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Cultivating Innovative Talents Through the Research-Teaching-Study Nexus in Chinese Higher Education: A Gear System and a Tree Model

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Research Domain: Higher education policy (HEP)

Abstract: This study contributes to the understanding of the cultivation of innovative talents through the research-teaching-study (R-T-S) nexus in Chinese higher education (HE), adding empirical evidence on the practical characteristics of [R-T-S](#) nexus to the global HE community. This is achieved through a historical and systematic analysis of Chinese national policies since the 1990s and the regulations about the undergraduate and postgraduate education in University of Chinese Academy of Sciences (UCAS). Through analysing 33 documents in national-, institutional- and discipline-based departmental-level, a gear system is illustrated, showing the interrelated rationales in Chinese national policies regarding cultivating innovative talents through the [R-T-S nexus](#) to promote Chinese university innovations, the building of national innovative system, eventually the nation building. Also, a tree model is illustrated, demonstrating the innovative model of talents cultivation in undergraduate and master education through the R-T-S nexus in UCAS.

Paper: Since Humboldtian idea of the 'unity of research and teaching' in higher education (HE) in 1910s (Humboldt, 1970, cited in Clark, 1994b, p. 11), international attention has been paid to the integration of research and teaching to strengthen students' learning in HE (Jenkins & Healey, 2010). Burton Clark (Clark, 1994a, 1994b, 1997) brought a 'study' component to the 'front and centre' in the unity of research and teaching in modern universities, forming a 'research-teaching-study nexus' (R-T-S nexus) (Clark, 1994b, p. 11).

Chinese HE has been regarded by the state as both a driver for innovation and a realm to be innovated (Schulte, 2018), where the innovative talents are regarded as the prime resource. Chinese HE has experienced various reforms to enhance its strategic role in China's national innovation system (NIS). This is expected to be achieved through, on the one hand, the cultivation of innovative talents, especially in research universities by integrating research and teaching to enhance students' learning and innovative abilities. It is possible that the promotion of R-T-S nexus and the cultivation of innovative talents are interrelated rationales in China's national policies, especially regarding university innovation and NIS. However, little has been done to dismantle such potential interrelations.

University of Chinese Academy of Sciences (UCAS) is affiliated with Chinese Academy of Sciences (CAS), the highest-profile research institute in sciences in China. As 'an innovative university adopting the model of R-T-S nexus', UCAS aims to cultivate the talents pool and the pioneers in future technology for CAS, facing the nation's vital strategic needs (UCAS profile, UCAS website). However, there is a dearth to explore how this innovative university cultivate innovative talents through R-T-S nexus for English readers.

This article will answer the research questions:

1. What are the rationales in terms of R-T-S nexus, the cultivation of the innovative talents, HE innovation and NIS in Chinese national policies?
2. How does UCAS cultivate innovative talents through R-T-S nexus?

China is a country with 'documentary politics' (Wu, 1995, p. 24), where the state rules national affairs through policy documents (Jing, 2013). Thus, this article extensively analyses Chinese national policy documents regarding country development, talents cultivation and HE (National level). Also, this article aims to study the case of UCAS, presenting the dynamics in a particular setting (Yin, 1994). Since UCAS is affiliated with CAS, this article will also analyse the relevant documents of CAS to figure out its rationale, development and management of UCAS and R-T-S nexus (institutional level). Furthermore, the documents of UCAS regarding the university strategy, students' cultivation (institutional level) with a specific discipline example (discipline-based departmental level), the School of Future Technology (SFT), will be analysed. This article retrieved the national policy documents via the online platform of National Library of China. All the documents of CAS and UCAS were downloaded from official websites. The files analysed are issued from 1990s till 2021.

This study found that, firstly, cultivating innovative talents through R-T-S nexus as one way to promote HE innovation has form a highly interrelated a gear system in China (See figure 1). Such a gear system serves the aim of nation building, especially regarding NIS, where innovative talents, sciences and technology (S&T) innovation and basic research innovation are vital components. Secondly, a tree model in UCAS regarding undergraduate and master education is illustrated (See figure 2). The extent and high-level research- and teaching- related physical and human resources from CAS function as the supporting trunk of this 'tree' of talents cultivation, supporting the two 'branches' of undergraduate and master education. The 'nutrition for the growth of this tree' comes from the integration and circulation of CAS-affiliated resources. In this tree model, students can design their own personal academic roadmap with individualised tutor assistance. Based on undergraduate and master trainings, students are expected to conduct innovative research at doctoral level independently.

This article empirically contributes to the global understanding of Chinese national discourse in HE in terms of the cultivation of innovative talents through R-T-S nexus. Such understanding is of significance since the influence of Chinese HE is increasing on the global stage (Marginson, 2018). Although the limits of a single case study of UCAS is admitted (Yin, 1994), the narrative of case study is able to 'weave uniqueness around common elements and their amplifying variations' (Clark, 2005, p. 2). The case of UCAS in this article, exemplified by the tree model, empirically adds to the global, national and local communications and understandings on the practical characteristics of cultivating talents through R-T-S nexus in HE.

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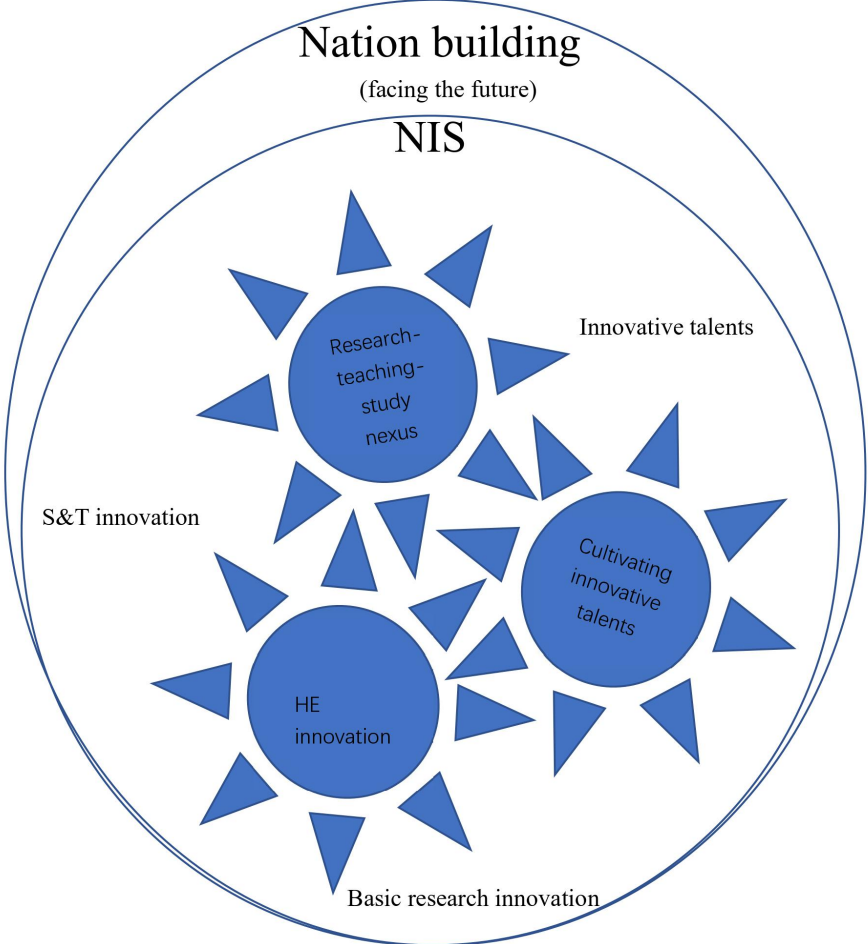
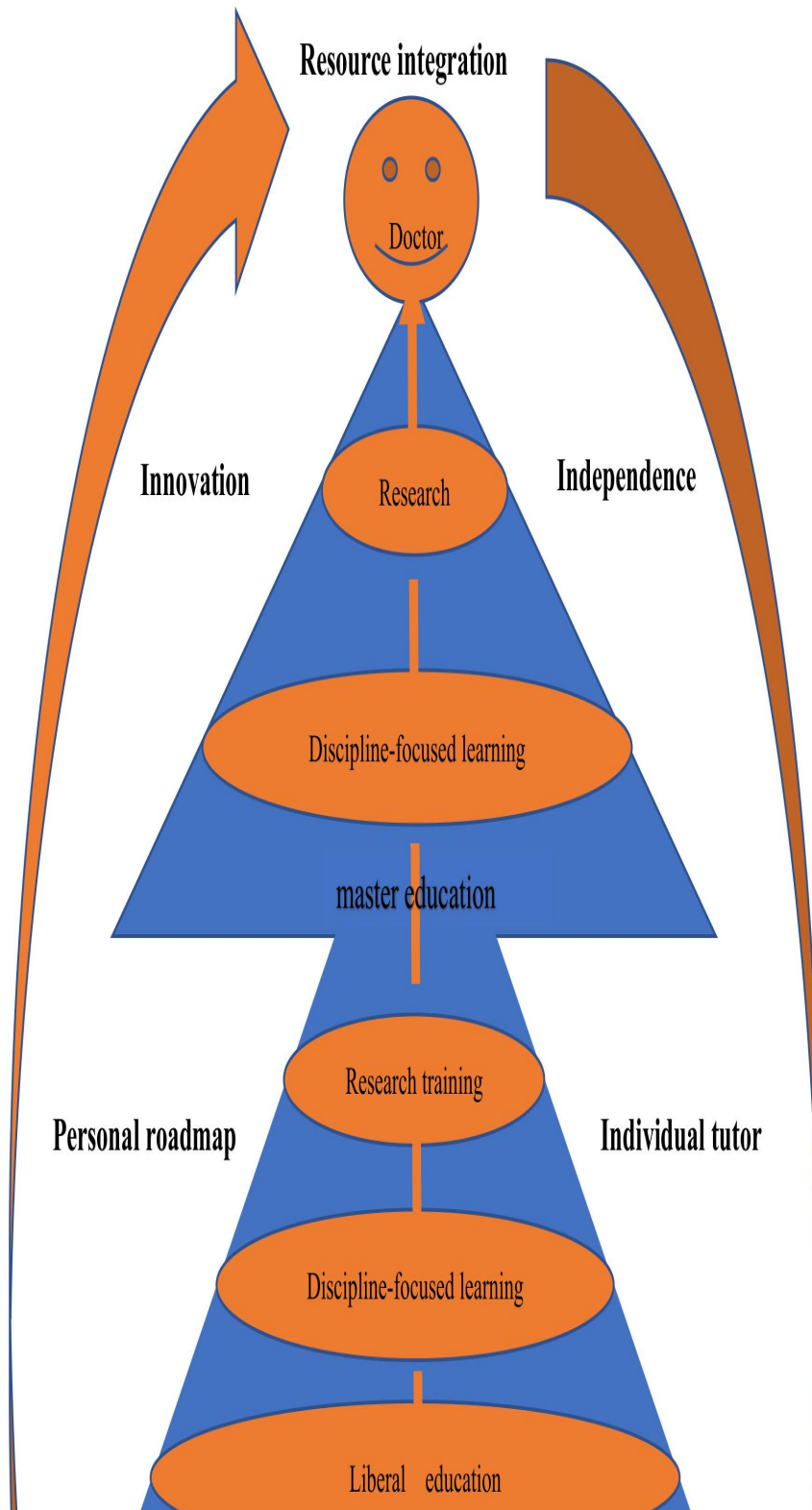


Figure 1. A gear system in Chinese national policies



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