

FLEXIBLE APPROACHES TO USING ONLINE CASE DATA WHEN COUPLED WITH TEXTBOOK-BASED CASE STUDIES IN MEDICAL SCIENCES TEACHING AND LEARNING.

David C. Hall

University of Calgary

Case studies are commonly used to anchor important theoretical concepts with carefully guided use of practical experience. This session explored approaches and methodologies for effective and creative use of coupling online case study resources with textbook case studies in order to enhance learning. An illustrative example referred to use of a textbook of case studies in One Health (Cork, Hall, & Liljebjelke, 2016), looking at the factors and health outcomes related to the interaction of animals, humans, and their environment, that is coupled with online data, visual resources, and testimonials. Coupling textbooks of medical case studies, in particular, with online additional data is not new (Jasani & Valtolina, 2011), although there was no record found of a learning situation using medical case studies in which prescriptive step-by-step instructional guidance for using online data was deliberately avoided and instead students were encouraged to rely on their own creativity. Benefits of avoiding a prescriptive approach include a more realistic learning experience for clinicians, latitude for use of personally preferred learning styles, and more opportunities for creativity in the teaching and learning process. Participants in the session reflected on their own teaching and learning style preferences to contribute to discussion of how required use of online case study data might stimulate or suppress their creativity, both for teachers and students. Barriers included lack of consistency in audience demographic, making it more challenging to provide a consistent learning experience and poor attention to context of application of case study lessons; catalysts included some degree of guided process for stimulating use of case study materials, supervision of discussion to facilitate sufficient interaction for learning, and adequate funding for preparing and hosting case study materials.

Keywords: case studies, veterinary medicine, One Health, online learning, creativity

INTRODUCTION

In many disciplines, the use of case studies is helpful for anchoring important theoretical concepts with carefully selected, supervised, and directed use of practical experience (Barkley, Cross, & Major, 2005). Teaching case studies in a health curriculum typically involves the use of textbook content for prescriptive learning of scientific content, as well as narrative descriptions, some form of communication of anecdotal evidence, including taped interviews or patient accounts, and diagnostic material, including histology materials, images, and clinical data. Providing internet access to students greatly expands the options for access to and use of case study teaching materials in conjunction with standard teaching materials such as textbooks, although documentation of this is remarkably sparse. To contribute to this discussion, an interactive session attended by approximately 15 participants was facilitated at the University of Hall, D. C., (2016). Flexible approaches to using online case data when coupled with textbook based case Studies in medical sciences teaching and learning. *Papers on Postsecondary Learning and Teaching: Proceedings of the University of Calgary Conference on Learning and Teaching, 1, 1-4.*

Calgary 2016 Conference on Postsecondary Learning and Teaching, exploring approaches and methodologies for effective and creative use of coupling online case study resources with textbook case studies. Participants were a mix of university faculty members from various disciplines, health professionals, and students. Many, but not all, participants were from the Calgary area. We discussed how such an approach could enhance learning, the value of a prescriptive vs. open approach, and the catalysts and barriers to creativity when incorporating online case data with case study approaches. The example used in the interactive session was the coupling of online case studies with a new textbook of One Health Case Studies (Cork, Hall, & Liljebjelke, 2016).

ONE HEALTH CASE STUDIES

One Health has been described as an approach to managing health problems that acknowledges and incorporates the inextricable links between humans, animals, and their environment, reflected in the health of the individual (Hall & Cork, 2016). Critical elements of a sustainable One Health approach embraced by individuals or communities in managing health problems should be founded on several ecohealth principles (Charron, 2012; Lebel, 2003) which include recognition of complexity, involving the community in generating solutions, transdisciplinarity, and ensuring a knowledge-to-action approach which can guide supportive policy formulation. A One Health approach is far more than simply ensuring various health disciplines agree to work together to solve a problem. The nature of the One Health approach thus lends itself to learning from others through the use of case studies.

The interactive session reported in this paper referred to teaching and learning concepts and principles of One Health through case studies such as those presented in a new textbook (Cork, Hall, & Liljebjelke, 2016), which links with online associated case study materials ranging from epidemiological data and surveillance reports to testimonies from health professionals and personal accounts of health outcomes from community members who are not part of a health profession. Several of these chapters are based on the teaching, research, and applied health management experiences of One Health professionals, including rabies control in Bali, Indonesia, management of waterborne disease in rural Vietnam, and tuberculosis in elephants in India. A common teaching experience relayed to the editors by the chapter authors while preparing this textbook with respect to teaching One Health was the difficulty in explaining to students the principles of One Health described above without the use of case studies. Furthermore, when case studies were employed, lessons or presentations lacked impact unless they included details of cases such as epidemiologic data, personal accounts, and situations or contexts which learners could relate to their own personal experiences.

FOSTERING CREATIVITY

These difficulties present challenges for educators to recognize the appropriate context for student learning while fostering meaningful discussion and engagement among students who seek both a prescriptive approach to foundational knowledge from textbooks as well as reflection on “real-life” data, such as one might find in case studies. In our interactive session, we explored the question of how educators might foster creativity in such an approach while not completely ignoring the importance of foundational knowledge. The idea of coupling textbooks of medical

- 2 Hall, D. C., (2016). Flexible approaches to using online case data when coupled with textbook based case studies in medical sciences teaching and learning. *Papers on Postsecondary Learning and Teaching: Proceedings of the University of Calgary Conference on Learning and Teaching, 1*, 1-4.

case studies with online additional data is not new (Jasani & Valtolina, 2011). More broadly, it is fairly common in undergraduate science courses to link textbooks with online resources provided by the publisher. However, we are not aware of a learning situation using medical case studies in which a prescriptive approach to step-by-step instructional guidance for using online data is deliberately avoided and instead students are encouraged to rely on their own creativity.

Participants were asked to reflect on their own teaching and learning style preferences and to consider how required use of online case study data might stimulate or suppress their own creativity, both as a teacher and a student. Our discussion generated the following observations.

Context matters: Development of a case study suitable for learning requires identification of the elements and boundaries of the case. Without identifying the context with which learners are familiar or the context in which students will apply One Health knowledge, our discussion concluded both teacher and student would be setting up barriers to creativity. Students may struggle to see relevance of material being taught and teachers may find it difficult to stimulate discussion or synthesis of ideas that seem out of context to their audience. To mitigate this, we felt it would be necessary to take the time needed to elicit from students the context in which they expect to apply their new knowledge and shape lessons appropriately. Case study selection should be guided by this context, as should the selection of linked case study material. In this regard, there was some discussion around the matter of selection of students. The principles of One Health and concepts of creativity suggest selecting students from different disciplines will result in a richer learning environment, although deliberate placement of students from radically asymmetric disciplines may be counterproductive. We did not come to conclusion on the matter of student selection with respect to context, but participants with experience in teaching in the health disciplines felt there seems to be some need for similarity of context, at least at the preliminary stages of learning. Fink (2003) expands on this concept when he addresses important situational factors including characteristics of learners and teachers, expectations of the groups involved, and the nature of the subject.

Guiding questions: While textbook case studies are a source of structured learning, provision of case study data does not have to be provided in a manner that is highly structured and may be more amenable to generating creativity among students where guidance for application and interpretation is limited. For example, students reading a textbook case study on rabies may find it very straightforward to learn of the infectious agent, vector, and preventatives chosen by a community. However, when given canine rabies case study data on the number of dogs in the community and the role that dogs play in the case study villages, students may find it far less obvious how to develop a rabies control program. With limited prompting guidance (e.g., location of villages and number of dog bites per village) they are likely to start asking questions regarding who owns the dogs, how many dogs there are, and, if you cannot easily catch the dogs, what else can be done other than vaccination. The experience of teachers in the session was that some guidance to get discussion started is helpful, but clear, step-by-step guidance does more to stifle creativity than generate solutions novel to teachers and students alike.

Information overload: It is tempting to link textbook case studies with large amounts of evidence including datasets, epidemiologic analyses, community member accounts, maps, photos, and videos. However, it was agreed by all participants that presenting too much information at one time can rapidly extinguish creativity in the learning group. This identifies a dilemma. The relevant difficulty when pairing textbook case studies with online information is that a substantial amount of information is already provided in the textbook case study. Thus, it may be best to provide access to the online case study data in stages rather than all at once. The

nature of the data provided should be relevant to the progress of the group and could be guided by requests for particular information such as data describing the demographics of the population at risk, by time given to reflect on data already provided, or by achieving particular milestones pre-established or established by consensus of the group.

Budget: A sometimes overlooked resource to support linking textbook case studies with online data is sufficient funding. Project budgets typically include line items to cover start-up costs but rarely include funds to maintain and sustain online server activity after the project closes. Similarly, when academic budgets are tight, ongoing maintenance funds that are not clearly necessary for in-class delivery of curricula may become a target for budgetary constraints.

CONCLUSIONS

This session allowed exploration of important catalysts and barriers to creativity when linking textbook case studies with online case study data. Participants at the session agreed that it was important to identify the context of not just the teaching and learning situation but also the context in which information will be applied, to provide some sort of framework of template for learning without being overly prescriptive, and to ensure learners are not exposed to a stifling overload of information all at once. Participants at this session were enthusiastic about the possibilities for linking textbook case studies with online data but recognized the limitations of both textbook-based and online learning when there are little or no opportunities to apply what is learned. This is particularly true of the One Health philosophy, which is context sensitive and which may be applied in different ways by different transdisciplinary groups of practitioners.

The benefits of considering these factors will be a more realistic learning experience for participants when using case studies, latitude for use of personally preferred teaching and learning styles, and more opportunities for fostering creativity in the teaching and learning process.

REFERENCES

- Barkley, E.F., Cross, K.P., & Major, C.H. (2005). *Collaborative learning techniques: A handbook for college faculty*. San Francisco: Jossey-Bass.
- Charron, D.F. (Ed.). (2012). Ecohealth: Origins and approach. *Ecohealth research in practice: Innovative applications of an ecosystem approach to health*. (pp. 9-19.) Ottawa: International Development Research Centre. http://dx.doi.org/10.1007/978-1-4614-0517-7_1
- Cork, S.C., Hall, D.C., & Liljebjelke, K.A. (Eds.). (2016). *One Health case studies: Addressing complex problems in a changing world*. Sheffield: 5M Publishing.
- Fink, L.D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco: Jossey-Bass.
- Hall, D.C., & Cork, S.C. (2016). Introduction to One Health concepts. In S.C. Cork, D.C. Hall, and K.A. Liljebjelke (Eds.), *One Health case studies: Addressing complex problems in a changing world* (pp. 3-10). Sheffield: 5M Publishing.
- Jasani, S., & Valtolina, C. (2011). *Small animal emergency medicine: Core principles plus case studies* [Online Module]. Cambridge: Elsevier
- 4 Hall, D. C., (2016). Flexible approaches to using online case data when coupled with textbook based case studies in medical sciences teaching and learning. *Papers on Postsecondary Learning and Teaching: Proceedings of the University of Calgary Conference on Learning and Teaching, 1*, 1-4.

Hall

Lebel, J. (2003). *Health: An ecosystem approach*. Ottawa: International Development Research Centre.

Hall, D. C., (2016). Flexible approaches to using online case data when coupled with textbook based case studies in medical sciences teaching and learning. *Papers on Postsecondary Learning and Teaching: Proceedings of the University of Calgary Conference on Postsecondary Learning and Teaching, 1*, 1-4.