analysis of the findings reveals three key patterns:

First, key strengths: The highest-rated indicator is sending department heads to postgraduate training programs (M = 3.58), reflecting DOETs' attention to strengthening the academic and professional knowledge base of their staff. Indicators related to organizing short-term courses (3.29), sending staff to training organized by higher authorities (3.32), and organizing study visits (3.28) also reached moderate-high levels, indicating that training activities have been implemented with some regularity.

Second, systemic weaknesses: The lowest-rated indicator is evaluation of training outcomes (M = 2.82), with consistently low scores across all four respondent groups – from leadership (2.85) to specialists (2.67). This finding is illuminated by in-depth interview data: *«After training courses, we can mainly only track whether staff attended and whether they obtained certificates. As for how training actually impacts their specific work, we have no clear evaluation tools»* (CBQL02 – DOET Director). From the department heads' perspective, this limitation was also palpable: *«After returning from training, there are almost no specific requirements to report on outcomes or apply what was learned to actual work. It is mostly up to each individual to apply it as best they can»* (TPCN04). In addition, using training results as a performance evaluation criterion (2.86), monitoring and supervising post-training effectiveness (2.99), and finan-

cial support for training participation (3.02) all scored low, reflecting a lack of systematic post-training follow-up and limited supporting resources.

Third, perceptual gaps across respondent groups: DOET leadership and department heads generally rated indicators higher than deputy heads and specialists – those directly involved in day-to-day coordination and implementation. This gap is particularly evident in the training needs assessment indicator (Group 1: 3.46 vs. Group 3: 3.03), suggesting that needs assessments tend to be conducted in a formalistic manner without genuinely reflecting actual training needs. This observation is further supported by a specialist's remark: *«Some department heads have attended many training courses and hold advanced degrees, but no clear improvements in their management style or task delegation are visible in daily work»* (CV01).

In summary, training for functional department heads of DOETs currently focuses primarily on inputs – organizing courses and sending staff to training – while giving insufficient attention to outputs: the degree to which knowledge and skills are translated into practical management competency. In particular, the systematic training of digital transformation management competency – aligned with competency frameworks and job position requirements – has yet to be implemented at DOETs. This situation calls for a fundamental shift in training approach, with competency-based training as a theoretically and practically grounded direction.

4.2. Experimental training in digital transformation management competency for functional department heads of Ninh Binh province DOET and results

Experimental design

Building upon the identified limitations – particularly the absence of systematically designed programs for developing digital transformation management competency using a competency-based approach – the study conducted an intervention experiment at the DOET of Ninh Binh Province from September to December 2025.

The experimental sample comprised 43 participants – all functional department heads and deputy department heads of Ninh Binh Province DOET – who are directly responsible for policy advisory, administration, and implementation of state management of education at the provincial level. Including both department heads and their deputies was intended to ensure representativeness and reflect actual management practice, in which deputy heads play a significant role in implementing professional tasks and digital transformation.

The study employed a single-group pretest/post-test experimental design combining quantitative and qualitative methods. The quantitative component used a 22-indicator competency assessment tool across four competency groups, rated on a five-point Likert scale. The qualitative component included observation of training participation, analysis of learning products, and in-depth interviews with selected participants.

Training content was designed around the four identified digital transformation management competency groups, integrating thematic presentations, group discussions, and management case simulations involving digital transformation within functional departments. Delivery was face-to-face and concentrated, with emphasis on hands-on activities applying digital technology and artificial intelligence (AI) tools to participants' daily management tasks.

Experimental results

Competency in using digital technology for management and administration. This group showed the most significant improvement following the intervention. The indicator «Using AI to assist in drafting, reviewing, and finalizing management documents» increased sharply from 2.91 to 3.60 – the highest gain across all 22 indicators. The indicator «Proficiently using electronic document management and work coordination systems» also rose from 2.91 to 3.49 (Table 2). This improvement reflects the direct impact of hands-on, practice-oriented training: competencies of an operational nature that can be immediately applied to daily work showed clear and rapid gains after training. Interview data reinforced this finding:

«The AI practice session significantly reduced the time I spend drafting reports; what used to take a whole working session

can now be done much faster – though careful review is still essential» (TPCN6). This remark indicates that training impact extended beyond increased operational skill to cultivating a mindset of responsible oversight of digital tools – a transition from 'using tools' to 'governing tools.'

Data exploitation and analysis competency

This group showed selective improvement following the intervention. The indicator «Applying AI to synthesize information, produce reports, and prepare advisory content» increased from 2.84 to 3.51; the indicator «Evaluating the reliability and appropriateness of data used in advisory work» rose from 2.72 to 3.40 – indicating that training contributed to the development of critical thinking and analytical validation skills, enabling department heads to begin identifying errors, biases, and algorithmic limitations in decision-making processes. However, the indicator «Using data to analyze the current situation and identify management issues» showed virtually no change (2.93 to 2.93), reflecting the reality that deep data analysis competency requires longer accumulation and depends on organizational conditions such as database standardization and inter-departmental data-sharing protocols. One department head noted:

«We have data but it has not been standardized – each department stores it differently, so cross-departmental analysis remains difficult» (TPCN2), indicating that limitations lie not only in individual competency but also in organizational structure and the data ecosystem of the unit.

Strategic awareness and thinking about digital transformation

Results for this group reflect deepened cognitive restructuring rather than simple score increases. The indicator «Understanding the concepts, goals, and requirements of digital transformation in education governance» rose from 3.09 to 3.49, reflecting strengthened theoretical understanding following training. Meanwhile, some indicators – such as «Clearly identifying the role and responsibility of the department head in promoting digital transformation» – showed a slight decrease from 3.53 to 3.09. This does not indicate declining competency; rather, it reflects more accurate self-assessment after participants gained deeper insight into the systemic complexity of digital transformation:

«After training, I realized that digital transformation is not just about technology – it involves changing entire processes and task allocation structures» (TPCN6). This represents a shift from a reductive to a systemic understanding of digital transformation – an important foundation for sustainably developing higher-order digital management competencies.

Attitudes and disposition toward digital transformation

This group showed positive changes in indicators related to individual motivation. The indicator «Modeling the use of digital technology in daily work» increased from 2.98 to 3.33; «Proactively learning and updating digital technology knowledge and skills» rose from 2.81 to 3.23 – indicating that training enhanced personal motivation and professional responsibility for digital transformation. The indicator «Willingness to experiment with new technology-based management approaches» decreased from 3.72 to 3.30, reflecting more realistic self-assessment following a deeper understanding of digital transformation's demands and challenges:

«Previously, I thought digital transformation was mainly about using software; after training, I realized it involves changing entire workflows, human resources, and data systems – so the degree of readiness must be assessed more carefully» (TPCN5).

Table 2. *Pre- and post-test results of digital transformation management competency assessment (selected indicators)*

Competency Group	Indicator	Before	After	Change
Attitudes and Disposition	Proactively learning and updating digital knowledge and skills	2.81	3.23	+0.42

Competency Group	Indicator	Before	After	Change
	Modeling the use of digital technology in daily work	2.98	3.33	+0.35
	Willingness to experiment with new technology-based management methods	3.72	3.30	-0.42
Strategic Awareness	Understanding the concepts, goals, and requirements of digital transformation in education management	3.09	3.49	+0.40
	Identifying roles and responsibilities in promoting digital transformation	3.53	3.09	-0.44
Use of Digital Technology	Using electronic document management and work coordination systems	2.91	3.49	+0.58
	Using AI tools to draft, review, and finalize management documents	2.91	3.60	+0.69
Data Exploitation and Analysis	Evaluating the reliability and appropriateness of data used in advisory work	2.72	3.40	+0.68
	Applying AI to synthesize information and prepare advisory content	2.84	3.51	+0.67
	Using data to analyze current situations and identify management issues	2.93	2.93	0.00

Source: Author's experimental data

4.3. Recommendations for enhancing the effectiveness of digital transformation management competency training for functional department heads of DOETs

Drawing on survey findings from eight provinces and cities and experimental results from Ninh Binh Province DOET, the paper puts forward three recommendations for improving the effectiveness of digital transformation management competency training for functional department heads of DOETs.

*First, training should be organized using a competency-based approach, aligned with competency frameworks and job position requirements***.** Experimental results demonstrate that direct, hands-on training designed around specific competency groups with clear behavioral indicators produces measurable impact on operational competencies related to digital technology and AI applications. DOETs should develop digital transformation management competency frameworks linked to the job positions of functional department heads, and design training programs with specific, measurable output objectives – rather than organizing training courses that focus primarily on participation inputs (*Le Quan, 2016*).

*Second, training programs should be designed in a tiered manner according to competency levels***.** Experimental results indicate that not all digital transformation management competency groups can be developed on the same timeline. Operational competencies – such as using AI for document drafting or navigating electronic document management systems – can improve markedly through short-term, hands-on training. In contrast, deep data analysis and strategic digital thinking require longer development pathways, complemented by organizational improvements such as database standardization, inter-departmental data-sharing protocols, and regular practice environments linked to specific management tasks (*Nguyen Xuan Dung, 2016*).

*Third, a post-training evaluation mechanism should be established, linked to job performance outcomes***.** Survey findings show that post-training outcome evaluation is the lowest-rated indicator in the entire training system (M = 2.82), yet it is the component most decisive for the substantive

quality and effectiveness of training. DOETs should develop post-training assessment tools with specific job-related behavioral indicators; require trained staff to prepare application plans and submit follow-up reports after a defined period; and integrate training results into evaluation, succession planning, and appointment processes to enhance learning motivation and ensure that training activities produce meaningful impact on the quality of management within each functional department (*Le Quan, 2016*), *(Pham Van Son & Nguyen Thi Tuyet, 2015*).

V. Conclusion

The context of digital transformation and the implementation of a two-tier local government model are placing increasingly demanding competency requirements on functional department heads of DOETs. Among these, digital transformation management competency – encompassing strategic awareness, use of digital technology, and data exploitation for advisory purposes – is a core competency that must be systematically developed in alignment with competency frameworks and job position requirements.

Survey results from 1,015 managers and specialists across eight provinces and cities reveal that while training for functional department heads has established certain operational routines, significant limitations remain: the evaluation of post-training outcomes (M = 2.82), the use of training results in performance evaluation (M = 2.86), and the monitoring of post-training effectiveness (M = 2.99) are all weak. In particular, the systematic training of digital transformation management competency has yet to be implemented in a structured, competency-aligned manner at DOETs.

Experimental results from training 43 department heads and deputy department heads of Ninh Binh Province DOET provide important empirical evidence: direct, hands-on training based on a competency approach produces clear and measurable impact on competencies directly applicable to digital management practice – particularly AI-assisted document drafting (increase from 2.91 to 3.60) and data reliability assessment for advisory purposes (increase from 2.72 to 3.40). At the same time, the experiment demonstrates that deep data analysis and strategic digital competencies require longer development pathways and improvements to organizational conditions.

Based on these findings, the paper proposes three directions for reforming the training of digital transformation management competency for functional department heads of DOETs: (1) prioritize competency-based, hands-on training aligned with competency frameworks and practical work situations; (2) design tiered training programs that differentiate between competencies achievable through short-term intensive training and those requiring sustained, long-term development pathways; and (3) establish post-training evaluation mechanisms tied to job performance outcomes, integrating training results into evaluation, succession, and appointment processes to enhance learning motivation and ensure sustained effectiveness of training activities.

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Contact: ptcongyk@gmail.com