

Introduction

The Flipped Classroom of System Dynamics Modelling for Public Health is a series of micro-modules on concepts and applications of the much-needed system dynamics modeling techniques, delivered through online videos on a central webpage.

Rationale and objectives

In the JC School of Public Health and Primary Care, postgraduate students take PUBH 6001: Introduction to Biostatistics and PUBH 6003: Health System and Policy, but they found it hard to apply statistical techniques to policy health research questions, as practical applications of statistical tools to health policy evaluations are indeed lacked. Students also need more connections between the two disciplines.

As a result, we teach the system dynamics (SD) modeling approach for solving public health issues. SD modeling can approach the dynamics that characterizes an event or intervention, and is widely used in addressing health policy questions.

The primary objectives are to let students understand: 1.concepts in system dynamics (SD) methodologies, 2.how system dynamics modeling can approach public health issues and 3.how to use SD modeling to answer real-world research questions.

Deliverables and outcomes in achieving the objectives

We teaches SD techniques through online videos. Five chapters are produced and uploaded to a central webpage (http://micromodule17.comuf.com/Ch1_DM.html).

Outcome

In each of the video, we i. introduce SD concepts and skills, and/or ii. pose a public health research question/ scenario of an issue and then demonstrate how to address it by SD modeling on a free software Vensim. Thus our objectives on i. introducing basic concepts (Objective 1) and ii. demonstrating applications (Objectives 2 and 3) can be achieved.

Timeline

For modules 1-3, they were produced timely on October, 2017. For modules 4-5, they were produced on early-May, 2018, in contrast to December as proposed. Fortunately, modules 4 and 5 were case examples for demonstration of previously-taught skills.

Evaluations

We have conducted both interim evaluation and final evaluation. Ten students gave comprehensive written comments for final evaluation. Overall, contents are simple and easy to understand, with a clear layout. After watching the online video, they can understand the SD modeling concepts and how to apply SD modeling skills using software. The workload is appropriate and moderate. Some expect themselves using the modeling skills in future similar problems. Strengths are found on contents being simple and useful, concepts clearly explained, and software applications being clearly illustrated with step-by-step instructions given (Ch 4

and 5). Yet weaknesses include some diagrams being too vague and some examples being difficult. Suggestions mainly focused on clearer diagrams and on provisions of useful web links, literature and exercises after each chapter.

Dissemination and diffusion

The series of micro-modules online videos are disseminated through a central webpage (http://micromodule17.comuf.com/Ch1_DM.html), with one subpage for each chapter. We made a same-titled poster for exhibition on the Teaching and Learning Innovation Expo 2017.

Conclusion

We teaches SD modeling skills and its applications through online tutorials. The flipped classroom provides student an opportunity to learn outside classroom with their own pace and help them understanding basic and general concepts and applying skills to practice.

Video

The video report can be found on: <https://youtu.be/dKZJyxAiwg8>.