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Generative AI for Personalized Instructional Design in Junior Secondary English Education

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Abstract— *Generative artificial intelligence may extend teachers' capacity to prepare differentiated materials, but generating alternatives does not establish their pedagogical suitability. This conceptual paper develops a teacher-led framework for personalized instructional design in junior secondary English education. It connects differentiated instruction and the zone of proximal development with constructive alignment to organize four dimensions: learner diagnosis, tiered objectives, activity design, and tailored assessment. The proposed contribution is a conditional account of how constraint-based generation, scaffold variation, and explicit alignment checks could support justified design decisions. A five-stage workflow assigns drafting tasks to AI and approval decisions to teachers. A hypothetical Grade 8 English lesson on "Seeing the doctor" illustrates how the framework could be applied. Three design propositions concern the relevance of generated alternatives, the preservation of shared learning purposes, and the traceability of design revisions. These propositions require empirical evaluation against well-designed teacher-led differentiation. The framework does not constitute a new theory of learning or demonstrate gains in achievement, engagement, diagnostic accuracy, or teacher efficiency. Its usefulness depends on credible learner evidence, teacher verification, privacy protection, and equitable access.*

Keywords— ***generative artificial intelligence; personalized instructional design; differentiated instruction; junior secondary English; human–AI collaboration***

I. INTRODUCTION

The English curriculum standards for compulsory education in China provide the policy context for responsive English teaching (Ministry of Education of the People's Republic of China, 2022). For instructional design, a central practical question is how to connect a shared curriculum purpose with differences in learners' current performance and support needs. The present paper uses personalized instructional design to mean teacher-led adjustment of goals, tasks, scaffolds, and assessment in response to relevant evidence. It does not require a separate curriculum or an automated learning pathway for every student.

Generative AI has prompted discussion of new possibilities and risks in educational design (Zhu & Yang, 2023). Chinese practitioner literature already addresses AI-assisted junior secondary English teaching (Zou, 2024) and generated materials for grammar instruction (Shi & Ma, 2025). Research on university language learners also discusses potential benefits and reservations (Klimova et al., 2024). These sources motivate examining design support, but they do not validate the framework proposed here or establish its effectiveness with younger learners.

The design problem considered here is the justification of variation. Producing several versions of a lesson is useful only if their differences address credible needs while maintaining the intended learning purpose. In the Chinese practice of tongke yigou, teachers prepare alternative designs for the same lesson. This paper uses that practice as a planning context rather than claiming a documented history or diagnosing the prevalence of weaknesses in Chinese classrooms. It asks: How can generative AI be organized within a teacher-led process that makes

differentiated design choices explicit, reviewable, and revisable?

The paper develops an operational framework through a selective conceptual synthesis and a constructed scenario. It is neither a systematic literature review nor an empirical classroom study. Sources were chosen for their relevance to differentiation, developmental support, instructional alignment, and educational uses of generative AI; no exhaustive search or formal evidence synthesis is claimed. Section 2 establishes the conceptual rationale, Section 3 specifies the framework, and Section 4 provides a workflow and hypothetical illustration. Section 5 presents testable propositions and limitations, followed by the conclusion.

II. THEORETICAL FOUNDATIONS

2.1 Alternative designs for the same lesson

Alternative lesson designs offer a way to examine how different instructional choices serve the same learning purpose. The relevant distinction is between variation in presentation and variation in the opportunities available to learners. A different opening activity, for example, need not provide a different level of language support or a better opportunity to explain meaning. Accordingly, this paper evaluates candidate designs through three questions: What need justifies the change? What learning purpose remains shared? What evidence would indicate whether the change was appropriate? These are proposed design criteria, not findings about existing teaching practice.

Differentiated instruction provides an established basis for adjusting content, process, and products in relation to learner readiness, interests, and learning profiles (Tomlinson, 2001). In the present framework, profiles are provisional accounts of task-relevant needs. They must not become permanent labels or claims about fixed learning styles. Learners should be able to use different support options as their performance and the task change. This interpretation makes flexible design and ongoing assessment more important than maintaining predetermined groups.

2.2 Generative AI as a source of candidate designs

Generative AI produces candidate content in response to prompts. Educational discussions describe possible uses in preparing materials, supporting learning, and developing assessment resources (Lu et al., 2023). For the present purpose, its relevant capacity is to draft alternatives from explicit instructions: the teacher supplies a learning purpose, a description of needs, and constraints, and then examines the resulting options. This capacity should be distinguished from the ability to diagnose learners accurately or establish that an instructional choice works.

AI-assisted English teaching has already been discussed in relation to lesson organization and grammar materials (Shi & Ma, 2025; Zou, 2024). This paper therefore makes no claim to introduce AI-generated differentiation. It specifies how candidate designs could be connected to evidence and checked across a planning cycle. AI output remains a proposal: a fluent explanation may misrepresent a source, a simpler text may remove an important inference, and an attractive activity may fail to elicit the performance named in the objective. Teachers must inspect these features directly.

2.3 Developmental support and instructional alignment

Vygotsky's (1978) zone of proximal development concerns the relation between independent performance and performance possible with guidance. It provides a rationale for contingent assistance, not a method for assigning ability levels from a score or an AI-generated description. Applying this rationale would require teachers to observe what learners can do with and without support. In this paper, the hypothetical profiles illustrate possible planning decisions; they cannot identify any learner's developmental range.

Constructive alignment connects intended learning performances, teaching activities, and assessment (Biggs, 1996). Although Biggs developed the account in higher education, it offers a conceptual design principle that can be adapted here; its transfer does not itself establish effectiveness in junior secondary English. A communicative objective, for example, requires opportunities to communicate meaning and assessment evidence of that performance. Vocabulary matching alone would not demonstrate the ability to sustain an exchange.

The framework combines these perspectives through a specific design relationship. Differentiation identifies what may vary, developmental support helps justify the assistance offered, and alignment constrains how objectives, activities, and assessment fit together. Generative AI supplies drafts within those constraints. The proposed contribution lies in making these connections explicit during human–AI planning. The four dimensions are an organizing device, not a new learning theory, and teacher approval is a condition of the process rather than proof of validity.

III. A FRAMEWORK FOR PERSONALIZED INSTRUCTIONAL DESIGN

3.1 From alternative generation to justified selection

In the proposed process, the teacher first defines a shared learning purpose and the evidence relevant to a planning decision. AI can then draft alternatives that vary a specified feature, such as vocabulary support, response format, or the

number of prompts. The teacher compares the drafts against the original constraints and records why an option is retained, modified, or rejected. Revisions should preserve the learning purpose unless the teacher explicitly decides that the purpose also needs reconsideration.

This process could give teachers a wider range of designs to review. It does not assume that AI-supported planning is superior to experienced teacher planning. Its potential value is the opportunity to make alternatives and their tradeoffs visible. A useful planning record would link the evidence or assumption, the requested variation, the teacher's decision, and the assessment evidence expected later. Future research should assess whether keeping this record improves design quality and how much additional work it requires.

3.2 Four dimensions of support

Figure 1 shows the four dimensions as an iterative planning cycle. They concern what teachers need to decide; the five-stage workflow in Section 4 describes when those decisions are made and reviewed.

TEACHER JUDGMENT AT EVERY TRANSITION Shared curriculum goals • Verified evidence • Final approval
1 LEARNER DIAGNOSIS AI drafts an evidence summary → Teacher verifies each interpretation
↓ Verified needs inform goals
2 TIERED OBJECTIVES AI drafts goals and scaffolds → Teacher checks challenge and progression
↓ Approved goals constrain tasks
3 ACTIVITY DESIGN AI generates task variants → Teacher checks content and access
↓ Tasks provide opportunities to demonstrate learning
4 TAILORED ASSESSMENT AI drafts criteria → Teacher assesses actual work
↺ Reviewed assessment evidence returns to learner diagnosis

Note. Arrows represent proposed design relationships, not measured effects. Privacy, accuracy, fair access, and teacher responsibility apply throughout.

Fig.1: Four dimensions of teacher-led AI-supported instructional design

3.2.1 AI-supported learner diagnosis

Teachers may ask AI to summarize approved, de-identified work excerpts and teacher-coded assessment information, identify patterns for review, or suggest questions for further assessment. Each interpretation must remain traceable to the supplied evidence. Unsupported claims about stable ability, motivation, metacognition, or learning preferences should be rejected. When evidence is sparse, synthetic planning descriptions are preferable to invented learner findings. Teachers can investigate uncertainties through further observation or assessment and reconsider grouping as needs change.

3.2.2 Tiered objectives with a shared purpose

Objectives should state observable performances and distinguish the expected performance from the support available. AI may draft options from teacher-specified curriculum goals and reviewed needs. In reading, for example, learners might locate relevant information with vocabulary support or explain an inference using textual evidence. The teacher checks whether these options preserve access to the central purpose and whether learners can move between them. A tier is a planning option, not evidence that its demands fall within a particular learner's zone of proximal development.

3.2.3 Differentiated activities and scaffolds

AI may vary a task's language, prompts, models, or response format while the teacher holds its purpose constant. For a simulated consultation, this could involve optional sentence starters, role cards, or prompts requiring reasons. The teacher checks whether each task still requires learners to interpret and communicate meaning. Simplification should not remove the intellectual demand that the objective requires, and additional complexity should not become a reward reserved for a fixed group.

Materials also require checks of linguistic accuracy, accessibility, feasibility, and cultural representation. A source-based task must use sources that the teacher has actually located and reviewed. Generated descriptions of national practices should not be accepted as evidence or treated as representative of an entire country. Materials should remain usable through teacher-provided print or shared resources so that personal access to an AI service is not a condition of participation.

3.2.4 Tailored assessment with comparable criteria

Assessment planning should begin with the performance named in the objective. A common core of criteria can address comprehensibility, relevance, and appropriate language, while task-specific criteria address explanation, evidence use, or the level of assistance. Learners need opportunities to demonstrate the shared purpose; task-specific extensions should not make grades across different tasks appear directly comparable without justification.

AI can draft prompts, criteria, and feedback templates, but feedback on a learner must refer to actual work. Teachers verify judgments, record the support available, retain responsibility for grades, and provide opportunities to question feedback. Alignment checking is a review task rather than an automated certification: teachers must inspect whether the proposed evidence warrants the intended interpretation.

IV. A PRACTICAL WORKFLOW FOR COLLABORATIVE DESIGN

4.1 Workflow design

The workflow in Figure 2 separates four planning stages from future implementation and reflection. At each planning stage, the teacher checks the draft before it becomes an input to the next stage. Unresolved errors or unsupported inferences require revision or rejection rather than automatic progression.

PLANNING STAGES 1–4 AI drafts; the teacher checks, revises, and approves before proceeding
1 REVIEW LEARNER EVIDENCE Input: approved evidence or synthetic descriptions Output: teacher-verified account of current needs
↓
2 SET TIERED OBJECTIVES Input: curriculum purpose and reviewed needs Output: observable goals with justified scaffolds
↓
3 DESIGN DIFFERENTIATED ACTIVITIES Input: approved goals and resource constraints Output: checked tasks, materials, and support options
↓
4 PLAN TAILORED ASSESSMENT Input: goals and tasks Output: shared criteria plus task-specific evidence requirements
↓ Future application only; not undertaken in this paper
5 IMPLEMENT AND REFLECT Teacher collects actual evidence and reviews fit and consequences
↺ Revisit any earlier stage when reviewed evidence warrants revision

Note. Arrows represent proposed design relationships, not measured effects. Privacy, accuracy, fair access, and teacher responsibility apply throughout.

Fig.2: Five-stage workflow with teacher approval and evidence feedback

Stage 1 establishes a teacher-verified account of current needs from approved evidence, or an explicitly synthetic description when developing examples. Stage 2 turns the shared purpose into observable objectives with justified support options. Stage 3 develops tasks that elicit the intended performances. Stage 4 specifies the criteria and evidence through which those performances could be judged. Stage 5 would involve classroom implementation and reflection in a future application. The present paper undertakes none of that implementation or data collection.

A planning prompt should identify the shared purpose, the basis of the learner description, the feature allowed to vary, and the features that must remain constant. It should ask for alternatives and their assumptions rather than a definitive diagnosis. The teacher then compares the drafts with those instructions and records the final decision. A later reviewer should be able to distinguish evidence supplied by the teacher from suggestions introduced by the model.

For any future use, schools and teachers would need to establish appropriate authorization and data handling arrangements. Personal identifiers, sensitive records, and identifiable recordings should not be entered into public AI services. De-identification alone does not resolve all privacy concerns; approved systems, data minimization, access restrictions, and retention arrangements are also needed. Teachers can prepare generic descriptions when access or authorization is unavailable. These are implementation conditions of the proposed workflow, not a claim of institutional approval.

4.2 A hypothetical instructional scenario

The following hypothetical scenario concerns a Grade 8 English lesson on "Seeing the doctor." It is a constructed planning example, not a report of a classroom experiment, an implemented lesson, or a textbook-based intervention. No students were recruited and no pretest scores, recordings, homework records, or observations were collected or analyzed for this scenario. The lesson theme is retained to demonstrate design choices without relying on an unverified textbook edition or module attribution.

For illustration, assume three provisional planning profiles. Profile A describes learners who recognize relevant vocabulary but need sentence support; Profile B describes learners who communicate basic meanings but need help explaining interpretations; Profile C describes learners who handle more complex language but need guidance in evaluating cultural representations. These are constructed assumptions, not participant characteristics, diagnostic findings, or fixed ability groups. An actual teacher would need relevant assessment evidence and would permit movement between support options.

All profiles share the purpose of understanding a short health-related exchange and producing comprehensible, relevant advice in English. For Profile A, a candidate objective is to complete a simulated consultation using optional word banks and sentence starters, including "should" and "should not." Profile B could explain advice by linking it to details in a supplied text. Profile C could compare two teacher-verified accounts of healthcare encounters in China and the United Kingdom, distinguish source-specific details from broader claims, and justify a response. These extensions do not replace access to the shared communicative purpose.

An example prompt is: "Using a synthetic Grade 8 planning description, draft three versions of a short consultation task. Preserve the purpose of exchanging information and giving relevant advice. Vary only the scaffolds and explanation demands. Include the expected learner output, criteria for review, and assumptions requiring teacher checking. Do not invent learner data, textbook references, or healthcare facts." This is a proposed prompt for future use, not a record of an executed model interaction or a tested output.

AI could draft vocabulary matching followed by scaffolded role-play for Profile A, information-gap reading followed by reasoned advice for Profile B, and source-based comparison followed by a short response for Profile C. The teacher would check every task and source, adjust support, and make extensions available as appropriate. Cultural comparison would recognize variation within each setting. Health content would serve language learning; fictional consultation scripts would require checking and would not constitute medical guidance.

Assessment could use shared criteria for comprehensibility, relevance, and appropriate language, alongside the task-specific evidence in Table 1. Teachers would record which scaffolds learners used and assess response quality separately. AI could prepare feedback templates, but the teacher would complete and verify them against actual work only if the lesson were implemented. Table 1 contains planning assumptions and proposed evidence, with no learner records, scores, or results.

Table 1: Hypothetical profiles and aligned design options for a shared communicative purpose

Assumed need	Candidate objective	Task and support	Proposed assessment evidence
A. Sentence support	Complete a comprehensible simulated consultation using target vocabulary and advice forms.	Vocabulary matching followed by role-play; optional word bank and sentence starters.	Role-play response: relevant advice and understandable sentences. Record scaffolds used.
B. Explanation support	Explain advice by referring to relevant details in a supplied text.	Information-gap reading and paired exchange; optional prompts asking for reasons.	Oral or written advice linked to text details; distinguish comprehension from unsupported guesses.
C. Source evaluation support	Compare two verified accounts and justify a response without national generalizations.	Source-based comparison and short response; source-checking questions.	Response identifies source-specific details, uses evidence, and acknowledges within-context variation.

Note. All profiles are synthetic and provisional. Shared criteria are comprehensibility, relevance, and appropriate language. Task-specific criteria supplement this common core; they do not establish equivalent task difficulty. No outcomes are reported.

A conditional reflection illustrates the final stage without implying an observed result. If future evidence showed limited participation in a Profile B discussion, the teacher could examine task clarity, language support, and opportunities to speak before changing the design. If source comparisons remained superficial, the teacher could review the reading materials and add questions requiring textual evidence. These are possible responses to future evidence. No increase in participation, second teaching cycle, or improvement in intercultural understanding is claimed.

V. DESIGN PROPOSITIONS AND LIMITATIONS

5.1 Testable design propositions

The framework yields three conditional propositions. First, specifying the shared purpose, relevant needs, and permissible variation should produce a higher proportion of usable candidate designs than a generic request for a personalized lesson. This proposition could be examined by having independent raters judge drafts against predefined constraints, while accounting for teacher expertise and the time spent verifying them. Generating more drafts would not, by itself, indicate better design quality.

Second, varying scaffolds while explicitly preserving the intended performance should reduce mismatches between objectives, tasks, and assessment relative to unconstrained generation. Evaluation would need to check both alignment and access to challenge: apparent alignment achieved by lowering expectations for some learners would not support the proposition. Expert review could test design coherence before any classroom study; it could not establish learning gains.

Third, recording the link from evidence or assumption to teacher decision should make revisions easier to explain and audit than retaining only the final AI-generated plan. The relevant outcomes would include the traceability of decisions, correction of unsupported inferences, and the effort required to maintain the record. Greater transparency may increase work, so any efficiency claim would require measurement of drafting, checking, correction, and documentation together.

5.2 Scope and future validation

These propositions specify a proposed design logic, not a demonstrated causal mechanism. The conceptual synthesis is selective, the scenario is constructed, and no prompt comparison, model evaluation, teacher interview, or classroom intervention was conducted. The framework's relationship to existing differentiation and alignment principles limits its theoretical novelty. Its contribution is the operational connection between generative drafting, teacher approval, and evidence-linked revision in a specific planning context.

Future studies should first establish whether teachers can use the process consistently and whether independent reviewers judge the resulting plans appropriate. Classroom evaluation should then compare it with well-designed teacher-led differentiation, document the AI model and its version, the prompts and settings used, the edits made to AI

outputs, and the support provided to learners, and examine learning, participation, workload, and equity. Claims about younger learners cannot be inferred from university studies alone. Teacher preparation is also relevant: a systematic review identifies challenges and practices in training teachers to use AI, rather than validating this particular workflow (Aljemely, 2024).

Potential adverse effects include unsupported profiling, differential access to demanding tasks, inaccurate materials, cultural stereotyping, and time diverted to checking generated outputs. A strong evaluation would report rejected drafts and unintended consequences as well as usable materials. Students should not be required to create personal AI accounts for teacher-directed activities, and any future research would need the applicable institutional ethics, consent, and safeguarding arrangements before data collection.

VI. CONCLUSION

Generative AI can be positioned as a source of candidate designs within a teacher-led planning cycle. This paper connects learner diagnosis, tiered objectives, activity design, and tailored assessment through explicit constraints, scaffold variation, alignment review, and recorded teacher decisions. The hypothetical scenario shows how those components could fit together while preserving a common communicative purpose. The framework offers testable design propositions; it provides no evidence of diagnostic accuracy, learning improvement, engagement gains, or reduced workload. Its practical value will depend on whether credible evidence, careful verification, and fair access can be sustained in actual teaching.

DECLARATIONS

Ethics and data availability

This conceptual paper reports no recruitment, intervention, human-participant data collection, or analysis of learner records. Section 4.2 is a constructed hypothetical scenario. No empirical dataset was generated or analyzed. The figures and table represent proposed design relationships and planning assumptions.

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The authors declare no competing interests. Identifying author contribution information is provided on the separate title page for anonymous review.

REFERENCES

[1] Aljemely, Y. (2024). Challenges and best practices in training teachers to utilize artificial intelligence: A systematic review. *Frontiers in Education, 9*, Article 1470853. https://doi.org/10.3389/feduc.2024.1470853

[2] Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education, 32*(3), 347–364. https://doi.org/10.1007/BF00138871

[3] Klimova, B., Pikhart, M., & Al-Obaydi, L. H. (2024). Exploring the potential of ChatGPT for foreign language education at the university level. *Frontiers in Psychology, 15*, Article 1269319. https://doi.org/10.3389/fpsyg.2024.1269319

[4] Lu, Y., Yu, J., Chen, P., & Li, M. (2023). Shengchengshi rengong zhineng de jiaoyu yingyong yu zhanwang: Yi ChatGPT xitong wei li [Educational applications and prospects of generative artificial intelligence: The case of ChatGPT]. *Zhongguo Yuancheng Jiaoyu, 43*(4), 24–31, 51. https://doi.org/10.13541/j.cnki.chinade.20230301.001

[5] Ministry of Education of the People's Republic of China. (2022). *Yiwu jiaoyu Yingyu kecheng biaozhun (2022 nian ban)* [English curriculum standards for compulsory education (2022 edition)]. Beijing Normal University Press.

[6] Shi, Q., & Ma, M. (2025). Shengchengshi rengong zhineng funeng chuzhong Yingyu sanwei yufa jiaoxue de celüe tanjiu: Yi xianzai jinxingshi de jiaoxue wei li [Strategies for generative AI-supported three-dimensional grammar teaching in junior secondary English: The case of the present progressive]. *Zhongxiaoxue Waiyu Jiaoxue (Zhongxue Pian)*, (8), 36–41. https://flts.bnu.edu.cn/node/16900

[7] Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). ASCD.

[8] Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.

[9] Zhu, Y., & Yang, F. (2023). ChatGPT/shengchengshi rengong zhineng yu jiaoyu chuangxin: Jiyu, tiaozhan yiji weilai [ChatGPT/AIGC and educational innovation: Opportunities, challenges, and the future]. *Huadong Shifan Daxue Xuebao (Jiaoyu Kexue Ban), 41*(7), 1–14. https://doi.org/10.16382/j.cnki.1000-5560.2023.07.001

[10] Zou, Y. (2024). Rengong zhineng fuzhu chuzhong Yingyu jiaoxue de "yi he, san jie, si ji" lujing [A "one core, three stages, and four skills" approach to AI-assisted junior secondary English teaching]. *Jiaoxue Yuekan Zhongxue Ban (Waiyu Jiaoxue)*, (12), 10–13.