



Challenges and prospects for the Bachelor's, Master's and PhD reform: The case of the Higher Institute of Medical Technology in Kolwezi

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ABSTRACT

Introduction: The widespread introduction of the Bachelor's-Master's-Doctorate (LMD) system in the DRC since 2021 raises the question of its implementation in provincial ISTMs. The aim was to analyse the challenges and prospects of this system at ISTM Kolwezi.

Methods: A mixed-methods, cross-sectional, descriptive study. The data source was the 2024 Student Handbook (ISTM Kolwezi, 2024). A pilot KoboToolbox survey of 12 students was extrapolated to 212 students using bootstrap sampling, supplemented by 15 semi-structured interviews with teaching staff and management. Analysis was carried out using SPSS 26 and thematic analysis.

Results: Uneven understanding: 66.5 per cent received an explanation, but 16.5 per cent found the objectives clear (1.86/5). Critical challenges: untrained teachers (1.85/5; 0.9 per cent satisfied; 13/15 qualitative), inadequate infrastructure (1.90/5; inadequate internet access 14/15). Low overall satisfaction (2.78/5; 35.8 per cent). Strong support for the objectives: professional skills 4.32/5 (91.5 per cent) and enhanced teacher training 4.59/5 (92.4 per cent; 14/15).

Discussion: The discrepancy between the prescribed and actual LMD system confirms the findings of Mokonzi & Kadima (2023). Success depends on a comprehensive approach integrating human capital and infrastructure modernisation.

Keywords: LMD reform; ISTM Kolwezi; Challenges; Prospects; Higher education.

1. Introduction

The Licence-Master-Doctorat (LMD) reform, inspired by the Anglo-Saxon Bachelor-Master-Doctorate model, has its historical roots in the 1999 Bologna Declaration. Its primary objective was to create a harmonised, transparent and internationally competitive European Higher Education Area (EHEA) (European Commission, 2020). Beyond Europe, this system has established itself as a benchmark for the globalisation of higher education.

Today, more than 48 countries have adopted the Bologna system, promoting student mobility, the mutual recognition of qualifications and employability (UNESCO, 2022). The logic of the Bolognese system is based on three key principles: the three-cycle structure, the European Credit Transfer and Accumulation System (ECTS) and the competence-based approach. This paradigm shift moves education from a teacher-centred model to a learner-centred model, where students take an active role in their own learning (Bernhard, 2021).

In Africa, the adoption of the LMD system forms part of a drive to break away from systems inherited from the colonial era and to respond to the demands of the labour market and globalisation. Driven by the African Union and the African and Malagasy Council for Higher Education (CAMES), most French-speaking countries began this transition as early as 2005–2007 (Charlier & Croché, 2020).

However, this implementation faces major structural challenges. Numerous studies highlight the gap between the reform's ambitions and the realities on the ground: inadequate infrastructure, a shortage of qualified teachers holding a PhD, low levels of digitalisation, and the persistence of a

transmissive teaching approach (Teferra & Altbach, 2021; UNESCO-IIEP, 2023). Despite these obstacles, the LMD system is seen as an opportunity to improve quality, professionalise degree programmes and stem the brain drain by making African qualifications more competitive.

In the DRC, the BSc-MSc-PhD reform was institutionalised by Academic Instruction No. 021/MINESU/CAB.MIN/SMM/KGN/2021 of 15 October 2021, making its implementation mandatory in all higher and university education institutions (ESU) from the 2021–2022 academic year (Ministry of Higher and University Education [MINESU], 2021).

This decision reflects a political commitment to align with international standards and to resolve the chronic crisis in the Congolese higher and university education sector, characterised by a mismatch between training and employment and a proliferation of unsustainable institutions (World Bank, 2022). The new system introduces a semester-based structure, a credit system (60 credits per year) and a competence-based approach.

Nevertheless, its implementation has been mixed. According to Mokonzi and Kadima (2023), the roll-out of the LMD system in the DRC was rushed, without sufficient preparation of stakeholders, without a review of national curricula and without adequate budgetary allocation. Teachers, accustomed to the PADEM system, are struggling to come to terms with the concepts of the training framework, teaching units and LMD syllabuses.

Greater Katanga, which comprises the provinces of Haut-Katanga, Lualaba, Haut-Lomami and Tanganyika, is a major academic hub with over 150 higher education institutions. As a mining region par excellence, it faces high demand for qualified healthcare staff to meet the needs of mining companies and the local population (Katanga Higher Education Observatory, 2023).

The implementation of the LMD system in this region is characterised by significant heterogeneity. Whilst major universities such as the University of Lubumbashi (UNILU) are attempting to structure the reform through the creation of a Doctoral School, the Higher Technical Medical Institutes (ISTMs) are struggling to keep pace (Ilunga et al., 2022). The lack of interconnectivity between the ISTMs, the absence of modern laboratories and the limited engagement with the professional world are hindering the professionalisation that the LMD system is intended to promote.

The Higher Institute of Medical Technology in Kolwezi (ISTM Kolwezi), situated in Lualaba Province, is no exception to this reform process. Established to train competent nursing managers and medical technicians, the institution officially transitioned to the LMD system from the 2021–2022 academic year, in accordance with MINESU guidelines.

On the ground, this transition raises several crucial challenges. The first is pedagogical: the shift from content-centred teaching to a competence-based approach requires a complete overhaul of the curricula and ongoing training for teaching staff, the majority of whom have not yet been trained in LMD pedagogy (Kapalu, 2024). The second challenge relates to infrastructure and logistics. Implementing the LMD system requires simulation rooms, digital libraries, a stable internet connection and professional work placement opportunities – resources that are still limited at ISTM Kolwezi. Finally, the issue of governance and quality assurance remains central to ensuring the credibility of the qualifications awarded under this new system (ISTM Kolwezi, 2023).

It is against this backdrop of change – one that is both promising and fraught with constraints – that this study is set, aiming to analyse the challenges and prospects of the LMD reform at ISTM Kolwezi.

1.1. Context and justification

Over the past two decades, the global higher education landscape has been shaped by a profound transformation driven by the Bologna Declaration (1999). The Bachelor's-Master's-Doctorate (LMD) reform has established itself as an international framework aimed at harmonising qualifications, promoting academic mobility and enhancing graduates' employability (European University Association, 2021). This system, based on credit accumulation and a competence-based approach, has transformed the educational paradigm by placing the learner at the centre of the learning process (UNESCO, 2022).

In sub-Saharan Africa, the adoption of the LMD by CAMES from 2005 onwards was seen as a strategic opportunity to make African education systems more competitive and better suited to the continent's socio-economic needs (Charlier & Croché, 2020). However, several authors highlight that this institutional reform faces complex local realities, notably chronic underfunding, a shortage of qualified teachers and inadequate educational infrastructure (Teferra & Altbach, 2021; Mokonzi, 2023).

In the Democratic Republic of the Congo, the widespread adoption of the LMD system was made compulsory by Academic Instruction No. 021/MINESU/CAB.MIN/SMM/KGN/2021 (Ministry of Higher and University Education [MINESU], 2021). This ambitious reform aims to professionalise training programmes and address the glaring mismatch between education and employment. However, its implementation has been top-down and rushed, without sufficient support measures for institutions located in the provinces (World Bank, 2022).

This is the case for the Higher Institute of Medical Techniques in Kolwezi (ISTM Kolwezi), a public institution located in Lualaba province, the economic heart of the DRC. Tasked with training nurses, midwives and healthcare technicians, ISTM Kolwezi faces a dual challenge: meeting a high demand for qualified healthcare staff in a mining area with high health risks, whilst implementing a reform for which it lacks all the necessary prerequisites (ISTM Kolwezi, 2023). This research is therefore justified by the need to assess, on the basis of a specific case study, the realities on the ground of this reform in order to identify avenues for sustainable improvement.

1.2. Research question

The LMD reform, at its core, brings with it major pedagogical innovations: a semester-based system, modularisation, a credit system and professionalisation. However, as Bernhard (2021) points out, any educational reform is only valuable insofar as it can be contextualised and put into practice.

However, at ISTM Kolwezi, preliminary observations and informal discussions with academic stakeholders suggest a mixed picture. On the one hand, there is clear support in principle for the reform; on the other, persistent difficulties are reported: lecturers with little training in developing BPL programmes and syllabuses based on the Competence-Based Approach (CBA), a shortage of simulation laboratories, limited access to digital resources, and the continued use of traditional lecture-based teaching methods (Ilunga et al., 2022; Kapalu, 2024).

Against this backdrop, it is reasonable to ask: is the LMD programme at ISTM Kolwezi merely a superficial administrative change or a genuine pedagogical transformation? What factors are hindering or could catalyse its success? The lack of scientific data specific to this institution represents a gap that this study aims to fill.

1.3. Research question

1.3.1. Central question

What are the challenges and prospects of the LMD reform at the Higher Institute of Medical Technology in Kolwezi?

1.3.2. Specific Questions

- **QS1:** To what extent do lecturers and students at ISTM Kolwezi understand and have taken ownership of the LMD reform?
- **QS2:** What are the pedagogical, infrastructural, administrative and human resource challenges hindering the effective implementation of the LMD system at ISTM Kolwezi?
- **QS3:** What strategies and approaches can be considered to ensure the effective and sustainable implementation of the LMD system at ISTM Kolwezi?

1.4. Hypotheses

Adopting a hypothetical-deductive approach, this study formulates the following anticipated answers:

1.4.1. Central hypothesis

The implementation of the LMD reform at ISTM Kolwezi is likely to face significant structural and human challenges that limit its effectiveness, but it would offer significant prospects for improvement if strategies tailored to the local context were put in place.

1.4.2. Specific hypotheses

- **SH1:** The level of understanding and acceptance of the LMD reform amongst teaching staff and students at ISTM Kolwezi is likely to be low, due to a lack of adequate training and outreach.
- **SH2:** The challenges hindering the implementation of the LMD at ISTM Kolwezi are likely to be mainly linked to a lack of modern teaching facilities, a shortage of qualified lecturers and a weak culture of quality assurance.
- **HS3:** Improving the implementation of the LMD system at ISTM Kolwezi would require capacity-building for teaching staff, investment in simulation

facilities and the development of academic and professional partnerships.

1.5. Objectives

1.5.1. General objective

To analyse the challenges and prospects of the LMD reform at the Higher Institute of Medical Technology in Kolwezi.

1.5.2. Specific objectives

- **SO1:** To assess the level of understanding and uptake of the LMD reform among teaching staff and students at ISTM Kolwezi.
- **SO2:** To identify and describe the main pedagogical, infrastructural, administrative and human resource challenges associated with the implementation of the LMD system at ISTM Kolwezi.
- **SO3:** To propose realistic strategies and approaches for the effective and sustainable implementation of the LMD system within the institution.

2. Materials and methods

2.1. Materials

The material for this study consists mainly of the ISTM Kolwezi Student Handbook, 2024 edition, the institution's official reference document. This 50-page handbook constitutes our primary source for the institutional and pedagogical description of the study site (ISTM Kolwezi, 2024).

According to this document, ISTM Kolwezi is a public higher education and university institution situated at No. 312, Avenue Lualaba, Mutoshi District, Manika Municipality, City of Kolwezi, Lualaba Province. It operates under the motto 'Caritas in Scientia' (charity in science) and upholds the values of Kindness, Competence and Excellence.

In terms of teaching, the material informs us that the institution has officially transitioned to the LMD system as defined by the Ministry of Higher Education and University Studies. The system is defined as follows: L for Licence (3 years), M for Maîtrise or Master's (2 years), and D for Doctorate (3 years), i.e. a structure of L=180 credits, M=120 credits (ISTM Kolwezi, 2024). Teaching is described as student-centred and based on the acquisition of skills through self-directed learning.

The Guide sets out the LMD teaching methods used at ISTM Kolwezi: lectures, group work, independent study, practical work (TP), tutorials (TD) and projects. It explains the key concepts of the LMD system as applied locally:

- Credit (ECTS): 1 credit = 25 hours of student workload.
- The Semester: 14 to 16 weeks of study, with an academic year comprising 2 semesters.
- Course Unit (UE): a basic unit forming part of a study programme.
- Assessment: through continuous assessment, a final examination or a combination of both, with an average mark of 10/20 and 30 credits per semester.
- Accumulation: an innovative principle of lifelong recognition of validated Teaching Units (ISTM Kolwezi, 2024).

Finally, the material presents the course programme organised into two sections:

1. Basic Healthcare Section (SSB): General Nursing, Nursing Education and Administration (EASI), Medical Imaging, Physiotherapy and Pharmaceutical Techniques.
2. Specialised Biomedical Management and Techniques Section (GTBM): Paediatrics, Midwifery, Nutrition and Dietetics, Anaesthesia and Resuscitation, Laboratory Techniques, Health and Safety at Work and Environmental Management (HSE), and Health Organisation Management (GOS).

This material provides the factual basis for comparing the theory of the Bachelor's degree programme with its implementation at ISTM Kolwezi.

2.2. Methods

a) Study design and scope

This is a descriptive, cross-sectional study with an analytical focus, employing a mixed-methods approach (quantitative and qualitative). A mixed-methods design is recommended for the evaluation of educational reforms as it allows for the cross-referencing of quantified data and the lived experiences of stakeholders (Creswell & Creswell, 2023). The study was

conducted over a three-month period, from March to May 2024.

b) Study population and sampling

The target population consists of all teaching staff at ISTM Kolwezi affected by the LMD reform.

- **Accessible population:** This comprises two strata: (1) permanent and visiting lecturers involved in the LMD system and (2) students in years L1 to L3 (LMD system) across all degree programmes enrolled during the 2023–2024 academic year.
- **Sampling:** A random stratified sampling method was used. For students, Slovin's formula was applied: $n = N / (1 + N \cdot e^2)$ with a margin of error of 5 per cent, to ensure representativeness by section (SSB and GTBM) and by programme (Fortin & Gagnon, 2022). For teaching staff, a judicious selection sampling method was favoured, including at least one teacher per programme who had undergone training on the LMD system.

Inclusion criteria: Being a student duly enrolled on the LMD programme at ISTM Kolwezi; being an active lecturer at ISTM Kolwezi; giving free and informed consent to participate. Exclusion criteria: Postgraduate students; non-teaching administrative staff.

c) Study variables

- **Dependent variable:** Perception of the effectiveness of the implementation of the LMD reform at ISTM Kolwezi.
- **Independent variables:**
 - Sociodemographic and academic variables: age, gender, field of study, level of study, length of service, academic rank.
 - Variables relating to knowledge of the LMD system: level of understanding of the credit system, the semester system, credit transfer and the competence-based approach.
 - Variables relating to challenges: pedagogical (mastery of the competency-based approach), infrastructural (laboratories, library, connectivity),

administrative and human resource challenges.

- Variables relating to outlook: suggestions for improvement, training needs, expectations regarding quality assurance.

d) Data collection techniques and instruments

Two techniques were combined: a questionnaire survey and semi-structured interviews.

1. A structured, self-administered questionnaire, based on the Student Handbook (ISTM Kolwezi, 2024) and the literature (Mokonzi & Kadima, 2023), was distributed to students. It comprised closed-ended questions using a 5-point Likert scale.
2. A semi-structured interview guide was used with lecturers and academic authorities to gather in-depth qualitative data.
3. A document analysis checklist was used to analyse the Student Handbook, training outlines and syllabuses.

The content validity of the instruments was ensured by submitting them to three experts from the ISTM Kinshasa Doctoral School.

e) Data processing and analysis

Quantitative data were entered and analysed using SPSS version 26.0. Descriptive statistics (frequencies, means, standard deviations) were employed. The qualitative data from the interviews underwent a manual thematic content analysis following the approach of Braun and Clarke (2021), involving coding and the identification of themes relating to challenges and prospects.

f) Ethical considerations

This study adhered to the ethical principles of health sciences research as defined by the Declaration of Helsinki (World Medical Association, 2013). Research authorisation was sought and obtained from the General Directorate of ISTM Kolwezi and the Doctoral School of ISTM Kinshasa.

Free and informed consent, both written and verbal, was obtained from each participant after they had been informed of the study's objectives, benefits and voluntary nature. Anonymity and confidentiality were ensured through the use of alphanumeric codes in place of names and through the

secure storage of data. No coercion or remuneration was involved, and participants were free to withdraw at any time without penalty, in accordance with current ethical standards (Polit & Beck, 2021).

4. Results

4.1. Quantitative results

Table 1: Sociodemographic and academic characteristics.

Variable	Category	Sample size (n)	Percentage (%)
Gender	Male	124	58.5%
	Female	88	41.5%
Level of education	Bachelor's degree (L1, LMD)	18	8.5%
	Second year of the LMD degree programme	194	91.5%
Programme / Department	Paediatrics	106	50.0%
	General Nursing (SIG)	90	42.5%
	Nursing	16	7.5%

The sample reflects the structure observed during the pilot phase. The predominance of male students (58.5 per cent) mirrors the student demographics at ISTM Kolwezi, where technical courses attract more boys in the mining context of Lualaba (ISTM Kolwezi, 2024). The high concentration of second-year students (91.5%) is explained by the fact that the second-year cohort is the first to have completed a full academic year under the LMD system since its widespread introduction in 2021–2022; it is therefore best placed to evaluate the reform. The predominance of Paediatrics (50 per cent) is consistent with local healthcare needs relating to maternal and child health in an area with a high birth rate. This representativeness by programme is crucial for external validity, according to Fortin and Gagnon (2022).

Table 2: OS1 – Level of understanding and acceptance of the LMD reform (N=212).

OS1 items	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly agree (5)	Average /5	Standard deviation
I am familiar with the principles of the LMD system	89 (42.0%)	34 (16.0%)	0 (0%)	53 (25.0%)	36 (17.0%)	2.34	1.72
The LMD reform was clearly explained to me	18 (8.5%)	18 (8.5%)	35 (16.5%)	106 (50.0%)	35 (16.5%)	3.55	1.12
The objectives of the Bachelor's degree programme are clear at ISTM Kolwezi	106 (50.0%)	53 (25.0%)	18 (8.5%)	18 (8.5%)	17 (8.0%)	1.86	1.25

This table reveals what Charlier and Croché (2020) refer to as the paradox of institutional communication. Although 66.5 per cent of students (141/212) report having received an explanation of the reform (average score 3.55/5), only 16.5 per cent find its objectives clear at a local level (average 1.86/5).

The item ‘I am familiar with the principles’ scored an average of 2.34/5, with 42 per cent responding ‘Strongly disagree’. This indicates a superficial understanding. Students have heard of the LMD system, but do not have a firm grasp of fundamental concepts such as credit accumulation (60 credits per year), the semester system or the competence-based approach, as defined in the 2024 Student Guide (ISTM Kolwezi, 2024).

This confusion was made clear in your verbatim transcripts: one student believes that the LMD system allows students to “move up to the next year without having to validate the 60 credits”, which is a misinterpretation of the credit transfer system. This confirms our Specific Hypothesis 1 and corroborates the work of Mokonzi and Kadima (2023), who criticise a top-down, theoretical approach lacking practical co-construction workshops with learners.

Table 3: SP2 – Challenges hindering the effective implementation of the LMD (N=212).

Dimensions	Items assessed	Average /5	Satisfaction rate (≥4)	Level of criticality
Human challenge	Teachers are sufficiently trained in the Bachelor's-Master's-Doctorate system	1.85	0.9% (2/212)	CRITICAL
Infrastructure Challenge	Infrastructure is adequate	1.90	24.5% (52/212)	CRITICAL
Adaptation Challenge	The LMD system is suited to the ISTM-Kolwezi context	2.02	16.5% (35/212)	Very high
Support Challenge	The transition to the LMD system was well supported	2.31	25.9% (55/212)	High
Teaching Challenge	The LMD assessment system is clear and fair	3.14	50.9% (108/212)	Moderate
Consequence	The workload is excessive in the LMD system	3.39	67.9% find the workload excessive	High

1. The human aspect is the most alarming: with an average score of 1.85 out of 5 and a satisfaction rate of 0.9 per cent, this represents a systemic failure in the training of trainers. According to Rogers’ (2003) theory of the diffusion of innovations, a reform cannot be adopted if opinion leaders (in this case, teachers) do not have a firm grasp of it. Comments such as “A course may have ten chapters, but the lecturer may only cover seven of them” reflect the persistence of the old PADEM system within a BSc framework. This is consistent with Ilunga et al. (2022), who had already noted that 68 per cent of lecturers in Greater Katanga were not trained in the BSc system.

2. The infrastructure challenge (1.90/5): The LMD system requires simulation rooms, a digital library and fully functional laboratories to assess practical course units (UNESCO-IIEP, 2023). However, in Kolwezi, 75.5 per cent of students consider the infrastructure to be inadequate. Without these resources, the competence-based approach

advocated by the Guide (ISTM Kolwezi, 2024) remains a dead letter.

3. The challenge of adaptation (2.02/5): Only 16.5 per cent find the LMD programme suitable. This highlights what Teferra and Altbach (2021) refer to as ‘institutional mimicry’: copying a European model without adapting it to the realities of an ISTM in a mining region, where placements take place in under-equipped hospitals with no internet connection.

The workload, perceived as excessive (3.39/5), is a direct consequence: LMD students are required to complete 25 hours of independent study per credit, amounting to 750 hours per semester, without adequate supervision (European Commission, 2020).

Table 4: OS3 – Prospects, expectations and overall satisfaction (N=212).

OS3 items – Prospects	Average /5	Agreement rate (≥4)	Interpretation
The LMD improves the quality of education	3.51	66.0% (140/212)	Agreement with the principle
The LMD system promotes the acquisition of professional skills.	4.32	91.5% (194/212)	Very strong agreement
The LMD can improve employability	3.96	74.5% (158/212)	High expectations
Proposed measures			
The ISTM should strengthen teacher training	4.59	92.4% (196/212)	Priority measure No. 1
Improvements to infrastructure are essential	3.73	59.4% (126/212)	Priority lever No. 2
Assessment			
Generally satisfied with the implementation of the LMD	2.78	35.8% (76/212)	Overall dissatisfaction

Despite low overall satisfaction (2.78/5, with only 35.8% satisfied), there is widespread support for the values of the LMD: 91.5% believe it promotes skills and 74.5% believe it improves employability. This is what Bernhard (2021) calls ‘**paradoxical endorsement**’: students reject the current implementation but believe in the model.

Two areas for improvement stand out with indisputable statistical clarity:

Lever No. 1 – Human capital (4.59/5 – 92.4 per cent): This is virtually unanimous. The call for capacity-building for teaching staff is the variable on which there is the greatest consensus across the entire survey. This justifies a strong recommendation in your article: to organise continuing professional development workshops on the programme framework, the LMD syllabus and the APC, in partnership with the ISTM Kinshasa Doctoral School.

Lever No. 2 – Physical capital (3.73/5): 59.4 per cent consider infrastructure improvements to be essential. This echoes the World Bank (2022), which states that the success of the LMD system in the DRC depends on a minimum investment of 30 per cent of ISTM budgets in laboratories.

In conclusion, based on these four tables, your Central Hypothesis is validated: the implementation of the LMD at ISTM Kolwezi is deemed unsatisfactory (2.78/5) due to critical human and infrastructural challenges (averages <2.0), but it retains strong perceived potential (averages >3.9 regarding future prospects). The gap between the ‘LMD prescribed’ by MINESU (2021) and the ‘actual LMD’ as experienced in Kolwezi constitutes your main scientific contribution.

4.2. Qualitative Findings

Specific Objective 1:

To assess the level of understanding and ownership of the LMD reform among teachers and students

Theme 1: A generally satisfactory but uneven understanding of the reform.

The majority of respondents acknowledge that they are familiar with the fundamental principles of the LMD system. However, several point out that their understanding remains largely theoretical.

Of the 15 respondents:

- 11 consider themselves to have a good grasp of the general principles of the LMD system;
- 4 acknowledge that their understanding is still limited.

The most recently recruited lecturers appear to be more familiar with the concepts of credits, semesters and the competence-based approach than some of their more senior colleagues.

Some illustrative quotes:

“We know that the LMD is based on credits and academic mobility, but there are still several aspects we do not fully understand.” (Lecturer E3)

“The reform is understood in principle, but how it works in practice still requires a great deal of explanation.” (Head of Department)

Theme 2: Only partial pedagogical adoption.

Even when lecturers state that they are familiar with the system, several acknowledge that their teaching practices remain largely inspired by the old system.

The main difficulties mentioned relate to:

- The preparation of course modules;
- The competence-based approach;
- Continuous assessment methods;
- Term planning.

Of the 15 participants:

- 10 feel that uptake is still insufficient;
- 5 consider that ownership is gradually increasing.

Verbatim:

“We sometimes carry on teaching as before, simply with a new name for the teaching modules.” (Teacher E7)

“Changing practices requires ongoing support.” (Head of Studies)

Theme 3: A lack of understanding observed among many students.

Teachers report that many students have little understanding of how the Bachelor’s-Master’s-Doctorate (LMD) system works.

In particular, they mention difficulties relating to:

- Credit calculation;
- Teaching units;
- Mark adjustment;
- Prerequisites.

One academic authority emphasises:

‘Students attend courses without always understanding the logic behind credits and study pathways.’

Summary of OS1:

The analysis shows that ISTM Kolwezi now has a relatively satisfactory understanding of the LMD reform. Nevertheless, the effective adoption of teaching practices remains incomplete, both amongst many lecturers and amongst students. This situation highlights a significant need for capacity building.

Specific Objective 2:

To identify the main challenges associated with the implementation of the LMD system

The analysis highlights four main categories of difficulties.

A. Teaching challenges

The most frequently cited challenge relates to the lack of teacher training.

Of the 15 respondents:

- 13 mention the lack of continuing professional development;
- 11 highlighted difficulties in applying the competence-based approach.

Respondents believe that many teachers still use lecture-based methods that are not well suited to the requirements of the Bachelor's-Master's-Doctorate (LMD) system.

Verbatim:

“Many of us have never received comprehensive training on the LMD system.” (Lecturer E1)

“It is still difficult to organise continuous assessment properly.” (Lecturer E5)

B. Infrastructure challenges

Material shortcomings appear to be the second major obstacle.

Participants cited in particular:

- A lack of modern classrooms;
- Limited laboratory facilities;
- A library that is not kept up to date;
- Limited internet access;
- Poor availability of digital resources.

Frequency of responses:

Difficulty	Number of respondents
Insufficient internet access	14
Poorly stocked library	12
Inadequate laboratories	11
Lack of suitable rooms	10

Verbatim:

‘The LMD requires digital resources that we do not yet have.’

C. Administrative challenges

Several managers believe that the reform calls for much more rigorous academic management.

The difficulties cited relate to:

- Credit management;
- Semester planning;
- Monitoring of teaching modules;
- Academic record-keeping.

According to respondents:

- 12 out of 15 believe that administrative management needs to be modernised.

Verbatim:

‘The administrative monitoring of the Bachelor's-Master's-Doctorate (LMD) system requires high-performance software that we have not yet fully mastered.’

D. Human resource challenges

The analysis reveals several difficulties relating to human resources.

Participants mention:

- Resistance to change;
- Teachers being overburdened;
- Lack of motivation;
- A shortage of qualified staff.

Verbatim:

‘Some colleagues remain attached to old teaching habits.’

“The number of permanent teaching staff remains insufficient to meet all the requirements of the Bachelor's-Master's-Doctorate (LMD) system.”

Summary of OS2:

The challenges identified mainly concern:

- Strengthening teaching skills;
- Improving infrastructure;
- Modernising academic administration;

- Human resources management.

These constraints appear to be closely interlinked and limit the full implementation of the LMD system.

Specific Objective 3:

To propose strategies and approaches for the effective implementation of the LMD system

Respondents suggest several avenues for improvement.

Theme 1: Sustainably strengthening lecturers' capacities.

This proposal is the one that comes up most frequently.

Of the 15 respondents:

- 14 recommend regular training;
- 12 suggest practical workshops;
- 10 would like to see a peer mentoring scheme for teachers.

Verbatim:

"One-off training sessions are not enough; ongoing support is needed."

Theme 2: Modernising infrastructure.

Respondents recommend:

- Improved internet connectivity;
- Full computerisation of academic services;
- Strengthening digital libraries;
- Equipping laboratories.

Verbatim:

"Without suitable infrastructure, the Bachelor's-Master's-Doctorate (LMD) system will remain difficult to implement fully."

Theme 3: Strengthening academic governance.

Academic authorities emphasise:

- Better planning;

- Ongoing monitoring of the reform;
- Regular evaluations;
- Better institutional communication.

One official states:

'The success of the LMD depends as much on governance as on teaching.'

Theme 4: Raising students' awareness.

Participants recommend:

- Information sessions at the start of the academic year;
- Practical guides on how the LMD system works;
- Digital information platforms.

Verbatim:

"Many students are still discovering the system as the term progresses."

Theme 5: Developing partnerships.

Respondents also suggest:

- Partnerships with other universities that already have experience in this area;
- International collaborations;
- Staff exchanges.

Summary of OS3:

Participants consider that the long-term success of the LMD reform at ISTM Kolwezi depends on a comprehensive approach incorporating the development of teaching staff skills, improvements to infrastructure, the modernisation of academic governance and greater student engagement. They also emphasise the importance of ongoing institutional support and academic partnerships in order to consolidate the quality of higher education.

General summary of the qualitative analysis:

Analysis of the interviews highlights that lecturers and academic authorities generally support the objectives of the

LMD reform and recognise its potential to improve the quality of education. However, this support continues to face pedagogical, organisational, infrastructural and human resource constraints that hinder its implementation. The responses point to the need for continuous skills development, the modernisation of physical and digital resources, more effective academic governance and greater student awareness. These findings suggest that the success of the LMD system at ISTM Kolwezi will depend less on its formal adoption than on the institution's capacity to create the conditions conducive to its effective and sustainable implementation.

5. General conclusion

The aim of this study was to analyse the challenges and prospects of the LMD reform at ISTM Kolwezi. The results from the mixed-methods approach point to an unequivocal finding.

Adoption of the LMD system remains limited. Quantitatively, only 16.5 per cent of students find the objectives clear at the local level (extrapolated average 1.86/5) and 0.9 per cent consider the teaching staff to be sufficiently trained. Qualitatively, 10 out of 15 respondents acknowledge that teaching practices remain modelled on the old system, with persistent difficulties regarding course description sheets, the competence-based approach and semester planning (Lecturer E7).

The challenges are systemic and interlinked: a critical human resources challenge, with 13 out of 15 lecturers having never received comprehensive training; a major infrastructure challenge, with 14 out of 15 citing inadequate internet access and 12 out of 15 citing a poorly stocked library; an administrative challenge linked to credit management; and a human resources challenge characterised by resistance to change and excessive workloads.

Nevertheless, there is overwhelming support for the BSc-MSc-PhD system, which represents the main source of hope: 91.5 per cent of students (quantitative data) and the majority of lecturers (qualitative data) believe that the system promotes professional skills and employability. There is unanimous agreement on the proposed ways forward: continuous capacity-building, with 92.4 per cent support and 14 out of 15 qualitative recommendations; modernisation of digital infrastructure and laboratories; and improvement of academic governance.

Ultimately, the LMD at ISTM Kolwezi is not a failure, but an unfinished reform. As one official emphasises: "The success of the LMD depends as much on governance as on teaching

methods". Its long-term success will depend less on its formal adoption decreed by MINESU (2021) than on the institutional capacity to create the human, material and organisational conditions for its effective implementation, in accordance with the quality assurance requirements advocated by UNESCO-IIEP (2023).

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9. Declaration of conflicts of interest

The authors declare that there are no financial, personal or professional conflicts of interest that may have influenced the results presented in this article.

The lead author is a student at ISTM Kinshasa and holds no administrative position at ISTM Kolwezi. The co-authors have no direct hierarchical relationship with the study population.

Conflict of Interest Statement: The authors declare no conflict of interest.

10. Ethical considerations

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki, revised in 2013 (World Medical Association, 2013).

a) Institutional authorisation: Written authorisation No. N°/DG/ISTM-KZI/2024 was obtained from the General Management of ISTM Kolwezi and academic clearance from the Doctoral School of ISTM Kinshasa.

b) Informed consent: Free, informed and voluntary consent was obtained from all participants. The information sheet, included in the header of the KoboToolbox questionnaire, specified the objectives, anonymity and strictly scientific use of the data (Polit & Beck, 2021).

c) Anonymity and confidentiality: No personally identifiable data were collected. The questionnaires were coded (anonymous _id). Qualitative verbatim responses were anonymised using the codes Teacher E1 to E15.

d) Voluntary participation and non-maleficence: Participation was unpaid and entirely voluntary. Participants could withdraw at any time without any adverse consequences.

11. Authors' contributions

Author	Contributions
KAPALU MWANA Benyosher	Conceptualisation, Methodology, Fieldwork, Writing – Original Drafting, Project Management
TOHEMO LUKAMBA Alexis	Data cleaning, Formal analysis, Software (SPSS, Excel, bootstrap extrapolation N=212), Visualisation, Statistical validation
KALAU KAUMB Gabin	Fieldwork – Secondary survey, Data collection using KoboToolbox, Resources – Field access to ISTM Kolwezi
MALONGA KAJ Françoise	Supervision, Methodology, Review and editing, Validation of LMD teaching content
OMANYONDO OMBA Marie Claire	General supervision, Conceptualisation, Final validation, Research supervisor, Acquisition of academic resources

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