

# Construction and Practice of Knowledge Map-Oriented Flipped Classroom Mode - An Example of Blended Teaching on Topics of World Civilizations

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## Abstract

The knowledge map-oriented flipped classroom model innovatively integrates information technology with traditional teaching. In this approach, teachers transition from knowledge transmitters to learning guides and course designers, using knowledge maps to optimize learner-centered instruction. Khan Academy's successful integration of flipped classrooms and knowledge maps has set a global benchmark for blended learning. Drawing on this model, this paper examines the principles, methods, and implementation of knowledge map-driven course design through the case of Topics of World Civilization. The goal is to foster a blended learning approach centered on knowledge connections and student-driven inquiry, offering a replicable framework for higher education reform.

## Keywords

Knowledge maps; flipped classroom; blended learning.

## 1. Introduction

Since the first industrial revolution in the 19th century, the world has undergone radical changes. With the continuous upgrading and development of information technology, the world is now realizing the transformation from the second industrial revolution to the flat third industrial revolution, and China's higher education, which is standing at the turning point of the era, has also ushered in new challenges. Against this background, the Ministry of Education released the Education Informatization 2.0 Action Plan in April 2018, the core of which is to promote the concrete implementation of 'Internet + Education.' [1]The advantage of education informatization is that it can break through time and space limitations, disseminate and replicate quickly, achieve rapid sharing of high-quality resources, and efficiently improve the quality of education. The action plan clearly puts forward the people-oriented, information technology to lead the construction of a new learner-centered education ecosystem, adhere to the integration of innovation, give full play to the advantages of technology, change the traditional mode, promote the deep integration of new technologies and education and teaching, online and offline blended mode of teaching is a new mode of teaching in this regard.

## 2. Meaning and Types of Blended Teaching Models

At the end of the 19th century, the British teacher Isaac Pitman was the first to attempt blended teaching. In an era when the Internet and computers were not yet popular, he wrote collated questions on postcards and mailed them to the students, who wrote the answers and then sent them back to him. He referred to this method as a way to break through the limitations of the classroom, allowing for a more diversified dissemination and acquisition of knowledge, which he termed blended teaching. Subsequently, it evolved and integrated with television, CDs, radio,

and other media, until the advent of mobile Internet, which led to rapid development and a full explosion of blended teaching.

The so-called blended teaching, written in English as Blended Learning, is not merely a simple addition of various teaching methods. Rather, it is a form of teaching that combines online and offline elements with the aid of new technologies and means, centered around specific teaching objectives, teaching content, teaching environment, and the conditions of both the subject and the object. It fully leverages the strong permeability and high coverage of the Internet, effectively compensating for the limitations of face-to-face teaching in terms of time and space, and represents an effective combination of traditional teaching and E-learning (pure online learning). Blended teaching forms can be categorized into the following types:

#### 1. Offline-based, online-based

In this form of teaching, teachers still play a leading role, with the learning mode primarily centered on in-person learning, supplemented by online learning. The teacher will provide supplementary materials, exercises, and other content online, allowing students to choose their own time to complete their studies. The main purpose of the online component is to enrich the teaching content and expand the knowledge acquired, while course assessment is primarily based on offline activities.

#### 2. Online-based and online-supported

Most of the learning content is arranged online, and teachers provide regular offline meeting tutorials. Teachers are no longer the center of learning; their main role is to check the effectiveness of the students' online learning and suggest guidelines for the next learning phase to help the students complete their learning more effectively.

#### 3. Online and offline dual-teacher teaching format

Online courses have a special master teacher and offline auxiliary teachers, with online and offline instruction accounting for about fifty percent each. Offline class teachers can arrange their teaching based on their own content, forming an echo and supplement to online teaching, thereby facilitating better learning outcomes.

The author's current school implements the third form of teaching. Next, the author will discuss the implementation of the course "Topics in World Civilizations" in light of his personal teaching practice.

### 3. Curriculum design for the Theme on World Civilizations

Topics in World Civilizations is a general course offered by Beijing Normal University for undergraduate students in the humanities on the MOCO platform, which covers the three continents of Europe, Asia, and Africa from prehistoric civilizations to the Roman imperial period, and involves a number of civilizations such as the Ancient Two Rivers Basin, Ancient Egypt, Ancient Persia, Greco-Macedonian, Ancient Rome, as well as Ancient China in terms of space.

#### 1. Design of teaching objectives

As a compulsory general course for university students, Topics in World Civilisations focuses on outlining the main lines of development of ancient civilisations, revealing the differences and commonalities among civilisations, enabling students to understand the history of the rise and fall of major civilisations while further contemplating the laws of civilisational development, fostering students' interest in historiography, establishing a correct view of history, and learning to use history as a guide. The specific objectives are threefold: first, to enable students to understand the development of the world's ancient civilisations, to construct the concept of time and space, to learn to grasp the historical figures and events in the course of history, and to establish a linear longitudinal clue of history; second, to learn to make

horizontal comparisons, and to enable students to carry out comparative research on these ancient civilisations by drawing knowledge maps, so that they can learn about the composition of their civilisations, the differences and similarities among them, and appreciate the pluralism and coexistence of human cultures; third, to learn to conduct horizontal comparisons. Thirdly, through classroom interactions and post-class tasks, students will develop independent thinking and critical thinking skills.

## 2. Teaching content design

This course is divided into online and offline modules, with the online course content consisting of a total of six chapters, which are: First, the Neolithic Agricultural Revolution; Second, the origin of civilization in Sumer; Third, the Egyptian civilization spanning 3,000 years; Fourth, the small mountainous country (Persian Empire) and the great empire (Alexander's Empire); Fifth, the rise of Rome and the unity of the Mediterranean Sea; Sixth, the Silk Road and the mutual understanding of civilizations. Each chapter is divided into several subsections, with a total of forty-two small sections and videos. Each chapter contains a number of subsections, with one subsection and one small video discussing a total of forty-two. The course advocates learning the history of civilizations from a historical perspective and emphasizes the role of reflection in learning. Therefore, there will be corresponding reflection questions at the end of each chapter. For example, when discussing the origin of human beings, students are asked to share their views on the 'single-origin theory' (also known as 'recent African origin of modern humans') and the 'multiple-origin theory' (also known as 'multiregional origin of modern humans') through reference to the provided information and their personal reflections. When discussing the Two River Basin Civilization, students are invited to contemplate this region. When discussing the civilization of the Two River Valley, students are encouraged to think about how the civilization of this region could maintain such remarkable continuity despite constant wars, riots, and changes in kingdoms and empires. When discussing the civilization of Ancient Egypt, students are invited to consider the deeper reasons behind the ancient Egyptians' pursuit of immortality and to further reflect on the relationship between religion and social life, among other topics.

Offline courses are scheduled once every three weeks, and the primary responsibility of teachers is to assist students in completing online independent learning and assessing their learning outcomes. The first task is to formulate a syllabus corresponding to the content of the online course; the second is to organize face-to-face teaching for the offline course, which generally does not involve lecturing on specific content but rather organizing flipped classroom teaching; the third is to engage with students through the online platform, such as discussing problems and answering questions; and the fourth is to prepare a question bank and organize tests for both online and offline courses.

## 3. Course evaluation design

As a blended course focusing on students' independent learning, this course emphasizes students' learning behaviors and learning processes, such as examining whether students are able to complete each chapter within the specified time, whether they can submit online test questions on time, whether they can attend offline meet-up classes regularly, whether they are active in classroom interactions, and how well they have completed the offline course tasks. Overall, the assessment ratio of online modules and offline modules each accounts for 50%, with online modules mainly focusing on video learning and self-tests; the ratio of offline modules featured assessment to usual grades is six to four. The specific settings are shown in the table below:

**Table 1.** Course Assessment Ratio Setting for Topics in World Civilisations

| Blended Course Assessment Ratio Setting |                    |                 |                |                     |                |         |                  |                 |
|-----------------------------------------|--------------------|-----------------|----------------|---------------------|----------------|---------|------------------|-----------------|
| Course name                             | Course assessment% |                 | online courses |                     | Online grade % |         | offline courses% |                 |
|                                         | online courses     | offline courses | Online grades  | Online final grades | Video Learning | routine | Final exam       | Ordinary grades |
| Topics of World Civilizations           | 50%                | 50%             | 100%           | 0%                  | 60%            | 40%     | 60%              | 40%             |

The online test is based on objective questions, aiming to help students master important knowledge points in a targeted manner; the offline test consists of two components: one is the performance of students' usual participation in course interactions, and the other is the final examination of students. The final examination differs from traditional examinations and is based on characteristic assessment, focusing on students' comprehensive abilities, such as retrieval ability, analytical ability, and expression ability.

#### 4. The Use of Flipped Classroom in Blended Learning

With the popularity of digital and network technology and modern information technology, the Flipped Classroom, which uses new media as a carrier, is increasingly utilized in the field of education. The Flipped Classroom reverses the two stages of knowledge transfer and knowledge internalization in the knowledge learning process, and the innovation of the reverse order of the teaching process brings about advancements in knowledge transfer and changes in knowledge internalization. This teaching mode can substantially improve students' classroom participation and the degree of communication between teachers and students and has been increasingly recognized.

##### 1. The pedagogical features of Khan Academy's flipped classroom

The biggest driver of the flipped classroom is Khan Academy, founded by Salman Khan in 2006 as a non-profit educational organization, which provides free education to people anywhere in the world in subjects such as mathematics, biology, chemistry, physics, history, economics, finance, etc. The Academy's video courses are now translated into more than sixty languages, and are available online to 15 million people worldwide every month.

They have established a learner-centered, scientifically refined video lecture system supplemented by classical exercises to enable students to master each knowledge point, efficiently filling the knowledge gap of students and effectively solving the problem of disconnection between teaching and learning. The college insists on the teaching method of mutual help and inquiry; students must complete 10 practice problems continuously after mastering a knowledge point before entering the next stage of learning, and if they encounter unsolvable problems, they can ask for help from teachers or other learners remotely through the computer. In order to check the learning effectiveness of learners, the Academy has introduced supporting modules such as Badge, Discussion, Project, Activity, Progress, Teach Red, etc. to help students share their learning achievements, track their trajectories, and generate exclusive learning record charts. [2] Unlike general catechisms, their teaching runs through the front-end, middle-end, and back-end of the teaching process. They have set up a 'pre-class pre-study' and 'post-class feedback' mechanism, where students' learning dynamics are directly monitored by the back-end and intuitive charts are generated for feedback to the teacher platform. Teachers can use data mining technology to customize optimal learning plans

for students. The most important feature is the concept of sophisticated teaching methods and the use of flipped classrooms.

## 2. Knowledge maps to pull course learning

Khan Academy's Precision Method is based on neuroscientific evidence. Through research, they believe that the human mind, like a muscle, can generate synapses through exercise, and when synapses are connected into pieces, they are able to connect previously learned knowledge, create macro-concepts in the mind, and form a Knowledge Map, which leads to true understanding. A Knowledge Map is a kind of structured knowledge relationship network, which can present the logical and associated structure of knowledge in a visual way, with the characteristics of connectivity and directivity.[3] For courses of a historical nature, a Knowledge Map can combine scattered knowledge points into an organically linked knowledge system, which helps students to understand and grasp the knowledge from a macroscopic point of view, so as to achieve a clear and coherent understanding of each other.

The course 'Topics in World Civilisations' is based on the vertical line of history, supplemented by the horizontal line, with a long time span and a large number of knowledge points, but it is most suitable for presenting in the form of a knowledge map due to the profound organic connection between the contents of the chapters. In order to help students sort out the content level of the course and grasp the knowledge structure, the teacher guides students to build up the knowledge map of the course through the following four steps.

### 1) Theme identification

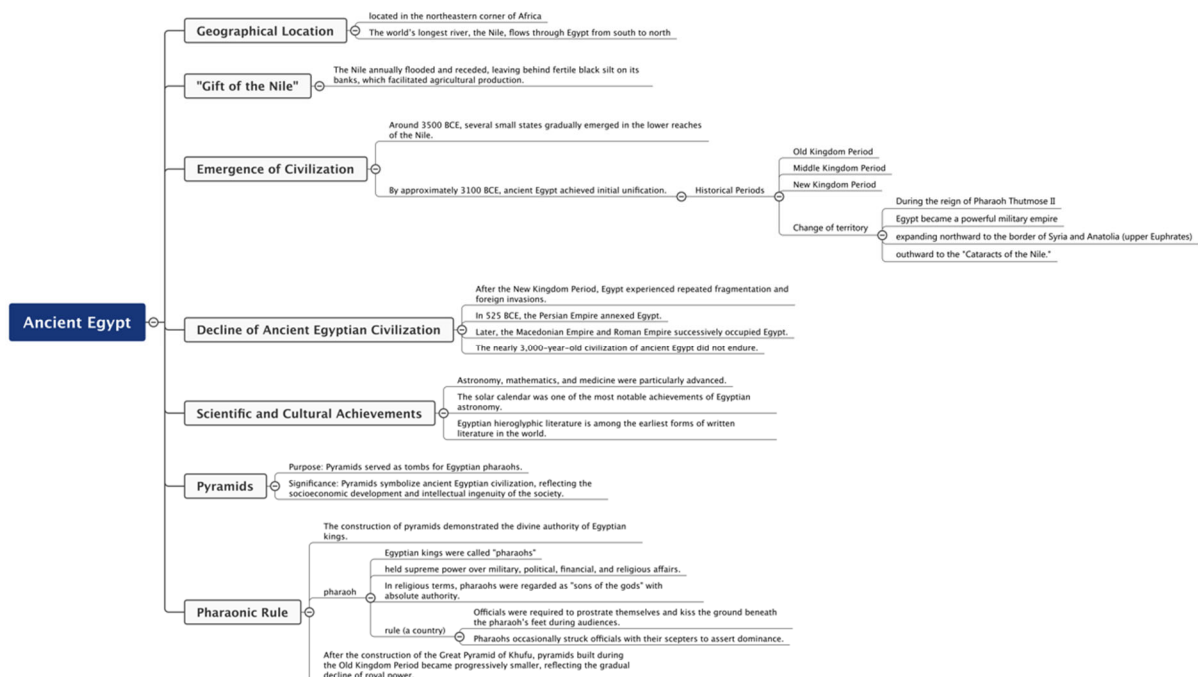
Generally speaking, a needs analysis is conducted before constructing a knowledge map, i.e., the purpose of constructing a knowledge map is clarified, and the topics and framework are determined according to the needs. For this course, as the groups have been divided according to themes, each student only needs to choose the theme according to his/her own group, and the content is much smaller in scope compared to the whole course, which is better to be mastered.

### 2) Tier Determination

Based on the video course and reference materials such as textbooks, list the structural levels, pay attention to the logical connection between the levels, and take the most general knowledge as the first level (first level catalogue), and the second level (second level catalogue) under the first level, and subdivide it step by step. For example, when talking about Sumerian civilisation, you can list the background of the era, production patterns, and ideology as the first level of the catalogue, and then choose to subdivide it downwards in the form of a classification chart, tree structure chart, hierarchical structure chart, or net structure chart according to your personal needs.

### 3) Selection of knowledge points

After determining the main framework, it is time to fill in the knowledge points, which can be extracted from time, space, cultural features, important people, significant historical events, representative sites, representative artifacts, important influences, etc., so that the map can be as complete as possible. The selection of knowledge points should pay attention to the relevance and precedence of knowledge. The so-called relevance means that two knowledge points can produce associations; the so-called precedence refers to the sequential relationship between the mastery of one knowledge point in order to better master the second. The following figure is a brief knowledge map about Sumerian civilization drawn in the classroom, which is mainly based on the background of the time, economic patterns, cultural patterns, and other aspects of Sumerian civilization.



**Figure 1.** Knowledge map for the Theme on World Civilizations  
(Photo credit: author's own)

#### 4) Knowledge cascade

After the main structure is completed, pictures can be inserted within the map, or expansion content can be added in the form of hyperlinks to achieve knowledge migration or integration. It is also possible to put several related knowledge maps together for horizontal or vertical comparison, to find the correlation between knowledge and knowledge, to achieve the transition from point to line, and when there are more and more such connecting lines, a knowledge structure map belonging to the learners themselves takes shape.

In short, a knowledge map is like a growing tree that can be added to, deleted from, and modified at any time with the help of professional mapping tools. It is like a navigation map, which can provide learners with learning paths, and can also help learners assess their own knowledge system, discover knowledge shortcomings, and make up for the shortcomings in a timely manner. Most importantly, it provides a visual presentation of knowledge in the form of a human brain mesh structure, which is more scientific and efficient than traditional study notes.

### 5. Stimulating Students' Interest in Learning With Specialized Tasks to Achieve True Classroom Flipping

The study of history at the university level differs from that at the secondary school level; coping with exams is not the goal. Instead, it is about establishing a relatively complete view of history through the study of knowledge points. History is a dynamic process that should be examined and analyzed as an organic whole. One of the competency objectives of this course is for students to break away from passive learning and discover the sparkling and moving points in history with a spirit of exploration, attempting to form their own understanding and interpretation of these points, thereby enhancing historical insight, understanding the changes of the past and present, and cultivating wisdom in life. Before preparing for the discussion in each class meeting, teachers will outline the scope of the class discussion in advance, taking into account the progress of online teaching to avoid superficial thinking and ensure that



discussions are not merely formalities due to inadequate preparation. Even in offline classes, the offline teaching platform will be opened simultaneously, allowing more students the opportunity to share their views, which also helps to enliven the classroom atmosphere. When students have more channels to express their views, they will think and express themselves more actively.

To better encourage student interaction, some interesting tasks have been set for this course. For example, to complete a 'world civilization site tour guide map,' students are invited to choose a topic within the regulations, plan a roadmap of cultural sites under that topic after conducting sufficient cloud research, and present it to teachers and students in the classroom as a cultural tour guide. One student in the class was particularly interested in ancient Egyptian culture; he created a 3D video exploring the Egyptian pyramids in the form of an animation. When sharing in class, he discussed the origins of ancient Egyptian civilization, and ultimately took his classmates on a cloud tour to the Pyramid of Khufu, which was praised as wonderful.

To sum up, in the context of the era of education 2.0, the classroom is no longer the only channel for students to acquire knowledge. They can completely obtain knowledge and skills through various means according to their own actual situations. The long-standing unidirectional teaching and acceptance mode between teachers and students, which has persisted for thousands of years, is also quietly changing. How to use blended teaching, flipped classrooms, and other methods to achieve student-oriented two-way interaction between teachers and students is a contemporary problem that teachers should contemplate. Only by preparing in advance and starting early can we avoid being left behind in this era of rapid development and change.

## 6. Conclusion

The knowledge map-oriented flipped classroom model, through the deep integration of information technology and traditional teaching, provides an innovative pathway for higher education curriculum reform. In the blended teaching practice of the "Topics of World Civilizations" course, the introduction of knowledge maps has effectively helped students construct a systematic historical knowledge framework, strengthening their understanding of the interconnections and differences among civilizations. The implementation of the flipped classroom, with its "learn first, teach later" reversed workflow, significantly enhances students' classroom engagement and self-directed learning capabilities. Research indicates that the blended teaching model guided by knowledge maps can transcend spatiotemporal limitations, optimize the allocation of educational resources, and stimulate students' exploratory interest through tailored task designs, fostering critical thinking and historical insight.

However, several challenges remain in the practical application of this model: First, the construction of knowledge maps must balance logical rigor and flexibility to avoid overly rigid structures that constrain divergent thinking. Second, the seamless integration of online and offline teaching demands higher competency in curriculum design and technological integration from educators. Third, cultivating students' self-directed learning habits requires long-term guidance and dynamic assessment. Future research could further explore the universality of knowledge maps across diverse academic disciplines, develop dynamic knowledge graph tools powered by artificial intelligence, and expand practical applications to validate the model's long-term effectiveness.

In summary, the knowledge map-oriented flipped classroom model offers replicable theoretical and practical exemplars for higher education reform. Its student-centered philosophy and technology-empowered innovative approaches provide critical insights for addressing education.

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