Webcast-based action learning to enhance learning effects in social studies domain classes

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ABSTRACT: In recent years, national education authorities in Taiwan have started to emphasise a student-centred cultivation of core capabilities and encouraged schools to set up special classes with curriculum activities for exploring cross-domain subjects. In the domain of social studies, there are corresponding classes to cultivate students' abilities of inquiry, participation, practice, reflection and innovation through the exploration of different topics. Considering the domain of social studies, this article presents a webcast-based action learning model for students to engage in social studies learning through live field research to cultivate their abilities of inquiry, participation, practice, reflection, innovation. Based on the model presented in this article, the authors propose a curriculum design that is advantageous for students engaged in social studies learning. Then, this design is applied to an *exploration and implementation of social studies domain* class for developing learning materials and activities to be used in the class. Finally, multiple assessments are applied to verify the effectiveness of the proposed webcast-based action learning model.

Keywords: Social studies class, webcast-based action learning, curriculum design, multiple assessment

INTRODUCTION

In recent years, national education authorities in Taiwan have begun to emphasise a student-centred cultivation of core capabilities and encouraged schools at different educational stages to set up special classes with curriculum activities for exploring cross-domain subjects, thereby strengthening students' integrated exploration and learning abilities. In the domain of social studies, there are corresponding classes [1] for such subjects as history, geography and society to cultivate students' abilities of inquiry, participation, practice, reflection and innovation. In addition, in the exploration process, students' attitude and training are emphasised on solving problems and innovative applications through group discussion, potential practical usage, communication and co-operation for enhancing their abilities for future career.

Thereafter, in order to design social studies classes, school authorities and teachers are brain-storming and trying possible learning models and curriculum activities to provide practical training for students. Among the many well-known learning models, action learning [2][3] provides students with an attractive path to learning by engagement in a real-life field of research at visited sites. During those visits, students observe or participate in actual, real-life situations, which enables them to understand these situations, identify any existent/potential problems, explore specific feasible solutions and develop innovative applications. In addition, due to the wide spread of on-line live webcasting [4][5] in recent years, students are also keen to engage in an interactive live webcasting during their action learning [6]. That is, during the actual field research, students who are visiting a site have a live webcast and interact with those students or teachers who are in the classroom to discuss, reflect and innovate. That way, all students' understanding about these sites can improve, and the overall learning effects increase in regard to their abilities of inquiry, participation, practice, reflection and innovation.

Considering this background, the authors of this article focus on the use of on-line live webcasting in action learning to develop a new type of webcast-based action learning model. As one may conceive, this model should enable students at the visited site to understand its actual situation through action learning, and also through live interactions with those students or teachers who are in class - as mentioned above. The real-time discussion and reflection will lead to a better understanding of the site and its specific situation, and will allow for further identification of existent/potential problems, exploration of feasible solutions and development of innovative applications. Then, with the new webcast-based action learning model, the authors propose a curriculum design that is advantageous for students in the social studies domain, and verify its effectiveness. Afterwards, this design is applied to an *exploration and implementation of social studies domain* class for developing relevant learning materials and activities.

By utilising the features of on-line live webcasting and interactions in action learning, the class can increase students' learning effects in regard to comprehending actual situations, identifying potential problems, exploring feasible solutions and developing innovative applications. Hence, the overall learning effects regarding the abilities of inquiry, participation, practice, reflection and innovation can improve. Finally, after the practical teaching of the class, multiple assessments including a test and a questionnaire are taken to verify the effectiveness of the proposed webcast-based action learning model.

WEBCAST-BASED ACTION LEARNING

In general, based on the well-recognised features of action learning [2][3], the wide spread of on-line live webcasting [4][5] in recent years has further promoted students' interest in having such webcasting during their action learning. Therefore, considering its academic merits, the developed webcast-based action learning approach has the following features for participating students:

1. All students can make use of digital tools before or in the class to take such actions as reading curriculum materials, querying site-related data, verifying relevant information, and other activities aimed at enhancing their learning effects.
2. Designated students engage in live action research and get real-life experience on the site concerned as specified in the curriculum content (e.g. observe or participate in the actual situation and more importantly have live interactions with those students or teachers who are in the classroom).
3. All students can make use of the site experience delivered by the students engaged in live action research to complete learning activities in the class. By understanding the actual situation of this site, they should identify any existent/potential problems and find feasible solutions or innovative applications for these problems.
4. All students engage in action research or the associated activities and actions in a group manner to co-operatively participate/observe, evaluate and reflect on these research activities and actions for enhancing their learning effects.
5. The teacher needs to provide on-line supports for students' action research by guiding their webcasting and introducing the visited site. In addition, he/she also needs to facilitate the live interactions between the site-visiting students and the ones in classroom, and help them to focus on understanding the actual situation of the visited site, identifying any existent/potential problems there, and finding feasible solutions or innovative applications for these problems.

CURRICULUM DESIGN

Within the webcast-based action learning model, a class that incorporates its features to provide students with an effective learning environment for their learning in the social studies domain can be designed with the following learning activities:

1. Before the class, all students can use digital tools to read the curriculum materials in various forms of eBooks (e.g. PDF or ePUB3 format) for establishing their basic concepts about the subjects in the class.
2. Before the class, a group of students is selected to prepare for live action research at a designated site relevant to the class subjects (i.e. preparing the required material for action research, such as the planned field route, live webcasting equipment, casting method and the required insurance).
3. At the beginning of the class, the group of selected students engage in the well-prepared live action research at the designated site to observe or participate in the actual situation of the site. Also, when observing or participating along the planned field route, they can webcast from the site and have live interactions with those students or the teacher who are in the classroom to realistically experience the actual situation of the site.
4. Therefore, at the beginning of the class, all students can make use of the site experience delivered by the live action research and the live interactions with students on the site to complete such learning activities as understanding the actual situation of this site, identifying the existent/potential problems there, and even finding feasible solutions or innovative applications for these problems.
5. After the live action research, students in the classroom engage in a group discussion to explore answers to the identified problems through problem-solving or innovative applications related to the class subjects. The shared experience of the site allows students to engage in a more informed discussion and exploration of the site problems, and reach a deeper level of thinking to develop the correct answer to the question.
6. After sufficiently long talks, students in the classroom need to converge their group consensus about the answer of the discussed question in terms of solving specific problems or developing innovative applications.
7. With the answer of the discussed question in mind, students in the classroom share their group answers with other groups. This exchange of answers helps students to enhance their knowledge about the answer of the question by capturing innovative ideas from other groups. In addition, the teacher can give adequate comments or suggestions about each exchange to help students reflect on their answers.
8. Finally, at the end of the class, students in the classroom take a post-class test to verify their learning effects about the class subjects.

Instructional Design

In this class, students read the curriculum materials in a PDF eBook form within a week before the class to establish basic concepts about the subjects to be discussed in the classroom. Then, a group of selected students engage in a 40-minute well-

prepared live action research at the designated site at the beginning of the class. Afterwards, students in the classroom engage in a 30-minute group discussion to explore answers to a subject-related question, and then have 20 minutes to share group answers with each other to enhance their knowledge. A 15-minute post-class test is finally taken at the end of the class to verify students' learning effects about the class subjects. Further, a PDF eBook chapter: *Taipei in the 90s* is used as the curriculum content for students learning in the social studies domain and discussion subject in the class.

In general, this chapter describes some attractions and stories about Taipei in the 1990s. In particular, among its descriptions, the introduction about the Dadaocheng area (denoted as DDC) near northern Taipei is specifically addressed as a subject to be discussed in the class: 1) the current characteristics of DDC; and 2) the most remarkable attractions around DDC. Thus, a group of students are selected to take a 40-minute live action research at DDC at the beginning of the class to observe its actual situation, deliver the real experience about its current characteristics and notable attractions, and then identify the existent/potential problems or notable attractions, and even find feasible solutions or innovative applications to these problems.

Data from Practical Instruction

With the above instructional design, a 36-student *exploration and implementation of social studies domain* class in a university in Taiwan was held on 7 December 2022. Initially, students started their learning within a week before the class by reading the PDF eBook chapter: *Taipei in the 90s* as shown in Figure 1.
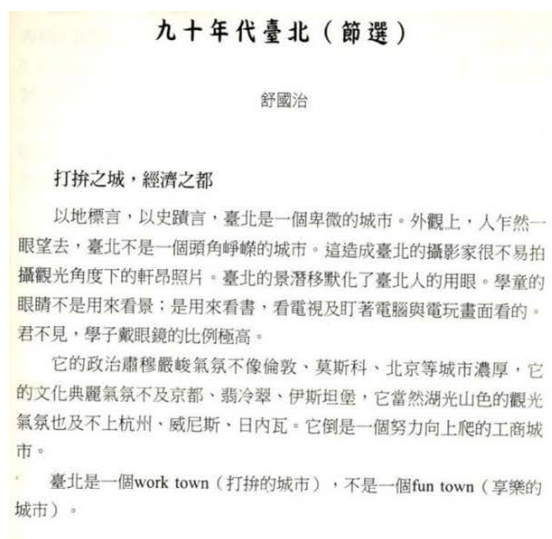

Figure 1: The eBook chapter read in the class.

Figure 2: Webcasting of live action research at DDC for students and the teacher in the class.

Also during the week prior to the class, a group of students were selected by the teacher to prepare for live action research at DDC. After that, this group of students had 40 minutes to conduct the live action research at the beginning of the class where they webcast the actual situation along the planned route. They introduced the site to class-based students, and interacted with them and the teacher in the classroom about the current characteristics and notable attractions at DDC, the existent/potential problems and even feasible solutions or innovative applications to these problems.

The following illustrates part of the live action research by a group of students denoted as S_{live} who had to introduce and interact with the teacher and students in the classroom about the subject-related situation at DDC:

1. The live action research was conducted at the beginning of the class as shown in Figure 2, where the teacher and students received the webcast live video in the classroom. The visited area included the area along the planned route on Dihua, Guisui, Chongching and Nanjing streets around DDC. Further, in light of the two subjects to be discussed in the class, the students had to:

    (1) Understand the actual situation of the visited streets i.e. what are the current characteristics of DDC, and what is the current situation of the most notable attractions in DDC?
    (2) Identify existent/potential problems at DDC, i.e. what problems does/may it have, and how do these problems impact its current environment or may impact its future development?
    (3) Find feasible solutions or innovative applications for these problems, i.e. what are the feasible or innovative ways to solve or alleviate these problems?

2. While visiting the site and its attractions, S_{live} students introduced the site, and interacted with the teacher (denoted as $T_{classroom}$) and students (denoted as $S_{classroom}$) in the classroom as the following examples illustrate (please note that these are English translations of the original Chinese speech):

(1) S_{live}：OK, here is the most famous Xiahai City God Temple at DDC. As you know, the Old Man under the Moon is the most popular deity among those enshrined in the temple. It is said that this deity was donated by a woman to thank the City God for blessing her children's marriage arrangements; she wished to share the marriage matching work of the City God with the Old Man under the Moon.

(2) $T_{classroom}$：Great, but can you explain also a little bit about the sources of the deity of the City God? There should be more historical tales about how he was put in the temple as we see today.

(3) S_{live}：Yes, as we know from the narratives of Taipei city government, the deity of the City God was moved from China in 1821, with more than 100 people carrying the statue of the City God from the Tongan County of Fujian Province to Taipei.

(4) There were more similar interactions, but they are not shown here due to space limits.

(5) S_{live}：Next, let us see a special attraction called the DDC Theatre. It is located on the 2nd floor of the Yongle market and known for presentations of traditional puppet shows, exhibitions and operas where male actors play female roles.

(6) $S_{classroom}$：Wow! I have not heard of this place. It feels very special, but how come I never knew about it!

(7) S_{live}：We think this may come from the advertising or marketing problem. Although DDC is very famous in Taiwan, but there are still some places or attractions not known to the general public. The theatre is a typical example. Therefore, we feel it is necessary for the government or local community to enhance the advertising or marketing the attractions of DDC.

(8) $S_{classroom}$：Sure, I also think so. In addition to the theatre, the Hong Choon Tea Shop faces also the same problem as you introduced earlier. I feel it is the responsibility of the Taipei city government to find some ways for enhancing the advertising of or marketing the attractions of DDC as a whole, not just piece-by-piece highlighting of some particular attractions.

(9) There were more similar interactions, but they are not shown here due to space limits.

3. Then, after the visit, S_{live} students concluded their findings:

(1) In regard to the current characteristics of DDC, it is very impressable that there are so many historical and cultural assets worth deeper exploration; in addition to the Xiahai City God Temple, there are many kinds of attractions like medicinal herb stores, grocery stores, tea shops, theatres, cloth villages, etc. However, it is only prosperous along the Dihua Street, and it is obvious that only the Dihua Street and nearby attractions are lively, while other streets are very quiet with few visitors, indicating an uneven distribution of prosperity.

(2) Therefore, the advertising or marketing for DDC should be enhanced, especially for those quiet streets and attractions outside the Dihua Street. As indicated by $S_{classroom}$, many attractions, which we visited outside the Dihua Street were unknown to them. We, therefore, agree with their opinion that suggests to enhance the marketing of DDC as a whole, not just as piece-by-piece highlights for some already known attractions.

(3) Finally, we want to say, DDC is an attractive place; there are many historical attractions for us to visit and capture in depth, and there are many stories worth listening to. We appreciate the opportunity to visit this site which let us comprehend more details about DDC. We recommend all classmates to actually visit it later after the class.

After the live action research, all students had a 30-minute group discussion to explore the answer to the question, through problem-solving or innovative application in regard to the class subjects, assigned by the teacher:

As concluded by the live action, there is an uneven distribution of the prosperity at DDC. It is thus suggested to enhance the marketing of its attractions as a whole. If you were a webcaster as S_{live}, what would be your plan to advertise DDC through marketing and introducing its attractions as a whole?

The following points include some of the answers by students denoted as S_{group} after their group discussions (please note that these are English translations of the original Chinese speech):

1. S_{groupA}：We think, we can advertise the site as S_{live} students did by introducing DDC along a planned route. However, we may arrange a route different from them. The point is that the route should follow the chronicle of historical events that had happened at the current attractions along the Dihua Street and other streets. This can make the visit across these streets more interesting, curiosity-arousing and engaging as nearby attractions would be introduced in a historic event-related way to the public who could learn what had happened around the whole DDC. For example, we plan the route to follow the historical events that had happened at such popular attractions nearby the Dihua Street as the Xiahai City God Temple, DDC Theatre, Chiaoyicheng and Lin Family's Ancestral House, and also those attractions close to other streets in a historical event-related way, such as Li Linchiu's Former Residence, DDC Chianchiu Street Shophouse, Chen Tianlai's Former Residence, DDC Gu's House, and the Hong Choon Tea Shop. We feel this is a good way to introduce the attractions around the whole DDC, especially for those attractions on the streets that are quiet with few visitors.

2. S_{groupB} : We plan to introduce some selected attractions by routing the relevant streets as a whole in an alternate way of longitudinal and horizontal directions. That is, our route would follow an alternate way to visit the selected attractions along the longitudinal streets like Dihua, Guide, Shining North and Yanping North, and the horizontal streets like Guisui, Minsheng West, Yongchang and Nanjing West. As you may notice, our goal is to make the tour along the shortest distances to save on walking time, and hence leave more time for introducing these attractions. In addition, the second point that we shall focus on is the content of our introductions. Basically, the attractions we shall select must be historical with several stories about their construction, development or even decline. We, therefore, would give in-depth narratives about the characteristics of these attractions in terms of their construction, development or even decline to make the introductions more attractive and engaging.

After the group discussions to explore the answer to the question about the class subjects assigned by the teacher, S_{group} students had 20 minutes to share their answers with each other to enhance their thinking and knowledge about the answer to the question by capturing innovative ideas from other groups. Also, as one may conceive, the teacher would give comments or suggestions about the answer of each group to help them rethink and reflect on their answer. Finally, at the end of the class, a post-class test with the question below was given to verify students' learning effects from this class:

As you may notice, DDC is similar to a historical and cultural park that has many valuable attractions for exploration in depth. Therefore, it is a good idea to think about the assets of DDC in light of a historical and cultural park. Please write down what you think about its possible assets. Note that you need to state what references you use (i.e. on-line sources or personal experiences) for addressing the assets of a historical and cultural park (e.g. what the park can provide and who can benefit from the park).

Table 1: The rubrics used for evaluation of the post-class test.

Ability	Very good	Good	OK	Not good
Inquiry, participation, practice, reflection, innovation (20% each)	17-20	13-16	9-12	0-8

Table 2: The results of the post-class test in light of the rubrics.

Ability	Number of very good	Number of good	Number of OK	Number of not good	Average (degree)
Inquiry (20%)	22	12	2	0	16.86 (good)
Participation (20%)	25	11	0	0	17.44 (very good)
Practice (20%)	24	12	0	0	17.25 (very good)
Reflection (20%)	14	19	3	0	15.67 (good)
Innovation (20%)	14	20	2	0	16.03 (good)

Table 3: The questionnaire about using the curriculum design in the class.

Category	No.	Questions	Mean	SD
Learnability	1	Compared to traditional learning, the webcast action method in our class offers a more effective learning model.	4.32	0.91
	2	Compared to traditional learning, the webcast action method in our class offers a more interesting learning model.	4.41	0.86
Lecture's ability in regard to instructional design	3	Compared to traditional instruction, the instructional design of our class offers a more comprehensive and constructive instruction.	4.26	0.99
	4	Compared to traditional instruction, the instructional design of our class offers a more active and student-centric instruction.	4.26	0.99
Satisfaction	5	Compared to traditional class, our class raises my interest in learning in the social studies domain.	4.41	0.66
	6	Compared to traditional class, I prefer to take the class that uses the webcast action method in its instructional design.	4.26	1.02

The following part presents some answers by the class-based students (please note that these are English translations of the original Chinese speech):

1. I found an article from the Internet that talks about the values of the Traditional Art Centre at Yilan [7]. I am interested in it because I have been there only twice. As it says, the value of traditional art lies in *people*. The centre has craftsmen and artists who create valuable stories to showcase and preserve the traditional art. Therefore, I also think that in relation to DDC. Its value lies also in *people*. In its historical residences, there are tea and medicinal materials traders, traditional performers, and the folk-based *Old Man under the Moon*. They all create different stories to preserve the heritage of DDC, i.e. so that it becomes a gathering place of traditional humanistic development, economic prosperity with a thriving community.

2. After reading some Web sites about historical or cultural parks, the report by Kinmen Daily for developing the Kinmen Cultural Park [8] impressed me a lot. It emphasises the association of culture with tourism and education to make the culture more popular in the hearts of people, and hence make the park become the best cultural asset and a dynamic full of attractions area. I think this reveals that the value of the Kinmen Cultural Park lies in its association of cultural heritage with tourism and education. Considering this in regard to DDC, I think that DDC is itself a cultural park because there are many historical attractions each of which represents some kind of culture, e.g. the Xiahai City God Temple is a religious cultural landmark and the Hong Choon Tea Shop is a business cultural landmark. Therefore, the value of DDC can be the same as the Kinmen Cultural Park's by associating its accumulated culture with tourism and education. This would make DDC the best cultural asset and a lively area for tourists, students and local residents.

Verification of Learning Effects

After the class instruction, follow-up assessments of the post-class test and questionnaire were conducted to verify the validity of applying the instruction to the webcast action learning model to improve students' learning effects:

1. The post-class test assessment.

As shown above, the post-class test has the question for verifying the learning effects of students from this class. Since this class is aimed at cultivating students' abilities of inquiry, participation, practice, reflection and innovation, the rubrics in Table 1 were used to consistently evaluate these abilities. Therefore, after the test, scores were collected from all students to specifically calculate the number of students at each degree of an ability and the average score of all students of the ability. As shown in Table 2, the test results indicated that students had very good scores of their learning in *participation* and *practice* abilities (*i.e. how they participate in the practical learning of the actual situation at DDC*) and good scores of their learning in *inquiry*, *reflection* and *innovation* abilities (*i.e. how they explore the heritage of a historical and cultural park and then reflect on that heritage in DDC, and innovate*). The validity of applying the instruction to the webcast action learning model to cultivate students' abilities was preliminarily confirmed as expected.

2. The Questionnaire.

The validity was also verified by a questionnaire at the end of the class where 34 (out of 36 enrolled) students gave their feedback. As shown in Table 3, based on the experience from Tsai and Lin [2], six closed-ended questions were included in three categories: *learnability* (when using the webcast action learning model), *lecture's ability* (when using the instructional design) and *satisfaction* (about the class), where a five-point Likert scale, from 1 - strongly disagree to 5 - strongly agree, was used. To measure the reliability of this questionnaire, an internal consistency estimate was conducted for deriving the Cronbach's alpha values for the overall reliability coefficient of its three categories. In result, the obtained Cronbach's alpha values for the three categories were 0.909, 0.751 and 0.904, respectively. According to Nunnally [9] and Cronbach [10], the internal reliability of questions in a category is considered satisfactory if it is greater than 0.7. Therefore, the reliability of the conducted questionnaire was satisfactory. Furthermore, as indicated in Table 3, the questionnaire results were encouraging. All scores were above 4.0; hence, students had supportive attitudes towards using the webcast action learning model in the instructional design. They advocated in favour of the webcast action learning model as it allowed them to achieve better learning effects. Further, they could accept using the webcast action learning model to raise their interests in learning.

CONCLUSIONS

In this article, the authors presented a new type of webcast action learning model that incorporates on-line live webcasting in action learning. This model enables students visiting a real-life site to understand the actual situations of the site through action learning, and also through live interactions with students or teachers in the class. This allows for real-time discussions, reflections and innovation based on a deeper thinking and understanding of the real-life site and its problems. Then, the authors applied the new model to design learning materials for students to use and activities for an *exploration and implementation of social studies domain* class to verify its effectiveness. Finally, after the class instruction, follow-up assessments of the post-class test and questionnaire were administered to verify the validity of applying the instruction to the webcast action learning model to enhance students' learning effects. As the test results indicate, students achieved at least good scores in their learning of the *participation*, *practice*, *inquiry*, *reflection* and *innovation* abilities. Further, the questionnaire results are also encouraging due to students' supportive attitudes towards using the webcast action learning model as it enables them to achieve better learning effects. They could also accept using the webcast action learning model to raise their interests in learning.

In the future, the authors will continue to explore the application of the new webcast action learning model with a wider variety of classes. Since the new model is verified by just an *exploration and implementation of social studies domain* class, its validity must be verified by other classes, not only in the social studies domain, but also in other relevant disciplines in various academic institutions. Further, based on the on-line live webcast model, there could be other

extensions of the model that could be incorporated in action learning, such as guidance provided on-line through live webcasting (e.g. guidance from local residents or experts provided during on-line live webcasting) or alternate on-line live webcasting (e.g. two groups of students could alternate in on-line live webcasting), Therefore, the authors will also examine the incorporation of these models in action learning. The validity of the resulting extended webcast action learning models will also be explored respectively.

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BIOGRAPHIES

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