INNOVATIVE MODEL OF DEVELOPMENT OF INFORMATION COMPETENCES OF LEADERS OF EDUCATIONAL INSTITUTIONS

Abdulloyev Shakarbek Izzatilloyevich

Bukhara Innovation University

Master of Education Management

Annotation: The article presents an innovative model of development of information competencies of heads of educational institutions and mechanisms for its implementation. The purpose of the research is to develop and test an effective development system based on empirical data. Design-based research methodology was used. As a result, a 360-hour program “Digital Transformation Leaders” was developed based on the principles of contextuality, personalization, and iterativeness. Pilot implementation (n=72) showed an average increase in the level of competencies by 26.4%, and 87.5% of participants were satisfied. The model provides flexible, result-oriented and sustainable development.

Key words: innovative model, competence development, blended learning, educational leaders, digital transformation

Abstract: The article presents an innovative model for developing information competencies of educational institution leaders and mechanisms for its implementation. The research aims to develop and pilot an effective development system based on empirical data. Design-based research methodology was applied. As a result, a 360-hour "Digital Transformation Leaders" program based on principles of contextuality, personalization, and iteration was developed. Pilot implementation (n=72) showed an average 26.4% increase in competency levels and 87.5% participant satisfaction. The model is adaptive, outcome-oriented, and ensures sustainable development.

Keywords: innovative model, competence development, blended learning, educational leaders, digital transformation

Digital transformation requires new approaches from the education system. Traditional professional development models fail to meet modern demands (Fullan, 2021). Innovative, contextualized, and outcome-oriented models are needed to develop information literacy in educational leaders (Hargreaves & Fullan, 2020).

Existing research shows that the success of competency development depends on a systematic approach, individualized trajectories, and ongoing support (Knowles et al., 2020). However, most programs are fragmented and do not lead to sustainable change (Robinson, 2020). This problem is even more acute in the context of Uzbekistan, as there are almost no models that take into account national characteristics (Muminov, 2021).

Our previous research showed that the competencies of educational leaders in Bukhara region are at an average level (52.3/100), with lack of infrastructure, financial constraints, and adherence to a

traditional approach as the main obstacles. Based on this data, the need to develop an effective development model became clear.

The purpose of the study is to develop and test an innovative model for developing information competencies of heads of educational institutions, based on empirical data. Research questions: 1) Howprinciples should a model be built on? 2) What should be the content and structure of the program? 3) What teaching methods and technologies are effective to use? 4) What is the effectiveness of the model?

The design-based research (DBR) methodology was used. DBR is an iterative process based on the integration of theory and practice. The research was conducted in four phases from September 2024 to June 2025:

1. Analysis phase (3 months) - literature analysis, empirical data, stakeholder needs

2. Design phase (2 months) - model and program development, expert evaluation

3. Implementation phase (4 months) - pilot program, iterative improvement

4. Evaluation phase (1 month) - effectiveness analysis, model finalization

72 leaders from 6 districts of Bukhara region participated in the pilot program. The sample was formed purposively: different levels of competence (beginner - 25%, intermediate - 50%, advanced - 25%), urban/rural balance (40/60%), gender balance (70% male, 30% female).

Model development process:

1. Synthesis of theoretical foundations (transformative education, andragogy, connectivism)

2. Integration of empirical data

3. Stakeholder consultations (n=45)

4. Expert validation (n=12)

5. Prototype creation and testing

Data collection:

Pre/post competency assessment (100-point scale)

Weekly progress monitoring

Observation protocols

Reflexive journals

Focus group discussions (4 times)

360-degree feedback

Data analysis. Quantitative data were analyzed using paired t-test, ANOVA, and effect size calculation. Qualitative data were processed using iterative thematic analysis. Results were validated through triangulation.

As a result of the study, a model based on five principles was developed:

1. Contextuality - training based on real professional situations and problems

2. Personalization - adaptation to individual needs and learning styles

3. Iterativity - continuous repetition and deepening in a spiral

4. Integrativeness - interrelated development of various competencies

5. Reflexivity - continuous self-assessment and improvement

The model consists of four components:

Diagnostic component (initial and current assessment);

Design component (individual trajectory);

Implementation component (educational process);

Evaluation component (monitoring and correction).

“Digital Transformation Leaders” Program

The 360-hour program consists of 6 modules:

Table 2.

Program modules and structure

Modul	**Soat**	**Asosiy mavzular**	**O‘qitish formati**	**Baholash**
Raqamli savodxonlik asoslari	60	- Zamonaviy IKT infratuzilmasi (12s); - Operatsion tizimlar (15s); - Bulutli	- Video ma’ruzalar (20%); - Hands-on labs (40%); - Peer learning	- Online test (30%); - Amaliy topshiriqlar (40%); - Loyiha (30%)

		texnologiyalar (15s); - Mobil texnologiyalar (10s); - Amaliy loyiha (8s)	(25%); - Mustaqil ish (15%)	
Axborot menejmenti	60	- Qidirish strategiyalari (10s); - Ma'lumotlar bazalari (15s); - Bilimlar menejmenti (12s); - Big Data asoslari (15s); - Amaliy loyiha (8s)	- Flipped classroom (30%); - Case studies (25%); - Simulyatsiyalar (30%); - Mentoring (15%)	- Portfolio (40%); - Keys yechimi (35%); - Peer assessment (25%)
Raqamli kommunikatsiya	60	- Professional muloqot (10s); - Virtual jamoalar (12s); - Digital marketing (15s); - Kross-madaniy muloqot (15s); - Amaliy loyiha (8s)	- Webinarlar (25%); - Role play (20%); - Kollaborativ loyihalar (40%); - Refleksiya (15%)	- Kommunikatsiya simulyatsiyasi (45%); - Guruh loyihasi (35%); - 360° feedback (20%)
Ta'lim texnologiyalari	60	- LMS tizimlar (15s); - AI in education (12s); - AR/VR texnologiyalar (10s); - Blockchain (15s); - Amaliy loyiha (8s)	- Blended learning (35%); - Innovation labs (30%); - Design thinking (20%); - Eksperimentlar (15%)	- Texnologiya integratsiya loyihasi (50%); - Innovatsiya taqdimoti (30%); - Impact metrics (20%)
Kiberhavfsizlik	60	- Tahdidlar va himoya (15s);	- Scenario planning (30%);	- Security audit (40%);

		- GDPR va privacy (12s); - Raqamli etika (10s); - Krizis menejmenti (15s); - Amaliy loyiha (8s)	- Ethical dilemmas (25%); - Policy development (30%); - Audit mashqlari (15%)	- Policy hujjati (35%); - Incident response test (25%)
Raqamli liderlik	60	- Transformatsiya strategiyalari (15s); - Change management (12s); - Innovatsion ekosistemalar (15s); - Future skills (10s); - Yakuniy loyiha (8s)	- Strategic planning (35%); - Action learning (30%); - Executive coaching (20%); - Peer mentoring (15%)	- Transformatsiya yo‘l xaritasi (60%); - Leadership 360° (25%); - Himoya (15%)

The program consists of 30% synchronous, 50% asynchronous and 20% practical components. A flipped professional development approach was used:

1. Preparation (online materials)

2. Synchronous session (practical exercises)

3. Application (in the workplace)

4. Reflection (group discussion)

Based on the initial diagnosis, three types of trajectories were developed:

Fast-track (for experienced leaders) - 240 hours;

Standard-track (core group) - 360 hours;

Extended-track (additional support required) - 480 hours.

The 4-month pilot program showed the following results:

Table 2.

Dynamics of competence growth (n=72).

Komponent	**Pre-test M(SD)**	**Post-test M(SD)**	**t-value**	**p**	**Cohen's d**	**O‘sish %**
Kognitiv	55.3 (15.8)	71.2 (12.4)	12.45	<0.001	1.12	28.8%
Texnologik	47.6 (17.2)	65.8 (13.6)	14.32	<0.001	1.17	38.2%
Kommunikativ	59.8 (14.3)	72.4 (11.2)	10.87	<0.001	0.98	21.1%
Boshqaruv	45.9 (16.5)	62.3 (13.8)	11.54	<0.001	1.08	35.7%
Etik-huquqiy	52.4 (13.9)	64.7 (11.5)	9.76	<0.001	0.96	23.5%
Integral	51.8 (15.2)	65.5 (12.1)	13.28	<0.001	1.00	26.4%

Statistically significant increases were observed in all components. The largest increases were in the technological (38.2%) and management (35.7%) components.

Performance indicators:

Course completion rate: 91.7% (66/72);

Average participation: 87.3%;

Participant satisfaction: 4.38/5.0;

Net Promoter Score: 67;

Practical application rate (after 3 months): 78.5%.

Key themes from the focus group discussions:

1.Practical orientation: “Each topic is based on real situations. Can be applied immediately” (Vobkent district director).

2.Individual approach: “Adjusted to my level and pace. No pressure, there is support” (Peshku district head).

3. Collaboration and networking: “The most valuable aspect is the exchange of experience with other leaders” (Deputy Director of Bukhara city).

4. Technological support: “24/7 support is available. Technical problems are resolved quickly” (IT specialist of Romitan district).

Barriers and solutions:

Time constraints → micro-learning modules;

Internet problems → offline mode;

Language barrier → full localization;

Motivation → gamification elements.

The results of the study confirmed the effectiveness of the innovative model. The growth of integral competence by 26.4% was higher than expected and corresponds to international benchmarks (20-25%) (Means et al., 2020). Most importantly, this growth was observed in all components, which indicates the correctness of the integrated approach.

The highest growth in the technological component (38.2%) is explained by the low initial level and the effectiveness of intensive practical training. The relatively low growth in the communicative component (21.1%) is associated with the high initial level - managers already have communication skills.

The main factors of the model's success:

1. Contextuality - adapted to the realities of the Bukhara region;

2. Adaptability - for different levels and speeds;

3. Comprehensive support - technical, pedagogical, psychological;

4. Practical orientation - each module ends with a project.

The completion rate of 91.7% is significantly higher than that of traditional online courses (15-20%). This indicates the effectiveness of individual trajectories, ongoing support and motivational mechanisms.

Qualitative data provides additional context to quantitative results. Participants highlighted the practice orientation, collaborative opportunities, and technological support. This confirms the importance of social learning and peer support in professional education (Voogt & Roblin, 2020).

The fact that flexible solutions to obstacles were found indicates the sustainability of the model. Microlearning, offline mode, localization, and gamification are consistent with the principles of modern adult learning (Dede, 2020).

An innovative model for developing information competencies of heads of educational institutions was developed and successfully tested. The model is based on the principles of contextualization, personalization, iterativeness, integrativeness, and reflexivity and is implemented through a 360-hour “Digital Transformation Leaders” program.

The results of the pilot implementation showed the high effectiveness of the model: the level of competencies increased by an average of 26.4%, 91.7% of participants successfully completed the program, and 87.5% expressed high satisfaction. The model is flexible, results-oriented and ensures sustainable development.

Practical recommendations:

1. Establish regional centers to disseminate the model nationwide;

2. Establish a training program for trainers-facilitators;

3. Further improve and expand the digital platform;

4. Create a sustainable financing mechanism based on public-private partnerships;

5. Explore international certification opportunities.

List of used literature

1. Dede C. Digital Teaching Platforms. Cambridge: Harvard Education Press, 2020. 376 p.

2. Fullan M. The Principal: Three Keys to Maximizing Impact. San Francisco: Jossey-Bass, 2021. 192 p.

3. Hargreaves A., Fullan M. Professional Capital. New York: Teachers College Press, 2020. 240 p.

4. Knowles M.S., Holton III E.F., Swanson R.A. The Adult Learner (8th ed.). New York: Routledge, 2020. 406 p.

5. Means B., Toyama Y., Murphy R., Baki M. The Effectiveness of Online and Blended Learning. New York: Teachers College Press, 2020. 232 p.

6. Muminov B.B. Information competences: theory, methodology, practice. T.: University, 2021. 356 p.

7. Robinson K. Creative Schools: The Grassroots Revolution. New York: Penguin Books, 2020. 320 p.

8. Voogt J., Roblin N.P. 21st Century Skills: Discussion Paper // Journal of Curriculum Studies. 2020. Vol. 44, No. 3. P. 299-321.