Editors' introduction to Where learning deeply matters

*Alise de Bie, Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

C. Annette Grisé, Department of English and Cultural Studies, McMaster University.

Contact: dasa@mcmaster.ca

2022 marks the 50th anniversary of McMaster University's teaching and learning centre, presently known as the Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching (MacPherson Institute or MI), one of the first established in Canada.¹ In alignment with the institute's vision of "cultivating an environment where learning deeply matters and teaching is valued and recognized by the collective McMaster community" (Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, 2019, p. 3), we wondered how we might leverage this milestone to further value and recognize teaching and learning at McMaster. This edited volume emerged in response, inspired by other examples of collective reflection on shared educational histories (e.g., Lerch, 2005; McAlpine & Cowan, 2000; McMaster University Faculty Association, 2001; Murphy, 2020; Newton et al., 2001; Tamtik et al., 2021).

Composed of 24 chapters written by 84 authors—including undergraduate and graduate students, alumni, current and former staff, teaching assistants, sessional instructors, faculty, and retired faculty—and supported by 46 research participants and 31 peer reviewers, this collection responds to the following questions:

- How has teaching and learning evolved and changed at McMaster University over time?
- What have been defining moments of teaching and learning development at McMaster?
- What must we remember and learn from this history?
- What critical challenges do we face in teaching and learning today and into the future? How have these emerged, and how might we address them?
- What are our visions for the future of teaching and learning at McMaster?

Notably, 18 of the 24 chapters are co-authored, 17 students/recent alumni contributed, and over a third of chapter co-authors are first-time or relatively new to academic publishing of educational scholarship.

ORGANIZATION OF THE BOOK

Following two context-setting pieces, the anthology is organized into three sections: The Long View, The Recent Past, and Values and Priorities for the Present and the Future. Below we

give a brief overview of these sections before turning to some of our own reflections on the work of the anthology as a whole.

Introduction

The anthology opens with an overview of significant themes from McMaster's earliest 80 years of education starting from the enrollment of the first student cohort in 1890. This contextual introduction authored by Alise de Bie, Jasmin Dhanoa, and Emily Ing also highlights inter/national trends in teaching philosophies and educational development that informed McMaster's creation of its teaching and learning centre (TLC) in 1972.

Long-time educational consultants with McMaster's TLC—Dale Roy when it was called the Instructional Development Centre and Roy, Erika Kustra, and Paola Borin when it was the Centre for Leadership in Learning—then offer a conceptual frame for the anthology. They identify and elaborate five important strategies that a university that takes teaching seriously would enact: (a) preparing potential university teachers; (b) investigating teaching abilities during hiring; (c) providing teaching resources; (d) ensuring the best teachers are known, celebrated, and rewarded; and (e) encouraging teachers to talk about the relationship between teaching and student learning. Chapters throughout the anthology offer illustrations of how McMaster University has realized and could further realize these strategies for valuing teaching.

The long view: Early days of instructional development and teaching and learning innovation at McMaster (1950s–present)

The first section of the anthology reflects on the establishment and evolution of instructional development and teaching initiatives, careers, and advocacy over 4 to 6 decades. Alise de Bie, Emily Ing, Dale Roy, and Lori Goff chart the formation and transformations of the MacPherson Institute over 50 years, including its contributions to educational policy, training for graduate students and teaching assistants, efforts to reward exceptional teaching, curriculum development, research to support scholarly teaching, and meaningful partnership with students in enhancing education. In addition to identifying strategies the institute has used to encourage culture change, this chapter unearths and reflects on the settler colonial interests of donor funding from petrochemical corporations and the need to proactively address areas where the institute has lagged, particularly with regards to support of Truth and Reconciliation and equity, diversity, inclusion, and accessibility in education.

Will Teal, Alise de Bie, Joanne Kehoe, Jon Kruithof, and Alek Montes then recover and reflect on what we can learn from nearly 65 years of instructional uses of technology at McMaster, from the launch of our remote television learning experiment in the 1960s to the rapid mass-migration to virtual environments during the COVID-19 pandemic. The authors focus on themes that have repeated over time in the human and social context surrounding educational technology, specifically the importance of using technology with a pedagogical purpose. They explore impacts of technology on accessibility, classroom spaces, and alternative assessment of student learning and end by discussing how learnings from the pandemic might carry into the university's strategy for the future of educational technology use.

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to *Where learning deeply matters*. In A. de Bie & C. A. Grisé 2 (Eds.), *Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University* (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

Narrowing in on health science education histories, Jonathan Sherbino, Geoffrey Norman, Robert Whyte, and Virginie Servant-Miklos share the story, as far as they can figure, of how the McMaster University signature pedagogy of problem-based learning (PBL) was developed and revised through four iterations between the 1960s and today. The authors describe key characteristics of PBL and how PBL teaching approaches were refined over time to incorporate shifting educational philosophies and to address noted gaps and deficiencies. Perhaps most surprisingly, the authors acknowledge that "the evidence for the educational effectiveness of PBL—its impact on acquisition or retention of knowledge or performance as a physician—is equivocal"; despite the popularity of PBL at McMaster and its international reputation, results are mixed about whether PBL works better than other teaching approaches.

This history is accompanied by Teresa M. Chan, Allyn Walsh, Jacqueline Wakefield, Susan Baptiste, Anne Wong, and Denise Marshall's memories of the 1970s formation of the Program for Educational Development in the Faculty of Health Sciences, its reconfiguration as the Program for Faculty Development (PFD), and how lessons from the program's past might inform directions for the future. As the living directors and assistant deans of PFD, the authors have all had a front-row seat at the evolution of McMaster's first teaching program for university faculty.

To close this first section, we turn to the work of individuals and networks that have informed teaching and learning experiences at McMaster. E. E. Daniel and P. K. Rangachari examine the set-up of an early co-operative education program in biology-pharmacology in 1989 that combines small-group PBL learning with paid work placements in laboratories. This chapter depicts the important role of passionate faculty members in recruiting supportive interdisciplinary colleagues, space, resources, and institutional permission to experiment with— and address resistance to—a new approach to education.

Gary Warner then traces a 60+ year journey of professional practice as an educator and charts both the changes to his teaching approach from dispenser of knowledge to facilitator and the pathways he has paved for students' critical thinking, engaged learning, global citizenship, and ethical engagement for the common good. This professional journey included work to address dominant Eurocentric curricula through the pioneering development of courses in francophone African and Caribbean literature; an impactful experience of international development in Sierra Leone that informed 2 decades of teaching; and the unique creation of the Global Justice Theme School and other co-teaching opportunities to foster problem-based, inquiry-based, and interdisciplinary learning experiences. Warner offers an example of a professional pedagogical practice informed by learnings drawn from growing up in Trinidad during an era of emancipation from colonial rule, teaching experience, community engagement, mentorship, and a focus on interconnectedness captured by the Bantu concept of Ubuntu.

To close, authors Alise de Bie, Emunah Woolf, Kate Brown, Omar Hamdan, Katherine Hesson-Bolton, Raihanna Hirji-Khalfan, Ryan Joslin, Nick Marquis, and Anne Pottier each draw on between 4 to 40 years of work supporting accessibility at McMaster to enhance the learning experiences of disabled students. Their chapter of interconnected narratives from nine disabled and non-disabled students, alumni, and staff illustrates how support for teaching and learning

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to Where learning deeply matters. In A. de Bie & C. A. Grisé
3 (Eds.), Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster
University (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching,
McMaster University.

does not just occur in the classroom but requires accessibility work across domains of policy, infrastructure, built environment, technology, and community development made possible by intricate webs of mentorship, colleagueship, friendship, and peer and other relational support. This chapter offers unique examples of holistic and personalized learning experiences where disabled students have the opportunity to extend coursework in disability and accessibility studies, social work, and computer science through relevant paid employment in advancing institutional accessibility.

The recent past: A decade of developments

In the second section of the anthology, contributors explore significant teaching and learning contributions over the past 5 to 15 years, including those related to institutional policy and specific academic departments, programs, and courses. Amy Gullage begins with a brief history of the first 10 years of McMaster's Institutional Quality Assurance Process (IQAP) and policy for curriculum review and program enhancement. Weaving together perspectives of two senior administrators and six staff involved in the process, Gullage explores the value of facilitating a reflective and improvement-based approach to quality assurance that is focused on student learning experiences and aided by multi-unit partnerships with the university's teaching and learning institute. Brad Walchuck then offers a theoretically contextualized analysis of the role of labour unions in education and the factors leading to the 2019 bargaining win for paid, mandatory training for McMaster's teaching assistants. The chapter highlights the important role of legislation, collective advocacy, and identification of shared interests between educators, learners, and employers in ensuring well-prepared and supported education workers and quality learning experiences for students.

We then turn from these institution-wide education initiatives to curriculum development in specific academic programs. Elizabeth Marquis and Jean Wilson commemorate the Arts & Science Program's 40th anniversary by reflecting on the program's most recent decade of developments and raising questions about what liberal arts education in the 21st century should look like. This includes discussion about curriculum changes to attend to Indigenous ways of knowing and to counter Eurocentrism, student-instructor collaboration to clarify pedagogical and program goals, and the possibilities and drawbacks of a small, limited enrollment program. In a similar vein, Sarah L. Symons, Chad T. Harvey, and Carolyn H. Eyles describe the design, delivery, refinement, and achievements of the Honours Integrated Science Program (iSci), the first 4-year integrated science degree program in Canada, since it accepted its first cohort of students in 2009. The chapter concentrates on four unique aspects of the iSci structure and approach including a custom pedagogical model that embodies integration and interdisciplinarity, a focus on communication and collaboration, the core role of science literacy, and emerging results of a decades-long longitudinal pedagogical research study.

Next, we are drawn into the world of adult learners through two companion chapters on McMaster Continuing Education (MCE). Lorraine Carter contextualizes McMaster's contributions to continuing education over nearly a century within common themes that have informed its past, present, and future: access to education for adult learners, innovative learning practices, and community partnerships. We see in this chapter a unit's curiosity about

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to *Where learning deeply matters*. In A. de Bie & C. A. Grisé 4 (Eds.), *Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University* (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

its own history and how guiding strategies can successfully energize and direct the work of an ancillary education centre to meet unique learner needs. Michel Clemens, Danielle D'Amato, Mubeen Moir, Lavinia Oltean, Daniel Piedra, Liam Stockdale, and Anastassiya Yudintseva then follow with an account that charts the evolution of MCE's online course development team and its principled, evidence-informed, nimble, and collaborative approach, all while offering several broader lessons about the nature of teaching and learning in the digital domain.

This section ends with two examples from the Faculty of Engineering of how educators' teaching approaches have evolved over time. In detailing three major shifts in the design of an undergraduate engineering course over a decade, Seshasai Srinivasan shows us how an applied technical course was transformed into a theoretically informed one that considers social, human, and environmental issues to prepare students for graduate study and professional practice. The chapter illustrates how the external influences of professional licensing requirements and internal experience-informed iteration can enhance the quality of student learning. Robert Fleisig then maps out the journey of one engineering educator into new ways of thinking about experiential learning. As Fleisig puts it, "the idea of simply substituting one experience (i.e., a written assignment) for a hands-on one and changing little else in the way the instructor approaches learning makes little sense if one is trying to deliver experiential education." Instead, Fleisig has come to pursue educational objectives—durable mindsets, behaviours, and ways of thinking—that do not appear on Bloom's classic taxonomy. We find in this chapter a compelling story of how an educator learned a new teaching approach from a colleague and used it to transform their professional practice.

Values and priorities for the present and the future

The volume ends with a third and final section that engages with two questions: What critical challenges do we at McMaster face in teaching and learning today and into the future and how might we address them? What are our visions for the future of teaching and learning at McMaster? Authors, including 11 students, examine the importance of equity, social justice, and anti-racism work; commitments to sustainability and planetary health; relationships, collaboration, and partnership; scholarly teaching; valuing teaching excellence; and fulsome and holistic student support in and outside of the classroom.

Maddie Brockbank and Renata Hall draw on critical race theory to share themes from a focus group with racialized students. They discuss systemic issues within white-streamed pedagogy, the significance of uncompensated and unrecognized labour in the classroom, classroom experiences of harm, and long-term emotional and academic impacts of racial trauma. Brockbank and Hall end by outlining a series of vital recommendations for the university administration, instructors, staff, and white students to support the creation of safer and more inclusive classrooms. Owen Dan Luo and Yina Shan then argue that universities are not preparing learners to tackle the planetary health challenges of wealth inequality, racism, and climate change driven by capitalism and colonialism. Drawing on their own student experiences, they propose that community-engaged learning, where communities are recognized as critical to pedagogy, represents a promising opportunity to strengthen students' sense of responsibility to their local and global communities. In support, Luo and Shan provide

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to *Where learning deeply matters*. In A. de Bie & C. A. Grisé 5 (Eds.), *Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University* (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

practical suggestions for embedding planetary health and community-engaged learning into post-secondary education.

In telling the 10-year history of the Lewis and Ruth Sherman Centre for Digital Scholarship, Andrea Zeffiro, Amanda Montague, and Jason J. Brodeur elaborate the importance of three core values of teaching and learning that guide their programming and services: prioritizing the social before the technological, striving for equitability of access, and being collaborative by design. They demonstrate how the prioritization of social connections and relationships, critical engagement with digital technologies, and relational accountability have enabled them to iteratively build a community that supports the needs of researchers, develops the talents of graduate students, and produces unique undergraduate courses and other programming to make learning about digital scholarship accessible.

Jee Su Suh, Dan Centea, Carolyn Eyles, Robert Fleisig, C. Annette Grisé, Teal McAteer, Ken N. Meadows, Philip Savage, Nicola Simmons, Bruce C. Wainman, and Nancy E. Fenton then pick up on the theme of connections and relationships by reflecting on their experiences getting involved in and leading teaching and learning scholarship. They examine how (a) conversations drive curiosity and teaching innovation, (b) new and emergent knowledge is created when individuals from diverse backgrounds and expertise come together, and (c) instructors can support one another to experiment, play, and take risks with their teaching in a safe environment. The authors end with suggestions for further recognizing and giving credit for engagement with the scholarship of teaching and learning (SoTL), embedding SoTL in institutional funding priorities, and fostering creativity in teaching through policy and culture.

Rebecca L. Taylor, Amanda Kelly Ferguson, Michel Grignon, and Alison Sills explore what the idea of teaching excellence means to students, staff, faculty, and senior administrators on campus and perspectives on how excellent teaching might be further supported and encouraged through revised approaches to the evaluation of teaching. Coming from the inverse perspective of learning excellence, Sean Beaudette, Elizabeth DiEmanuele, Jacqueline Hampshire, Liz Koblyk, Kerri Latham, Jenna Levi, Jeffrey Low, Anna Magnotta, Mary McCaffery, and Andrew Staples mark the Student Success Centre's 10-year anniversary in 2020 of providing robust student support. They discuss the ways in which learning beyond the classroom including through orientation and transition support, academic skills development, global opportunities, leadership development, and career planning—helps facilitate student exploration of identity, values, skills, confidence, resilience, and potential.

The anthology ends with reflections from seven students who played a vital role in the anthology's peer review process. Bre-Anna Owusu, Jasmin Dhanoa, Ashael Hylton, Emily Ing, Anusha Mappanasingam, Ami Patel, and Raphaela Pavlakos amplify themes that resonated for them throughout the anthology and extend these themes through examples from their own experiences as learners and teaching assistants from underrepresented groups. The student peer review team amplifies the importance of equity, diversity, and inclusion in education; instructor collaboration with students in designing and delivering online learning; accessibility in graduate studies and for teaching assistants; equitable learning experiences for those in large enrollment programs; and the integration of experiential learning into curriculum and program

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to Where learning deeply matters. In A. de Bie & C. A. Grisé 6 (Eds.), Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

design. Seeking, listening to, and acting on student perspectives is crucial to McMaster's fulfillment of our *Partnered in Teaching and Learning* strategy (McMaster University, 2021).

EDITORS' REFLECTIONS

The anthology as a whole speaks to numerous contextual factors that inform teaching and learning at McMaster, including the COVID-19 pandemic, neoliberalism and corporate donations, student social movements, government priorities, legislation, professional accreditation requirements, shifting educational philosophies, community and industry partners, university policy and strategic plans, social and ethical responsibilities, and more. Chapters illustrate a variety of approaches to cultivating change in teaching and learning at the scale of individual practice, program curriculum, institutional policy, and international scholarship. This includes work by visionary and tenacious individuals, accidentally or intentionally formed partnerships and teams, and committed program units and departments. Although McMaster's teaching and learning centre makes appearances in a number of these chapters, it is rightfully presented not as the centre of educational innovation on campus but as playing a supporting role.

We note several limitations to the work collected here. By no means does this anthology reflect the full diversity of teaching approaches and learning experiences at McMaster. Contributing to this anthology was more appealing to some educators than others, particularly those who have significant experience conducting teaching and learning scholarship or profiling their work as educators or their flagship academic program. Our student peer reviewers repeatedly drew our attention to chapters focused on the teacher's perspective of how innovative curriculum was designed or delivered rather than student experiences of learning. While this limitation is addressed to some extent with excerpts from and chapters authored by students, further partnership in teaching and learning remains an area for growth in the years ahead. Chapters by Brockbank and Hall, Owusu et al., and de Bie, Woolf et al. offer helpful recommendations and examples for doing better in this area.

Additionally, in curating the anthology, we sought to balance the tone of celebration one might expect in a commemorative collection with deeper reflection on challenges, gaps, and failures that we might learn from. We appreciate the work of chapter authors who did the same. In this regard, we were not as successful as we might have hoped. Rather than reading the anthology as a celebration of a person, team, or unit, we encourage a more collective appreciation for work happening across the McMaster community to enhance teaching and learning, while also recognizing that much more is needed to respond to calls for Truth and Reconciliation, inclusive excellence, and accessibility.

Notwithstanding these limitations, we offer this collection as a preliminary archive of histories of—and visions for—teaching and learning at McMaster that can help us enhance teaching as a professional practice and cultivate an environment where learning deeply matters. For newcomers to the campus community, the chapters describe and contextualize several teaching approaches proudly promoted as signature pedagogies at McMaster and offer a glimpse into the multiplicity of teaching and learning strategies valued on campus. Likewise, anthology contributors introduce readers to the numerous research methods and writing

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to *Where learning deeply matters*. In A. de Bie & C. A. Grisé 7 (Eds.), *Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University* (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

approaches that can be used to reflect on, investigate, document, and disseminate teaching innovations and scholarly teaching practices (Healey et al., 2020). We invite you to engage with this work with an openness to stumbling across something new.

In our current moment, some educators are struggling to return to or reconcile their pre-pandemic teaching methods with lessons learned during the pandemic. We hope this anthology encourages us to preserve and learn from the past—including our most recent past—to carry its lessons into our future.

ACKNOWLEDGEMENTS

This project was made possible by a hefty support team, and we express our heartfelt appreciation and gratitude for their important contributions. Professors Emeriti Sue Baptiste and Sheila Sammon were generous advisors to the editorial team, offering wise council on the vision for the book, chapter solicitation and review, and as we navigated multiple hiccups along the way.

Student, staff, and faculty peer reviewers offered diligent and critical comments that enhanced the quality of each chapter and the anthology as a whole. These include Maddie Brockbank, Samantha Clarke, Alexis-Carlota Cochrane, Rita Cossa, Jasmin Dhanoa, Shelir Ebrahimi, Fatma Elbabour, Raghd Elgamal, Laura Facciolo, Nancy Fenton, Robert Fleisig, Emily Goodwin, Ashael Hylton, Emily Ing, Mehak Kapur, Samantha Kupis, Erika Kustra, Anusha Mappanasingam, Beth Marquis, Pedro A. Martín-Cervantes, Alek Montes, Rodrigo Narro Perez, Bre-Anna Owusu, Ami Patel, Raphaela Pavlakos, Danny Pryke, Anna Samson, Celeste Suart, Stephanie Sushko, Will Teal, and Jean Wilson.

Thanks as well to project copyeditor Lisa Kabesh, Karen Henderson and Nick Caric from the McMaster University Research Ethics Board, Gabriela Mircea and Olga Perkovic with McMaster University Libraries, Antonio Dos Santos with the *International Journal for Students as Partners*, and Erin Aspenlieder, Raphaela Pavlakos, Rima Nikolajeviene, and Nancy Lidstone at the MacPherson Institute for instrumental support.

NOTES

1. The MacPherson Institute's 50th anniversary takes place a decade after the first teaching centre at a postsecondary institution celebrated this milestone—The Center for Research on Learning and Teaching established in 1962 at the University of Michigan (Cook & Kaplan, 2011).

REFERENCES

Cook, C., & Kaplan, M. (2011). Advancing the culture of teaching on campus: How a teaching center can make a difference. Stylus Publishing.

Healey, M., Matthews, K. E., & Cook-Sather, A. (2020). Writing about learning and teaching in

de Bie, A., & Grisé, C. A. (2022). Editors' introduction to *Where learning deeply matters*. In A. de Bie & C. A. Grisé 8 (Eds.), *Where learning deeply matters: Reflections on the past, present, and future of teaching at McMaster University* (Chapter 2). Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University.

higher education: Creating and contributing to scholarly conversations across a range of genres. Elon University Center for Engaged Learning. http://doi.org/10.36284/celelon.oa3

- Lerch, M. (Ed.). (2005). *Making a difference: A celebration of the 3M teaching fellowship*. Council of 3M Teaching Fellows & the Society for Teaching and Learning in Higher Education. Distributed by the Centre for Leadership in Learning, McMaster University.
- McAlpine, L., & Cowan, S. (Eds.) (2000). Reflections on teaching and learning: 30 years at McGill. *McGill Journal of Education*, April 2000.
- McMaster University. (2021). Partnered in teaching and learning: McMaster's teaching and learning strategy 2021–2026.

https://provost.mcmaster.ca/app/uploads/2021/06/McMaster-TLStrategy-Webfinal.pdf

- McMaster University Faculty Association. (2001). *MUFA's first 50 years: The presidents reminisce*. McMaster University Faculty Association. https://macfaculty.mcmaster.ca/app/uploads/2020/06/BOOK-MUFAs-First-50-Years.pdf
- Murphy, M. P. (2020). CJSoTL at 10: A quantitative analysis of authorship, genre, and impact. *The Canadian Journal for the Scholarship of Teaching and Learning*, 11(2). https://doi.org/10.5206/cjsotl-rcacea.2020.2.8627
- Newton, J., Ginsburg, J., Rehner, J., Rogers, P., Sbrizzi, S., & Spencer, J. (Eds.). (2001). *Voices* from the classroom: Reflections on teaching and learning in higher education. Centre for the Support of Teaching, York University.
- Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching. (2019). *Strategic plan 2019–2022.*

https://mi.mcmaster.ca/app/uploads/2019/06/MacPhersonInstitute-StrategicPlan-2019_2022-Brochure.pdf

Tamtik, M., Trilokekar, R., & Lavigne, E. (Eds.) (2021). Looking back, looking forward. *Canadian Journal of Higher Education, 51*(3). https://journals.sfu.ca/cjhe/index.php/cjhe/issue/view/182801