

How Interactive Teaching Promotes Student Self-Development

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Abstract: As a student-centred teaching paradigm, interactive teaching is receiving increasing attention in higher education. Drawing on constructivist learning theory, this paper systematically explores the underlying mechanisms through which interactive teaching promotes student self-development. Research indicates that interactive teaching can effectively enhance students' metacognitive abilities, awareness of autonomous learning, and self-efficacy through pathways such as creating dialogic contexts, stimulating cognitive conflict, and facilitating meaning negotiation. The paper further analyses the differentiated roles of three fundamental forms of interaction—teacher-student, student-student, and human-environment—in student self-development, and proposes strategic recommendations for optimising the design of interactive teaching.

Keywords: Interactive teaching; Self-development; Constructivism; Higher education; Learning autonomy.

1. Introduction

The fundamental mission of higher education lies not only in imparting specialist knowledge, but also in cultivating lifelong learners equipped with autonomous learning abilities, critical thinking and an awareness of continuous development. However, traditional lecture-based teaching often treats students as passive recipients of knowledge, neglecting their active role in the process of meaning-making. In recent years, interactive teaching—as a pedagogical model emphasising dialogue and collaboration between teachers and students, and amongst students themselves—has gradually become a key direction for teaching reform in higher education institutions. How, then, does interactive teaching promote students' self-development? Clarifying this question holds significant theoretical value and practical significance for optimising instructional design and enhancing the quality of talent cultivation.

In this paper, self-development primarily refers to students' ability to actively plan, regulate and reflect on their own learning and growth processes, encompassing dimensions such as metacognitive abilities, self-efficacy and intrinsic motivation for learning. Interactive teaching, grounded in constructivism, emphasises the co-construction of knowledge and the active participation of learners [1]. It should be noted that self-development is not achieved overnight, but rather constitutes a spiralling process. The support provided by interactive teaching is not a single linear causal relationship, but rather an ecosystem interwoven with multiple factors. This paper will examine the intrinsic connection between interactive teaching and student self-development from a theoretical perspective, analyse its mechanisms of action, and propose corresponding recommendations for teaching optimisation.

2. Theoretical Foundations and Core Characteristics of Interactive Teaching

2.1. The View of Learning from a Constructivist Perspective

Constructivism holds that knowledge is not passively received, but actively constructed by learners on the basis of their existing experiences. Piaget's theory of assimilation and accommodation suggests that cognitive development stems from the interaction between the individual and the environment; Vygotsky's 'zone of proximal development' theory further emphasises that social interaction is the key driving force behind cognitive development [2]. Interactive teaching puts this theory into practice: the teacher is no longer the sole authority on knowledge, but rather a guide and facilitator of learning; students, through interaction with peers, teachers and the learning content, continuously refine and improve their cognitive structures. Furthermore, the social constructivist school of thought further points out that knowledge is not only the result of individual construction, but also the product of group negotiation. The sense of 'community' fostered in interactive teaching enables students to gradually develop disciplinary ways of thinking and value norms through the process of sharing viewpoints, questioning arguments and reaching consensus. For students' self-development, this process implies that they must not only learn 'how to learn', but also 'how to learn with others'—the latter being a crucial skill for future professional and social life.

2.2. Core Characteristics of Interactive Teaching

Compared with traditional teaching, interactive teaching possesses four distinct characteristics. First, dialogic nature—the teaching process is driven by questions or tasks, encouraging students to express their views, raise questions and engage in debate. Second, collaborative nature—learning activities are often conducted in small groups, with students sharing knowledge whilst working together to complete tasks.

Third, contextual nature—learning content is embedded within real or simulated task contexts, enhancing the ability to transfer knowledge. Fourth, it is reflective—the interactive process requires students to continually examine their own understanding, thereby promoting metacognitive development [3]. Together, these characteristics form fertile ground for fostering students' self-development. In practical teaching, interactive teaching also exhibits a high degree of generativity. That is, the teaching process is not entirely predetermined but generates new questions and ideas through ongoing interactions between teachers and students, and amongst students themselves. This non-linear teaching format demands greater adaptability and initiative from students, which in turn serves to cultivate these qualities.

3. Analysis of the Mechanisms Through Which Interactive Teaching Promotes Student Self-Development

3.1. Cognitive Conflict and Conceptual Change

When students encounter views differing from their own during interactions, cognitive conflict arises. This conflict compels them to re-examine their understanding, thereby triggering conceptual change. Research indicates that peer debates on complex issues stimulate deeper thinking more effectively than simply listening to a teacher's lecture [4]. In this process, students must not only articulate their own views but also respond to others' counterarguments, thereby honing their skills in logical reasoning and self-advocacy. More importantly, students gradually learn to view cognitive conflict as a resource for learning rather than an obstacle, thereby cultivating a positive attitude towards uncertainty—which is one of the core competencies of self-development.

The intensity of cognitive conflict must be moderate. Conflict that is too mild may fail to capture students' attention, whilst conflict that is too intense may provoke defensive reactions. Effective interactive teaching often employs a 'scaffolded conflict' strategy: the teacher first presents counterexamples or anomalies to prompt students to articulate their existing understanding; then facilitates group discussions to allow differing viewpoints to collide fully; and finally assists students in achieving cognitive restructuring through reflection.

3.2. Stimulating Metacognitive Abilities

Metacognition, or 'cognition about cognition', encompasses the ability to plan, monitor and regulate learning activities. Interactive teaching provides students with ample opportunities to externalise their thought processes. For instance, in group discussions, students are required to explain their reasoning steps; in role-playing, they must predict the consequences of different decisions; and in peer assessment, they must evaluate the merits of others' work against established criteria. These activities encourage students to step outside their own perspective and examine their thought processes through the eyes of an 'observer'. Vygotsky once noted that higher mental functions first emerge at the level of social interaction before being internalised into the individual psychological sphere [5]. In other words, the 'collective metacognition' present in interaction can gradually be transformed into the individual metacognitive abilities of students.

The enhancement of metacognitive abilities is also reflected in the cultivation of the habit of 'self-questioning'. Students who frequently participate in interactive discussions will unconsciously simulate dialogue scenarios when solving problems independently: 'If I were the teacher, how would I evaluate this answer?', 'Do I have evidence to support this view?', 'Are there any other possible explanations?' This internal dialogue is a concrete manifestation of metacognitive monitoring.

3.3. Enhancement of Self-Efficacy

Self-efficacy refers to an individual's belief in their ability to perform specific tasks. In interactive teaching, students gain enhanced self-efficacy through two pathways: firstly, by successfully completing challenging tasks with peer support—Vygotsky's 'scaffolding' theory suggests that, with the assistance of more capable peers or teachers, students can accomplish tasks beyond their individual capabilities, and this experience of success significantly boosts their confidence; secondly, by observing role models—when students witness peers of a similar ability level succeeding, they develop a vicarious experience of "if they can do it, so can I" [6]. Furthermore, positive feedback from peers and teachers can also reinforce students' sense of self-worth. This enhanced self-efficacy, in turn, encourages students to participate more actively in interactions, creating a virtuous cycle.

It is worth noting that the enhancement of self-efficacy is domain-specific. A high sense of efficacy gained through interaction in one subject does not necessarily transfer directly to other subjects. Therefore, interactive teaching should focus on repeatedly reinforcing students' experiences of success across different courses and task types, enabling their sense of efficacy to gradually generalise.

3.4. Transfer of Autonomous Learning Skills

The ultimate aim of interactive teaching is not to make students perpetually dependent on others, but to help them become autonomous learners. In interactive contexts, students need to formulate hypotheses, gather evidence and evaluate conclusions themselves. As interactive experience accumulates, these externally regulated behaviours are gradually internalised as students' self-regulation strategies. For example, students who frequently participate in group discussions will spontaneously adopt a 'question-and-answer' approach to test their understanding during independent study; students who regularly receive peer feedback will habitually self-check their work before submitting assignments [7]. This transition from 'heteronomy' to 'autonomy' is precisely the core hallmark of self-development.

From the perspective of self-determination theory, interactive teaching satisfies three fundamental psychological needs: autonomy, competence and relatedness. Autonomy is realised through the right to choose and the freedom to speak; competence is achieved through appropriate challenges and support; and relatedness is established through an atmosphere of equal dialogue. The fulfilment of these three needs collectively fosters the development of intrinsic motivation, which in turn serves as the driving force for sustained autonomous learning.

3.5. Emotional Support and Social Presence

In addition to cognitive mechanisms, interactive teaching also provides support for students' self-development on an emotional level. The reality of higher education is that many

students face emotional distress such as anxiety, loneliness and self-doubt during their university years. By establishing a safe and inclusive atmosphere for dialogue, interactive teaching helps students achieve emotional belonging. When students feel heard and accepted during interactions, their sense of psychological security is significantly enhanced. This sense of security is a prerequisite for students to dare to try new methods, expose their shortcomings, and thereby achieve growth [13].

The theory of social presence suggests that the higher the degree to which learners perceive the ‘presence of real others’ during interactions, the greater their engagement and satisfaction. In online or blended learning contexts, teachers can enhance social presence by encouraging informal communication, using emojis and providing immediate feedback, which in turn promotes the development of students’ self-regulated learning abilities [14]. In other words, emotional connection is not a by-product of cognitive learning, but a necessary condition for self-development.

4. The Differentiated Impact of Different Forms of Interaction on Self-Development

4.1. Teacher-Student Interaction: Providing Structured Support

Teacher-student interaction is particularly important in lower years or when students have not yet mastered basic learning methods. Teachers build ‘scaffolding’ through questioning, demonstration and feedback to help students complete the initial task breakdown and strategy selection. However, over-reliance on teacher guidance may also stifle students’ autonomy. Therefore, effective teacher-student interaction should exhibit a ‘dynamic withdrawal’ pattern: as students’ abilities improve, teachers gradually reduce direct guidance, shifting instead to providing more open-ended and reflective questions [8].

In teaching practice, teachers can also employ ‘thinking demonstration’ strategies—that is, when solving problems through reasoning, they verbalise their own thought processes. This not only demonstrates the process of expert thinking to students but also provides a model for them to emulate self-monitoring. At the same time, teachers should avoid becoming the absolute centre of the interaction; otherwise, teacher-student interaction is likely to degenerate into a ‘teacher-student Q&A’ rather than a genuine dialogue.

4.2. Student-Student Interaction: Promoting Peer-to-Peer Learning

Peer interaction offers advantages that cannot be replaced by teacher-student interaction: peers share similar cognitive levels, their modes of expression are easier to understand, and the collaborative atmosphere is more egalitarian. In peer interaction, students are both contributors and recipients of knowledge, which encourages them to view issues from multiple perspectives. More importantly, peer interaction inherently involves an element of ‘teaching’—when a student explains a concept to a peer, they must externalise implicit knowledge, and this process itself deepens their understanding [9]. In terms of promoting students’ self-development, peer interaction is particularly effective in cultivating communication skills, empathy and a spirit of cooperation. However, peer interaction may also give rise to

the phenomenon of ‘collective mediocrity’, whereby all members of a group possess similar cognitive levels and lack high-level critical questioning, resulting in discussions remaining superficial. To address this, teachers can adopt heterogeneous grouping strategies, placing students of varying abilities and backgrounds within the same group, whilst introducing a ‘rotating roles system’ (such as group leader, note-taker, questioner, and summariser) to ensure every member participates substantively. Furthermore, regular ‘peer group evaluations’ can break down closed interaction patterns within groups, introduce external perspectives, and stimulate further reflection.

4.3. Interaction between People and the Environment: Expanding Learning Contexts

In addition to interpersonal interaction, the interaction between students and the learning environment (such as online learning platforms, virtual simulation experiments, and course resource repositories) is becoming increasingly important. This form of interaction allows students to explore at their own pace and in their own time, thereby fully embodying the autonomy of learning. For example, in a flipped classroom, students watch videos and complete online quizzes before class, whilst in class they focus on discussion and addressing queries. Interaction with the environment provides students with a low-risk space for trial and error, which helps cultivate their information literacy and self-management skills [10].

With the advancement of artificial intelligence technology, intelligent learning guidance systems and adaptive learning platforms can provide personalised interactive recommendations based on students’ learning behaviour data. In theory, this human-machine interaction can more accurately align with students’ zone of proximal development, thereby promoting self-development. However, we must remain vigilant against the ‘information bubble’ effect that may arise from over-reliance on algorithmic recommendations; the guiding role of teachers in this process remains indispensable.

5. Strategies for Optimising Interactive Teaching to Promote Student Self-Development

5.1. Designing Interactive Tasks with a Gradient

Interactive tasks should progress from simple to complex, gradually increasing cognitive demands. In the initial phase, well-structured questions (such as conceptual analysis) may be set; in the middle phase, ill-structured problems (such as case studies) are introduced; and in the final phase, students are challenged with open-ended, real-world problems (such as project design). This gradient design not only prevents students from feeling frustrated by tasks that are too difficult but also ensures they remain within their ‘zone of proximal development’. It is worth emphasising that this progression is not linear but cyclical. Upon completing a cycle, the teacher should guide students to reflect on their previous interactive experiences, identify their own progress, and set new self-development goals for the next cycle. This cyclical model of ‘task—reflection—new task’ helps students to internalise a sense of self-development as a routine practice.

5.2. Establishing a Multi-tiered Feedback Mechanism

Feedback acts as a catalyst for self-development in interactive teaching. It is recommended to adopt a three-dimensional feedback model comprising 'peer assessment + teacher evaluation + self-assessment'. Peer assessment provides diverse perspectives, teacher evaluation offers professional standards, whilst self-assessment encourages students to internalise evaluation criteria. Feedback should be specific, timely and actionable, rather than vague comments such as 'very good' or 'needs improvement' [11]. Process feedback is just as important as outcome feedback. Teachers can observe the interaction process, noting students' performance in asking questions, responding, challenging arguments and adding to the discussion, and provide targeted suggestions after class. For example: "In the third discussion, you attempted to cite data to support your argument; this is excellent progress. Next time, you could further explain the source and limitations of the data."

5.3. Cultivating Norms and Habits of Interaction

Not all classroom interactions promote self-development; low-quality interactions (such as those dominated by individual students, straying from the topic, or being merely perfunctory) may actually have a negative impact. At the start of the term, teachers should work with students to establish rules for interaction, such as taking turns to speak, respecting differing opinions, and refuting arguments based on evidence. At the same time, by organising activities such as 'interaction reflection journals', teachers can help students regularly review their performance and learning outcomes during interactions.

Interaction norms also need to be cultivated through demonstration. In the early stages of the course, teachers can assume the role of a 'model participant', demonstrating how to raise questions politely, how to synthesise others' views, and how to acknowledge one's own uncertainties. After several weeks of practice, these norms will gradually become an integral part of the class culture, enabling students to engage in high-quality, self-directed interaction even in the teacher's absence.

5.4. Integrating Online and Offline Interaction Spaces

Blended learning offers richer possibilities for interaction. Tools such as online forums, real-time polls and collaborative whiteboards can alleviate the anxiety some students feel about speaking face-to-face, providing them with opportunities to express themselves more at ease. Teachers can use online interactions as a warm-up before class or an extension after class, devoting more classroom time to in-depth discussion. This combination of 'asynchronous and synchronous' approaches helps students with different personalities and learning styles find an interaction rhythm that suits them [12]. Building on this, it is recommended that teachers establish an 'Interaction Portfolio' to record each student's frequency of participation, quality of contributions and collaborative performance in both online and offline interactions. This serves not only as a basis for formative assessment but also helps students to visualise their own growth trajectory in terms of interactive skills.

5.5. Tools for Promoting Reflective Practice

To transform interactive experiences into a driving force for self-development, dedicated tools for reflection are required. In addition to the aforementioned 'Interaction Reflection Log', teachers may also introduce 'learning contracts' or 'personal development plans'. At the start of the term, students set two to three self-development goals related to interaction skills (such as 'to pose at least one evidence-based question each week'), followed by self-assessment and peer feedback at the mid-term and end-of-term stages. This institutionalised reflective practice transforms self-development from a vague aspiration into concrete, actionable and trackable behaviour [15].

6. Conclusion

Interactive teaching is not merely a shift in teaching techniques; its deeper value lies in providing a social foundation for students' self-development. By provoking cognitive conflict, stimulating metacognition, enhancing self-efficacy, promoting the internalisation of learning strategies, and providing emotional support, interactive teaching helps students transform from passive recipients of knowledge into active constructors of meaning. Interactions between teachers and students, among students themselves, and between individuals and their environment each have their own distinct focus, yet together they constitute a supportive learning ecosystem. To fully harness the potential of interactive teaching to foster students' self-development, teachers need to carefully design graded tasks, establish multi-level feedback mechanisms, cultivate norms for interaction, integrate online and offline spaces, and introduce vehicles for reflective practice.

Future research could further explore the differentiated impacts of interactive teaching on student self-development across different disciplinary fields (such as the humanities, social sciences and natural sciences), as well as how to utilise learning analytics to dynamically assess self-development trajectories during interactive processes. Against the backdrop of the popularisation of higher education, cultivating lifelong learners capable of independent planning and proactive development is both a requirement of the times and an unwavering goal of educational reform. Interactive teaching is not an end in itself, but a viable pathway towards student self-development; it is not an isolated technique, but rather a holistic approach that must be accompanied by systemic reforms such as curriculum objectives, assessment methods, and the transformation of the teacher's role.

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