
CONFERENCE ARTICLE**Contemporary Pedagogical Approaches to Developing Students' Research Competencies: An Analysis of International Experience****Tenelbayev Ramazan**Teacher of Chirchik State Pedagogical University, Faculty of Tourism, Uzbekistan

Abstract: Research competence has become an increasingly important component of higher education as universities are expected not only to provide disciplinary knowledge but also to prepare students to identify problems, evaluate evidence, conduct systematic inquiry, and communicate research findings effectively. In this context, the development of students' research competencies requires pedagogical approaches that move beyond knowledge transmission towards active, inquiry-oriented and research-integrated learning. This article examines contemporary pedagogical approaches to developing students' research competencies and analyses relevant international practices in higher education. Particular attention is given to inquiry-based learning, problem-based learning, project-based learning, research-based learning, collaborative learning, and experiential learning as approaches that can create conditions for students' active engagement in research-related activities. The analysis also considers the importance of critical thinking, problem solving, academic communication, information literacy, and evidence-based reasoning as interconnected dimensions of research competence. International evidence indicates a broader shift in higher education towards student-centred learning, problem- and case-based activities, and performance-oriented assessment.

Keywords: Students, research competence, higher education, pedagogical approaches, inquiry-based learning, problem-based learning, project-based learning, research-based learning, international experience.

Introduction

The transformation of higher education in the twenty-first century has increasingly shifted attention from the transmission of disciplinary knowledge towards the development of competencies that enable students to apply knowledge, solve complex problems, evaluate evidence, and generate new ideas. This transformation is closely associated with changes in the social, technological, and professional environment in which graduates are expected to operate. Higher education institutions are therefore increasingly required to create learning environments in which students become active participants in knowledge construction rather than passive recipients of information.

The development of research competencies occupies a particular place within this transformation. Research competence enables students to formulate questions, identify and analyse problems, search for and critically evaluate relevant information, select appropriate research methods, interpret evidence, and communicate findings in an academically appropriate manner. These abilities are relevant not only to students who intend to pursue academic careers but also to graduates working in professional environments where evidence-based decision-making, analytical thinking, problem solving, and continuous learning are increasingly important.

The relevance of this issue is also reflected in international higher education research. The OECD has emphasized that contemporary higher education is expected to contribute to the development of generic and transferable skills, including critical thinking, creativity, problem solving, communication, teamwork, and learning-to-learn skills. At the same time, international comparative evidence indicates that the possession of a higher education qualification does not automatically guarantee the development of these competencies to the same extent across

students and educational systems. This observation strengthens the need to examine not only what students learn but also how pedagogical processes contribute to the development of higher-order academic and research-related competencies.

Main part

The development of students' research competencies has been examined from different theoretical and methodological perspectives in higher education. Although the terminology used in the literature varies, research competence is generally associated with the ability to formulate meaningful questions, identify and evaluate relevant information, apply appropriate methods, analyse evidence, draw justified conclusions, and communicate research findings. These abilities are not developed through the acquisition of theoretical knowledge alone; rather, they require sustained engagement with research-oriented learning activities.

Recent scholarship increasingly emphasizes the connection between teaching and research. In particular, research-based learning (RBL) has been conceptualized as an approach that involves students in authentic research processes, including the formulation of research questions, study design, data collection and analysis, and communication of findings. A systematic review published in 2026 examined 47 empirical studies conducted between 2004 and 2024 and reported that research-based learning can contribute to the development of an "inquiry habit of mind," including systematic questioning, critical thinking, tolerance of ambiguity, and consideration of multiple perspectives.

This perspective is important because research competence should not be reduced to a technical ability to conduct a particular research procedure. A student who is able to collect data but cannot formulate an appropriate research question or critically interpret evidence cannot be considered fully research

competent. Therefore, research competence should be understood as an integrated construct combining cognitive, methodological, information, communicative, and reflective dimensions.

Consequently, the development of research competence requires pedagogical environments in which students are encouraged to ask questions, investigate problems, examine alternative explanations, and justify their conclusions. This provides a theoretical basis for considering inquiry-oriented, problem-based, project-based, and research-based learning as interconnected rather than isolated pedagogical approaches.

1. CONTEMPORARY PEDAGOGICAL APPROACHES TO DEVELOPING STUDENTS' RESEARCH COMPETENCIES.

Inquiry-based learning represents one of the most directly relevant pedagogical approaches to the development of research competence. Its fundamental principle is that learning is organised around questions, investigation, evidence, interpretation, and explanation. Instead of receiving predetermined answers, students are placed in situations in which they must explore a problem and construct an evidence-based response.

Recent systematic evidence supports the educational value of inquiry-oriented approaches. A 2024 systematic review of open inquiry studies in science education found positive effects across conceptual understanding, motivation, scientific and thinking skills, and science literacy. At the same time, the review emphasized that open inquiry requires appropriate teacher support, flexible instructional design, and effective classroom management.

This finding has an important implication for higher education. Research competence is unlikely to develop simply by giving students complete freedom to conduct research. Rather, students need structured autonomy: sufficient independence to formulate questions and make decisions, combined with methodological guidance from the teacher or supervisor.

Thus, the pedagogical value of inquiry-based learning lies not only in its emphasis on independent learning but also in its capacity to reproduce essential elements of the research process within the educational environment.

1.2 Problem-Based Learning

Problem-based learning (PBL) is another important approach for developing research-related competencies. In PBL, learning begins with a problem rather than with the presentation of a complete body of theoretical information. Students analyse the problem, identify what they already know and what they need to learn, search for relevant information, evaluate possible explanations, and formulate a solution.

A systematic review published in *Frontiers in Education* examined adaptations of PBL specifically designed to strengthen critical thinking. The review found that PBL can support critical-

thinking development, although its effectiveness depends on how the model is designed and adapted.

More recent evidence provides further support. A 2025 second-order meta-analysis synthesised findings from 20 first-order meta-analyses of PBL in higher education. The study reported an overall positive effect of PBL on several student outcomes, while also finding that the effects varied according to the outcome measured, geographical context, research quality, sampling procedures, and other moderators.

This evidence is particularly relevant to the present study because it indicates that PBL should not be treated as a universally effective technique independent of context. Its contribution to research competence depends on the quality of problem formulation, student collaboration, access to information resources, teacher facilitation, and the extent to which students are required to justify their conclusions with evidence.

Therefore, PBL can be viewed as a pedagogical mechanism through which students develop problem identification, information search, critical analysis, evidence-based reasoning, collaborative inquiry, and decision-making skills.

1.3. Research-Based Learning

Among contemporary approaches, research-based learning has the most direct conceptual relationship with students' research competence. Its central characteristic is the integration of research processes into learning activities.

The recent systematic review by Raberger, Darmawanti, and Froehlich provides particularly relevant evidence. Analysing 47 empirical studies, the authors describe research-based learning as involving learner independence, engagement with theory, reflective practice, and active participation in knowledge creation. The review identifies activities such as formulating research questions, designing studies, collecting and analysing data, and communicating findings as central elements of the approach.

This approach changes the student's role within the educational process. The student is not simply learning about research conducted by other scholars but is gradually becoming a participant in research activity.

For this reason, research-based learning can be considered particularly valuable for higher education programmes in which the development of research competence is an explicit educational objective.

DISCUSSION

The analysis demonstrates that contemporary pedagogical approaches differ in their immediate educational focus but share several mechanisms that are directly relevant to the development of research competence.

Table 1. Relationship between contemporary pedagogical approaches and research competence

Pedagogical approach	Main learning mechanism	Research competencies developed
Inquiry-based learning	Questioning and investigation	Research questioning, evidence evaluation, interpretation
Problem-based learning	Analysis of complex problems	Problem identification, critical thinking, information search
Project-based learning	Sustained investigation and production	Planning, data collection, analysis, academic communication
Research-based learning	Participation in authentic research	Research design, methodology, analysis, reflection

Pedagogical approach	Main learning mechanism	Research competencies developed
Collaborative learning	Joint knowledge construction	Academic communication, teamwork, argumentation
Experiential learning	Learning through authentic experience	Application of knowledge, reflection, problem solving

The comparison suggests that no single pedagogical approach encompasses all dimensions of research competence equally. Inquiry-based learning is particularly relevant to questioning and investigation; PBL provides strong opportunities for problem analysis and critical reasoning; project-based learning supports planning and sustained investigation; while research-based learning provides the most direct connection with authentic research processes.

This observation is important for the design of higher education pedagogy. Rather than selecting one method as a universal solution, institutions and teachers may obtain greater educational value by combining complementary approaches according to the developmental stage of students and the intended research competencies.

For example, first-year students may initially require structured inquiry tasks and guided information-search activities. At an intermediate stage, problem-based and project-based activities can require students to formulate more independent research questions and analyse evidence. At advanced levels, research-based learning can involve students in authentic research projects, data analysis, academic writing, and dissemination of findings.

Such progression can be represented as:

Guided inquiry → Problem analysis → Independent project work
→ Authentic research participation → Research dissemination

This progression does not imply that the approaches must always be implemented in a strictly linear sequence. Rather, it represents a possible developmental logic in which the degree of student autonomy and research authenticity gradually increases.

CONCLUSION

The analysis indicates that the development of students' research competencies is closely connected with the transformation of higher education towards active, inquiry-oriented, student-centred, and research-integrated learning. Contemporary pedagogical approaches—including inquiry-based learning, problem-based learning, project-based learning, and research-based learning—provide different but complementary opportunities for developing students' capacity to formulate questions, analyse problems, evaluate evidence, apply research methods, and communicate findings.

International research suggests that these approaches can contribute to higher-order cognitive and research-related competencies, but their effectiveness depends substantially on implementation conditions. Recent systematic reviews and meta-analyses highlight the importance of methodological design, teacher support, student engagement, appropriate assessment, and contextual factors.

The findings therefore support a developmental and integrated approach to research competence. Rather than relying on a single pedagogical method, higher education institutions can combine complementary approaches and gradually increase the level of students' autonomy, methodological responsibility, and involvement in authentic research activity.

From this perspective, the development of students' research competencies should be regarded not as an additional component of higher education but as an integral element of contemporary university learning. The international experience

analysed in this study provides a conceptual basis for adapting research-oriented pedagogical practices to different institutional and disciplinary contexts while taking account of local educational conditions.

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