ATATÜRK ÜNİVERSİTESİ YAYINLARI
ATATURK UNIVERSITY PUBLICATIONS

Research Article DOI: **10.62425/jmefm.1641085**

Enhancing Clinical Clerkship Assessment: A Framework Aligned with the National Core Curriculum

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ABSTRACT

Objective: To evaluate the effects of an innovative assessment framework for clinical clerkships aligned with the national core curriculum, aiming to enhance student-centered learning, interdisciplinary collaboration, and structured assessment practices.

Methods: This study employs a qualitative document analysis educational research design, focusing on the evaluation of an innovative assessment framework for clinical clerkships. A structured assessment framework was designed and implemented in all clinical clerkships at the Karadeniz Technical University, Faculty of Medicine. The framework integrated multiple assessment methods—structured oral exams, workplace-based assessments, and learner-centered activities—ensuring their alignment with curriculum objectives derived from the national core curriculum.

Results: The implementation of the framework resulted in a significant increase in the diversity of assessment methods between the 2020–2021 and 2023–2024 academic years. Previously, assessment relied heavily on multiple-choice exams. However, after implementation, structured oral exams, OSCEs, reflective writing, and workplace-based evaluations were widely incorporated. The integration of these methods improved the alignment of assessments with learning objectives and enhanced interdisciplinary collaboration in clinical education.

Conclusion: This study highlights the successful adoption of an assessment framework that aligns with the national core curriculum while promoting structured and competency-based evaluation. The findings support the literature on the benefits of structured assessment tools in medical education. The framework serves as a model for medical schools aiming to improve their accreditation readiness and enhance student-centered learning. Future research should explore the long-term impact of this model on student competency and adaptability in various institutional settings.

Keywords: Assessment, Framework, National core curriculum, Clinical clerkship, Accreditation.

INTRODUCTION

Assessment plays a pivotal role in shaping and refining medical curricula, serving as a key driver of educational quality and student competency development. In medical education, a well-structured, framework-based curriculum is essential not only for fostering comprehensive learning but also for ensuring alignment with accreditation standards and global best practices.[1] The integration of standardized curricular frameworks has been recognized as a fundamental approach to achieving consistency and coherence across medical education programs worldwide.[2] Studies emphasize that curriculum frameworks should not only outline core competencies but also incorporate structured assessment methodologies to measure learning outcomes effectively and drive continuous improvement in educational delivery.[3,4]

Received	16.02.2025
Revision Requested	04.03.2025
Last Revision	24.03.2025
Accepted	09.04.2025
Publication Date	28.04.2025

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Cite this article: Akturan S. Enhancing Clinical Clerkship Assessment: A Framework Aligned with the National Core Curriculum. *J Med Educ Family Med*. 2025;2(1):13-21

In many countries, including Türkiye, the National Core Curriculum (2020) has established fundamental educational standards to guide medical schools in designing programs that align with national healthcare priorities.[5] This alignment ensures that future physicians develop the necessary competencies to meet societal health needs while maintaining international educational benchmarks.[6] However, despite the presence of a national framework, individual medical schools must tailor their curricula to their specific institutional context, available resources, and infrastructural capacities.[7] The adaptability of core curricula at the institutional level allows for innovations in teaching and assessment strategies, fostering interdisciplinary learning and competency-based education. Effective implementation requires ongoing evaluation to ensure that curricular adaptations meet accreditation criteria while maintaining the integrity of national and global medical education standards.[8] Although national core curricula provide general guidance for medical education, there is limited evidence—both nationally and internationally—that explores how these frameworks are reflected in actual assessment and evaluation practices at the institutional level.

The structure of clinical clerkships at our faculty is designed to align with predetermined learning outcomes, allowing multiple disciplines to contribute to student training. Recognizing the critical importance of assessment in achieving these goals, the Department of Medical Education has developed an innovative assessment framework. This design not only promotes learner-centered educational approaches but also enhances the use of structured and objective assessment tools.

This study aims to evaluate the effects of an innovative assessment framework for clinical clerkships aligned with the national core curriculum, aiming to enhance student-centered learning, interdisciplinary collaboration, and structured assessment practices. The research questions were as follows:

1. How does the innovative assessment framework influence the diversification of learning approaches in clinical clerkships?
2. What is the impact of the assessment framework on the variety of assessment methods used in clinical clerkships?

METHODS

This study employs a qualitative document analysis educational research design, focusing on the effects of an innovative assessment framework for clinical clerkships. The framework was developed in alignment with national core curriculum standards to ensure competency-based assessment practices.

Document analysis, a systematic technique for reviewing and interpreting educational materials, provides a comprehensive understanding of the framework's structure and integration within the national core curriculum.[9] By triangulating information from multiple institutional documents, this study enhances the validity of its conclusions regarding the implementation and impact of the assessment framework.

Data Sources

This study utilized publicly accessible curriculum documents from the Phase 4 and Phase 5 programs of the Karadeniz Technical University Faculty of Medicine as primary data sources. These documents provided detailed insights into the structure, content, and assessment strategies employed in clinical clerkships. Additionally, veri were extracted from the self-evaluation report prepared by the Karadeniz Technical University Faculty of Medicine as part of its accreditation process. This report offered a comprehensive overview of the institution's educational strategies, assessment methodologies, and alignment with national and international accreditation standards.

To ensure the reliability and relevance of the selected studies, the study applied specific inclusion and exclusion criteria. Documents were included if they:

- Were official and up-to-date, published within the last five years, and directly influenced the institution's educational policies,
- Had direct relevance to curriculum design and assessment, particularly those shaping the clinical clerkship framework,
- Were publicly accessible and verifiable, originating from institutional reports, official websites, or accreditation documentation.

By systematically analyzing these carefully selected data sources, this study ensures an evidence-based approach to evaluating the assessment framework and its integration into the medical curriculum. The use of institutional documentation allows for a structured examination of curricular design and assessment practices, contributing to the study's validity and relevance.

Description of Framework

To achieve horizontal and vertical integration in undergraduate medical education, clinical clerkships have been restructured to align learning objectives with contemporary medical education and accreditation standards. This restructuring follows the "Temporal Coordination" level, classified as the fifth level of integration, where courses are synchronized but taught separately.[8]

Our medical faculty's long-term vision (6–8 years) is to advance toward interdisciplinary and transdisciplinary integration. This goal requires a holistic approach to curriculum alignment, assessment systems, and program evaluation. The assessment framework for clinical clerkships was designed to:

- Ensuring that disciplines align their course content with the national core curriculum;
- Encourage multidisciplinary sessions and student-centered learning methods,
- Implement assessment strategies consistent with the educational approach,
- Foster interdisciplinary collaboration.

This assessment model has been successfully integrated into our faculty and continues to evolve as part of our commitment to enhancing medical education quality.

General Principles of Assessment Design: The following assessment principles align with our faculty's current level of integration and support its progression toward higher integration levels in the coming years[10]:

- All clinical clerkship topics must align with the theoretical course content outlined in UÇEP, including the Core Diseases/Clinical Problems (CD-CP) list, Basic Medical Practices (BMPs), and Behavioral, Social, and Humanities Sciences (BSHS) subcategories.
- The assessment level coefficients, developed by the KTU Department of Medical Education, are applied on the basis of UÇEP-2020 learning levels and recommendations. These coefficients determine the weight of each department's contribution to formative and summative assessments.
- The Clinical Clerkship calculates exam weightings both during (formative assessment) and at the end of the clerkship (summatic assessment). If needed, they may consult the Department of Medical Education.
- The assessment designs proposed by Clerkships are reviewed by the Assessment and Evaluation Committee and implemented by the Faculty of Medicine Dean's Office.
- Assessment methods must align with educational activities. For example, departments using symptom-based learning (SBL) or similar approaches that support clinical reasoning and decision-making may conduct structured oral examinations (SOEs).
- The weighting coefficients are assigned as follows:
  - SOE categories: 4× the weight of the theoretical course categories.
  - BMP categories: 3× the weight of the theoretical course categories.
  - SBL sessions: Evaluated via a form recommended by the Department of Medical Education. If not assessed, their weight is added to SOE.
  - Student-centered learning activities: If a valid assessment tool is available, it contributes to the final grade. Otherwise, its 5% weight is added to SOE.
  - Workplace-based assessments (360° evaluation, OSCE, Mini-CEX, DOPS, and professional attitude assessments): A coefficient of 6 was assigned. If unused, their weight is redistributed among other categories on the basis of the Clerkship Committee's decision.

The definitions and details of the assessment framework for clinical clerkships are presented in Table 1 and Figure 1. An example illustrating the implementation of the assessment framework is presented in Table 2.

Statistical Analysis

Following Bowen's[9] qualitative document analysis approach, this study systematically examined relevant institutional documents to explore the integration and impact of the assessment framework. The analysis was conducted in a structured, multistep process to ensure methodological rigor and enhance data reliability.

The number of Theoretical Educational Activities	The number of CS/F/C educational activities		The number of BMP Trainings	The number of Applications for Professional Attitude and Skills in Clinical Settings	
49*1: 49	12*4: 48		4*3: 12	2*6: 12	
Theoretical exam	SOE[1]	BMP exam[2]	Assessments for professional attitude and on-the-job clinical skills[3]	Formativ assesments of SBL[4]	Formative assessments of learner-centered educational activities[5]
49 ~ 36.5%	48 ~ 36.5%	12 ~ 8.5%	12 ~ 8.5%	~ %5	~ %5

1. Each Structured Oral Examination (SOE) category is weighted **four times** that of theoretical course categories.
2. Each THU category is weighted **three times** that of theoretical course categories.
3. 360° Evaluation, OSCE, Mini-CEX, and DOPS are weighted at 6 for assessing professional attitudes and clinical skills. If unused, their weight is redistributed by the clerkship committee.
4. SBL sessions are assessed using a form recommended by the Department of Medical Education. If not evaluated by the clerkship committee, their **weight** is added to SOE.
5. If a suitable assessment tool is developed for learner-centered activities, it may affect the end of clerkship score. Otherwise, the **5% weight** is added to SOE.

Figure 1. Calculation of the proportional weight of the end of the clerkship score.

Table 1. Definitions and details of the assessment framework for clinical clerkships.

Definition		Description	Coefficient
Non-UÇEP educational activities		Educational activities that are not included in UÇEP or cannot be directly linked to a specific category.	1
Preliminary Diagnosis (ÖnT)		Educational activities that equip students with the ability to make a preliminary diagnosis in nonemergency situations and refer patients to specialists.	1
Preliminary Diagnosis + Prevention (ÖnT + K)		Educational activities that, in addition to preliminary diagnosis, cover preventive measures.	2
CD-CP[1] with at least Level A		Educational activities that develop the ability to recognize emergency situations, provide initial treatment, and follow referral protocols.	2
CD-CP with at least Level T		Educational activities focused on diagnosing conditions, having knowledge about treatment, and referring patients to specialists.	3
CD-CP with at least Level TT		Educational activities that equip students with skills to diagnose, treat, and manage complications.	4
Theoretical Courses Related to BSHS Subtopics		Theoretical educational activities related to main and subtopics in Section 3 of UÇEP.	+1[2]
Learner-Centered Educational Activities		Student-centered educational methods include: small group work, case discussions, and reflection sessions, etc.	4 (+2 additional coefficient[3])
Basic Medical Practices	Level 1	Basic medical practices at the informational level.	1
	Level 2	Basic medical practices requiring application in emergency situations according to guidelines/protocols.	2
	Level 3	Basic medical practices that can be performed in common clinical conditions.	3
	Level 4	Basic medical practices that include interventions in complex cases.	3
Symptom-Based Learning (SBL) Sessions		Structured student-centered sessions that support clinical reasoning and decision-making processes.	5
Structured Oral Examination (SOE)		A structured oral examination system within clerkships that assesses clinical decision-making skills. The weighting is calculated based on the involvement of relevant departments.	Calculated based on the weighting of participating departments.
Workplace-Based Assessment (WBA) methods		Refers to the systematic evaluation of learners' clinical competencies, professional behaviors, and decision-making skills in real clinical settings. Common WBA methods include Mini-CEX, DOPS, and 360-degree evaluations, etc.	6

1- CD-CP = Core Diseases/Clinical Problems

2- If an educational activity integrates a BSHS topic, its coefficient increases by '+1'.

3- If a learner-centered educational activity is conducted with the participation of multiple departments, the organizing department receives an additional '+2' coefficient.

Table 2. An example implementation of an assessment design specific to the sensory internship block.

	Coefficient	Dermatology	Ophthalmology	ENT	PRS
Theoretical Educational Activities					
Non-UCEP-2020 Courses + Preliminary Diagnosis (ÖnT)	**1**	8*1: 8	12*1: 12	5*1: 5	1*1: 1
Preliminary Diagnosis + Other Levels (ÖnT and/or K)	**2**	1*2: 2	-	4*2: 8	1*2: 2
CD-CP[1] with at least Level A	**2**	-	-	2*2:4	2*2: 4
CD-CP with at least Level T	**3**	2*3: 6	-	1*3: 3	1*3: 3
CD-CP with at least Level TT	**4**	6*4: 34	1*4: 4	5*4: 20	1*4: 4
Theoretical Courses Related to BSHS Subtopics*	**1**	-	-	-	-
Learner-Centered Educational Activities	**4**	-	-	-	-
Total Score		**40**	**16**	**40**	**14**
Percentage		**40%**	**16%**	**40%**	**14%**
The Numer of Question per Departments in Theoretical exam		**40**	**15**	**40**	**14**
Clinical Symptoms/Findings/Conditions (CS/F/C)					
Dermatology	• Skin rashes/lesions (maculopapular, bullous, vesicular) • Changes in skin and appendages (dryness, discoloration, etc.) • Itching • Petechiae, purpura, ecchymosis • Oral apht				**5** **~ 41.5%**
Ophthalmology	• Red eye • Vision impairement/loss				**2** **~ 17%**
ENT	• Hearing impairment/Tinnitus • Ear pain/discharge/blockage • Hoarseness • Neck mass • Lenfadenopathy				**5** **~ 41.5%**
Basic Medical Practices					
Non-UCEP-2020 Recommended Skills or Level 1		-	-	-	**-**
Level 2		-	-	-	**-**
Level 3		-	-	-	**-**
Level 4		1*4: 4	1*4: 4	1*4: 4	1*4: 4
Total		4	4	4	4
Percentage		25%	25%	25%	25%

Initially, publicly accessible faculty-related documents were identified and collected on the basis of their direct relevance to the study's aim. These documents were then meticulously reviewed, with a particular focus on their authenticity, contextual significance, and alignment with the Karadeniz Technical University Faculty of Medicine assessment framework. To increase the validity of the findings, a structured thematic framework was defined on the basis of the assessment framework. After the themes were defined, the analysis involved an iterative coding process in which key categories were identified through an inductive approach. Thematic coding was performed manually by the researcher, ensuring consistency and depth in the interpretation of the data. The coding framework was developed on the basis of recurring concepts, curriculum alignment indicators, and assessment principles extracted from the documents. Any emerging themes were continuously revised throughout the analysis process.

To strengthen the trustworthiness of the findings, the study employed methodological transparency by maintaining an audit trail of the analysis process. This included documentation of coding decisions, theme development, and cross-referencing of findings with the study objectives. Finally, the findings were systematically interpreted in relation to the research question, with document analysis providing robust evidence supporting the conclusions of the study.

RESULTS

This assessment design framework has been implemented in all clerkships in Phase 4 and Phase 5 at the Karadeniz Technical University Faculty of Medicine since the 2021–2022 academic year.

The document analysis process identified two main themes: educational activities and assessment activities, each comprising several subthemes. Educational activities include learner-centered classroom activities, multidisciplinary educational approaches, experiential learning methods, laboratory-based training, and structured workplace-based educational activities. Assessment activities are categorized into theoretical exams, performance-based assessments, and comprehensive evaluations, reflecting different levels of competency assessment. A detailed breakdown of these themes, including categories and coding, is presented in Table 3.

Table 3. The revealed themes, categories and coding after the document analysis process.

Themes	Subthemes	Categories	Coding
Educational Activities	**Learner-centered classroom activities**	Symptom-based learning activities	• Task-based educational activities • Symptom-based learning
		Multidisciplinary educational activities	• Panel • Entegrated session
	Experiential learning activities	Laboratory-based trainings	• Clinical skills trainings
		Structured workplace- based educational activities	• Educational activities in wards • Education activities in clinic
Assessment Activities	Theoretical exams	Knows	• Multiple Choice Exam • Reflective Writing Assignment
		Knows how	• Structured Oral Exam • Scientific Research Practices
	Performance-based assessment	Shows	• Objective Structured Clinical Exam (OSCE) • Simulation Methods and Evaluation
		Does	• Workplace-based assessment in clinics • Patient File Preparation
		Comprehensive evaluation	• Clerkship Logbook

The distribution of learner-centered educational activities over the past four years is presented in Table 4. Prior to the implementation of this assessment design, from 2020--2021, the diversity of assessment methods was quite limited. However, by the 2023--2024 academic year, this diversity had expanded significantly, encompassing various methods such as structured oral examinations, OSCEs, and reflective writing assignments (Table 5).

Table 4. The implemented learner-centered educational activities.

Academic Year	Learner-centered educational activities[1]	Year 4	Year 5	Total
2020 – 2021[2]	SBL (Online[3])	4	-	4
	Multidisciplinary educational activities	-	-	-
2021 - 2022	SBL	20	24	44
	Multidisciplinary educational activities	7	1	8
2022-2023	SBL	30	18	48
	Multidisciplinary educational activities	7	3	10
2023-2024	SBL	35	18	53
	Multidisciplinary educational activities	10	3	13

1- This includes interactive educational activities where learners take responsibility within a team, with allocated time.

2- The assessment design reflects the year before implementation in all clinical clerkships.

3- During the pandemic, symptom-based learning (SBL) was conducted via a learning management system-integrated Zoom application.

Table 5. Comparison of the implementation of assessment methods across eight clerkships in Phase 4 and Phase 5 between the academic years 2020--2021 and 2023--2024.

Structured Assessment Medhods	Number of Clinical Clerkship	
	2020-2021	2023-2024
Multiple Choice Exam	8	8
Structured Oral Exam	1	8
Objective Structured Clinical Exam (OSCE)	2	4
Patient File Preparation	2	6
Clerkship Logbook	-	2
Reflective Writing Assignment	-	1
Simulation Methods and Evaluation	-	2
Workplace-Based Assessment in Clinics	-	1
Scientific Research Practices	-	1

DISCUSSION

This study highlights the successful implementation of an assessment framework at the Karadeniz Technical University Faculty of Medicine since the 2021–2022 academic year. The framework effectively integrates learner-centered approaches and structured evaluation methods, leading to a significant increase in the diversity of assessment tools. These findings demonstrate the positive impact of the framework on the development of undergraduate medical education.

The results align with the literature, which suggests that structured assessment tools, such as OSCEs and structured oral exams, enhance the quality of education and ensure better alignment with curriculum objectives.[11-13] By integrating such methods, this framework not only supports student learning but also contributes to the ongoing improvement of medical education quality.[14,15]

Furthermore, similar structured assessment frameworks have been implemented in international medical education systems. For example, the OSCE is widely adopted in the global context as a standardized method for assessing clinical competencies in medical education.[16-18] Likewise, medical schools have integrated structured oral exams to enhance student evaluation, demonstrating a parallel trend toward a competency-based assessment model.[19] Comparing these approaches to our framework underscores its alignment with global best practices, suggesting its potential scalability and adaptability in various international educational settings.

One of the key strengths of this framework is its innovative approach, which serves as a model for other medical schools in Türkiye. It fosters interdisciplinary collaboration, aligns learning objectives with the national core curriculum, and promotes the use of diverse and structured assessment tools. Additionally, the framework incentivizes departments to adopt learner-centered methods, thereby advancing the overall educational experience. While its implementation at the Karadeniz Technical University Faculty of Medicine has been successful, its adoption in other medical faculties may require institutional support, faculty training, and a phased implementation strategy to ensure sustainability.[20,21]

This assessment framework has practical implications for medical schools seeking to align their curricula with national core curriculum standards and improve their accreditation readiness. It provides a structured approach to designing assessments that are fair, diverse, and aligned with educational activities. Although this assessment framework was developed within the context of the national core curriculum, the emerging themes and categories align with modern international medical education literature.[22-24] Therefore, this framework has the potential to be utilized not only at the national level but also in international contexts. The incorporation of student feedback into the design and implementation process can further enhance its effectiveness.

Despite its promising contributions, the assessment framework is not without limitations. Its successful implementation at the Karadeniz Technical University Faculty of Medicine benefited from strong institutional support and motivated faculty members, who may not be readily available in other medical schools. Broader implementation could face challenges such as limited resources, varying levels of faculty engagement, and the need for continuous professional development. The framework, while aligned with national standards, may also require further refinement to ensure flexibility and applicability across different departments and medical education contexts. Incorporating more systematic student feedback and evaluating long-term outcomes will be

essential for improving its effectiveness and sustainability. Finally, this study did not include individual-level student performance or long-term learning outcome data. Therefore, while changes in assessment diversity were observed, their direct impact on student achievement could not be measured and remains a subject for future investigation.

Future research should also focus on evaluating the framework's long-term impact on learning outcomes and testing its adaptability to other medical schools in Türkiye and beyond. Expanding the scope of implementation to include larger and more diverse samples would provide valuable insights into its effectiveness and scalability in various educational contexts.

CONCLUSION

The assessment and evaluation design for clerkships at the Karadeniz Technical University Faculty of Medicine presents an innovative and structured approach aligned with national core curriculum standards. This framework supports the implementation of learner-centered educational activities and the use of structured assessment tools that align with instructional goals.

Medical faculties seeking to adopt a similar framework should ensure alignment with their own curricular structures and institutional priorities. The key steps include establishing a curriculum-assessment alignment committee, involving faculty development programs to ensure a shared understanding of assessment principles, and gradually introducing structured assessment tools across departments. Institutions should also anticipate potential challenges, such as limited faculty readiness, resource constraints, and the need for continuous monitoring and feedback mechanisms to sustain implementation.

Ethics Committee Approval: This study was conducted using publicly available and accessible data obtained from institution's website. Since no personal, sensitive, or identifiable information was collected, and no interaction with human subjects took place, ethical approval was not required.
Informed Consent: This study was conducted using publicly available and accessible data obtained from institution's website. Since no personal, sensitive, or identifiable information was collected, and no interaction with human subjects took place, informed consent was not required.
Peer-review: Externally peer-reviewed.
Declaration of Interests: The author no conflict of interest to declare.
Funding: The author declared that this study has received no financial support.

Although developed within the context of the national core curriculum, the emerging themes and categories of this framework resonate with international medical education standards. Therefore, the model has potential for adaptation in other educational contexts, both nationally and globally.

Kars is renowned for its harsh winter conditions, with temperatures occasionally plummeting to -20°C at the start of morning classes. This can be especially challenging for students from warmer or temperate climates. Moreover, extreme cold often makes it difficult for faculty members to start their vehicles and reach class on time. To alleviate these challenges, adjusting class start times to relatively warm hours of the day could be a viable solution. Furthermore, schools should pay attention to students' lives outside the classroom, such as housing and transportation issues, to increase class attendance.

In-person education is essential for skill training. However, it has begun to be seen as a burdensome method for conveying theoretical knowledge. Compared with remote online education, school education requires more effort, imposes a greater financial burden, and takes up more of the students' time. Today, the sources of accessing information have diversified and become more accessible. However, the school is not only a place where information is transmitted but also a space where socialization occurs. Therefore, attending school should remain a fundamental principle. However, schools need to reorganize their educational approaches in a way that highlights the advantages of both in-person and online education. It seems that hybrid education, which the pandemic forced upon us, will also retain its validity in the postpandemic period.

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