

A Comparative Literature Analysis of Differentiated Instruction on Improving Learner Engagement in the Context of Online Education

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Abstract

Student engagement in online education has been an issue for global educators. This literature review briefly touched upon the definition of Differentiated Instruction in both the West and China, shedding light on learning styles and how Chinese students' learning styles are categorized. Then the article went further to introduce student engagement and the educational practices that the West and Chinese scholars suggested to increase student engagement. Lastly, based on research findings, the article concluded that the idea to incorporate numerous learning apps during online education is a good way of DI to increase student engagement in the West and China.

Keywords

Differentiated instruction; Student engagement; Online education; Learning styles; Learning Application.

1. Introduction

Due to technological advancement and the ongoing COVID-19 safety concerns, online education has gained widespread public attention and become an alternative to traditional face-to-face learning at various levels of education. Countries all over the world have made attempts to provide online education to accommodate the global pandemic, including China. Under the guidance of the "School's Out, But Class's On" initiative, Chinese schools have been encouraged to use online learning platforms and promote virtual learning in lieu of face-to-face education during the intermittent COVID-19 lockdowns [1]. However, given the massive population of the student body in China, many cast doubt on the effectiveness of Chinese online education. Specifically, one direct result of such an enormous student population is the large class size [2]. According to the Chinese government's educational report, there are two types of large class sizes in primary and secondary schools [3]. Super courses, or classrooms having more than 66 students, are one example. These classes account for 86,000 students or 2.4% of all classes. Second, 10.1% of all classes have 368,000 large classrooms with more than 56 students. Therefore, it can be difficult to maintain discipline and ensure student engagement in such a large class [4].

Differentiated Instruction (DI) is a new teaching pedagogy that has been proven effective in improving learner engagement, and enhancing learning outcomes [5] [6] [7] [8]. Yet, fewer studies have been conducted on the effectiveness of DI on student engagement in online courses. As a result, the use of DI in online education to improve student engagement during online

sessions remains an under-researched subject. This article is to use a literature review to shed light on the key concepts of DI and learner engagement from a West and Chinese perspective, presenting a balanced view on the feasibility of DI in improving learner engagement during Chinese online education.

1.1. DI as a Modern Education Philosophy in the West

Tomlinson (2005) describes DI as an education philosophy according to the belief that children optimize their learning when teacher children's readiness levels, interests, and learning profiles into consideration. In other words, DI aims to maximize student learning[9]. Differentiating can be done in many ways, including content, product, and process differentiation. Content differentiation refers to "the input of the unit: ideas, concepts, information and facts" [10]; product differentiation, on the other hand, demands that students should be able to use a variety of ways to show what they understand and what they learn from the classroom [11]; lastly, process differentiation is the process where students can "make their own sense of the content or input" [10].

To differentiate, various students' profiles need to be taken into consideration before teaching, including socioeconomic backgrounds, academic readiness, languages, and interests [12]; teachers should also collaborate with each other to provide an ideal learning environment for children via differentiated teaching[13]. In addition, teachers should give equal respect for students' talents and offer them diversified assessment options so they can be assessed based on what students are good at[13]. Overall, DI offers a meaningful approach for teachers to address learner variance [9], reform the one-size-fits-all curriculum [14], and meet various learning styles of various learners.

1.2. DI as a Philosophy in Chinese History

The contemporary notion of DI proposed by Tomlinson actually resonated well with the Chinese audience as a result of the predominant Confucius ideology and educational philosophy [15]. The great philosopher, Confucius, who advocated for equal learning opportunities for all students had long believed that both male and female students could learn[16]. On top of that, he underlined the need for instructors to modify their instruction in light of each student's unique traits [17]. Due to his far-reaching impact, Confucian ideals of teaching all pupils equally while ignoring differences in social class are still widely held today [18].

In terms of educational practices, Confucius' tenet is that "teaching according to pupils' characteristics", which set the tone for DI in China [19]. Confucians believed that the characteristics and areas of interest of the students were where they differed from each other [16]. To capitalize on these different characteristics and interests, Confucius suggested that teachers should value individual student differences during teaching practices [16]. In addition to student differences in characteristics and interests, students also differ in intelligence, learning style, and learning ability [20], and teachers should modify their instruction based on student's strengths and weaknesses during actual instruction to their learning styles [19],[21],[22]. Speaking of learning styles, what are they, and why are they important?

1.3. Learning Styles

Researchers have posited numerous learning style theories based on past observations and educational practices. The VAK theory is a learning modality comprised of visualizing modality, auditory modality, and kinesthetic modality. [23]. Visual modality learners who are generally good at visual learning, and thus visually sensitive to information such as pictures, shapes, sculptures, and paintings; kinesthetic learners, on the other hand, are generally fond of learning from physical movements, including gestures, body movements, object manipulation and positioning; lastly, auditory learners are more likely to succeed in audio-related learning

activities, therefore, activities involving listening, rhythms, tone, and chants will enhance their learning performance [23].

Another learning style theory is the Grasha-Reichmann Learning Style Scale. Anthony Grasha and Sheryl Reichmann published their findings in *The Journals of Psychology* in 1974, specifying six learning styles avoidant, participative, competitive, collaborative, dependent independent [24]. Other learning styles theories such as Peter Honey and Alan Mumford's model [25], and Neil Fleming's VAK/VARK model [26] have similar categorizations.

1.4. Chinese Learners' Learning Styles

While Chinese students are deemed modest and diligent [27], and display tremendous respect towards seniors, teachers, and scholars [28], stereotypical learning characteristics such as rote, silent and passive are their tags based on many western education researchers [29]. Li (2012)'s study on Chinese students studying in an English-medium university suggests that Chinese tertiary EFL learners' learning styles are diverse; but in common, they preferred individual learning over group learning; they also liked tactile, kinesthetic, and visual learning the most; auditory learning was more evenly and uniformly preferred. Li (2012)'s research further concluded that Chinese learners learning styles have much to do with Confucius's education philosophy, in which teachers are seen as the authority of the classroom. So Chinese students' learning style is more culturally based.

Rodrigues, Bu and Min (2000) corroborated Li (2012)'s claim that learners' preferences for learning styles are determined by national culture. Rodrigue, Bu and Min (2000) noted that Western students are open to participation and learning through independent research and investigation, whereas Chinese students favor a passive style of learning and anticipate the teacher to take the lead and supply learning points. Based on these findings, how to engage students in the classroom across different cultures?

2. Student Engagement

Student engagement, per Fredricks et al. (2004), involves three dimensions: behavioral, emotional, and cognitive. Behavioral engagement refers to undertakings such as "effort, persistence, attention, asking questions, participation, following rules, and the absence of disruptive" [30]; emotional engagement, on the other hand, includes "affective reactions in the classroom, such as boredom, happiness, sadness, anxiety, identification with school, and liking or disliking school" [30]; lastly, cognitive engagement denotes "investment in learning, self-regulation, preference for the challenge and hard work, going beyond requirements, effort in mastering new knowledge and skills and using learning strategies" [30].

Kuh (2009) defines engagement in this outcome-oriented manner: "The engagement premise is straightforward and easily understood: the more students study a subject, the more they know about it, and the more students practice and get feedback from faculty and staff members on their writing and collaborative problem solving, the deeper they come to understand what they are learning" (p. 5).

Given that student engagement involves multiple dimensions and leads to better learning outcomes and deeper understanding, it is imperative to enhance learner engagement in online education. Then, specifically, what do the Western and Chinese scholars suggest regarding how to improve student engagement in online education?

2.1. Enhancing Student Engagement—A Western Perspective

Western educators generally underscore the critical role of teachers in improving learner engagement. The critical role that teachers play in fostering student engagement is supported by recent research. For instance, Australian's CCYP (2018) discovered that "teachers' roles in fostering a dynamic and happy learning environment were, predictably, crucial to students'

school and learning experiences" (p. 44). Since the teacher designs these activities, it gives them more pedagogical tools to encourage involvement. According to Taylor and Parsons (2011), engagement and learning should take precedence over academic success in these activities, materials, language, and pedagogy used by the teacher. This is how the involvement of students when teachers employ effective pedagogy in the classroom, pupils learn more and perform better; this leads to an overarching aim of continuing progress as part of a beneficial learning cycle [31].

The majority of virtual school teachers, according to Beck and Beasley (2021), lack experience with differentiation, testing, curriculum, grouping, and techniques. The creation and usage of online tools may be challenging for novice teachers. Teachers must therefore learn more about how virtual schools meet the demands of their students. As a result, it is important to research and develop efficient methods for assisting teachers in creating differentiated education.

Collaborative learning, according to language experts in the United Arab Emirates, is an effective method for practicing differentiated instruction since it encourages social contact among students, student participation, and cultural appreciation[32]. Their findings may have an impact on teacher preparation programs, academic administration, curriculum development, and classroom decisions. They may also be helpful in directing future, in-depth research on differentiated instruction and cooperative learning. Overall, western educators' suggestions in improving student engagement are highly related to the students learning style preference and could be categorized as reflections of DI, as teachers are encouraged to differentiate content, product, and process as well as to establish a supportive and safe learning environment to meet the various learning styles.

2.2. Enhancing Student Engagement—A Chinese Perspective

While teachers in Chinese societies typically embrace the concept of varied teaching and believe that it is essential to serve the diversity of learners [33], in practice, given the learning styles preference and Confucius's education philosophy, teachers are the authority of a classroom, so Chinese scholars offer alternative perspectives to enhance student engagement. Compared with the western ones that highlight the teachers' role in content, product, and process differentiation to inspire learners to engage in online learning, Chinese researchers focus on means to reduce distractions and maximize the teacher's authority. A brief review of peer-reviewed academic articles published on China National Knowledge Infrastructure (CNKI) concluded Chinese education experts' insight on student engagement online, listed below:

1. Ensure that only teaching-related tools and software are available on the cell phone, computer, and other portable devices; hide and uninstall unnecessary software [34].
2. Make sure that students only have access to these devices as normal users rather than administrators; forbid normal user's installation of new applications and unauthorized websites visit [35].
3. Parents can use remote control software to monitor students' online learning progress by monitoring the camera and desktop display [36].
4. Introduce teaching management into the online teaching environment, including the setting of headteachers who actively participate in various courses of online education. The job description of a headteacher includes but is not limited to: taking attendance, assigning & collect homework, recording online courses and camera displays, and communicating with parents to provide instant feedback about learners' progress [37].
5. Use the big data provided by learning applications to monitor the length of online exam taken by each student, and the frequency of screen-switching to identify if students have left or closed the learning application during the online study [38]

3. Integration of Learning Applications as DI

Despite the fact that Western and Chinese educators have discorded on active-passive approaches to increase online student engagement, they seem to reach a consensus regarding the use of learning applications and platforms such as DI to enhance student engagement.

On the Western end, Chua et al. (2020)'s study on interactive learning apps, such as Kahoot and Plickers for quizzes, Padlet and Oceania for classroom discussions, and Cram and Quizlet for flashcards are valid approaches to increasing student engagement [39]. This study confirms the claims made by Storz, Mailler, Brienne, Chotel, and Dang (2012) that the app's main feature focuses on repetitive linguistic tasks in accordance with behaviorist learning principles.

On the China end, Gao (2021) conducted a case study to evaluate whether or not students' engagement in online learning may be improved by the incorporation of deliberate interactions that are supported by technology integration. The findings of the study lend credibility to the integration of technology in DI to boost student engagement in online education. Namely, the study suggests the use of learning platforms and technologies will make for a more powerful educational encounter. In addition, tests and other types of assessment should make use of interactive educational tools to improve students' ability to prepare for them and track their progress in acquiring subject matter knowledge. Finally, in order to facilitate the development of a learning community among the students, synchronous group discussions and asynchronous learning groups that take place outside of the classroom should begin with learning assignments that have been assigned in advance, which is in alignment with DI's content, process, and product differentiation.

Somewhere in the middle between China and the West, the integration of learning applications is also proven effective as a DI approach to engaging online learners. Lu et al., (2014) designed a learning app for primary school kids in a bilingual school in Hong Kong to engage online learners. They discovered that the mobile app aided teachers in putting differentiated instruction into practice and taking into account various students' learning styles. WeChat, virtual reality, the learning app, and other technological technologies have the potential to be very effective pedagogical assistants and support a variety of learning activities and enhance the learner's academic performance.

4. Conclusion

The article briefly introduced the DI from a Western and China perspective, and then list learner's learning styles in general and Chinese learner's learning styles as a comparison. Thereafter, the article touched upon the notion of student engagement and brought on some comparisons of educational practices recommended by both West and Chinese scholars regarding how to increase student online engagement. Lastly, both sides agreed that the incorporation of interactive learning applications will be an effective way as a DI to engage students during online education.

Based on the cultural differences between the West and China, learners learning styles vary significantly. As a result, the suggestions and recommendations that scholars made were polarized: the western educators generally underscore the importance of teachers in DI, so to enhance student engagement, teachers are who need to make a change, such as reforming curriculums, designing activities, diversifying assessments and upholding a safe and diverse environment that can differentiate the instruction, enhance the peer learning and collaboration, and effectively engage students; on the other hand, Chinese educators view teachers as absolute authority in classroom, so when students disengaged, educators would work from the student end either by reducing distractions or placing external monitoring mechanism to make sure students are more engaged in online learning. It is controversial to dictate which method is a

better one without a given context. However, based on research findings, both sides agreed that it is imperative to incorporate more learning apps into CI in nowadays online education. Therefore, it is foreseeable that DI in future online education will include a variety of learning apps addressing various learners' learning styles.

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