



# *Draft* Framework for the Implementation of Learning Analytics at the National Open University of Nigeria

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# 1. Background

The National Open University of Nigeria (NOUN) is the largest single-mode open and distance learning institution in the West Africa sub-region with over 600,000 student enrolments since its inception in 2002. Currently, NOUN has over 100,000 registered students in 108 study centres across the country.

As part of its strategic objectives, the institution strives to provide learners with a high-quality learning experience that equips them with a competitive advantage and the skills to contribute to national development (NOUN Strategic Plan 2013-2017). By the size of a diverse student population dispersed over an expansive geographic space, the deployment of technology and digitalisation of the institution's systems and operations is imperative. Equally imperative, is the need to equip learners with the skills and competencies required of the 21st-century workforce in the context of technological advances and more jobs becoming digitised. NOUN embarked on a digital transformation journey from its establishment and has amassed considerable amounts of digital data information in the process, which has significant value for institutional research and to inform policy decisions that will enhance teaching and learning outcomes.

To drive the transformation, NOUN recently developed a digital transformation strategy aimed at positioning the university to utilise digital technologies in the areas of teaching and learning, research and innovation, and administrative operations (2022). As the institution becomes increasingly digitised, it seeks to understand its student's needs better and make meaning of its digital data to improve learners' learning experience, enhance institutional cost effectiveness, and address concerns about student retention using Learning Analytics. The process of integrating learning analytics into its systems is being championed by the University's Leadership. It involves sensitization of the university community about Learning Analytics, and an engagement with key stakeholders to reflect the broad nature of Learning Analytics' stakeholder involvement in the development of a framework that will guide the implementation of Learning Analytics at NOUN.

## 2. Preamble

Learning Analytics, since its emergence in 2011, has matured as a research focus and institutional practice providing evidence of how the collection, analysis, and use of student data and the contexts in which learning occurs can positively impact student retention and success, responsive pedagogy and assessment strategies, more appropriate student support and more cost-effective resource allocation and operational planning. Currently, most, if not all the theoretical understandings and evidence of the impact of Learning Analytics are from the Global North with very little evidence of the implementation of learning analytics on the African continent, and in the broader context of the Global South. Learning Analytics is about students' learning providing actionable intelligence to learners, faculty, and student support staff to transcend barriers to learning.

As such, the implementation of Learning Analytics at NOUN is aligned with and will contribute to the vision of NOUN in ensuring NOUN to be "the foremost university providing highly accessible and enhanced quality education anchored by social justice, equity, equality and national cohesion through a comprehensive reach that transcends all barriers." Learning Analytics furthermore will allow NOUN

to fulfil its mission to provide “functional, cost-effective, flexible learning which adds life-long value to quality education for all who seek knowledge” (Federal Ministry of Education, 2002, NOUN Blueprint and Implementation Plan).

### 3. Principles guiding the framework

The following value-informed principles will inform and guide the design, implementation and evaluation of learning analytics at NOUN:

**Principle 1:** Learning Analytics at NOUN is fulfilling our *moral and legal obligation* to ensure effective, equitable and quality learning experiences.

**Principle 2:** Learning Analytics at NOUN will adhere to the *highest ethical standards*, ensuring and protecting *student privacy* and having the *best interests of students* at heart.

**Principle 3:** We acknowledge that *student data does not belong to us*, but *we will be trustworthy custodians of their data*, ensuring *transparency* in what data we collect, the purposes for which we collect the data, and *who will have access* to the data and *under what conditions*.

**Principle 4:** We acknowledge that students and their learning experiences are *much more than the data* we have access to, more *complex than the patterns* we may see from the data, and *richer than the quantification* of their learning. Learning Analytics at NOUN will be in service of contributing to a more *holistic understanding* of student learning.

**Principle 5:** Learning Analytics *aims to significantly contribute* to retention and student success, as well as ensure cost-effective, quality and equitable teaching and learning, and more effective, personalised student support

**Principle 6:** The design and implementation of Learning Analytics at NOUN will be *research and evidence-led*

**Principle 7:** The design and implementation of Learning Analytics at NOUN will be *consultative at its core*, valuing the input and diversity of contributions from institutional stakeholders and especially students.

### 4. The Value Proposition of Learning Analytics at NOUN

The value proposition is guided by the desired outcomes of the implementation of learning analytics:

#### 4.1 Data in service of teaching, learning and student support

As NOUN becomes increasingly digitised and datafied, NOUN will have access not only to a greater volume of student data but also a greater granularity of data, more nuanced data as well as a velocity of data. Learning Analytics as the collection, analysis and use of student data will allow NOUN to better *understand* students’ learning and the context in which their learning occurs, *explain* student learning,

*predict* students' probability of failing or dropping out, *prescribe* preventative or more appropriate actions and choices to students, as well allowing for the *personalisation* of pedagogy, assessment and student support. As such, Learning Analytics is foreseen to impact student retention and success, creating the opportunity for more appropriate and effective pedagogical and assessment strategies, increasing the quality of tuition, as well as the quality of NOUN graduates.

Learning Analytics will also allow staff (both academic and non-academic) *actionable insights* into students' learning and the effectiveness of institutional processes, pedagogies and assessment regimes, as well as resource allocation. Learning Analytics will allow academics, facilitators, student support and study centre staff to get a sense of students' progress and allow personalised interventions ranging from *administrative, cognitive and socio-psychological support*.

## 4.2 A robust digital infrastructure, adequate capacity and critical skills

On an institutional level, the implementation of Learning Analytics will contribute to the digital transformation of NOUN and provide additional impetus for a review and upgrade of institutional digital infrastructure, capacity and skills. The success of the design and implementation of Learning Analytics depends on the seamless integration of data sources into a centralised data warehouse allowing appropriate levels of access to different stakeholders. As such teaching and learning data will be democratised and made accessible in service of improving teaching, learning and student support.

The democratisation of teaching and learning data at NOUN will be supported by an informed professional development strategy for all staff providing them with the competencies and skills to teach and support students in an increasingly digital world.

## 4.3 Research and evidence-led course design and implementation

Integral to the design and implementation of Learning Analytics is a commitment to empirical and critical enquiry, whether regarding students' learning and the environments in which their learning occurs, or evidence informing the design and implementation of Learning Analytics. The implementation of Learning Analytics at NOUN will provide strategic impetus in foregrounding the scholarship of teaching and learning as a legitimate and essential characteristic of NOUN. Democratising access to data will provide much-needed support to researchers to investigate student retention and success at NOUN.

## 4.4 Enhancing the quality of teaching, learning and student support

From pre-enrolment/application admission to course registration, course content engagement, learner support, facilitation, and assessment - we need access to student data to be able to improve learner outcomes. With access to accessible student data, faculty, facilitators, student support and study centres will be able to identify barriers to students' learning, whether administrative, socio-

psychological and/or cognitive and allow staff to address these barriers in a timely and also personalised manner. International evidence suggests that Learning Analytics helps to identify students who are at risk of dropping out or failing and, as such, alerts a range of teaching and support staff to respond. Learning Analytics will provide evidence of elements in the curriculum that needs to be better explained, more appropriate pacing and scheduling of formative assessment opportunities, and the need to offer additional support to students who were identified as at risk of dropping out and/or failing. Not only will Learning Analytics increase the quality of teaching and learning, but also enhance the quality of graduates by deepening their learning and competencies in the outcomes of modules and programmes.

## 5. Drivers of learning analytics at NOUN

### 5.1 External drivers

i. **The National Universities Commission (NUC):** The national regulatory body is responsible for accrediting institutions and their programmes. Learning Analytics can facilitate improved learning outcomes, student engagement and satisfaction enhancing the institutional reputation that facilitates accreditation.

ii. **Competition:** Competitors with NOUN comprise conventional institutions offering distance learning programmes. LA will allow the institution to support students more effectively and appropriately, as well as increase students' and institutional engagement and responsiveness. Implementing LA at NOUN will significantly become the distinguishing feature of NOUN that separates NOUN from competitors.

iii. **Perception of ODL:** The perception of learning offered by ODL as second best persists. LA can facilitate raising the bar and allow NOUN to become known for its responsiveness and personalisation of student learning.

iv. **Funding:** The Federal Government is responsible for funding public higher education institutions and NOUN is a public institution. Higher education in Nigeria has witnessed consistently dwindling funds and the situation is likely to continue. There is the possibility of increasing costs being passed on to students and this has implications for NOUN as a university that prides itself in offering affordable higher education.

v. **Labour market:** The acceptability of NOUN graduates in the labour market is affected by how employable they are which is measured by their employability skills, quality of education, and sometimes by how long it took them to complete their course of study. Learning Analytics can facilitate

completion rates as well as identify qualities that students from conventional institutions do not possess e.g independence and discipline.

## 5.2 Internal drivers

The internal drivers for adopting LA include:

- i. **Quality of teachers and quality of service:** LA can help identify effective teaching strategies and areas for improvement, ultimately enhancing the overall quality of higher education and the services provided to students.
- ii. **Access to the data:** LA provides educators and administrators with access to valuable data on student performance, engagement, and learning patterns, enabling informed decision-making.
- iii. **Seamless integration of databases, levels of access to data, and clear procedures, organisation, and accuracy of data:** This underscores the importance of having a well-organised and integrated system for collecting, storing, and accessing learning data, ensuring accuracy and following clear procedures.
- iv. **Service quality delivery to students:** LA can contribute to tailoring learning experiences to individual student needs, thus enhancing the quality of services provided.
- v. **Staff satisfaction:** Implementing LA effectively can lead to better insights into student progress, allowing Faculty to adjust their teaching methods accordingly, and potentially leading to higher job satisfaction.
- vi. **Improved digital infrastructure (soft and hard) and capacity:** Adopting LA will require the development and enhancement of both software and hardware infrastructure, which can have positive effects on the institution's overall digital capabilities.
- vii. **Cost-effectiveness:** While initial investments might be required for implementing LA, its insights can lead to more efficient allocation of resources and improved student outcomes, contributing to long-term cost-effectiveness.
- viii. **Improved digital capabilities/skills:** Implementing LA can drive the development of digital skills among both students and staff, which are increasingly important in today's technology-driven world.

## **6. Enabling conditions for implementing learning analytics**

### **6.1 Institutional buy-in**

The design and implementation of Learning Analytics depend most importantly on the leadership, support, resource allocation and sanction by the NOUN staff and student disciplinary boards, Senate, and Management, both administrative and academic as well as students. Without the leadership and support of the highest levels of NOUN management, the design and implementation of Learning Analytics are bound to fail.

Published evidence on the design and implementation of Learning Analytics shows that it is crucial to not only involve all those that would be involved and/or benefit from learning analytics, but also to have institution-wide support. This will require a transparent and well-designed communication and awareness strategy not only to the university community but also to a range of external stakeholders and broader society.

### **6.2 Legal compliance**

Central to Learning Analytics is the collection, analysis and use of students' learning data in combination with other sources of information such as, e.g. demographic, prior learning data and data 'gifted' to the institution in personal communication, discussion forums, etc. The design and implementation of Learning Analytics at NOUN should be aligned with national legislation, as well as cognisance of international data protection regulations and frameworks, such as the GDPR.

### **6.3 A commitment to ethical practice**

An essential enabling element in the design and implementation of learning analytics is an understanding of the ethical issues in the collection, analysis and use of student data. While we already acknowledge that Learning Analytics should be aligned with national and international laws and legal provisions, the collection, analysis and use of student data fall within the official legal mandate of higher education to ensure the efficiency of teaching and learning provision. It is, however, important to recognise that just because something is legal, does not necessarily make it ethical. All NOUN staff should have a clear understanding of what the ethical collection, analysis and use of student data looks like and the requirements of staff, systems, processes and policies.

### **6.4 An enabling policy environment**

The design and implementation of Learning Analytics cut across several operational domains and strategic areas such as ICT, teaching and learning, the governance of data, the job descriptions of staff, the student disciplinary code, the digital transformation strategic project, etc. The design and implementation of Learning Analytics at NOUN provide an opportunity to critically engage with existing policies and projects to identify and address the implications of digitalisation and datafication of NOUN, but also to address the need for new policies to provide guidance.

## 6.5 Robust digital infrastructure, capacity and skills

Acknowledging that a significant part of teaching, learning and student support data is still analogue, the design and implementation of learning analytics require a robust digital infrastructure, hardware, instruments, as well as data analytical capacity and skills. Ensuring the quality and interoperability of data sources and formats, and analysing these data will have no effect if NOUN cannot communicate these analyses to a range of stakeholders in a range of stakeholder-appropriate formats.

A certain level of data literacy will be required of all staff depending on their needs and the use of student data to inform their actions.

There is a need for a critical audit and analysis of the current digital infrastructure, capacities and skills of all stakeholders who will be involved in the design and implementation of learning analytics and/or users of learning analytics.

## 6.6 Professional development and training

Currently there is not only a lack of shared understanding of what Learning Analytics is and can contribute to the quality and effectiveness of teaching and learning, but also an informed data literacy. Without effective communication and ensuring that all staff have a minimum understanding of Learning Analytics and a level of data literacy through a well-designed professional development program, the design and implementation of Learning Analytics will fail.

## 6.7 Research and evidence-led

Earlier, the role of research and the need for the design and implementation of Learning Analytics as part of the value contribution of learning analytics at NOUN, it is also important to recognise that research and evidence-led implementation are enabling factors. There is a significant body of published research on the design and implementation of Learning Analytics. The design and implementation of Learning Analytics at NOUN must be informed by this research. It is furthermore very important that the design and implementation process of Learning Analytics collects evidence of the process, the background to the decisions taken, the deliberations, concerns and developing a context-appropriate and responsive design and implementation process.

# 7. Constraints

## 7.1 Internal constraints

### 7.1.1 Lack of digital infrastructure

7.1.2 capacity and skills (digital literacy): The capacity and skills for digitalising across the institution continue to change and evolve with the needs of staff and students as well as the changing technological environment. Consequently, there is a need for a system of training and development



that takes these consistent changes into account. It is important to upskill and reskill staff and students about the innovations that would accompany the deployment of learning analytics at NOUN. Such areas of skills development include basic digital literacy skills such as

### 7.1.3 Policy congruence

• *What policies should change? What policies should be developed?* There is a need to identify existing policies at NOUN, and review them where necessary to reflect guidelines for data collection, archiving, access, and use. Furthermore, policies which NOUN does not have but are required for LA should be identified. Policies that are required for Learning Analytics include ODL policy, ICT policy, eLearning/online and blended learning policy, data privacy and integrity policy, and Ethics policy (for collection and use for research).

### 7.1.4 Sustainability

Potential political challenges within NOUN include ensuring continuity (after the tenure of the current Vice-Chancellor).

## 7.2 External constraints

**7.2.1 Internet Penetration in Nigeria:** The level of Internet penetration in the country can significantly impact the adoption of Learning Analytics. If internet access is limited or unreliable, it could hinder the effective implementation of online-based analytics systems, which rely on consistent and high-speed internet connections. The institution will need to ensure the availability of reliable internet connectivity.

**7.2.2 Cost of Data:** The cost of data and internet plans for users can be a significant barrier to the adoption of online platforms and services, including Learning Analytics. If data plans are expensive, it might discourage students, teachers, and institutions from fully engaging with digital platforms involved in tracking and collecting data.

**7.2.3 Access to Hardware/Software:** Learning Analytics often require appropriate hardware and software applications. Limited access to institutional technology infrastructure can hinder the successful implementation of LA.

**7.2.4 Political and Economic Macro-Environment:** The broader political and economic conditions in a country, like Nigeria, can influence the ability and willingness of educational institutions to adopt new technologies. Factors such as government policies, funding availability, and economic stability can impact the resources that the institution allocates to implementing Learning Analytics.

These external constraints highlight the importance of considering the local context and environment when planning to implement Learning Analytics. Addressing these challenges might involve improving internet infrastructure, providing affordable data plans, ensuring access to necessary hardware and software, and navigating the political and economic landscape to secure the necessary support for adopting LA at NOUN.

# 8. Stakeholder Involvement and Roles

## 8.1 External stakeholders

a. **The National Universities Commission** is responsible for regulating university education in Nigeria; the NUC is also responsible for the disbursement of government funding. Their decisions impact the university in a variety of ways.

b. **Federal Government Funding through the FME:** The Federal Government funds NOUN alongside other federal universities. Recently the FG has expressed fears that it may not be able to continue funding university education alone. The possibility of cost sharing between students and the government exists soon. While this pronouncement is originally addressed to conventional universities, it may well impact NOUN as a distance learning institution.

c. **Labour market** - the needs and expectations of the labour market constitute an impact factor in the delivery of NOUN programmes.

d. **Alumni:** Institutional alumni are increasingly becoming more relevant and essential to university operations since they have a proprietary interest in the activities of the university.

e. **Professional Bodies:** such as the Nursing Council, Nigerian Bar Association etc, are key external stakeholders because they influence the teaching and learning process at NOUN.

f. **Local Communities and LCDA:** who are keen to establish study centres are also important external stakeholders.

## 8.2 Internal stakeholders

### 8.2.1 Primary internal stakeholders

1. **Faculties, departments and academic directorates** - the academics in the departments, faculties and academic directorates are responsible for setting admission criteria for programmes. They are also responsible for the design and development of learning content and maintaining the overall quality of the instructional process.
2. **Study Centre Directors** - the study centres are the students' point of contact with the university where they stay in touch with administrative support staff, counselling staff and instructional facilitators. They also appear for summative examinations and assessments at the study centres. The directors are responsible for coordinating all the support services at the study centres
3. **DICT** - this directorate maintains the university website and issues students with institutional email addresses. They maintain the entire IT infrastructure of the university
4. **DMIS** - this Directorate manages all forms of students' data including admission, registration and payment records.

5. **DLSS** - this directorate coordinates the activities of all study centre directors and the student counsellors
6. **The Students** - the purpose of learning analytics is to improve students' learning experience. Thus, students are at the centre of the process since it is their information that is being harvested, processed and organised for institutional decision-making.
7. **Directorate of Academic Registry** - this is the Directorate responsible for validating all forms of students' prior learning experiences and ensuring the integrity of the process. They are also responsible for processing students' transcripts and ensuring that students are processed for final graduation.
8. **DEA - Directorate of Examinations and Assessment** - is responsible for managing the tutor-marked assignments over the semester as well as the end-of-semester examinations. The Directorate processes students' performance records and shares them with the MIS Directorate as necessary.
9. **Legal** - This unit is responsible for ensuring that ALL activities of the university operate within acceptable legal parameters.
10. **Directorate of Human Resources** - The Directorate of HR is responsible for ensuring that institutional capacity development needs are addressed in all sections of the university where they may be required.
11. **DLCMS** - Learning Content Management Directorate is responsible for ensuring that all instructional videos are posted online and available to the students. They are also responsible for maintaining the online discussion forum for the courses. This is the Directorate that provides students access to all instructional content in electronic format.
12. **Course Materials Development Unit** - responsible for the processing of courseware and print-based texts and ensuring that they are available in high-quality and accessible formats for different categories of learners.
13. **Quality Assurance:** This directorate is responsible for the overall quality assurance process in the university. The QAD will also be responsible for managing the monitoring and evaluation processes of the learning analytics project.
14. **Directorate of Linkages and Advancement** - responsible for alumni relations. This Directorate will provide critical information from alumni stakeholders. The alumni can provide critical information about the student experience and potential areas of improvement.

## 8.2.2 Secondary internal stakeholders

1. **Bursary:** The Bursary division is responsible for processing students' payments and maintaining the students' online wallets through the MIS, on the directive of management.
2. **Physical Planning & Development:** This directorate is responsible for maintaining the physical facilities available in the University and across study centres.
3. **Security and Transportation Unit:** the security unit provides physical protection for the facilities across the university centres, while the transportation section is responsible for logistics operations and the provision of utility vehicles.

### 8.2.3 Involving students

- a. Students are involved through the provision of various data types that they offer to the University, these include, directed, contractual, volunteered data
- b. A holistic view of students' data across their learning experience to provide an optimal experience over their life course as students of the university
- c. The design process of the learning analytics project requires the involvement of the students to ensure that they have buy-in and make input into the design for ethical considerations. This is in keeping with the principle of emancipatory research -" nothing about us, without us".

### 8.2.4 Challenges involving stakeholders

- a. Key stakeholders need to be aware of the goals and have a buy-in into the process
- b. Involving all possible stakeholders can become unwieldy
- c. There are potential overlaps in stakeholder functions, e.g. DLCMS and MIS. Some stakeholders are involved at different stages of the process. This needs to be clearly defined so that each stakeholder knows what they are doing, where and when.

### 8.2.5 Defining stakeholder responsibilities

The roles and responsibilities will derive from the primary functions of each stakeholder group. Additional responsibilities will emerge from the needs of the learning analytics programme and situation analysis of the implementation process.

## 9. Data Governance

### 9.1 Whose/what data will be collected?

- a. Application, admission and registration data
- b. Automated data gathering on the learning management system (LMS). Data on students' usage and engagement will be collected at different stages
- c. Data gathered from institutional surveys and research
- d. Digital data students share on the LMS in discussion forums
- e. Data on facilitation of learning and lecturer engagement will also be collected
- f. Other relevant data relating to students' experiences and the responsiveness of different units of the university. This relates to data involving payment issues, support processes and administrative concerns.

### 9.2 How will consent be obtained?

- a. Within the legal mandate of the institution, we are allowed to collect, analyse and use student data to increase the effectiveness of institutional processes and specifically teaching and learning. Additional consent does not need to be obtained for routine data

- b. Students will be informed at the initial engagement in module contexts, of what data are collected, analysed, and used, and for what purposes. Students will furthermore be made aware of the implications of posting personal information in discussion forums.
- c. If research is conducted on students' engagement patterns with the purpose of publication, ethical clearance will be required.

## 9.4 Who collects data?

These are the primary data collection units in the university such as:

- a. Management Information System (MIS)
- b. Information and Communications Technologies (ICT)
- c. Directorate of Examinations and Assessment (DEA)
- d. Learning Content Management Systems (LCMS)
- e. Academic Registry
- f. Advancement and Linkages
- g. Students Accounts
- h. Human Resources
- i. Academic Planning
- j. Researchers

## 9.5 Who can access the data?

Learning Analytics data will be accessible to different actors and agents in the university depending on their needs. Different actors will receive different levels of access to carry out their functions. For instance, the data accessible to lecturers in the faculties will vary from the data accessible to counsellors at the study centres. However, such access will require executive approval from the VC and the DVC TIR.

## 9.6 How will anonymity policies be applied to the processing and presentation of data?

Data can be used as aggregated data where anonymisation is not applicable. However, where personalised data are processed and presented, adequate care would be taken to ensure that privacy issues are considered to ensure that students do not come to harm or abuse. One means of ensuring this is to ensure that only specific institutional actors have access to such personalised data and such access is sanctioned at the highest level.

## 9.7 Will data be shared with researchers?

The data can be shared with researchers within the institution after the necessary institutional ethical requirements have been satisfied.

## 9.8 Will data be shared with external parties under what conditions?

Yes! Data can be shared with external parties under the following conditions:

- a. Under the Freedom of Information Act - this will most likely be aggregated data
- b. Regulatory requirements from the National Universities Commission - this will also relate to aggregated data.
- c. On the ruling of a court - this may relate to both aggregated and personalised data.

## 10. Monitoring and evaluation

It was already acknowledged and emphasised earlier that the design and implementation of Learning Analytics at NOUN will be research and evidence-led. Aligned with this core principle, and value contribution, is the role of continuous monitoring and evaluation of the design and implementation of Learning Analytics.

What would/should be the criteria for the monitoring and evaluation of the design and implementation of learning analytics at NOUN?

- It is important that the monitoring and evaluation take cognisance of published evidence on the design and implementation of Learning Analytics. As such, the design and implementation of learning analytics at NOUN should be evaluated against the published evidence. This does not mean, however, blindly following evidence from Global North contexts, but using the insights and lessons learned from these designs and implementations as guiding lights.
- Secondly, the design and implementation of Learning Analytics at NOUN should be monitored and evaluated against the stated principles and values at the beginning of this framework. These principles and values are specific to the intentions and visions of what Learning Analytics in the context of NOUN will want to be held accountable to.
- Thirdly, this framework is putting forward a clear value contribution and as such, the design and implementation of Learning Analytics at NOUN should be measured against this stated value contribution, and not against externally developed criteria.
- Fourthly, there are generally accepted principles and criteria pertaining to the monitoring and evaluation of implementation processes (including principles of project management), and these will act, lastly, as guidance to inform the monitoring and evaluation of the design and implementation of Learning Analytics at NOUN.

## 11. Who will drive learning analytics and where will it be located at NOUN?

LA at NOUN is foreseen to inform the design of learning experiences and the provision of personalised research-based support to academics and students. Currently, the design of learning experiences is

found at the intersection of the unit Course Material Development and the Learning Content Management Systems. The digitisation of teaching and learning suggests that it would increasingly become impossible to separate course material development and the facilitation of learning on the LMS. Subsequently, it is crucial for the success of LA at NOUN to have an integrated research-led approach to the design, development and delivery of learning experiences.

LA comprises research, capacity building and a sound understanding of factors impacting the design of effective teaching and learning. It is crucial to emphasise that LA is at its core pedagogical while relying on a range of expertise such as instructional design, data management, data analytics, disciplinary knowledge, and student support. It is therefore crucial to ensure an agile, integrated and responsive process of data-led instructional design and the facilitation of learning.

The positioning of LA is therefore of utmost importance. It is envisaged that executive oversight of Learning Analytics at NOUN will be provided by the DVC TIR as the Institutional Lead. Furthermore, we propose the following:

1. A well-resourced **Learning Intelligence Hub (LIH)**, comprising data science and instructional design expertise;
2. A seamless integration of data and clear processes for access to data;
3. Clear procedures on the roles, responsibilities and value contributions of several departments such as Learner support, DLCMS, QA, MIS and CMDU; and,
4. The core functions of this unit will be to:
  1. aggregate and disseminate data to inform the design and facilitation of learning;
  2. undertake pedagogy-led research
  3. evidence-led learning experience design
  4. Staff development and training
  5. Learning analytics advocacy

It is clear that the *initial* location of the Learning Intelligence Hub is of cardinal importance. It is furthermore important that the envisaged Learning Intelligence Hub primary value is in creating and sustaining the appropriate *flow of data* throughout NOUN in service of data-informed teaching, learning and student support. As such, the Learning Intelligence Hub is primarily an operational and strategic centre and as such will require not only to be located 'where the learning happens' but also where the Learning Intelligence Hub can add the most timely and data-informed intervention. The following aspects of the envisaged Learning Intelligence Hub informed the recommendation regarding its location:

- 11.1 Learning analytics is, at its core, an *academic* matter providing teaching and support staff, as well as students, with actionable intelligence.
- 11.2 The DLCMS is core to not only the digitisation of teaching and learning at NOUN but also the collection of students' learning behaviour data and progress in their learning.
- 11.3 Approval of a proposed recommendation to have all the learning resources (including copies of the official study materials) stored on the course sites on the LMS, creates

vast opportunities to create learning experiences that are evidence-informed through careful and appropriate instructional design.

- 11.4 The Learning Intelligence Hub is not a data centre but interfaces with the envisaged centralised data centre at NOUN.

## 12. Envisaged design and implementation process

This first draft framework is the result of a process as explained in the Background section of this framework. As such, it qualifies as the first step in the design and implementation process of Learning Analytics at NOUN. During the consultative processes resulting in this first draft framework, it became very clear that there is firstly a need for more research and exposure to Learning Analytics at institutions such as the Open University (UK) and the University of Pretoria. There is also an urgent need to establish the implications of the Nigerian laws pertaining not only to the mandate of higher education to collect and use data within the scope of their operational mandate but more specifically, the implications for the use of personal student data.

As the design and implementation of Learning Analytics at NOUN will link to and have to be aligned with existing policies, frameworks and strategies at NOUN, it is crucial to establish not only a database of policies that may inform or be impacted by the implementation of Learning Analytics but also to point to gaps in existing policies, strategies and frameworks. It will also link to and be aligned with inter(national) privacy and data laws and policies. Figure 1. below shows the process flow which student data will pass through in terms of data collection, processing and analysis, storage and security, Use, sharing, and Maintenance and governance.



Figure 1: Global Process flow diagram for Learning Analytics at NOUN



The below list of key actions, stages or critical points in the design and implementation of Learning Analytics at NOUN is not, at this stage, comprehensive, but should serve as a basis for further interrogation. Many of these actions or stages can and possibly should happen at the same time while other steps, actions and stages follow one another.

### Preparation phase

- Draft first framework finalised and circulated to the NOUN community
- Institution-wide awareness of learning analytics - designing a communication and change strategy including reaching students
- Exposure to/consultation with key higher education institutions who have already implemented and institutionalised learning analytics - e.g. the Open University (UK) and the University of Pretoria
- Alignment with national and international legislation and regulation
- Engagement with key stakeholders (e.g., students, academics, facilitators, study centres, ICT, quality assurance, etc.) regarding their expectations of learning analytics, data, capacity and skills needs
- Create processes for collecting and collating institution-wide feedback and insights as an impetus to rework/amend the framework
- The final round of institution-wide consultation
- Each stakeholder is to provide a list of capacity and skills needed, envisaged structural changes needed, adaptations of job descriptions, cost analysis, budgets for the implementation of learning analytics
- Data audit: what data are stored where, in what format, who has access to the data under what conditions, etc.
- Capacity and Skills audit: which of the following skills are available and where they are located in the institution, adequacy, and capacity building needs- instructional design, learning technology, programmers, student counselling, advanced statistical analysis and data science.
- Learning analytics task team to compile the final framework as well as a detailed analysis of costs, budgets
- Finalise the first Framework
- Approve Framework by Senate
- The learning analytics task team to suggest a phased implementation process working with three high-impact courses (high enrolment, high dropout, low student success, and evidence of online pedagogy/digital footprints)

### Pilot phase (three courses)

- Identify three courses to pilot the learning analytics project.
- Get approvals from relevant stakeholders.
  - Hosting all materials on DLCMS and no longer on Courseware
  - Locating the Learning Intelligence Hub at DLCMS
  - Allocating key implementation staff to set in motion processes
  - Appointing a project manager for the LA Project
  - Providing the marked TMAs to students/faculty and counselling
- Get ethical clearance to document the process as research participants (both staff and students).

- Get the profile of the successful and 'at-risk' NOUN student in three courses.
- Develop a process map to tell the story of how the flagging of issues will happen, who will be informed (sort of a track and trace LA ticketing system), and how the system will respond to flags.
  - Design response levels, access to data levels, algorithms needed, etc.
  - Develop automated TMA feedback to students depending on the questions they got wrong.
  - Develop automated TMA feedback to faculty and instructional designers at DLCMS/Courseware.
  - Develop a process flow chart for how data is to be pulled and pushed including levels of access.
- Provide staff and student training on learning analytics.
- Map the pedagogical questions and data needs in the specific disciplinary context of each module.
- Storyboard learning analytics in each of the three (3) courses with key stakeholders e.g., ICT, MIS, mapping key data moments, possible changes in assessment strategies, linkages to study centres, facilitators, etc.
- Communicate the project results to stakeholders, especially students.
- Full implementation of the learning analytics project in the second semester

#### Institution-wide phase

- Evaluation of first implementation and implications for wider-scale roll-out
- Add high-impact courses
- Institution-wide rollout of LA

## 13. Conclusion

Learning Analytics, as research focus and practice, has matured since its emergence in 2011 and more than a decade later, there is substantial evidence that learning analytics can greatly enhance the design and delivery of equitable, effective and appropriate learning experiences to increasingly diverse student populations. Evidence also shows that learning analytics allows institutions to offer more appropriate and holistic student counselling and support to students, as well as empowering students with information to make better informed decisions regarding their learning approaches and strategies.

The framework is the outcome of a consultative process initiated by the Vice Chancellor in 2022 and outlines not only the alignment of the implementation of Learning Analytics to the mission, vision and Strategic Plan of NOUN (2013-2017), but also to the Blueprint and Implementation Plan of the Federal Ministry of Education (2002). The framework is guided by seven principles that encompass and guide the implementation of Learning Analytics at NOUN. As such the framework and its principles are the first such framework on the African continent, and, in this format, the first documented evidence of a blueprint for the implementation of Learning Analytics in a distance education context in the Global South.

## 14. Process Timeline

The following is a tentative outline of how the design and implementation process can evolve.

Action	Envisaged completion date
Draft of first framework finalised and circulated to the NOUN community. Invite feedback by end of November 2022	End of October 2022
Engagement with key stakeholders (e.g., students, academics, facilitators, study centres, ICT, quality assurance, etc.) of their expectations of learning analytics, data, capacity and skills needs	End of November 2022
Institution-wide awareness of learning analytics - designing a communication and change strategy including reaching students	End of November 2022
A detailed analysis of costs, budgets	Middle December 2023
Exposure to/consultation with key higher education institutions who have already implemented and institutionalised learning analytics - e.g. the Open University (UK), the University of Pretoria	End of April 2023
Alignment with national and international legislation and regulation	Middle of November 2023
Receive input from stakeholders	End of August 2023
Collate input from stakeholders and finalise the framework	Middle December 2023
Each stakeholder is to provide a list of capacity and skills needs, envisaged structural changes needed, adaptations of job descriptions, cost analysis, budgets for the implementation of learning analytics	Middle December 2023
The learning analytics task team to suggest (most probably) a phased implementation process working with <b>three courses (high enrolment, high dropout, low student success and online pedagogy/digital footprints)</b> Learning analytics task team to compile the final framework as well as a detailed analysis of costs, budgets, draft proposal to the Vice-Chancellor	End of February 2024

<ul style="list-style-type: none"> <li>● Identification of the three (3) courses complete</li> <li>● Getting ethical clearance to document the process as research participants (staff and students)</li> <li>● Staff and student training</li> <li>● Mapping the pedagogical questions and data needs in the specific disciplinary context of each course</li> <li>● Story-boarding learning analytics in each of the three (3) courses with key stakeholders e.g., ICT, MIS, mapping key data moments, possible changes in assessment strategies, linkages to study centres, facilitators, etc.</li> <li>● Design response levels, access to data levels, algorithms needed, etc.</li> <li>● Institution-wide and module specific communication to stakeholders especially students</li> </ul>	March to May 2023
Implementation of learning analytics in three (3) courses	Second semester 2024
Evaluation of first implementation and implications for wider-scale roll-out	End of October 2024
Add high-impact courses	First and second semester 2025
Institution-wide rollout of LA	Second semester 2025

## 15. Next steps

- Form a team responsible for researching and implementing the Learning Analytics Framework.
- Identify key stakeholders and roles for the creation of the Learning Intelligence Hub.
- Develop a project plan and timeline for implementing the Learning Analytics Framework.
- Form a team responsible for developing and maintaining the secure, centralised data portal with proper access protocols.

### Counselling

- Form a team to lead the digitisation of counselling services.
- Develop an e-counselling platform and integrate it with students' profiles.
- Design automated prompts and reporting schedules for counselling support.

### Course Materials

- Transition course material distribution from courseware site to the LMS.
- Develop a communication plan to inform students and faculty about the change.
- Ensure all necessary resources are available on the LMS course sites.

- Establish a process for using course content/materials on the LMS as the foundation for printed course materials.
- Communicate the new process to Print Production and faculty members.

#### **Learning Experience Design**

- Form a team to draft the institutional framework/policy for learning experience development.
- Assess instructional design capacity and plan for necessary reskilling.
- Create a general online learning design template/structure for modules.
- Align institutional structures and processes to integrate instructional design across NOUN.
- Establish a cyclical data-informed process for module redesign based on student behaviour, performance, and feedback.
- Implement a system to make students' marked TMAs accessible on the LMS for students, lecturers, and counsellors
- Develop an alert system based on TMA results to notify students, faculty, and counsellors of necessary actions.

#### **Skills in Data Management and Analysis**

- Conduct an institutional capacity and skills audit to identify expertise needs
- Identify relevant skills needed in Data Analysis, Programming, Data Management, and other areas.
- Create a professional development and training plan to build these skills among staff and students.

#### **Locating and Resourcing the Learning Intelligence Hub**

- Identify existing and future infrastructure provisions that can be leveraged for learning analytics platforms.
- Ensure smooth integration and interoperability of the platforms.
- Set up the Learning Intelligence Hub within the DLCMS for the initial three years, with a plan for its future location and functions.
- Define the core team for the Learning Intelligence Hub, including roles, responsibilities, and interdependencies with other departments.
- Utilise the results of the capacity and skills audit to recruit and fill positions within the Learning Intelligence Hub
- Determine appropriate oversight mechanisms involving all stakeholders.

#### **Policy Development on Ethical Data Use and AI use**

- Formulate a policy for the ethical collection, analysis, and use of student data at NOUN.
- Develop a policy for the deployment and use of Generative Artificial Intelligence (AI) at NOUN to guide its implementation in teaching, learning, support, and research.