

CONDUCTING VIRTUAL MATHEMATICS TUTORIAL CLASSES USING CENTRA SOFTWARE

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Introduction

Colleagues who know me well would be aware that I like to explore and try out various kinds of IT tools in my teaching. I have tried most of the tools available in the IVLE, conducted webcast lectures and occasionally, I use Adobe Presenter (a.k.a. Breeze) to do DIY recordings. I have also designed and implemented virtual computer lab sessions. These are all e-learning platforms that allow students to access course materials or carry out learning activities without being physically in a classroom. One particular software, known as Saba Centra (or Centra for short), has been available to NUS staff for few years. I knew about the software when it was first introduced to NUS, and was quite excited about it. However, I have not used it until recently. In this article, I will share with readers my experience of using Centra to conduct virtual tutorial classes for my mathematics courses.

Description

Centra is a software designed to conduct virtual tutorial classes. Unlike webcasts, Breeze and discussion forums, Centra is a real time interactive tool in which the instructor and students can set up their “e-meetings” at anytime and anywhere. For those who are familiar with the IVLE chat room, Centra is like a chat room except that it has many more advanced features. While the IVLE chat room only allows text chats, Centra users can do voice chats and can even see each other through the webcam. The software features a workspace where users can put up text or graphic images, which also functions as a whiteboard. The workspace also includes some mark-up tools for the users to write, type, draw and make annotations in real time. Furthermore, users can share software and webpages on their own computers with the rest of the class. The session can also be recorded for subsequent review.

The following is a snapshot of the Centra window interface (Figure 1). I will describe its features in greater detail in the following paragraphs.

Considerations

As mentioned earlier, I only started using Centra recently, a few years after it was introduced to the teaching staff in NUS. My understanding from the Centre for Instructional Technology (CIT) is that usage of this software has been quite low. In fact, there were a few reasons why I held back from using it myself.

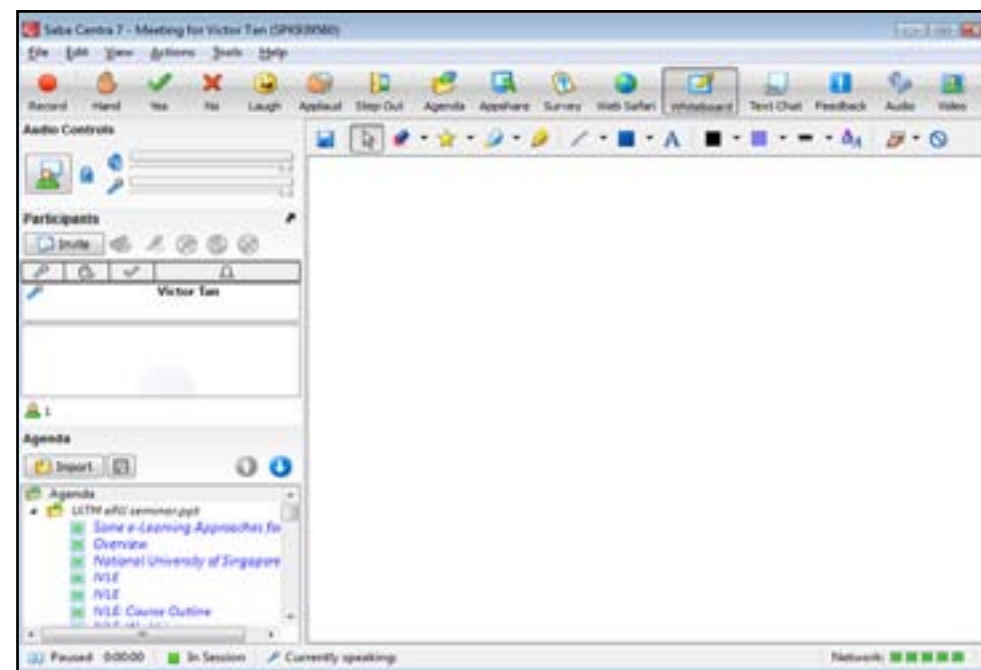


Figure 1. Centra's window interface.

For many years, I have been using the IVLE chat room to chat with students on the eve of their exams. Though the chat sessions are not compulsory, there could be as many as 100 students in the chat room at the same time. Questions from students would come fast and furious, making it quite hectic and a challenge for me to handle all the questions myself (even though, I have to qualify that most of the time, I would get voluntary help from among the students themselves to answer some of the simpler queries). My thinking then was that, if I can barely handle the regular chat room in IVLE, how am I going to manage Centra, which is like a “super chat room” with so many more features? The solution to this was to request for a teaching assistant (TA) to help out during these sessions and to restrict the number of students in each session.

Another consideration I had was that, in order to effectively conduct the virtual class via Centra, I had to ensure that students were equipped with the necessary IT hardware. It might not be so common a few years back, but with the advancement of current technologies, most NUS students these days own laptop computers that come with built-in microphones and webcams. This makes it possible for more students to attend classes through a virtual platform. Hence, I thought the time was right for me to try out the virtual class.

What ultimately prompted me to give Centra a try was the NUS e-Learning Week exercise, which was held during Semester I, AY 2009/2010. Although the university did not make it a requirement to conduct tutorial classes using the online mode during the exercise, given the support from CIT, I decided to go ahead and try

out the software for my module. In fact, I did it not just for one week, but for one whole semester!

Preparation

The module for which I implemented the virtual tutorial class was a first year module for mathematics majors, MA1100 “Fundamental Concepts of Mathematics” in Semester I, AY 2009/2010. There were about 450 students enrolled in this module and 16 tutorial classes were conducted weekly by TAs. Since it was my first time using the Centra software, I wanted to be more cautious and start out on a small scale. Instead of converting all 16 tutorial classes into virtual classes, which would have been too drastic, I introduced an additional virtual tutorial class for interested students to sign up, subject to a minimum of five students and a maximum of 20 students. Though the license carried by NUS allows up to 35 users to be in the virtual class at any one time, I felt that 20 was a comfortable number that I could manage.

The initial response was lukewarm. There were exactly five students who expressed interest in joining this class. The main reason for the low take-up rate among students was because it was new to them. Most would rather stick to the regular mode of mathematics tutorial classes. Subsequently, there were more students signing up after they heard from their friends what the virtual class was about.

Another reason many students stayed away was the class requirement of active participation on their part. I made it clear that students who joined the virtual class must be involved in the discussions and do presentations during the weekly meetings. I did not want the virtual class to end up becoming another variation of a webcast lecture. In reality, most students in a typical tutorial class are quite passive and do not like to speak up or even respond to the tutor. They may not be motivated to join my virtual class, other than the fact that this would be the only tutorial class that was conducted by the lecturer himself. In any case, I had five adventurous students who were keen to try it out, so I had to keep my promise to offer the virtual class.

Before commencement of the first virtual class, I conducted a physical briefing session, supported by a staff member from CIT, to introduce students to Centra and brief them about some of the common codes of practice in a virtual class. Not surprisingly, students picked up the basic features very quickly. They were also required to install the software in their own computers which could also be done quite easily. During the briefing, we also discussed how students would do a simulation of classroom presentation on the software’s whiteboard feature during the virtual class. None of the five students had a tablet PC or an external tablet that would allow them to use the pen tool feature to write on the workspace. As such, they had to rely on the textbox tool to type out their working and answers instead. However, they may encounter problems typing out mathematical symbols and complicated equations

accurately. This is because the Centra software is not equipped with any feature that allows users to insert mathematical symbols. Unless they were willing to invest in a tablet (an external one costs a few hundred dollars), the students would have to try their best to improvise by inserting the mathematical symbols using the available characters on the computer keyboard (for example, using “oo” or simply spelling out the word which represents the notion of “infinity” or “∞”). In any case, as I would be using a tablet, I could always help them to fill in or correct any missing or improvised symbols.

Once we settled on all the hardware requirements, we were ready to start the very first virtual mathematics tutorial class in NUS!

Execution

When I started using Centra, I tried not to be too ambitious in using all the available options in the software, but focused mainly on its basic features instead. I made use of the software’s agenda feature to better organise my lessons. The agenda can be prepared in advance using a simple PowerPoint file. When the file is uploaded to the virtual class session, each slide gets converted to a linked item of the agenda and the slide’s content will be displayed as a graphic image in the workspace when the user clicks on the linked item. The agenda serves as a guideline to show users the lesson’s sequence and flow. However, the host has the flexibility of changing the sequence by going to a specific item on the agenda while he is conducting the lesson.

For my tutorial classes, the agenda items were the tutorial problems. I would simply do a “cut and paste” to transfer the problems to the PowerPoint files, one problem per slide. I would leave some space on each slide for students to present how they worked out the solution. My practice was to pre-assign the problems to the students. They could either type out and send their working in advance to me for inclusion in the agenda, or they could present their work during the virtual class session itself. For those who did not have a writing tablet but chose to present their work “live”, I had them prepare a typed version of their work in advance, and have it transferred to the workspace using the textbox tool. This saved a lot of air time that would otherwise have been wasted if the students were to type their solutions on the spot. During the sessions, students would take turns to show their working and verbally explain them to the class. I would then give my comments about how they worked out the problems, using the mark-up tools to make annotations on the workspace.

As the virtual class was not bound by a physical classroom, I had the flexibility to change or extend the class timings. This allowed me to discuss each problem in greater depth without having to rush through the lesson.

Reflection

The experience gave me the opportunity to test out the feasibility of conducting a virtual tutorial class. It turned out that using the software was not as overwhelming as I had imagined. The learning curve is not that steep if you take it one step at a time. Just grasp enough knowledge of the software's basic features to conduct a class and then gradually explore its more advanced features if you wish to.

In addition, it is not very time consuming to set up a virtual class session. You do not need to do anything in advance if you are just going to do a freestyle tutorial class. However, if you prefer to have a more organised lesson, all you need to do is to create a simple PowerPoint file (no animation is necessary) and upload it to the software's agenda feature.

Though I only tried out the virtual class on a very small group of students, the fact that these sessions could be sustained over an entire semester proved that this mode of teaching is possible. The 10 virtual class sessions throughout the semester also allowed me to make gradual improvements and to fine-tune my virtual class along the way to achieve the best possible online learning experience for my students.

In general, the virtual class was well received. This is what one student who attended it had to say:

- “Virtual classroom is a brave attempt and I wish that you will be able to accomplish it by scaling up the size further but still retaining it's effectiveness, because I feel that I have benefited very much through a small classroom teaching as compared to the traditionally large tutorial class size.”

Another student wrote:

- “The virtual classroom for tutorial is also very engaging and personally, I am able to absorb much better in the tutorial. He also engages us in thought provoking questions and the teaching methodology is quite different from the standard tutorial-styled teaching. We get to critique and look at different forms of proofs (which is quite important as we are able to study different proving methods employed by different people, if we were to only take in answers from the tutor, then we are not exposed to the wide variety of possibilities to proving).”

The pioneering students who attended the virtual class were the better and more motivated ones from this cohort. They were quite responsive and willing to speak up, which is key to a successful virtual tutorial class. Subsequently, I tried out the virtual class in Semester II, AY 2009/2010 with a group of weaker students. I found that it was not as effective, as these students tend to stay quiet during class unless they were asked to present their work. Nevertheless, their level of engagement was still higher than if they were to stay in a regular class. The students made good use of the built-in response buttons during the sessions, which gave me a good gauge

of their level of understanding of the course content. I also felt that I knew the students better through a virtual class than through a face-to-face session. This may sound strange but it seems to be the trend with our students in the digital age.

Will I continue to conduct a virtual tutorial class? Most probably, but I will keep it to a small and select group for now. As I usually teach large classes, it is not possible for me to conduct all the regular tutorial classes myself. The virtual sessions will not only directly benefit the small group of students who attend these classes, but the recorded version could be used as webcast tutorials and shared with the rest of my students who are not attending these virtual sessions.

Conclusion

I hope that my account of conducting the virtual class will serve to motivate and encourage colleagues to try out and make good use of not just Centra, but also the various online teaching tools at our disposal. NUS teaching staff are lucky to have a whole range of IT tools and a team of IT support available to them. I must say that we are much better equipped than some of the universities in the region which offer distant learning and e-learning courses.

In case there are colleagues who wish to try out virtual tutorial classes after reading my article, I would also like to mention that there is another software for virtual classroom teaching that NUS has purchased, known as Webex. CDTL is currently conducting regular workshops on the use of Webex. This software's functionality is similar to Centra, and there are pros and cons to choosing one software over the other. You will have to try it yourself to find out which one is more suitable for your teaching needs.

Endnote:

1. Readers can find more information about Centra at http://www.saba.com/products/centra/details.htm#virtual_classes.