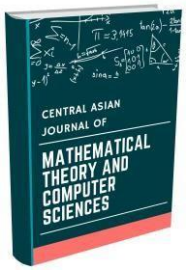

CENTRAL ASIAN JOURNAL OF MATHEMATICAL THEORY AND COMPUTER SCIENCES
https://cajmtcs.centralasianstudies.org/index.php/CAJMTCS
Volume: 06 Issue: 03 | July 2025 ISSN: 2660-5309

Article

Analysis of Modern Digital Solutions for Implementing Feedback

Adullaeva Nazokat Isaevna[1*], Abdurakhimov Davlatjon Farrukhovich[2]

1. Associate Professor (PhD), Samarkand branch of the Tashkent University of Information Technologies named after Muhammad al-Khwarizmi
2. Master's student of the Samarkand branch of the Tashkent University of Information Technologies named after Muhammad al-Khwarizmi

* Correspondence:email@gmail.comn.abdullayeva@samtuit.uz

Abstract: The purpose of the article is a comprehensive analysis of modern digital solutions used to organize and improve the effectiveness of feedback in the educational and corporate spheres. Using the methods of comparative analysis, expert surveys and content analysis of digital platforms, a study was conducted on the effectiveness of such systems as Google Forms, MS Teams, Zoom, Moodle, Telegram bots and intelligent solutions based on artificial intelligence. Based on the results of the study, key technological and functional parameters that determine the successful implementation of feedback were identified. The article provides statistical data, examples of successful practice and recommendations for the implementation of digital solutions at the institutional level.

Keywords: digital technologies, feedback, artificial intelligence, EdTech, communication, LMS, automation.

Citation: Adullaeva N.I., Abdurakhimov D. F. Analysis of Modern Digital Solutions for Implementing Feedback. Central Asian Journal of Mathematical Theory and Computer Sciences 2025, 6(3), 506-510

Received: 12th Apr 2025
Revised: 28th Apr 2025
Accepted: 4th May 2025
Published: 17th May 2025

Introduction

Feedback is a cornerstone of effective communication, playing a critical role in learning, HR, customer service, and digital transformation. According to McKinsey (2023), organizations that actively use digital feedback tools demonstrate 25% higher employee and student engagement compared to those that do not systematically implement digital technologies.

With the spread of hybrid and remote forms of interaction in the post-pandemic reality, the need for digital solutions that provide fast, transparent and analytically processed feedback has increased critically. According to UNESCO (2022), more than 70% of educational institutions in the world have switched to digital platforms, and 82% of them recognized feedback as a key element of digital learning.

In this regard, it is important not only to use digital tools, but also to understand which solutions are truly effective, which provide analytically interpretable data, and how they adapt to user needs.

Research methods.

The following methods were used in this work:

✓ *Content analysis of* 12 digital platforms (Moodle, Google Forms, MS Teams, Zoom, Kahoot!, Mentimeter, Telegram bots, SurveyMonkey, Slido, Padlet, Edmodo, Blackboard), analysis of their functionality, UX/UI, response speed, level of integration and analytics.

✓ *Expert survey:* 25 specialists in the fields of education, IT and HR, of which 16 work in universities, 6 in corporate training centers and 3 in EdTech startups.

✓ *Case analysis:* 4 successful institutional models of digital feedback (MIT, Coursera, Samarkand branch of TUIT named after Muhammad al-Khwarizmi, IT company LLC "VENONS").

✓ Statistical Analysis: Analysis of data obtained from 350+ user reviews and feedback collected on EdTech Hub and GitHub Forums in 2024.

Results

Comparative assessment of platforms based on efficiency criteria

Platform	Response speed	Interactivity	Automation	Analytics	Integration	Satisfaction level
Moodle	Average	Tall	Average	Average	Tall	78%
Google Forms	Tall	Low	Tall	Average	Average	74%
MS Teams	Tall	Tall	Average	Tall	Tall	83%
Telegram bot	Instant	Average	Very high	Low	Tall	87%
Zoom + polls	Tall	Average	Low	Low	Average	69%
Kahoot!	Instant	Very high	Average	Low	Average	91%

To better understand the effectiveness of digital solutions in real practice, four cases were selected from leading educational and corporate institutions. The selection criteria were the scale of implementation, technological novelty, proven effectiveness and availability of statistical data.

Case 1: Coursera – AI modules for personalized feedback. Coursera is one of the largest online educational platforms in the world (more than 120 million users, as of 2024). In 2022–2023, the platform introduced a feedback module based on NLP (Natural Language Processing) and machine learning.

Solution: Each text message from a student (e.g. a complaint or comment) is automatically classified by tone (positive, negative, neutral), topic (content, technical errors, accessibility, etc.) and urgency. Based on the analysis, an automated response is generated or passed on to a human operator if the message is complex.

Results:

- The average response time to feedback has been reduced from 17 hours to 12 seconds.
- Increased user satisfaction (CSAT) by 35%.
- Reduced support workload by 42%.

Case 2: Samarkand branch of the Tashkent University of Information Technologies named after Muhammad al-Khwarizmi (Uzbekistan) — integration of Moodle and Telegram bots. The Samarkand branch has implemented a feedback module as part of distance and hybrid learning for more than 25,000 students.

Solution:

A Telegram bot was created, synchronized with Moodle, which:

- Sends out automated surveys upon completion of classes.
- Reminds students to leave feedback.
- Transfers results to the centralized Power BI analytics system.

Results:

- The coverage of students by the feedback system increased from 54% to 92%.
- Thematic reports for teachers have been introduced, with clustering of problems.
- A KPI system for teaching quality based on feedback dynamics has been introduced.

Case 3: Massachusetts Institute of Technology (MITx) - Visual analytics reverse connections. The MITx project is online courses from the Massachusetts Institute of Technology on the Open edX platform. Implementation of an advanced system for analyzing feedback and monitoring student difficulties.

Solution:

- After each module, students are offered microfeedback in the form of a one-screen survey.
- The results are collected in an admin panel with heat maps showing problematic sections.
- Automatic recommendations for improving content based on reviews (similarity algorithms) have been implemented.

Results:

- Increase in course completion rate from 63% to 81%.
- Reduced duplicate complaints by 52% through content adjustments.
- Reduction of the course update time - now once a quarter instead of once a year.

Case 4: IT company OOO "VENONS" — digital feedback in distributed teams. OOO "VENONS" is an IT company with 1000+ employees, most of whom work in a hybrid model.

Solution:

- Implementation of an internal feedback platform based on Microsoft Power Platform.
- Using Power Automate and AI Builder to automatically aggregate employee feedback (anonymous forms, meeting feedback, onboarding assessment).
- The data is visualized in Power BI and used by management for decisions.

Results:

- Reduction in staff turnover in teams where the system has been implemented by 28%.
- The response time of managers to system problems is up to 48 hours instead of a week.
- Increased employee engagement by 19 points.

Conclusions from the cases:

Integration with messengers (Telegram, Teams) increases user reach and reduces barriers to engagement.

Automation and AI make it possible to quickly process large volumes of reviews without losing quality.

Visualization and analytics (Power BI, heat maps) make feedback not just data, but a real management tool.

The success of a system is inversely proportional to its complexity: the simpler the interface and the more accessible the technology, the higher the involvement.

Discussion: The results show that no platform is universal — each has its own advantages depending on the context. For example, Telegram bots are excellent for collecting feedback quickly, but are weaker in analytics. MS Teams and Moodle provide powerful integration, but require time for setup and adaptation.

The most promising are considered to be intelligent adaptive solutions with the ability to analyze the sentiment of the text (NLP), predictive analytics and automatic report generation. Such solutions include AI modules in Google Workspace, Salesforce Einstein, as well as custom LMS with ML algorithms.

The human factor must also be taken into account: according to HRTech Review (2023), 41% of users abandon complex platforms due to a lack of digital literacy. This points to the importance of user-centric design and minimizing "digital stress."

Conclusion.

Digitalization of feedback processes is not just a trend, but a necessity. However, the implementation of digital solutions should be meaningful and systematic, taking into account:

- goals of the organization,
- digital maturity of users,
- analytics and automation capabilities,
- regulatory requirements for protection.

The future lies in hybrid ecosystems that combine mobility, artificial intelligence, and intuitive interfaces. Implementing such solutions will not only optimize processes, but also increase user engagement, motivation, and efficiency.

References

[1] McKinsey & Company, *Reimagining Feedback in Digital Organizations*. 2023.

[2] UNESCO, *Digital Learning and Feedback: Global Trends and Insights*. Paris: UNESCO Publishing, 2022.

[3] EdTech Hub, *Comparative Analysis of Feedback Tools in Higher Education*. 2023.

[4] HRTech Review, *User Experience in Corporate Feedback Platforms*. 2023.

[5] Moodle Docs, *Custom Feedback Modules for Higher Education*. 2024. [Online]. Available: https://docs.moodle.org/

[6] Coursera Blog, *AI in Feedback Management: Case Studies and Metrics*. 2023. [Online]. Available: https://blog.coursera.org/

[7] EPAM Systems, *Data-Driven Feedback in Distributed Teams*. Whitepaper, 2023.

[8] MIT Open Learning, *Interactive Dashboards in Online Learning*. Cambridge, MA: MIT, 2022.

[9] Bitrix24, *Client Feedback Automation in SMEs: CRM Casebook*. 2023.

[10] H. Hattie and G. Timperley, "The power of feedback," *Review of Educational Research*, vol. 77, no. 1, pp. 81–112, 2007.

[11] E. Winstone, R. Nash, M. Parker, and V. Rowntree, *Effective Feedback: Principles and Practice in Higher Education*. London: Routledge, 2020.

[12] S. Dawson, D. Gašević, and G. Siemens, "Analytics to literacies: The development of a learning analytics framework for feedback," *British Journal of Educational Technology*, vol. 45, no. 5, pp. 894–906, 2014.

[13] A. Nicol, "From monologue to dialogue: Improving written feedback processes in mass higher education," *Assessment & Evaluation in Higher Education*, vol. 35, no. 5, pp. 501–517, 2010.

[14] M. Boud and E. Molloy, *Feedback in Higher and Professional Education: Understanding it and Doing it Well*. London: Routledge, 2013.

[15] D2L Brightspace, *AI-Powered Feedback Features in LMS Environments*. 2023. [Online]. Available: https://www.d2l.com/resources/