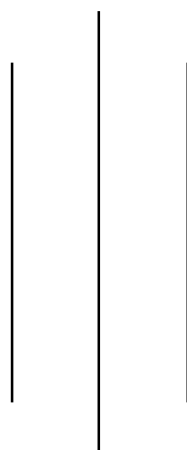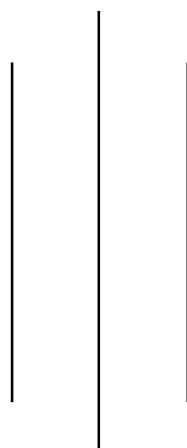# UNIVERSITY GRANTS COMMISSION

NURTURING EXCELLENCE IN HIGHER EDUCATION PROGRAM (NEHEP)

2021/22 – 2025/26

STANDARDS, OPERATIONAL POLICIES AND GUIDELINES
FOR
HIGHER EDUCATION DIGITALIZATION

APRIL, 2022

ACRONYMS

AI	Artificial Intelligence
CCTV	Closed-Circuit Television
CDN	Content Delivery Network
COVID	Corona Virus Disease
DERs	Digital Educational Resources
DNF	Digital Nepal Framework
DaaS	Device as a Service
EMIS	Educational Management Information System
GON	Government of Nepal
HEIs	Higher Educational Institutions
ICT	Information and Communication Technology
IaaS	Infrastructure as a Service
IoT	Internet of Things
M&E	Monitoring and Evaluation
MOEST	Ministry of Education, Science and Technology
MOHP	Ministry of Health and Population
MP	Master Plan
NEHEP	Nurturing Excellence in Higher Education Program
NHEP	National Higher Education Program
OER	Open Education Resources
PaaS	Platform as a Service
RA	Result Areas
SDGs	Sustainable Development Goals
SOPG	Standards, Operational Policies and Guidelines
SaaS	Software as a Service
TU	Tribhuvan University
UGC	University Grants Commission
VLE	Virtual Learning Environment
VR	Virtual Reality

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1. BACKGROUND

1.1 Country Context on Higher Education Digitalization

1. Digitalization of Education, though relatively a new practice, has received higher priority over the last decade in Nepal and recent policies and practices have embraced its importance. The *National Education Policy 2019*[1] has underscored the importance of the use of Information and Communication Technology (ICT) to deliver improved equitable quality education for producing human capital for societal transformation and prosperity. Indicating the role of ICT in higher education for improved pedagogy, the policy has also emphasized the need of an integrated Educational Management Information System (EMIS) to inform the policy and practices at different levels with real-time data to foster improved efficiency in education service delivery and good governance. *Science, Technology and Innovation Policy, 2019*[2] has highlighted the importance of producing skilled technical human resources and scientists by upgrading and modernizing traditional knowledge and technology, developing scientific culture, and encouraging a research-oriented education system.

2. *Information and Communication Technology (ICT) Policy 2015*[3] has stressed the use of local content & indigenous technologies and employment driven competencies It has also emphasized affordable innovative and affordable technology use, E-learning, E-education, E-library, distance & open learning, promoting research and innovation. It has also focused on the capacity enhancement of higher educational institutions (HEIs) through the use of ICT tools.

3. *The Fifteenth Plan (2019/20–2023/24)*[4] has emphasized the role of **practical and vocational** education towards developing entrepreneurship skills in higher education. It has highlighted the importance of research and the use of new technologies such as ICT and Nanotechnology in collaboration with higher education institutions and universities. For improved access to quality higher education, the plan has also focused on alternative delivery approaches such as open and distance education systems including open universities. In addition to this, the plan has emphasized how the current system of educational data sharing could be improved with the involvement of different stakeholders including the academics/students for research and studies.

[1.] Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., and Haenlein, M. (2021). "Digital transformation: A multidisciplinary reflection and research agenda." *Journal of Business Research*, 122(July 2018), 889–901.

[1] http://moe.gov.np/article/1244/राष्ट्रिय-शिक्षा-नीति-२०७६-2.html

[2] https://nitc.gov.np/downloads

[3] https://nitc.gov.np/downloads

[4] https://npc.gov.np/images/category/15th_plan_English_Version.pdf

4. The *Digital Nepal Framework (DNF) 2019*[5] aims at strengthening the foundation for a knowledge-based society and digital economy. The framework aims at leveraging the digital technologies to achieve sustainable development goals (SDGs). It has identified eight national sectors to be addressed through eighty initiatives. Education is one of the major sectors among them and the initiatives include smart classroom, promotion of open learning education, promotion of online learning, rented laptop services, strengthening EMIS, developing a centralized student admission system, use of biometric attendance and CCTV (Closed-Circuit Television), and mobile learning for rural areas. The framework is designed to establish an overall superstructure for digital services in Nepal and guide the entire digital technology sector.

5. After the progressive impact of ICT in Education Master Plan 2013-2017 (MP-I), Ministry of Education, Science, and Technology (MOEST) has released the draft version[6] of Education Master Plan-II (MP-II) with the mission of ensuring an equitable and relevant quality education utilizing the ICT and innovative technologies and resources. These include among others digital resources, a competitive workforce, whole-of-educational governance, and so on. The four components the MP II has underlined are digital materials for quality education, ICT infrastructures for equitable access, human resources development, and governance and management. The MP-II has also noted the role of the University Grants Commission for coordination and facilitation in strengthening ICT in the higher education sector.

1.2   Higher Education Digitalization

6. Nepal's higher education includes public universities, their affiliated campuses and health academies. National universities are on the radar of Ministry of Education, Science, and Technology (MOEST), whereas the health academies are under the Ministry of Health and Population (MOHP). Tribhuvan University (TU) has the largest share (around 76 percent) of higher education enrollment. All these universities receive public funding through the University Grants Commission (UGC). The UGC, an advisory body to the government, is the implementing agency of the higher education program "Nurturing Excellence in Higher Education Program". All government funding to universities, institutions, campuses, schools, and departments is channeled through the UGC. While some Provincial Universities have been established and others are in the pipeline, the federal government's higher education public funding is not yet channeled to provincial universities.

7. Following the disruption of higher education due to the COVID-19 pandemic, many universities and colleges in Nepal quickly initiated online learning starting in April 2020. This

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[5] https://mocit.gov.np/pages/digital-nepal-framework
[6] Reference on shared document of public DP and other stakeholder form MoEST

initiation was also founded on the limited experiences of online learning modes practiced at Kathmandu University, Open and Distance Education Center (ODEC) of Tribhuvan University and Nepal Open University. However, these initiatives were largely concentrated within the relatively well-off regions and HEIs. The UGC-initiated support to universities/HEIs to respond to COVID-19 contributed to create a foundational shift towards expanding the higher education through blended and online mode. The universities have passed the regulatory framework for online/ blended learning including assessments/ examinations with limited coverages. Universities/HEIs have established IT centers/ units and they trained a large number of teachers with basic knowledge in handling online teaching and learning. First rounds of online examinations were also conducted by some universities. This was also supported by the then Higher Education Reforms Project (HERP). As the implementation of online teaching-learning progressed, the demand for a more comprehensive policy framework as well as improved digital connectivity, campus intranet, last-mile connectivity, access of individuals to devices, and more advanced training for faculty members/students in handling digital tools to support online/blended learning were in emerging needs.

8. Globally, digitalization has helped higher education towards improving collaborations, good governance, and overall education management. Despite its limited use, digitalization opened wider avenues towards a sustainable teaching-learning process. Nepal witnessed its benefits, which among others included added flexibility and self-paced learning through recorded lectures and 24-hour resources; better time management with flexible choices; improved virtual communication, collaboration, and resource sharing with a broader and global perspective including exposure to faculty members/students from remote areas; fewer emission with limited travel; new technical skills and so on. It was also realized that digitization helps to improve better data management and progress monitoring on academic and administrative aspects during pandemics and other forms of disasters and disturbances. The GON/UGC and universities/HEIs have realized that Nepal needs to utilize the full benefits of digitalization for sustainable and uninterrupted quality service delivery in education during pandemics and disasters despite various limitations on digitalization, which among others include:

- Not clearly defined strategic framework for higher education in the ICT policy.
- Lack of policy and strategic plan for strengthening connectivity, online/blended learning at some universities/HEIs.
- Limited outreach of digital connectivity, and access to the digital device to individuals.
- Lack of regulatory provisions for online/alternative mode of final examination administration and management across the disciplines.
- Inadequate skilled human resources in universities/ HEIs in different aspects of digitalization of higher education.

9. In order to address the above limitations and other aspects of higher education digitalization, the ongoing higher education reform program entitled Nurturing Excellence in Higher Education Program – NEHEP (FY2021/22-2025/26) signed between the Government of Nepal and the World Bank on August 19, 2021 has included digitalization as a core reform agenda.

10. The overall objectives of the NEHEP are to strengthen labor market relevance and quality of higher education, boost collaborative research and innovation, and enhance equitable access for underprivileged and disaster-affected groups. Extending the digitalization of higher education is one of the cross-cutting result areas (RA) of the program to support the achievement of the program objectives. This RA aims to improve the policy and governance system for digitalization and connectivity and strengthen the institution's capacity to digitalize teaching and learning and the administration. The NEHEP support will focus on three specific sub-results areas.

11. *Sub-Result Area 1: Improving the policy and governance of digitization and connectivity.* This will include the preparation of a new ICT strategy for the higher education sector, including strategies to leverage the available broad-band connectivity facilities under the NREN or similar institutions and setting up more collaborative governance arrangements.

12. *Sub-Result Area 2*: *Strengthening campus networks and distance learning capabilities.* The program will support strengthening campus networks and distance learning capabilities by supporting competitively selected HEIs with Digitization Grants on a cost-sharing approach, specifically (a) establishing last-mile connectivity, (b) strengthening the bandwidth for better connectivity, and (c) installing on-campus wi-fi connectivity. The Digitization Grants will also support the capacity building of HEIs for integrating online/digital learning for all aspects of academic activities, from student enrollment to class teaching, examination, graduation. The program will also support peer learning across various agencies and institutions.

13. *Sub-Results Area 3: Digitization of UGC and university administration*. This RA will support the digitization of the UGC and university administration, including establishing a resource planning system to manage the universities' human resources, finances and procurement tasks, student administration, and the efficient management of monitoring and evaluation. The student administration would include, among others, the admissions, examination, alumni relations and student scholarship/aid functions, and so on.

14. Associated with the three results areas, the UGC will strengthen the existing digital learning platform and online administration at the UGC. The UGC and universities/HEIs will continue strengthening digitalization towards increasing the share of students registered in courses with online/blended teaching mode. The NHEP will work towards exceeding the NEHEP target of 50 percent on blended learning.

15. Digitalization, being an emerging discipline, needs regular improvements and updates both on policy and practice fronts. While this SOPG focuses on the implementation in the above three sub-result areas of higher education digitalization, the UGC will also continue providing evidence-based guidance and support to the universities/HEIs going forward to cope with the emerging trends of higher education digitalization with defined standards and operational policies as elaborated in the sections below.

2. STANDARDS OF HIGHER EDUCATION DIGITALIZATION

UGC has identified the following standards for the digitalization of the higher education sector in Nepal for broader and technical aspects:

Broader Perspectives

16. **Transformation of higher education by complementing face-to-face mode education:** Digitalization should contribute to the transformation of higher education by providing a credible alternative to the conventional mode education. The online class is one of the components of digitalization in education. Digitalization is a broader terminology that might simply indicate the use of digital technology, such as computers and online content. For a rich and complete learning experience in modern days, digitalization should be regarded as complementary to the face-to-face mode of education. During normal times, a digital component might have less weightage compared to the physical interaction but during unusual times and circumstances (such as the Covid-19 pandemic, natural disasters, riots), a digital component can have up to 100% weightage of educational programs.

17. **Quality enhancement.** Digitalization should enhance the quality of education. This could be achieved through one or more ways including – increasing the coverage of education, engaging qualified teachers, providing access to knowledge resources, engaging students in learning, and increasing teaching/learning efficiency. Digitalization should diminish the parochial outlook and increase global outreach, thus making the Nepali education approach the global standards.

18. **Immersion into digital culture.** The world is heading for Fourth Industrial Revolution (4IR, or Industry 4.0), and digitization is ubiquitous. Industry 4.0 involves components including artificial intelligence (AI), robotics, virtual reality (VR), and the internet of things (IoT). Education should prepare students to be adaptable to the digital culture, otherwise, they may be at risk of being outdated. Teachers should also adapt to the digital culture not to risk their careers for being outdated.

19. **User-friendly, cost-effectiveness, and social adaptability.** Digital technologies should be easy, self-explanatory, and user-friendly. Advanced features should not be the barriers to adapting to the technology but be the motivation to learn new things. The technologies should consider the socio-economic condition of the nation and should focus on cost-effectiveness. Online learning should add flexibility to learning.

20. **Inclusion and accessibility.** Access to higher education is still a challenge in Nepal, particularly in remote areas and for disadvantaged people. For example, in some communities, boys can commute to education centers at a fair distance from their homes but girls are discouraged to commute. Similarly, due to poverty students cannot attend the face-to-face mode of education which are often conducted during the office hours in which they are employed elsewhere for earning. Digitalization, in these situations, could provide higher education opportunities in a more flexible manner that would enhance inclusion and accessibility.

21. **Collaboration and expertise utilization.** Digitalization should promote collaboration among experts at different locations and institutions. It should assist to utilize the expertise of various people away from the physical reach of the students. As digitalization eliminates most limitations to joining physically, more experts should be encouraged to deliver their classes/sessions. At the students' level too, sharing among students living in different locations such as Kathmandu and Jumla will become easier due to digitalization and such interactions shall be promoted.

22. **Short-circuiting of the conventional learning curve.** Digitalization should improve the efficiency of education. Some examples include: visual content can supplement as virtual tours to fields; time and effort spent on travel can be saved to increase the pace of learning; content can be played at the students' convenience thus compensating for missing classes; efficient practices from elsewhere can be followed. Through all these means, digitalization should short-circuit the conventional learning curve.

23. **Exploration of new tools and techniques.** Digitization has emerged in numerous ways and has the potential to bring changes in virtually every sector. Possibilities should always be explored not only to adapt but also devise new tools and techniques. Possibilities may include online class, presentation, video, group discussion, online conference, online exam, and virtual tour to a farm, an industry, or a facility. Continuous refinement and advancement should prevail. An example of a new technique could be that instead of submitting the photographs of students' copies for assignments, students may be asked to computer type their answers through a website.

24. **Adoption of the core principles of digitization.** This SOPG promotes digitization to reform and advance higher education in Nepal. Digitization has a set of good practices and agreed principles including *compatibility*, *sustainability*, *interoperability*, *scalability*, and *cyber security*. This is a fast-moving development and hence the systems adopted should be dynamic. Good practices should be followed and promoted.

   <u>**Technical Perspectives:**</u>
   - Access to the digital contents (course-related materials) to all the students at a reasonable speed from anywhere anytime.
   - All the digital contents must adhere to the syllabus developed by the university. And also, the digital contents must be immediately updated as the syllabus is updated.

- The contents must not be plagiarized or should not have a duplication level more than the standards as specified by the respective university.
- The digital content should be accessible to only those users (students, teachers, staff of the university) who are created by the university administration. Each user must be assigned with the specific roles like who can read the content, who can create and read the content, who can modify, delete the content, etc.
- All the digital contents are the property of the university, so those contents must be secured from any kind of tampering.
- System must be available anytime with uninterrupted service.

3. OPERATIONAL POLICIES OF HIGHER EDUCATION DIGITALIZATION AND GUIDELINES

25. The operational policies have been prepared to guide the universities/HEIs' preparation for digitalization in line with the provisions outlined in the NHEP and NEHEP, and also linking the achievements with performance-based financing of UGC to the universities/HEIs as explained in Table 4.1.

26. The UGC and academia have recognized the issues with P*olicy* and P*ractice* dimensions of digitalization in the higher education of Nepal. To overcome these challenges, the higher education institutions should continue working on the policy and practice dimensions and the UGC will facilitate them in funding, providing technical support and coordination. The implementation of digitalization will be conducted according to the MOU to be signed between UGC and Universities/HEIs. While the UGC will explore possibilities of mobilizing various sources for support, the universities/HEIs will also mobilize their internal resources to strengthen their education technology readiness.

27. **Digitalization of UGC.** Digitalization of UGC and university administration is one of the forefront agendas of the NHEP, which is also elaborated under Sub-Results Area 4.3 of the NEHEP. The UGC digitalization will significantly improve the higher education implementation and overall management in close coordination with the universities/HEIs. The UGC will prepare/update the higher education *digitalization policy and strategic framework* in alignment with the national policies, programs, and targets. The framework will include *among others* connectivity, digitalization infrastructure, virtual learning environment (VLE), implementation of a learning management system (LMS), human resource development, digital education resources (DERs), and monitoring and evaluation (M&E). The framework will also include provisions for collaboration and resource sharing among GON agencies, universities, private sectors, and other agencies to promote sustainable development with shared responsibilities through resource sharing and other forms of partnership.

28. The universities will develop overarching policy documents, strategies, and rules/guidelines for the implementation of digital technology in their university programs as elaborated in

Table 1. The individual campuses, schools, and departments will prepare their strategic plans and guidelines to be implemented at their levels as shown in *Table 2*.

Table 1: University level Responsibilities

Policies/ Strategies/ Guidelines	Area of coverage[7]	UGC Role
Universities Information Technology Policy	The policy will include all key dimensions of digitalization: connectivity, digital infrastructure, learning management system/ virtual learning environment, digital materials, capacity enhancement of HR, EMIS strengthening, funding, and sustainability plan	Facilitates collaboration and resource sharing among universities and agencies and encourages the same in UGC funding as performance-based grants (Table 4.1)
University Digitalization Strategy	Implementation strategy of various dimensions of digitalization with milestones, estimated budget, and sustainability plan	Facilitates universities to work on the provision of government/UGC and university cost-sharing modality Update regularly the strategy as per the availability of public funding and internal resources
University Digitalization Guidelines	Guiding framework of different components of practices of digitalization for constituent and affiliated campuses/ schools/departments.	Provides the list of areas to the HEIs for developing the guidelines.
Monitoring and Evaluation	Periodic online survey to understand the status of education technology readiness on policies and practices of individual universities and their constituent/ affiliated campuses for evidence-based support going forward	UGC will also carry out periodic online surveys with nationwide coverage

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[7] Refer Table 3 for details about various dimensions of digitalization that needs to be covered in the universities digitalization policy, strategic plan, and guidelines for UGC funding as per performance grants (Table 4.1)

Table 2: Individual Campus/School/ Department level Responsibilities

Activities	Area of coverage[8]	UGC and Affiliating university's role
Campus/School/department level ICT Strategy	Implementation strategy of the various dimensions of digitalization with milestones, estimated budget, and sustainability plan with coverage on:	UGC will encourage collaboration with other HEIs. UGC and the affiliating university will also provide guidance and technical facilitation for the preparation of such strategy and collaboration
Campus/School/Department level ICT Guidelines	Implementation guidelines of different components of the practices of digitalization	UGC and universities will also guide as required
Monitoring and Evaluation (Institute/ School/ Campus/ Department level)	Individual Institutes/ Schools/ Campuses/ Departments will conduct a periodic online survey to collect information about the status of EdTech readiness from their implementation practices	UGC and affiliating universities will also provide guidance and technical facilitation for the periodic surveys

The UGC will also encourage the universities to partner with other universities/HEIs and private sectors for collaboration. The dimensions of digitalization the universities and HEIs will include in their respective policies, strategic plans, and guidelines, will cover the following aspects among others. Further details are also included in Table 4 and Table 5.1.

- Connectivity and ICT infrastructure development
- Learning management system/virtual learning environment
- Digital resources development and dissemination
- Capacity building of human resources including empowering university leaders/heads of institutions/ principals and developing their e-leadership for academic management practices

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[8] Refer Table 3 for details about various dimensions of digitalization that needs to be covered in the campus/school/departments digitalization strategy, and guidelines for UGC funding as per performance grants (Table 4.1)

- Strengthening web-based EMIS

29. Provision for backup and Disaster Recovery System safeguarded: The UGC, universities/HEIs will also ensure provisions for the backup and disaster recovery system. As a practice, this would be critical for uninterrupted service delivery in the case of disasters.

30. *Periodic progress updating of digitalization at policy and practice levels.* The measures of focusing on digitalization and the measure of what is happening in digitalization are both critical aspects. The universities and HEIs will carry out periodic surveys as a part of their monitoring and evaluation to assess the improvement of the universities/HEIs focusing on the readiness of individual academic institutions for digitalization. This will help the institutions to make additional efforts on the lagging indicators for improving both the *policy* and *practices* (overall administration and other practices) fronts. This will also provide the institutions good evidence to approach for focused support towards inclusive digitalization also reaching out to underprivileged groups and lagging/remote regions. Such periodic updates will also help the UGC and the government to approach various development agencies for enhanced partnership with additional resources and technical support with shared responsibilities.

3.1 Guidelines for Periodic Monitoring of HEIs Progress on Digitalization

31. A guiding framework for monitoring towards strengthening policies and practices of digitalization of the universities and HEIs is provided in Annex 1. This framework considers various dimensions of digitalization to be captured in the periodic surveys. The institutions can also customize and adapt the details both on policy and practice fronts during the design of tools for a particular survey. The UGC will guide the universities and HEIs in designing such periodic online survey tools and prepare a periodic survey report based on the data from universities, HEIs, and from its national-level periodic surveys. Given that digitalization is an emerging but important issue, the objective of the periodic survey is (i) to assess and collect information on two dimensions namely education technology policies and practices in higher education, and (ii) to suggest the drivers and enablers in strengthening these policies and practices with needful improvements going forward.

32. The periodic survey will help analyze policies and practices on six broader areas as explained in Annex 1: (i) connectivity, (ii) digital infrastructure including virtual learning environment and learning management system, (iii) Education Management Information System (iv) human resources - faculty members, students, academic/administrative staff, and university leaders/head of institutions/ principals' e-leadership for academic management practices (v) digital educational resources, and (v) institutions: universities/HEIs. The outcome of the periodic results will help design and launch a communication and sensitization strategy about the need of improving digitalization in lagging areas the universities/HEIs would need to improve both at the policy and implementation levels. The UGC will facilitate the universities/HEIs with technical support in designing the survey tools.

3.2   Guidelines for Periodic Rating of HEIs Digitalization

33. A Guideline has been prepared for a periodic rating of HEIs for their performance towards digitalization under five rating scales Twenty-six ranking parameters clustered around five broader areas will be marked with a total mark of 100. Each ranking parameter will be marked on a rating scale of 0 to 4. The rating of the HEIs will follow the same category of *'absent to very satisfactory'* for score bands within 0 to 20, 20 to 40, 40 to 60, 60 to 80, and 80 to 100. The details are presented in Annex 2.

Table 3.1: Guiding Framework for monitoring towards strengthening Policies and Practices of Digitalization
(Applicable for UGC, Universities, and HEIs as per their specific needs)

Component	Remarks
Connectivity • Broad-band connectivity service • Last-mile connectivity and campus area wifi facilities • Connectivity to individual faculty member/student residence • Deployment of intranet to connect all the departments of UGC, universities and HEIs	Applicable to all (UGC, Universities, HEIs)
Digital Infrastructure • Availability of digital equipment at UGC, university/HEIs, for faculty members/students • Development of a common educational data center • Acquisition of cloud service • Establishment of IT support unit • Establishment of Digital Studio Lab	• Applicable to all • UGC coordination to agree on a common data center • UGC coordination • Applicable to all • Applicable to all
Virtual Learning Environment (VLE) • Implementation of Video Conference/Online tools • Implementation of Learning Management System • Policy and sustainability plan for the Learning Management System hosting • Standard LMS and configuring it on the webpage • Approval of the template for the deployment of LMS with needful customization and configuration, and publishing on the webpage. • Preparation of the step-by-step user's guide (manual) both for teacher and student and published on the webpage.	• Applicable to all • Applicable to all • Applicable to all • Applicable to all • Applicable to all • Applicable to universities/HEIs

Component	Remarks
LMS Implementation Support Arrangement • IT support Unit: the unit will work as an administrator of the LMS implementation. This unit will provide necessary support and training to teachers and students. • Administration Unit: This unit will administer students, teachers, online teaching/learning resources; develops and manages all the necessary documents; considers students', teachers', and staffs' welfare. • Examination Unit: this unit will work for the exam through LMS. This unit closely works with teachers to create questions, make results.	• Applicable to universities/HEIs • Applicable to universities/HEIs • Applicable to universities/HEIs
EMIS System will address the following aspects • Centralized Email System • Website/Web portal • Student Admission System • Account/Finance • Administration • Research, Development, Innovation, Entrepreneurship • Quality Assurance and Accreditation • Assessment and Examination • Online Payment • Integrated Monitoring & Evaluation	
Human Resource Development **Academic Leaders** • Identification of key elements required for empowering university leaders/heads of institutions/ principals and developing their e-leadership capacity for academic management practices **Faculty Members** • Identification of key elements required in a digital competence framework for faculty members and imparting training and inputs to make them capable of integrating ICT for teaching in line with the curricula, and training to staff for digitalization of administration and EMIS: - digital literacy training - integrated pedagogical skill training for faculty members - mass-scale training through the MOOC learning platform - self-paced learning environment • Monitoring & Evaluation of the impact of ICT technology on the current pedagogical approaches the faculty members use in the teaching-learning and evaluation	• Applicable to universities/HEIs • Applicable to universities/HEIs • Applicable to universities/HEIs

Component	Remarks

Students
• Identification of key digital competencies for students that the universities and institutes/ schools/ campuses/ departments should develop and impart training in alignment with the curricula:
  - use of digital resources,
  - use of online libraries, MOOC courses, and so on
	• Applicable to universities/HEIs

Open Education Resources (OER) • Use of Open Educational Resources (OER) and Open Data • Development and sharing of OER • e-resources, e-library, privacy/plagiarism/security tools	• Applicable to all • Applicable to all • UGC/universities/HEIs collaboration for cost-sharing
Monitoring & Evaluation (M&E) • Periodic M&E about the implementation of the policy and practice dimensions of Digitalization • Inform Policy and Practices for appropriate revision/updating	• UGC will provide a framework for UGC, universities, and HEIs in collaboration with universities

3.3   Action steps for each activity:

34. **Digitalization Policy, Strategy, and Rules/Guidelines: The following action steps will be followed to execute these activities:**

- Universities and HEI (Community Campuses) should develop the *short term and long term five-year strategic digitalization* policy, strategies, and guidelines to clarify the roadmap of the digitalization process including capacity development, infrastructure development, digital material development, virtual learning, and blended learning, EMIS and educational governance issues with a various dimension of digitalization with milestones, estimated budget and sustainability plan.

- Universities should develop the *IT policy* including all key dimensions of digitalization: internet connectivity, secure wi-fi zone, security policy, digital infrastructure, learning management system/ virtual learning environment, digital materials; capacity enhancement of HR, EMIS strengthening, funding, and sustainability plan on the field.

- UGC will provide the *template policy format* to the uniformity of IT policy in every university and HEI (Community Campuses).

- Universities and HEI (Community Campuses) should develop *issue-specific guidelines* for the execution of digitalization activities including internet access, email operation, information security, privacy, etc.

- Universities and HEIs must organize a broad consultation with the related stakeholders before the approval of the policy, strategy, and guideline development process.

- Universities and HEIs could recruit expert consultation support for the formulation of policy, strategy, and guidelines as per their own procurement rules.
- Approve strategic, policy and guidelines must be published in the public portal (Website of HEI) to release all grants.

35. **Digital Educational Resources Management: The following action steps will be followed to execute these activities:**
    - Universities and HEIs (Community Campuses) should establish/operate the digital library platform to develop digital materials for their universities and HEI using proprietary or open-source platforms such as DSpace etc.
    - Database or digital repository could be subscribed by universities and recommended utilizing cost-sharing mode.
    - Subscribed data repositories should be available in off-campus and on-campus modes.
    - Universities and HEIs should develop digital studios including hardware and software at the universities level to produce interactive books, audio, and video materials, simulations, and animation for the higher education sector.
    - Production and publishing of e-books, audio/video, animation, simulation, gaming learning materials, and so on and dissemination/sharing (up to 500 items) by universities and HEI to fund disbursement.
    - Universities should organize promotional activities to promote Open Educational Resources (OER) and open data between the students and faculties.

36. **Connectivity and ICT Infrastructure Development: The following action steps will be followed to execute these activities:**
    - Universities and HEIs should ensure the minimum broadband[9] connection with the collaboration of private ISP and coordination with the NTA broadband project (RTDF Fund).
    - Universities and HEIs could manage the alternative modes of connectivity if NTA provides government-subsidized support services.
    - Coordinate with MoEST (Ministry of Education and Science and Technology), MoCIT (Ministry of Communication and Information Technology), and NTA to connect with higher education by UGC.
    - Establishment of secure Wi-Fi zone on universities and HEI premises, the secure Wi-Fi zone development guideline should be provided by UGC.

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[9] Minimum Broadband bandwidth will be varied on geographical location, number of students, number of program, but ensure minimum 20 Mbps.

- Utilization of national and international collaboration to establish intranet and educational network on campus with the support of NREN, NPIX, and other similar networks.
- Establishment of an IT support unit at the Universities and HEIs with appropriate hardware and software.
- Development of a guideline for cloud hosting Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Device as a Service (DaaS) with a priority content delivery network (CDN).
- Development of own intranet and extranet by the Universities and HEI to connect campuses, central offices to share and exchange educational data with each other.
- Allocated grants should be released after completion of the above tasks.

37. **Learning Management System (LMS)/Virtual Learning Environment: The following action steps will be followed to execute these activities**:

Each campus will implement LMS with the following working action steps.

1. IT support Unit: the unit will work as an admin of LMS implementation. They will provide necessary support and training to teachers and students.
2. Teaching and Learning (T&L) unit: the unit will work to design a pedagogical model for LMS implementation. This unit will provide necessary teacher training for effective LMS implementation.
3. Administration: the unit work for students' welfare. This unit develops all necessary forms and notices for campus-level administration of the digital database
4. Student: the unit is related to the student club for digital transformation. This unit will provide necessary awareness of LMS across student levels.
5. Examination: this unit will work for the exam through LMS. This unit closely works with teachers to design diagnostic, placement, formative, and summative exam guidelines

The additional documents required from the HEIs to be eligible for the fund are as follows.

1. Sustainability plan: The campus must prepare and approve the sustainability plan for the LMS hosting. [hardcopy]
2. Standard: The campus must use global standard LMS and configure it on their Website.
3. Template: The campus must approve the template for the deployment of LMS. It should be customized and configured accordingly and published on the campus Website.
4. Manual: The campus must prepare step by step user guide for both teachers and students and publish it on the campus Website

38. **Capacity Building: The following action steps will be followed to execute these activities:**

Each campus will set up a Teaching and Learning (T&L) unit: the unit will work to design a stepwise user manual and provide training as below.

1. Training on generic tools for digital literacy
2. Training on pedagogical tools for video conferencing (MS Team, Zoom, Meet)
3. Training on pedagogical tools for LMS (Moodle)
4. Training on assessment tools (Constructed Response)
5. Training on assessment tools (Selected Response)
6. Training on learning analytics.

4.   UNIVERSITY GRANTS COMMISSION DIGITALIZATION

4.1   Introduction

UGC, the apex body of the higher education system in Nepal, is established to maintain the quality of higher education in Nepal. UGC monitors the progress of the universities and campuses, encourages research work, provides grants to researchers, allocates budgets for the universities, and produces several reports related to the higher education system of the country. UGC is also responsible for executing the World Bank project to promote and enhance the quality of the higher education system as per the demand of the time.

UGC has the following divisions to execute its tasks and activities in the implementation of the higher education program and also for coordination with the Government and other agencies and stakeholders as an advisory body of the government about higher education:

1. General Administration Division including Information Education and Communication Section and Procurement
2. QAA Division
3. Research and Scholarship Division
4. Planning, Monitoring and Evaluation Division including EMIS
5. University Coordination Division
5 Financial Administration Section

4.2   Current Status

Currently, these divisions are executing their tasks and activities with minimum use of Information Technology. Some of the divisions are using MS Excel to store data; MS Excel is good for storing data, but producing summary reports of different types is a time-consuming process for most of the users and needs special skills. These departments perform their task

alone or by collaborating and cooperating with other divisions as and when necessry. Collaboration and cooperation are done through face-to-face meetings or telephonic conversations. This traditional method of working has resulted in delays in the completion of the tasks and activities; in absence of sometimes personnel in the division, it becomes almost impossible to get the data and information needed. It has become very necessary to digitalize and automate the tasks and activities of the UGC and connect the divisions for smooth execution of tasks, easy sharing of data and information, easing decision-making processes. Financial administration section would also need to integrate the banking system and online payment methods.

4.3   Policies for Digitization of UGC
- Use of information technology to collect, process data and produce information in the digital format in all the divisions, units of the UGC
- Establishment of a high-speed computer network in the UGC for smooth transmission of data between the divisions, units anytime
- Installation of security measures to protect all the data/information of the UGC
- Fast transmission of data from server to the client and client to the server; users should get data/information within a reasonable time frame.

4.4   Strategies for the digitization of UGC
- Establishment of an IT department
- Development of centralized information system to store data of all the divisions, to produce information, reports by the divisions, units; the information system development process includes major stakeholders of each division, unit; they should provide all the requirements, things to be done by the information system
- Thoroughly testing the developed system to ensure if all of the requirements have been addressed or not, to assure the quality of the system is acceptable or not
- Provisioning of power backup to ensure the system is always on and running (24 * 7 hours)
- Implementation of a backup server of the main centralized server computer
- Installation of the firewall to protect the system from unnecessary access
- Creating users with roles and responsibilities; each role should be clearly defined with what the user with that role can do and can't do
- Networking of division's, unit's computer with the central system using exiting standard networking protocols and ensuring the high-speed data transmission between client and server
- Providing training to all the staff of the UGC to make them familiar with the system
- Cloud service can be used to store all the data of UGC instead of purchasing its server computers. In this case, there is no need of maintaining power backup, firewalls, back up servers.

4.5 Guidelines for the digitization of UGC

- A small team of 3 to 5 members selected by the executives of the UGC (including major stakeholders of UGC) should be created; this team will be responsible for providing requirements of the users of the UGC, actively participating in the software system development; ensuring the quality of the developed software by testing the software thoroughly
- A document with a list of requirements of each division and unit will be prepared by the team
- Software and hardware vendors should be selected and software and hardware should be purchased under the existing procurement rules of the UGC; HEIs can also subscribe cloud services.
- Team should actively participate in the software development process, other employees (not members of the team) should also participate and observe the development process, and provide feedback, comments to the team whenever they feel necessary; the team will communicate about the feedback and comments with the developers
- A draft document of the requirements (list of requirements of the divisions, units) must be prepared within a specified period. The team must prepare test cases to test the software with the help of employees of the concerned divisions, units.
- The executives of the UGC should specify the roles (what a user can do and can't do, who can do, who can't do) and provide a document with roles specified to the team at the time of the requirement collection period. Users and roles should be clearly stated and written in a document. The team will provide that document to the software developers.
- All the components, modules must be tested using the prespecified test cases to ensure the quality of the components, modules. Evaluating the system to ensure all the requirements are addressed correctly
- The developed and finalized subsystems should be installed in the centralized computer and allowed to the user; if some issues/problems are found by the users those must be addressed immediately
- Security of the computer network and data must be ensured
- Easy to read and use user manual with clearly specified steps for using the system, every component and module of the system must be provided by the software development team (company) after the completion of the system development within a reasonable time frame.
- Reports, notices, Completed forms must be printable in different formats as required by divisions, units of the UGC

The IT department of UGC will be responsible for:

- Maintaining user accounts, creating a new user account, removing existing user accounts in the UGC digitization system.
- Maintaining the system, database, and other relevant server computers at UGC
- Making a backup of the database as a disaster recovery system
- Supporting divisions to access and use the system
- Maintaining the intranet and keeping the network intact and functioning.

Learning Management System (LMS) at UGC

39. The existing UGC LMS will support online courses for the general public. To use that LMS, the following approach should be taken by the UGC:

- RD will collaborate with IT section to manage the LMS.
- Use/implement the MOOC-based self-learning and self-paced general courses (Decided by UGC Board) for all stakeholders in higher education.
- Hiring of Teachers/experts for the development of digital content (courses) relevant in the current time in collaboration with universities, HEIs, and private sectors.
- Manage and track the self-registration of students in the courses using the online system
- Establish the self-paced learning platform and certification process.
- Update and management of the self-paced MOOC course learning materials and the student's data.

4.6 UGC Support to HEIs for Digitalization

40. UGC will continue to support universities and HEIs for digitalization on policy and implementation level. UGC will provide performance-based fund to the universities and HEIs for digitalization focusing on policies and implementation. The funding scheme is presented in Table 4.1. These supports will be an integral part of other supports provided by the UGC. The UGC will also play a coordinating role with academia, government agencies, business communities, and private sectors to facilitate collaboration among these agencies in sustainably strengthening higher education digitalization with shared responsibilities.

Table 4.1: Performance Grants to Universities/HEIs for Digitalization

S.N.	Indicator	Activities	Grants Amount
1	1.1 Digitalization Policy, Strategy, and Rules/Guidelines preparation, approval and implementation	*Universities* (i) Preparation of Policy, Strategic Plan, Rules/ Guidelines in consultation with stakeholders incorporating all aspects of digitalization adhering to the standards and operational policies as explained in chapter 3 Table 1 of this SOPG and approval (release of 20 percent of the allocation upon completion of this task)[10] (ii) Implementation of Policies, Strategic Plan, and Rules/Guidelines (80%)	*Universities:* Policy, Strategic Plan, Rules/ Guideline *Funding Arrangement*[11] *Universities with total students:* • >100,000 total students: up to NPR 1crore • > 50,000 total students: up to NPR 50 lakhs

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[10] Provision of Back-up and Disaster Recovery System for universities/ campuses EMIS, LMS, e-Library and so on safeguarded in the policy, strategy and rules/guidelines

[11] Policy, Strategic Plan and Rules/Guidelines each will have 1/3rd weights of the total performance grants

S.N.	Indicator	Activities	Grants Amount
			• < 50,000 total students: Up to NPR 25 lakhs
	1.2 Connectivity and ICT Infrastructure Development-	*Campuses* (i) Broadband Connectivity (ii) Secure Wi-Fi on campus (iii) Intranet development on campus to connect all the departments (iv) IT support unit with hardware and software. b) Integrated Intranet in the Central Departments of S&T	*Campuses* @ NPR 1,00,000 per activity (total Rs. 5,00,000/HEI) NPR 50 lakh
2	Learning Management System/Virtual Learning Environment	*Universities with constituent campuses/ programs* Establish a university-level LMS platform integrating constituent campuses/schools/ departments, and delivery of online/blended mode academic courses (existing and or new)[12] with setting up of a virtual learning environment (MS Teams, ZOOM, Meet, or other similar tools) *Community Campus* Establish the LMS platform at the campus and deliver online/blended mode academic courses (existing and or new)[12] with setting up of virtual learning environment (MS Teams, ZOOM, Meet, or other similar tools) *UGC:* (i) Offer the self-paced MOOC course for HEI faculties and students public concern courses such as climate adaptation, cyber security, digital pedagogy, entrepreneurship, indigenous teaching including self-certification (ii) Technical support to continue operationalization of the UGC LMS including the addition of new features as per needs	• >=100,000 students in constituent campuses/programs: NPR 1 Crore • > 20, 000 students: NPR 50 lakh • < 20,000 students: NPR 30 lakh *Community Campuses* • >= 3,000 students: NPR 10 lakh • < 3,000 students: NPR 5 lakh *UGC:* (i) Delivery of MOOC courses with self-certification: 20 courses in 5 yrs. @ Rs 2,00,000/course Rs 20 lakh

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[12] 50% of allocated amount against delivery of two courses on online/blended mode and remaining against three additional courses delivered in online/blended mode in each campus programs

S.N.	Indicator	Activities	Grants Amount
3	Digital Resources Development and Dissemination	*Universities with constituent campuses* (i) Establish/operate the Digital library platform to develop the digital materials (ii) Digital studio set up (iii) Production and publication of e-books, audio/video, animation, simulation, gaming learning materials, and so on and dissemination/sharing (up to 500 items) *Community Campuses* i. Establish/operate the Digital library platform to develop the digital materials i. Digital studio set up i. Production and publication of e-books, audio/video, animation, simulation, gaming learning materials, and so on and dissemination/sharing (up to 100 items)	Universities *with constituent campuses* @ NPR 20 lakh/100 items (item standard as per the guideline provided by UGC) Community Campuses @ NPR 20 lakh/100 items (item standard as per the guideline provided by UGC)
4	Capacity Building	*Universities and HEIs* (i) Conduct the digital literacy training for faculties, students (ii) Conduct digital pedagogy training for faculties (iii) Conduct the subject-specific tools handling training for faculties.	*Universities and HEIs* • Digital literacy training (DLT): Rs 50,000/100 faculty members • Digital pedagogy training DPT: Rs 100,000/100 faculty members[13] • Subject-specific tools handling training: Rs100,000/50 faculty members

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[13] DPT training will follow after two groups or 100 faculty members DLT training (whichever completes earlier) to be eligible for PBG against the subsequent groups DLT

S.N.	Indicator	Activities	Grants Amount
5	Strengthening Web-based EMIS	*Universities and constituent campuses* (i) Integration of university/constituent campus EMIS with UGC EMIS system including with provision of reporting (ii) Regular updating of academic data in the EMIS system and generating executive reports. *Community Campuses* (iii) Integration of campus EMIS with UGC EMIS system including with provision of reporting (iv) Regular updating of academic data in the EMIS system and generating executive reports.	*Universities with constituent campuses/programs*[14] • >= 100,000 students in constituent campuses/programs: Rs 1 Crore • >= 20, 000 students in constituent campuses/programs: Rs 50 lakh • < 20, 000 students in constituent campuses/programs: Rs 30 lakh *Community Campuses*[15] Rs 3 lakh per campus for five years.
6	UGC EMIS and Office Automation System	UGC (i) Re-engineering of EMIS system and implementation of UGC EMIS system (ii) Digitalization of QAA, Research, and Development, Monitoring and Evaluation, Planning, admin, finance functionalities at the UGC level. (iii) Integration of UGC functionalities and develop the integrated educational management information system (IEMIS) system with universities and HEIs EMIS. (iv) Capacity enhancement for staff of UGC (v) Capacity enhancement of service seekers and the staff of HEIs (vi) Back-up and Disaster Recovery System managed	UGC Estimated amount: Rs 2 Crore (To be released as per the expenditures against the five noted activities)

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[14] First 50% PBG tranche release to universities upon publication of the first EMIS Report of the university starting 2021/22 and 2nd tranche upon integrating the university EMIS with UGC EMIS

[15] First 50% PBG tranche release to community campuses upon publication of the first EMIS Report of the campus starting 2021/22 and 2nd tranche upon integrating the campus EMIS with UGC EMIS

ANNEX 1: Drivers and Enablers in Strengthening Education Technology Readiness

Components	Policies	Practices
Connectivity	• What regulatory issues exist related to connectivity and information access issues as they relate to the higher education sector, and what guidelines and best practices have emerged? • What elements are required to ensure the availability of Internet connectivity in urban and rural HEIs and remote regions? • What measures would help to moderate the cost and ensure affordability?	• What is the connectivity that a student needs at the HEIs based on the availability of computers in the classroom and the type of activities or intensity of the use of the Internet? • How to adjust the use of digital devices and digital education resources according to the connectivity available to students and teachers?
Digital Infrastructure	• What are the goals that the UGC, universities, and HEIs are trying to achieve, and how the digital infrastructure help to meet such goals? • What are the direct and indirect investments needed (upfront capital and operating expenditures)? • What are the procurement best practices and required coordination with the Education Technology ecosystems?	• What type of pedagogical support is needed for faculty members and students to use the devices? • What organizational arrangements need to be conducted to ensure the availability and maintenance of ICT devices in universities, Campuses/ Schools/ Departments?
Faculty Members	• What are the key elements required in a digital competence framework for faculty members? • What models exist for the effective utilization of ICTs to support ongoing professional development for faculty members?	• What inputs are required to support faculty members to be more effective at integrating ICT for teaching? • What pedagogical approaches do faculty members use and how will these be impacted by technologies?
Students	• What are the key digital competencies (DC) for students that the universities and HEIs should develop?	• What conditions are required for students to better use technologies inside and outside the universities/HEIs?

Components	Policies	Practices
	• How are these competencies aligned with the curriculum? What mechanism do the universities/HEIs use to assess students' DC?	How to ensure an effective learning experience when students use digital educational resources?
Digital Education Resources (DER)	• What conditions are needed to foster the pedagogical relevance of DERs aligned to the curriculum? • What standards are needed to guarantee the quality of DERs and a mechanism to evaluate them? • What are the most effective strategies to secure access to DER for those communities which are more digitally excluded?	• What conditions are required to ensure pedagogical usefulness and (re)usability of DERs? • How to equip managers/ teachers to search, identify, share, create or purchase appropriate DERs? • What are the best practices for creating, adopting, and adapting digital curricular content?
Universities, Institutes/ Schools/ Campuses/ Departments	• What are the key elements required that systems need to define for the integration of ICT in strategic plans? • How can education systems empower university leaders/heads of institutions/ principals and develop their e-leadership?	• What conditions do the university leaders/heads/principals need to integrate ICT into the strategic plans? • How can university leaders/principals/ heads foster the effective use of ICT for faculty members/ academic management practices? • How the use of education technology could foster collaboration and partnership among different agencies for sustainable development as a shared responsibility?

ANNEX 2: A Marking Scheme for Ranking of HEIs on Digitalization

The HEIs will be ranked for their performance towards digitalization of the education sector into five categories. Twenty-five parameters will be marked with a total mark of 100. Each parameter will be marked on a rating scale of 0 to 4 shown below. The rating of the HEIs will follow the same category of *'absent to very satisfactory'* for score bands within 0 to 20, 20 to 40, 40 to 60, 60 to 80, and 80 to 100.

Rating scale

0	Absent	— component is missing
1	Unsatisfactory	— needs significant improvement
2	Somewhat satisfactory	— needs targeted improvements
3	Satisfactory	— discretionary improvement needed
4	Very satisfactory	— no improvement needed

Set A: Institution's policy and performance

Parameter	Fullmark	Obtained mark
The institution supports the digitalization of higher education through a set of policies, strategy guidelines, notices, actions, and encouragements	4	
The institution has developed a digital infrastructure	4	
The institution has practiced a learning management system/virtual learning environment with digital materials and their accessibility	4	
The institution provides digital literacy and other digitalization related training to its faculties and students	4	
Compared to the previous years, the institution has tangibly progressed toward digitalization[16]	4	
Total	**20**	

Set B: Governing bodies (UGC, University, MoE, Government) policy and performance

Parameter	Fullmark	Obtained mark
The government has promoted digitalization in higher education through favorable acts, policies, instructions, decisions, budgetary support, program support, electricity, internet facility, awareness, etc.	4	
The governing university has supported the HEI for digitalization through policy, budget, program, guidelines, orientation, facilitation, and responding to the requests	4	
The HEI receives direct funds and programs from the government, university, or UGC explicitly for digitalization or the HEI allocates sufficient funds for digitalization making no need for external budgetary support	4	

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[16] Examples include: implemented of policies, updated website, developed course portal, created documents for download and sharing, creating online learning modules, tools or apps, created a digital library, extended computer/ICT lab, conducted online teaching/seminar/virtual tour/exam, partnered for promoting digitalization, established or improved internet connection. Any of those should have taken place in the most recent year as this parameter measures the continual progress of the institute.

Parameter	Fullmark	Obtained mark
Compared to the status and progress made by the HEI towards digitalization, how are the status and progress made by the government, university, and UGC (relative pull or push factor)	4	
Compared to previous years, have there been any tangible progress made by the government, university, and UGC towards digitalization	4	
Total	**20**	

Set C: Teacher's performance

Parameter	Fullmark	Obtained mark
Are the teachers[17] familiar with digitalization?	4	
Have the teachers received any training related to digitalization?	4	
Have the teachers conducted online classes, seminars, conferences or virtual tours, online assignments, and exams?	4	
Are the teachers passionate about digitalization and use digital infrastructure and media at the HEI and their end voluntarily?	4	
Compared to previous years, was the number and digital literacy level of teachers adapting to digitalization improved in the current year?	4	
Total	**20**	

Set D: Student's performance

Parameter	Fullmark	Obtained mark
Are the students[18] familiar with digitalization?	4	
Have the students received an orientation/training related to digitalization?	4	
Have the students attended/participated in online classes, seminars, conferences or virtual tours, online assignments, and exams?	4	
Are the students passionate about digitalization and use digital infrastructure and media at the HEI and their end voluntarily?	4	
Compared to previous years, was the number and digital literacy level of students adapting to digitalization improved in the current year?	4	
Total	**20**	

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[17] The section evaluates for the entire faculties in the HEI. So, this set of question should be representative of all teachers. For an accurate evaluation, the same set of questions can be answered for individual teachers and their average can be used in the final evaluation sheet.
[18] The section evaluates for the entire body of students in the HEI. So, this set of question should be representative of all students.

Set E: Relative performance

Parameter	Fullmark	Obtained mark
Compared to similar HEIs in the province[19] and Nepal, how has been the performance of the HEI towards digitalization?	4	
Compared to other universities in Nepal, how has been the performance of the governing university of the HEI towards digitalization?	4	
Compared to similar HEIs in neighboring countries, how has been the performance of the HEI towards digitalization?	4	
Compared to the teachers in similar HEIs in Nepal, how has been the performance of the HEI's teachers towards digitalization?	4	
Compared to the students in similar HEIs in Nepal, how has been the performance of the HEI's students towards digitalization?	4	
Total	**20**	

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[19]An HEI that is outstanding in its province will receive full mark