

E-Learning and iLearn2.0

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E-learning refers to using computer technology in a learning experience that has led to many changes in traditional learning. In the beginning, people who originally studied psychology talked about the use of artificial intelligence (AI) as a teaching assistant but were unable or afraid to implement it. iLearn is an online assistant first launched in 2000. It was used in university courses to integrate technology with education in line with the SLE approach. In 2015, the iLearn system was upgraded and migrated to the iLearn 2.0 version.

E-learning

iLearn2.0

sustainability

Microsoft Teams

1. Introduction

Before 1970, the behavioral school's programming teaching had to be carried out through a specific machine. Between 1985 and 1995, the emergence of multimedia and hypermedia made the transmission and acquisition of information easier. The teaching environment at this time was affected by cognitive constructivism, which emphasizes the learner's initiative and interaction in the classroom. The uniqueness of E-learning research is that this type of research often introduces a technological tool that is relatively novel to the learning object ^[1].

The other concept that accompanies E-learning is the Internet. From 1995 to 2005, the Internet was popularized, and a teaching environment designed based on the Internet began to emerge, which had a great deal of influence on the construction of computer-aided curricula. The new perspectives of learning emphasized the importance of learning communities, cooperative learning and the authenticity of learning activities or assignments as well as the computer-supported, intentional learning environment, which focused on problem, project, or inquiry-based learning activities ^[2]. After 2005, learning entered the era of mobile phones and wireless networks. iPads replaced computers in classrooms by and large; a specific example is a researcher who used smartphones to integrate problem-solving plots and led students to visit museums ^[3].

There are many forms of using virtual space as a platform to promote digital learning. Some online platforms used as online professional learning communities include Moodle, Wiki, Blog, Skype, and FB. A number of empirical studies on these platforms have been conducted with a similar research goal, i.e., the use of technology to break through the constraints of geography and time and support the collaborative learning of participating teachers and students in groups ^{[4][5][6][7][8][9][10]}.

The changes in E-learning theory can be divided into three stages: the behaviorist/empiricist view as the first stage was represented by the behaviorist school of thought. The second phase, known as the cognitive/empiricist view,

was represented by the cognitive school, focused on information processing and cognitive constructivism. The third phase, the situational/pragmatic-pragmatic/socio-historical view, was represented by situational cognitive theory and social constructivism ^[11].

Common variables in E-learning research include media and teaching materials, teaching methods and learning methods, and learner characteristics ^{[4][5][6][7][8][11][12][13][14][15][16][17][18][19][20]}. The traditional E-learning model uses book digitization and online platforms to transform traditional classroom learning into an online learning model that can be used to learn online anytime, anywhere. However, this model still uses lecturing, passive participation of users, and top-down content for teaching and learning ^{[4][21][5][6][7][8][9][10][19][22][23][24][25]}. E-learning 2.0, a coined term for collaborative learning through technologies, involves student-centered learning, active learning and participation, collaborative cooperation and discussion, bottom-up learning mode, learning content generated by users, and learning community generated by common learning interests and goals groups ^[20].

2. Educational Technology and E-Learning

An important aspect to E-learning is sustainable educational technology. Since 2020, COVID-19 has affected the lives of many people all over the world. For the health and safety of students, the educators and faculty staff of many schools around the world have taken strict measures for epidemic prevention or even temporary close-downs. In this regard, schools are looking for ways to enable students to continue to participate in learning sustainably. Sustainability in learning can best be defined by the United Nations initiative that aims to bring relevant and curated learning solutions on sustainable development topics to individuals and organizations ^{[6][8][22][26]}. Through the cooperation of the United Nations, multilateral organizations, and sustainable development partners from universities, civil society, academia, and the private sector, UN SDG provides a unique gateway that empowers individuals and organizations through an informed decision when selecting among a wealth of SDG-related learning products and services that are currently available. Sustainable education is formal and informal education and professional development that continually renews itself, incorporating principles and aspirations of sustainability in design and delivery, and educating in ways that promote sustainable learning.” It is less structured and “fixed” than conventional education and operates more organically and responsive ^[27].

2.1. Sustainable Learning in Education and Education Transformation

Sustainable learning in education (hereafter SLE) is a learning and teaching philosophy based on sustainability principles, especially in the concept of “learning to learn,” which is similar to lifelong learning ^[18]. Sustainability as a key element in today’s pedagogical paradigms has many implications for teaching methodologies and materials. Online courses in the post-epidemic era should have four key components of SLE: renewal and re-learning, independent and collaborative learning, active learning, and transferability ^[28]. However, there are various reasons why current pedagogical models cannot keep up with the non-lasting nature of technological and social changes, emphasizing the need for new learning and teaching paradigms. As a result, education is being transformed to different learning contexts with the aid of technology. The new technologies are changing our thoughts, concepts, and educational goals, not just our methodology ^[29].

In face-to-face learning, students are completely assessed by teachers. Teachers are their main source of information. As a result, the quality of learning depends to a large extent on them. There is a prevailing tendency for teachers to assume control over learning processes and view students as passive receivers of knowledge [30]. For sustainability, however, student engagement and leadership is of paramount importance. The curriculum and teaching practice of higher education institutions must improve students' critical and reflective thinking skills through interdisciplinary ways and even making substantial changes to the curriculum, including providing more effective and socially fair higher education for sustainable development [31].

For sustainable development, E-learning has been used in education especially in the context of lifelong learning and adult education, and some studies have been conducted to evaluate the results of E-learning for sustainable development in higher education. Scholars analyze students' motivation, satisfaction, results, abilities, and attitudes and believe that E-learning in higher education is very effective for lifelong learning in education for sustainable development [32].

In E-learning, teachers mostly use an online platform and many technological advancements that have improved the role of students and enhanced student activities, resulting in relevant learning [33][34][35]. The oriented and transformative learning approaches should be situated in higher education institutions because they generate relevant learning for students [36][37][38][39][40][41][42]. Students' assessment can also be carried out more conveniently using technology tools. The quality of learning depends to a large extent on the teacher's digital training level and teaching style [12].

2.2. iLearn 2.0

iLearn is an online assistant first launched in 2000. It was used in university courses to integrate technology with education in line with the SLE approach [22]. In 2015, the iLearn system was upgraded and migrated to the iLearn 2.0 version. The upgraded platform continues to use "Internet Classroom". The platform has been also used by businesses for distance learning and for conferencing, the same as Kahoot [43]. The system of iLearn 2.0 module is Moodle. The main change of iLearn2.0 is that teachers can design the teaching plan more flexibly, and the new platform presents a single page. The method is closer to social network models, increasing the affinity of students [44]. In this platform, to meet the users' demands, the teaching resource center re-examines and plans the functional blocks, resource classification and layout of the online classroom, re-courses, university class tools, and other modules so that users can find the resources they need to use more easily. In the iLearn2.0 operation interface, the basic functions include (see **Figure 1**).

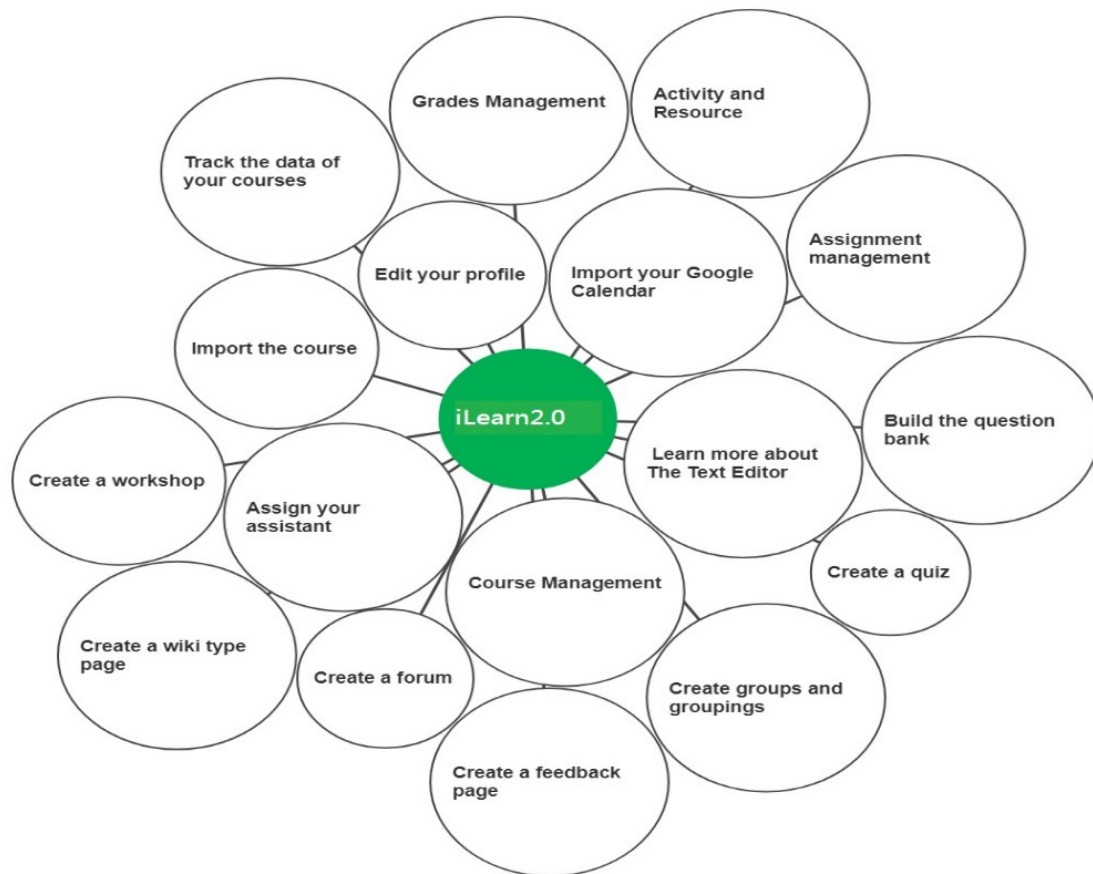


Figure 1. The Functions of iLearn2.0.

Due to the difference in the core architecture of the iLearn system, the user's operation method changed slightly compared to the previous version. The online classroom (iLearn2.0) system also introduces "Learning Guidance" and "Learning Portfolio". It helps teachers and students in class to use the iLearn2.0 easily. The iLearn2.0 live video streaming software is easy to operate, allowing teachers to grasp the learning status of each student in real time. In addition, the live video software supports functions, such as "recording", "screen sharing", "whiteboard" and "chat interaction". The content of the lectures can be imported into iLearn2.0 regularly. During the video process, students are also able to ask teachers about the points they do not understand, to ensure that the right of every student (i.e., to be taught) is saved.

3. Conclusions

The unprecedented situation of the COVID-19 pandemic caused a fundamental transformation in the education system. From a teaching perspective, E-learning is an effective, sustainable learning solution under current and future conditions [8]. One of the main sustainability goals of the United Nations 2030 Agenda for Sustainable Development (Goal 4) focuses on the equal right of all people to receive fair and quality education. In this regard, teachers play a vital role because sustainable education involves "teacher participation and authorization, motivation, and support in a system with sufficient resources and efficient and effective management" [45]. Content is disseminated through the education process so that we can talk about the sustainability of the education. In the

Internet industry and education scene in the post-pandemic era, the keyword born is E-learning [26]. Many teachers believe that online teaching provides them with ideas to change traditional classroom teaching. As a learning mode that is not limited by time or space, E-learning allows teachers to have a flexible and convenient learning environment to expand their professional knowledge [1].

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