



IMPROVING DIDACTIC SUPPORT IN GEOGRAPHY EDUCATION THROUGH INTERACTIVE METHODS AND DIDACTIC GAMES

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Abstract

This article examines the theoretical and methodological foundations for improving didactic support in geography education through interactive methods and didactic games. Drawing on content and comparative analysis of scholarly and methodological sources, methodological modelling, and constructive design, the study identifies key problems associated with organising interactive learning activities. These include selecting a method before defining the intended learning outcome, equating outward activity with meaningful interactivity, weakening individual accountability in group work, and failing to specify clearly the expected learning product and assessment criteria. To address these issues, the article proposes a six-stage instructional framework that integrates the formulation of learning outcomes through geographical activity, the selection of problem-based questions and source materials, the planning of methods and content-related roles, the management of collaborative analysis, criteria-based assessment, reflection, transfer, and corrective support. The practical application of the framework is demonstrated through a role-based analytical game designed for the Grade 10 geography topic “Global Environmental Problems.”

Keywords: Geography education, didactic support, interactive methods, didactic games, geographical sources, meaningful interactivity, individual accountability, learning product, criteria-based assessment, role-based simulation, reflection, global environmental problems.



Introduction

The purpose of contemporary geography education extends beyond providing learners with ready-made information about geographical features, phenomena, and processes. Geography lessons should develop learners' spatial thinking and their ability to analyse maps and statistical sources, identify relationships between natural and socio-economic processes, compare different perspectives, and draw evidence-based conclusions. Achieving these outcomes requires didactic support to be oriented towards learner activity and demands coherent alignment among educational content, instructional methods, source materials, learning tasks, and assessment tools.

Interactive methods and didactic games have the potential to transform learners from passive recipients of established knowledge into active participants, investigators, and decision-makers. Through collaborative analysis, debate, case studies, role-based simulations, and cartographic games, learners can examine geographical information collectively, substantiate their views with evidence, evaluate alternative positions, and develop possible solutions to complex territorial problems. From this perspective, interactive learning constitutes an important didactic means of revealing the practical and analytical dimensions of geography.

However, the use of interactive methods or didactic games in educational practice does not invariably produce the intended geographical learning outcomes. In some cases, the method is selected before the lesson objectives and content are defined; group work is reduced to the simple division of tasks among learners; and the game becomes little more than a means of eliciting rapid responses, recalling geographical names, or determining a winner. Consequently, although learners' outward activity may increase, discipline-specific practices – such as analysing maps and statistical data, explaining territorial cause-and-effect relationships, evaluating competing evidence, and developing well-founded decisions—may remain insufficiently developed. This situation highlights the need to align the selection and application of interactive methods with clearly defined learning outcomes, geographical questions, source materials, learning products, assessment criteria, and reflection.



The purpose of this article is to identify the principal methodological problems encountered in the use of interactive methods and didactic games in geography education, analyse their didactic causes, and develop an integrated framework for their application oriented towards geographical activity. To this end, the article examines the didactic potential and limitations of interactive methods, substantiates criteria for selecting them in accordance with specific geographical practices, and proposes a six-stage methodological framework extending from the formulation of learning outcomes to reflection, transfer, and corrective support. The practical application of this framework is illustrated through a role-based analytical game designed for the Grade 10 geography topic “Global Environmental Problems.”

Literature Review

Issues related to the use of interactive methods and didactic games in geography education, the organisation of active and collaborative learning, the development of analytical thinking through geographical sources, and the assessment of learning outcomes have been addressed in the scholarly and methodological works of international researchers, including S. Freeman, S. L. Eddy, M. McDonough, M. K. Smith, N. Okoroafor, H. Jordt, and M. P. Wenderoth [1], P. Klein [3], J. L. Plass, B. D. Homer, and C. K. Kinzer [4], M. Prince [5], O. E. Shuvalova [7], and P. Wouters, C. van Nimwegen, H. van Oostendorp, and E. D. van der Spek [10], as well as Uzbek scholars such as R. J. Ishmuhamedov, A. A. Abduqodirov, and A. Pardayev [2], F. T. Rajabov and O. U. Abdimurotov [6], N. Turdiyev, Y. Asadov, and S. Akbarova [8], and X. Vaxobov, N. R. Alimqulov, and N. B. Sultanova [9]. These studies substantiate the influence of active learning on educational outcomes, the need to align interactive activities in geography lessons with subject content, the importance of integrating game elements with clearly defined didactic objectives, rules, feedback, and reflection, the purposeful use of maps and statistical sources in practical geographical tasks, and the methodological design of competency-based educational technologies.

Research Methodology

The study was conducted within systems-oriented, activity-based, competency-based, and discipline-specific methodological frameworks. The methods employed included content and comparative analysis of scholarly and



methodological sources, decomposition of pedagogical problems into their constituent elements, synthesis, methodological modelling, and constructive design. The principal units of analysis were the alignment of interactive methods with intended learning outcomes, the promotion of learners' meaningful engagement and individual accountability, the use of geographical sources, the production of clearly defined learning products, criteria-based assessment, reflection, and the transfer of knowledge to new contexts. Based on the systematic synthesis of the identified methodological problems, a six-stage framework for applying interactive methods and didactic games was developed. Its practical potential was modelled through a role-based analytical game designed for the Grade 10 geography topic "Global Environmental Problems."

Main Body

The effectiveness of interactive methods and didactic games in geography education is not determined solely by their organisational appeal or their ability to engage learners in visible activity. Their didactic value lies in the extent to which they direct learners towards analysing geographical sources, comparing territorial phenomena, identifying cause-and-effect relationships, evaluating evidence, and drawing well-founded conclusions. Interactive methods should therefore be designed not as decorative additions to a lesson or temporary motivational devices, but as didactic mechanisms that establish coherent links among learning objectives, geographical content, source materials, learner activity, and assessment.

The methodologically sound organisation of an interactive method or didactic game requires the alignment of several interrelated components. First, the intended geographical learning outcome must be clearly defined, after which an appropriate problem-based question and relevant sources should be selected, and learners' content-related roles and required actions should be planned. The activity should culminate in a clearly specified learning product, assessment evidence, and a form of reflection that demonstrates the learner's geographical thinking. If any of these components is unclear or disconnected from the others, the meaningful potential of interactivity may be diminished, reducing the activity to routine group work, question-and-answer exchanges, or entertainment.



The shortcomings encountered in the use of interactive methods in educational practice are often associated not with the inherent potential of a particular method, but with methodological misalignments in its selection and integration into the lesson structure. These include selecting a method before defining the intended learning outcome, treating outward activity as meaningful interactivity, weakening individual accountability in group work, and failing to specify the final learning product and assessment evidence. In addition, excessive time devoted to organisational procedures and the absence of criteria aligned with geographical learning outcomes may prevent learners' active participation from developing into substantive geographical analysis. The following section examines these problems and the methodological approaches through which they may be addressed.

The first problem is selecting the method before defining the intended learning outcome. When a lesson plan is developed, the name of a method—such as clustering, Jigsaw, debate, or case study – is often specified first, after which a topic-related task is sought. In this sequence, the method may retain its external organisational structure without becoming meaningfully integrated with the geographical content. A more appropriate sequence begins by determining the intended outcome: is the learner expected to locate a feature, compare two territories, explain the causes of a process, evaluate the reliability of a source, or propose a territorial solution? The method should then be selected as a form of activity capable of leading learners towards that outcome.

The second problem is the conflation of the concepts of “active” and “interactive” learning. Locating a feature on a map constitutes learner activity; however, interactivity remains limited unless learners engage with the evidence presented by others, explain their own reasoning, or contribute to a shared decision. In an interactive process, learners engage not only with their peers but also with maps, tables, texts, photographs, diagrams, and the conditions of the problem itself. This dimension is particularly important in geography education, because conclusions about a territory are generally reached by integrating evidence from multiple sources.

The third problem is the loss of individual accountability in group work. When a task is completed on a single worksheet, it is often carried out primarily by the



most active learner, while the remaining group members become little more than organisational participants. A polished group presentation does not demonstrate that every learner in the class has understood the relevant spatial pattern. Role allocation should therefore not be limited to positions such as “secretary”, “presenter”, and “timekeeper”. Roles aligned with the geographical task itself – such as map analyst, statistical-data verifier, causal-analysis expert, or evaluator of alternative solutions – strengthen each learner’s substantive responsibility for the content.

The fourth problem is the lack of clarity regarding the learning product at the conclusion of an interactive activity. A group may engage in discussion, exchange ideas, and listen to the teacher’s summary, yet no tangible evidence may remain to demonstrate the level of learning achieved. In geography education, the learning product may take the form of a concise territorial conclusion, an annotated map, a cause-and-effect diagram, a priority matrix, a route plan, or a decision statement. When such a product is clearly specified, the teacher can assess not only the degree of participation, but also the accuracy and evidential grounding of learners’ geographical thinking.

The fifth problem concerns the allocation of time. Forming groups, distributing task cards, explaining the rules, and presenting the results may consume a substantial portion of the lesson, thereby reducing the time available for substantive analysis. A complex method does not need to be used in every lesson. In some cases, a two-minute sequence of “think individually – check in pairs – formulate a shared conclusion” may be more effective than an extended game scenario. The scale and complexity of the method should be proportionate to the topic and the intended learning outcome, and organisational procedures should not displace the time required for geographical thinking.

The sixth problem relates to assessment. In interactive lessons, high value is often placed on visible activity, speed, volume of speech, or the attractiveness of a presentation. However, geographical learning outcomes require different criteria, including the accurate use of sources, appropriate consideration of maps and scale, clear explanation of territorial relationships, recognition of counter-evidence, and alignment of the conclusion with the conditions of the problem.



Distinguishing between criteria for participation and criteria for subject-specific achievement enhances the objectivity of assessment.

A didactic game may fulfil a range of functions in the geography classroom. Short activities such as cartographic dominoes, geographical bingo, outline-map relays, or “find the odd feature out” are well suited to reinforcing geographical nomenclature and spatial location. They help focus learners’ attention, diversify routine revision, and provide rapid feedback. Although the scope of such games is limited, their purpose is clear: to activate prior knowledge or identify errors.

In analytically oriented topics, however, game-based activity should operate at a more advanced level. Issues such as urban location, the allocation of water resources, construction in areas exposed to natural hazards, the design of tourist routes, or the delineation of protected areas require learners to make choices and consider their consequences. In such cases, the game functions less as a means of determining a winner and more as a model of decision-making. Learners assume roles characterised by different interests and constraints and seek a shared solution on the basis of cartographic and statistical evidence. Such situations reveal the multi-factor nature of geographical processes.

Competition within the rules of a game should be used with caution. Speed-based competition may be effective for recalling simple information, but rushing through the analysis of a complex map is likely to increase errors. Moreover, if the same high-performing learners repeatedly emerge as winners, the participation of other learners may decline. Instead of direct competition, a game may be structured around achieving a shared group criterion, improving upon a previous result, or selecting the most well-founded solution from among several alternatives.

Post-game analysis is one of the principal conditions of a game’s didactic value. Beyond answering the question “What happened?”, learners should also consider questions such as: “Why did we make this decision?”, “Which map or numerical evidence changed our view?”, “Which factor was missing from the rules?”, and “What consequences might this decision have in a real geographical context?” Without reflection, a game may remain memorable as an emotional experience but is unlikely to develop into generalised knowledge.



It should be emphasised that the principal criterion for selecting an interactive method should not be its popularity, organisational complexity, or visual appeal, but the geographical action required of the learner. A method serves the subject content only when it engages learners in analysing maps and statistical data, comparing territories, explaining causal relationships, evaluating alternative solutions, or developing a territorially informed decision. Accordingly, the design of each interactive activity should specify in advance the geographical action to be performed, the expected learning product, the evidence to be used for assessment, and any potential methodological risks.

The Think – Pair – Check – Share method is effective in situations where learners are required to formulate an initial conclusion from a map and verify it against a partner's evidence. Each learner first writes an independent territorial conclusion of two or three sentences, then discusses it with a partner and makes any necessary revisions. The learner's initial written response and the subsequent revisions made during pair work serve as assessment evidence. However, unless the task explicitly requires reference to a map or another geographical source, the paired discussion may be reduced to an exchange of unsupported opinions.

The Jigsaw method is well suited to topics that require learners to integrate information from different sources or geographical areas. Each "expert" examines a particular territory, map, table, or dimension of a problem and subsequently connects this information with the findings of other group members. The activity may culminate in a synthesising table, comparative diagram, or annotated map. Assessment should consider both the substantive contribution of each expert and the quality of the group's final synthesis. If the task is limited to dividing reading materials among groups, however, meaningful connections among the sources may not be established, and the method may lose its principal didactic value.

The case-study method enables learners to analyse a territorial problem from the perspectives of natural and socio-economic factors, as well as the interests of different stakeholders. Rather than merely retelling the given situation, learners should identify the causes of the problem, develop several possible solutions, and evaluate their likely consequences. The final learning product should consist of alternative solutions and a well-founded recommendation supported by relevant



sources. Assessment should take into account the reliability of the evidence used, the clarity of the selected criteria, and the geographical interpretation of potential consequences. Unless the case content is aligned with a guiding question and explicit assessment criteria, the activity may be reduced to a simple exercise in reproducing the text.

Debate is used to evaluate competing territorial decisions or alternative development pathways. Learners defend their positions using maps, statistical data, and geographical concepts, while also responding to evidence presented by the opposing side. The learning product takes the form of a position statement accompanied by a reasoned response to counterarguments. Assessment should focus not on rhetorical performance, but on the quality of geographical source use, the relevance of the evidence, and the extent to which the conclusion is well founded. Otherwise, verbal fluency may overshadow geographical analysis and reduce the substantive learning outcome to a secondary consideration.

Role-based simulation is particularly effective for topics that require learners to consider resource use, reconcile territorial interests, and evaluate the consequences of decisions. Learners assume roles such as environmental specialist, farmer, entrepreneur, local government representative, or community group, justify their interests with geographical evidence, and work towards a shared territorial solution. The activity may culminate in an agreement, action plan, or decision map. Assessment should consider not only the learner's ability to justify the interests associated with the assigned role, but also their capacity to take broader territorial consequences into account. Excessive emphasis on the emotional or performative aspects of the role, however, may cause the subject content to become secondary.

Cartographic didactic games are well suited to reinforcing learners' understanding of the location, classification, direction, and spatial relationships of geographical features. Such activities may result in a completed outline map, a classification scheme for geographical features, or a list of identified errors. Assessment should consider the accuracy of feature placement, the correct use of cartographic symbols, and the quality of the accompanying explanation. Organising the game solely around speed, being the first to respond, or recalling geographical names limits its analytical potential. It is therefore advisable to



require learners, after providing a rapid response, to explain the reasons for a feature's location, its relationships with other territories, or the relevant geographical pattern.

Accordingly, the same interactive method may be applied across different geography topics, but its didactic effectiveness depends not on the name of the method itself, but on the content of the task, the sources used, and the learning product created. In the Jigsaw method, for example, it is not sufficient for groups merely to collect information about separate territories; the activity should culminate in a synthesis of the similarities, differences, and interrelationships among them. Otherwise, the method may remain little more than a divided-reading exercise.

Learners' levels of readiness should also be taken into account when selecting a method. Providing learners who have not yet developed a secure understanding of cartographic symbols with multiple sources, a complex problem, and several content-related roles at the same time may increase cognitive load. It is therefore advisable to begin with simple map comparison and brief paired explanation before progressing to group synthesis, case studies, debate, and role-based simulation. When interactivity is increased gradually, learners acquire not only the organisational procedures of the method, but also the processes of geographical thinking and evidence-based reasoning.

The problems identified through the analysis indicate that interactive methods and didactic games should not be designed as a collection of isolated techniques, but as a structured instructional sequence extending from the lesson objective to reflection. The proposed framework comprises six stages, each of which establishes a connection between geographical content and learner activity (Table 1).



Table 1 Framework for Applying Interactive Methods and Didactic Games

Stages	Main Task	Teacher Activity	Learner Activity	Outcome
Stage I	Defining the Learning Outcome through a Geographical Action	Transforms a general objective expressed as “knows” into an observable action, such as locating, comparing, explaining, evaluating, or designing	Understands the expected learning product and the criteria for success	Alignment among the Objective, Learning Product, and Assessment Criteria
Stage II	Preparing a Geographical Question and a Package of Source Materials	Selects an appropriate range of problem-based questions, maps, tables, texts, and images	Interprets the source and identifies its purpose and limitations	The Capacity of the Sources to Support an Answer to the Question
Stage III	Selecting the Method, Game Rules, and Content-Related Roles	Selects an interactive format suited to the geographical action and defines individual accountability within the group	Accepts the assigned role and task and completes the individual preparatory work	Each Participant’s Substantive Contribution
Stage IV	Collaborative Analysis and Decision-Making	Manages the process through questions, interim time checks, and brief feedback	Compares sources, presents evidence, defends their position, and revises it when necessary	Evidence-Based Geographical Discussion
Stage V	Learning Product and Criteria-Based Assessment	Assesses an annotated map, conclusion, plan, or decision statement against explicit criteria	Produces the group learning product and provides an individual final response	Evidence of Group and Individual Achievement
Stage VI	Reflection, Transfer, and Corrective Support	Guides learners in analysing the game or method in relation to the geographical content and transforms identified errors into subsequent learning tasks	Explains which evidence changed their view, the limitations of the rules, and how the knowledge can be transferred to another context	Generalised Knowledge and Motivation for Continued Learning

In the first stage, it is the learning outcome – not the name of the method or game – that is defined. A statement such as “Learners know about water resources” is insufficient for assessment. By contrast, an outcome such as “The learner explains the distribution of water resources on the basis of two maps and proposes an evidence-based solution to a situation involving conflicting interests” provides clear guidance for selecting the sources, method, and learning product.

In the second stage, a geographical question is formulated that requires learners to engage in substantive thinking. The question should be designed not to elicit



the reproduction of a ready-made answer, but to direct learners towards identifying relationships among sources. The question “Why did the volume of water in the Aral Sea decline sharply?” may be too general, whereas “On the basis of data on water consumption, irrigated land, and population needs, which decisions intensified the decline in water volume?” defines the analytical direction more precisely.

In the third stage, the method and roles are selected. When a task requires learners to develop a decision that takes account of different stakeholder interests, a role-based simulation or case-study method is more appropriate than a simple question-and-answer activity. A role should define not only the character portrayed by the learner, but also the sources to be analysed and the geographical task to be performed. For example, an environmental specialist may analyse data on environmental flows and salinity, a farmer may examine a table showing water consumption and crop yields, and a local government representative may assess the needs of the population and infrastructure.

In the fourth stage, the collaborative process is managed. The teacher does not provide the answer directly but ensures that the discussion remains grounded in geographical evidence. Questions such as “Which map supports this view?”, “Which territory would be affected most?”, and “Would your conclusion still hold if the scale of analysis changed?” help maintain the substantive focus of interactivity. Where necessary, the teacher may introduce an interim pause and ask each group to summarise its current conclusion and strongest supporting evidence in a single sentence.

In the fifth stage, the activity is transformed into a tangible learning product. The product need not be extensive. A one-page decision map, a three-point recommendation, or an “evidence–explanation–consequence” table may be sufficient. Most importantly, the product should demonstrate the learner’s geographical action and be assessed against criteria communicated in advance. In addition to the group outcome, obtaining a brief individual conclusion from each learner enables a more accurate assessment of participation and achievement.

The sixth stage is devoted to reflection and transfer. At the conclusion of a game or debate, the process should not be limited to announcing a winner. Learners discuss the evidence that influenced their decision, the factors that were



overlooked, and the differences between the game model and the real geographical situation. They are then assigned a task requiring them to transfer a similar approach to another territory or topic. It is precisely this stage that transforms the interactive experience into generalised knowledge.

The practical application of the proposed methodological framework may be illustrated through the Grade 10 geography topic “Global Environmental Problems”. The intended learning outcome is defined as follows: the learner analyses at least two geographical sources relating to the spatial distribution of global environmental problems, explains their natural and socio-economic causes, and justifies priority solutions by taking ecological, economic, and social consequences into account.

For the lesson, thematic maps, statistical tables, diagrams, and brief information materials are prepared on climate change, freshwater scarcity, desertification, deforestation, atmospheric and ocean pollution, and biodiversity loss. The sources present the spatial extent of each problem, the severity of its development, the number of people affected, and its potential consequences. The class is divided into four groups: environmental scientists, advocates of economic development, representatives of developing countries, and representatives of international environmental organisations. In addition to a common set of sources, each group receives a role-specific card outlining supplementary information, stakeholder interests, and relevant constraints.

Under the rules of the game, the groups are required to allocate limited international funding and resources among four principal areas of action for addressing global environmental problems: reducing greenhouse-gas emissions, protecting freshwater resources, conserving forests and biodiversity, and reducing waste and pollution. Each group first prepares a proposal based on the interests and responsibilities associated with its assigned role. However, every component of the proposal must be supported by specific evidence drawn from a thematic map, statistical dataset, or diagram.

At the next stage, the groups present their proposals, analyse the evidence offered by the other groups, and respond to opposing viewpoints. The representatives of international environmental organisations facilitate the general discussion and coordinate the development of a unified action programme based on the urgency



of each environmental problem, its spatial extent, its impact on populations, its economic costs, and its long-term consequences. During the discussion, the teacher directs learners back to geographical evidence through questions such as: “Which map supports this view?”, “In which regions is this problem most severe?”, and “How might the proposed measures affect another environmental problem?”

Once an initial decision has been developed, the teacher introduces a new scenario card. This card presents a changed set of conditions, such as a sharp rise in global temperatures, prolonged drought, large-scale forest fires, increased discharge of plastic waste into the oceans, or intensified environmental migration in certain regions. The groups then reconsider their initial decisions and revise both the allocation of resources and the priority measures proposed. This stage demonstrates the interconnected and dynamic nature of ecological systems, as well as the dependence of decision-making on specific geographical conditions. As the final learning product, the class prepares a concise international action programme that includes a priority table for global environmental problems, a resource-allocation scheme, at least three geographical arguments supporting the decision, and the anticipated ecological and socio-economic consequences. Assessment is based on the accurate use of geographical sources, consideration of spatial differences among the problems, coherent explanation of causes and consequences, evidence-based justification of the proposed solutions, and the ability to move beyond narrow group interests towards the broader global interest. At the end of the lesson, each learner completes an individual reflection task by providing written responses to questions such as: “Which environmental problem did I initially consider the highest priority?”, “Which map or statistical evidence changed my view?”, “What limitations does the proposed solution have?”, and “What additional information would be required for real-world international decision-making?” Alongside the assessment of group performance, this task makes it possible to evaluate each learner’s geographical thinking and individual contribution.

This role-based analytical game differs from activities designed merely to memorise environmental terminology or lists of problems. Its rules encourage learners to compare different geographical sources, recognise conflicts among



stakeholder interests, make evidence-based decisions, and assess the consequences of those decisions for different regions. In this way, the didactic game becomes not simply an entertaining element of the lesson, but a methodological tool for modelling the spatial characteristics and interconnectedness of global environmental processes.

Conclusion

The results of the theoretical and methodological analysis indicate that the effectiveness of interactive methods and didactic games in geography education is determined not by learners' outward activity, the popularity of a particular method, or the entertainment value of the lesson, but by the nature of the geographical activities in which learners engage. An interactive method serves the didactic purposes of geography education only when it directs learners towards analysing maps and statistical data, comparing territories, explaining cause-and-effect relationships, evaluating evidence, and drawing well-founded conclusions.

The analysis identified several principal methodological problems: selecting an interactive method before defining the intended learning outcome; treating active and interactive learning as equivalent; weakening individual accountability in group work; failing to specify the final learning product clearly; devoting excessive time to organisational procedures; and prioritising speed and visible activity over geographical learning outcomes in assessment. Excessive emphasis on competition and rapid responses in didactic games may likewise restrict opportunities for geographical analysis, decision-making, and reflection.

As a methodological solution to these problems, a six-stage framework for applying interactive methods and didactic games was proposed. This framework integrates, within a coherent instructional sequence, the formulation of learning outcomes through geographical actions, the selection of problem-based questions and source materials, the planning of methods and content-related roles, the management of collaborative analysis, the criteria-based assessment of clearly defined learning products, and the organisation of reflection, transfer, and corrective support. As a result, the interactive method becomes not an isolated decorative element of the lesson, but a methodological mechanism that aligns objectives, learner activity, source materials, learning products, and assessment.



The practical potential of this framework was modelled through a role-based analytical game designed for the Grade 10 topic “Global Environmental Problems”. This model supports the organisation of learning activities in which learners compare different geographical sources, recognise conflicts among stakeholder interests, develop evidence-based decisions, and evaluate their ecological and socio-economic consequences.

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