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Reflections on the Relationship between Language Learning Investment and Learner Identity Construction from the Perspective of Digital Literacy

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Abstract: Digital Technology has changed the environment of resources and interaction for language learning. How learners are engaged in and confirm their identity as language users have become subjects of research. Based on the investment model proposed by Darvin and Norton, and drawing from recent empirical studies, this paper explores the mediating role of digital literacy in the relationship between language learning engagement and identity construction. Analysis shows that digital literacy is not only about technical skills but also about which symbolic resources learners can use, as well as influencing the direction of their identity imagination and investment. Learning engagement can be regarded as a form of identity construction, and the learners' use of online language helps them actively build or alter their self-concept. There is no automatic path from the sense of identity gained in digital practice to official recognition by educational institutions. Whether the two can be connected depends on the power relationship of the fields. The progress or obstruction of identity construction inversely regulates the extent and duration of investment. The three work together to achieve this. Therefore, the new direction of language education is to enable learners to think critically about how the platform works rather than just learning how to use the tools.

Keywords: Digital Literacy, Language Learning Engagement, Learner Identity Construction, Investment Model, Critical Digital Literacy.

1. Introduction

Language learning is not just the acquisition of language symbols. Norton put forward the idea of "investment" in the 1990s to overcome the shortcomings of the "motivation" model and study language learning in light of power relations and social structures. She indicated that learners are motivated to participate in language activities because they believe that such participation will increase the accumulation of symbolic and material resources, thereby strengthening cultural capital and social status. Thus, the idea of investment links learning behaviour with identity formation; that which is invested and who one becomes are essentially the same.

The connection is more difficult in the digital age. Language learning is increasingly taking place in a mixed environment of short videos, social media, collaboration tools and generative AI, and learners are no longer confined to a closed classroom but are exposed to an open network of algorithm recommendations, platform design and data logic. Ren and Wang's research on university learners in China shows that informal digital language learning assisted by vlogs (video blogs) through the chain-mediated effect of social presence and learning engagement is positively associated with self-perceived multilingual identity; digital literacy significantly moderates this path, and higher literacy leads to a stronger association [1]. Therefore, digital literacy is not a prerequisite for increased interest in learning but rather one of the sources of motivation that can be utilized to foster a sense of self.

However, the existing studies still have two deficiencies in their understanding of the connection among the three. Firstly, most studies focus on reducing digital literacy to practical operating ability and neglect an indispensable part: the awareness and critical thinking about the power logic of platforms and algorithm bias, discourse norms, etc. Second, learning engagement and identity construction are often viewed as a unidirectional causal relationship, and the reverse regulation of identity construction on engagement is neglected. Based on the investment model put forward by Darvin and Norton (2015), this paper adds the two dimensions of identity and capital to explore a stronger association mechanism between language-learning engagement and identity construction through digital literacy.

2. Digital Literacy as a Capital Condition for Learning Engagement

Digital literacy is often taken as a prerequisite or supportive instrument for learning engagement in research on language education. If the learners cannot find, select and organise the digital language resources, there will be no learning. The problem is that it considers digital literacy to be only about functions and fails to recognize that, in fact, digital literacy is also a form of capital for a specific group of learners. Darvin and Norton's investment model suggest that the desire of learners to participate is related to how much capital they believe they have [2]. The investment model refers to whether the time and effort of learning are worth it. In the field of digital language teaching, one must recognise and leverage one's own digital literacy as a resource. Liu studied the digital behaviour and identity changes of rural migrant students in China through connective ethnography and provided a compelling case study [3]. Two English learners from the countryside who moved to the city for university, Xing and Jimmy (anonymous), were denied the right to speak and be heard in the traditional classroom due to the rural identity label. They were thought to be in the countryside and therefore not ideal. They went online to learn English independently, and with the help of digital literacy, they were able to access a wealth of language, culture and symbols unavailable in traditional classrooms; thus, they viewed

themselves as legitimate English users. The problem is not that the learners lack digital skills, but rather how their digital literacy can be used to leverage capital that was previously unavailable through the institutional education system.

There is a cause for this. Digital literacy helps to boost students' interest in learning by offering them a way to gain external resources for their studies outside of regular school. The institutionalized language classroom cannot provide some learners with a sense of belonging, and participation in the digital space has become another way to form an identity. When the classroom cannot provide an identity position, the digital space becomes another investment venue, and although the accumulated resources may not be recognised by the classroom, they are meaningful to them. The higher the digital literacy, the more capable learners are of using the resources in this alternative space, and the more direction and continuity their participation will have. Therefore, digital literacy is no longer about "ability" but about "resources"; now, one can determine whether a person has the necessary digital skills to build their own identity system. Digital Literacy is now a tool for life and also a way of being.

3. Learning Engagement as a Practical Form of Identity Construction

As capital, digital literacy needs to be realised in the actual behaviour of learners for it to have an effect. The three types of learning engagement are behaviour, cognition and emotion. It will be easier to measure; however, the context of the behaviour cannot be understood and it may be reduced to a number. Another way to view it is that the learner establishes their own place, and thus, participation in the social practice becomes an extended activity; through this involvement, they begin to identify with and belong to that practice.

Digital Language Learning is relatively transparent in operation. Zhang studied an English game community in China, and players communicated, cooperated and discussed in English during games of Werewolf [4]. Students are not merely "learning English"; they are actively employing these language practices to reduce the stigma of being a "non-native speaker" and instead view themselves as valid users of Chinese English within the community. They are acknowledged by the community after many talks and games, and given the title of "recognised language user". Engagement here is not a path to an identity but rather an act of identity formation.

According to Norton's concept of an "imagined community", the above problems can be alleviated [5]. Learners often have an ideal, but distant, future in their minds, and participation is an attempt to achieve this desired self-concept. The Digital Space brings this idea to life. Daily use of the language leaves a trail on the platform and gradually builds a "seen" usage history. Therefore, one's self-concept is formed through the experience described above.

However, there is a sense of tension that is often ignored. The recognition in the digital space is not bound by the same rules as that in education and is sometimes even contrary to it. Liu's study on rural migrant students indicates that the sense of legitimacy for use that learners acquire in the digital space is precisely due to a contrast with their marginalised experiences in the classroom. Whether the identity resources accumulated in digital practice can be transformed into recognised legitimate identities in the classroom is not due to how much effort the learner puts in, but rather to the power relations between the two fields. Discussions of the connection between investment and identity construction should not ignore the specific social power structure; otherwise, they will reduce the real circumstances of learners in different areas to a simple causal chain.

4. The Recognition Mechanism in Digital Space and the Asymmetric Exchange of Identity Resources

The previous section has mentioned the main reason for this problem: the identity resources that learners have collected in the digital world are often not used when they enter school.

The Recognition Mechanisms of Digital Platforms and Schools are Not the Same. Learners' places in the classroom are based on tests, grades and teachers' recognition; on the platform, however, there is attention to real-time feedback, visibility and algorithms. Although the platform has a low threshold, the "language ability" it recognises often does not meet the requirements of the classroom. Those in the gaming community who are well-known as "good communicators" in English may use registers, styles, and strategies that the classroom evaluation system does not recognise [6]. Zhang's research shows that the identity of "Chinese English users" created by players is based on the tacit understanding of the community and non-institutional authoritative certification.

The Standards for "legality" in the two areas are different. The classroom should have standardised language forms that fit the culture of the target language, and the space for digital interaction needs to be effective in communication and integrated with the community. Darwin believes that to create an online identity, various linguistic and multi-modal resources need to be integrated at different interfaces, and these interfaces can either restrict or extend the autonomy of users. Recognition in the digital space is achieved by learners' efforts and changes in the structure and rules of the community platform.

The more learners engage in the digital world, the more distinct an identity of language users will be formed. However, the relocation of these resources to the classroom is more difficult. This is not because of the "unreality" of digital practice, but rather because the evaluation logic of the two areas is different and does not align smoothly. The more learners use the unique interaction ways of the platform, such as quick responses, emojis and multimodal expressions, the harder it will be for their language practice to be recognised by a classroom system that values textual normativity and oral standards [7].

Asymmetry is also a problem; the sense of "I can use this language" that has accumulated in the digital world may be ignored or even contradicted in the classroom. Although this experience may not discourage the learners from participating in the investment, it may motivate them to develop a "field-switching strategy" by activating different identities in various places and fail to achieve a unified identity recognised by all fields. In terms of an investment model, it is a rational allocation of capital; learners consider the recognition conditions of various fields and invest in places that can provide more identity rewards. Digital practice for language educators should not be considered another tool or addition to the others; instead, it is an independent space for identity formation.

5. The Reverse Regulation of Identity Construction on Learning Engagement

The asymmetry of the recognition mechanism shows the conflict between the digital field and the educational field. However, there is another way in which engagement relates to identity construction: identity construction may also affect engagement in reverse. The two are not only a one-way path of "engagement leads to identity change". The progress or blockage of identity construction also limits the extent, direction and continuity of subsequent participation.

Choi's combined-methods research on Korean high school English learners has shown that this reverse regulation is complex [8]. Language learning assisted by generative AI reduces anxiety in oral communication and improves pronunciation scores; at the same time, there is a change in the cognition of language identity goals, moving from "native-like pronunciation" to "effective communication". This change itself is the progress of identity construction; learners abandon the goal of identity that is difficult to achieve through comparison with native speakers and construct a new identity as "someone who can effectively use English for communication". This modification of cognition makes the engagement more durable as it is no longer associated with anxiety and frustration.

However, this study also found the negative form of reverse regulation. Some students are too dependent on AI tools and have increased their cognitive load; the practice provided by AI does not align well with real-life communication. In terms of identity construction, this means that the "language user identity" learners build through practice in the presence of digital tools may be fragile and context-dependent; when interacting with AI, they feel that they "can use English", but in actual communication situations, this sense of identity quickly vanishes. The Investment will not be sustainable and will be of low quality. If the investment cannot be used to form a stable identity recognition, learners may choose not to participate or revert to the simpler tool-based usage habit.

This may be related to the impact of digital literacy, etc. According to Choi's study, the way to address the psychological tension is to enhance digital literacy education. Digital literacy here refers to the ability to recognise the deficiencies of AI feedback and to distinguish between automated practice and genuine communication, rather than the skill of operating AI tools [9]. Learners with this kind of literacy can construct a more rational identity cognition in the practice mediated by AI; they know that they are using tools rather than communicating with a "real" language community. Prudence is a kind of caution that prevents the collapse of identity construction due to the deficiencies in tool-based practice.

6. Critical Digital Literacy and Autonomy in Identity Construction

Based on the above analysis, it can be concluded that whether learning engagement in digital language learning can be effectively converted into resources for identity construction depends on whether learners have a critical dimension of digital literacy. Lack of coordination between the digital world and education makes the problem even more serious.

Generally speaking, the three components of critical digital literacy include: the ability to critically evaluate AI-generated texts; the capacity to identify ideologies in platforms and data; and self-awareness of one's own goals in the presence of automated systems that shape cognition, language and participation. Liu and others have also studied that Chinese learners who invest in critical digital literacy can "decode the black box of AI" by adopting a critical attitude and mobilising capital, developing awareness of the power relations in AI platforms, and negotiating agency in informal digital English learning mediated by AI [10]. The agency is not only at the level of technical operation but also involved in reflecting on the default assumptions of "what constitutes good language use" in the platform logic.

The demand is relatively high in the area of language learning. Language is a means of communication that can also express one's identity and place in society. As learners are more frequently exposed to language via platform algorithms, the kinds of language and culture they encounter have been selected and organised. Recommendations from the algorithm may restrict the scope of language resources due to the formation of a "filter bubble", and thus the learning content will be monotonous and shallow. Prolonged exposure to this will lead to a reduction in the diversity of learners' language resources and possibly constrain their own sense of "imagined identity as a language user" according to the platform's logic.

Learners with strong digital literacy will be more aware of it. Darvin (2022) studied how Hong Kong TikTok users construct a local identity by integrating multiple kinds of resources and thereby overcome the structural deficiencies in platform design [11]. In the context of language learning, this means that learners can choose not to base their language-practice communities solely on "traffic" and connect digital-space investment with broad identity planning, thus avoiding the equivalence of platform-immediate-feedback with genuine language-ability recognition. Critical digital literacy is therefore required for learners to retain autonomy in the construction of their identity in digital language learning.

7. Conclusion

The above analysis shows all the connections among digital literacy, learning engagement and identity construction from different perspectives. In short, the connection among digital literacy, interest in learning languages and students' sense of identity is not that of "ability-behaviour-outcome". The three are mediators of capital allocation and power relations and ideology, and form an interconnected system.

Digital literacy motivates students to learn more actively by providing new ways to collect and use capital outside of school. Learning engagement is an actual occasion for identity construction, and language use in the digital space is the process of identity negotiation. Although the recognition mechanism of digital platforms provides alternative resources for identity construction, there is a structural mismatch between the recognition in the digital space and that in the educational field: the language abilities recognised in the digital space are not evaluated by the same standards as those assessed in the classroom, and the identity resources learners have gathered in the digital space cannot be directly applied to the educational field. The extent and duration of investment in identity construction are negatively correlated with its progress and obstruction. The rule can be the learners' "field switching" strategy, that is, to activate various identity orientations in different recognition systems. At the centre of this relationship is essential digital literacy; it is necessary to

transform engagement into identity resources effectively and also ensures that learners can maintain their sense of identity autonomy in algorithm-mediated language practice.

Therefore, we can adjust the teaching of foreign languages. Equating digital literacy education with tool-operation training narrows the concept of digital literacy in theory and reduces learners' ability to deal with the structural constraints of digital platforms in practice. Integrate the cultivation of critical digital literacy into the language learning activities and, at the same time, guide learners to think about the technical conditions and power relations that enable these digital language practices.

Limitations of This Study. Based on the theoretical synthesis of existing research, no collection or analysis of primary empirical data was conducted in this study. In the future, one or both of the above methods can be used to study the actual process of learners' cross-field migration of identity resources and the role of critical digital literacy.

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