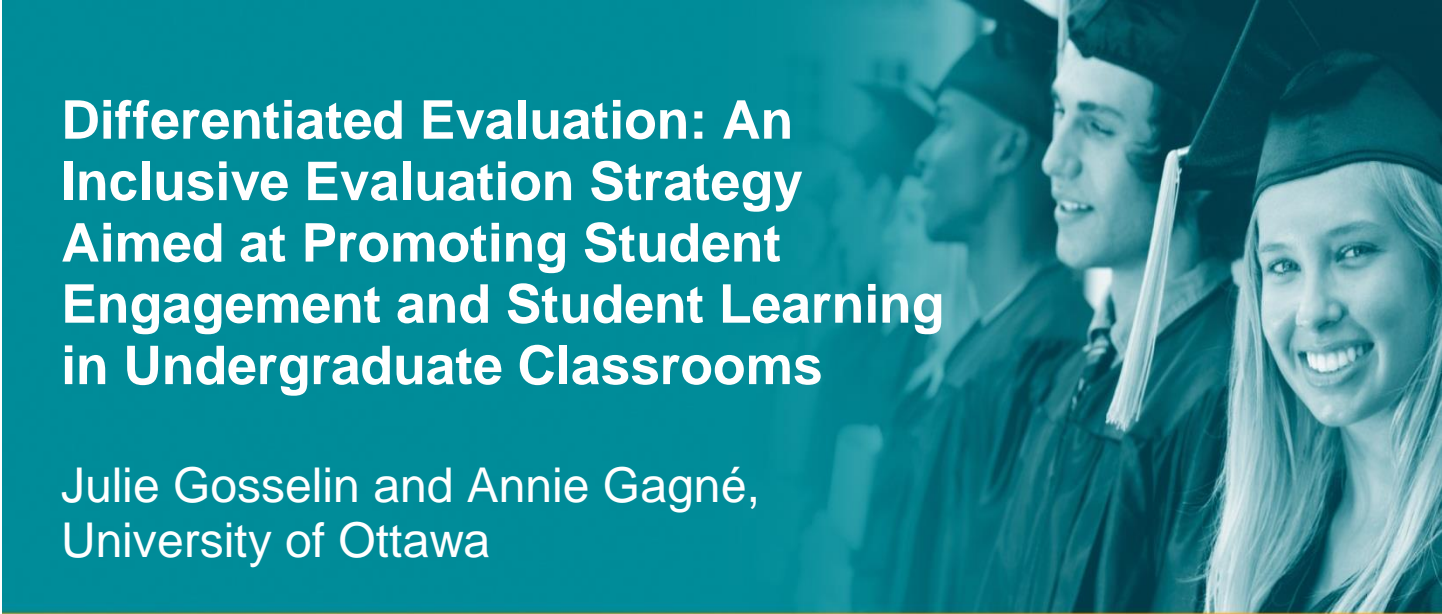




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Differentiated Evaluation: An Inclusive Evaluation Strategy Aimed at Promoting Student Engagement and Student Learning in Undergraduate Classrooms

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Executive Summary

This paper presents the findings from a research study on the implementation of an alternative evaluation strategy into a third-year class, which changed the learning environment by allowing students to choose how they would be evaluated. The specific objective of the study was to determine if the implementation of this evaluation strategy would improve student engagement, the quality of the learning experience and address challenges associated with increased diversity in student capabilities.

During the Winter 2012 and Winter 2013 semesters, PSY3523: Psychologie de la famille (Psychology of the Family) was taught at the University of Ottawa as a course offered to a maximum of 100 students per semester. The course incorporates various teaching methods, including traditional lectures, the use of documentaries and group discussions, as well as student-led mini-classes. The course implemented an evaluation strategy that combined traditional examinations (midterm and final exams) with the option of completing a term project. If students elected to complete a term project, they could choose from two different options (i.e., to prepare a mini-class or to participate in the Community Service Learning program at the University of Ottawa). Additionally, teaching assistant (TA)-led tutorials were scheduled throughout the semester to help students succeed in both the traditional examinations and the term project. Finally, material presented in the tutorials, as well as weekly quizzes, were made available online for students to consult as needed throughout the semester to support their engagement and success in the course.

We assessed the impact of implementing this evaluation strategy into the course in a number of ways. First, we sought to identify those characteristics that distinguished students who elected to participate in differentiated evaluation (DE) from those who did not. Specifically, we looked at student achievement data, student perception of the options for term projects, as well as basic personality characteristics. Second, we studied the impact of including the option of a term project on overall class achievement results (i.e., impact on final exam results and on final grade). Finally, we created student surveys to track how DE was perceived throughout the semester, what informed student choices of evaluation method, and what (if any) value they found in the addition of DE to the overall learning evaluation strategy.

This study found that the implementation of DE within the two offerings of this course had a positive impact on student academic achievement and on the student learning experience. While we found no significant differences in personality characteristics between students who produced a term project and those who did not, as well as no significant impact of DE on overall class average, we found a number of positive trends for students who elected to complete a term project. Specifically, students who were performing below the class average found that their final grade improved when they completed the term project. Additionally, students who completed a term project saw their performance improve more on the final exam in comparison to students who did not complete a term project.

Student survey results also indicated consistently positive perceptions of DE across students and across course offerings. Students felt that the implementation of DE provided them with interesting choices and opportunities to engage with the evaluation of their learning. Students also stated that completing a term project could help alleviate some of the stress associated with traditional examinations. Finally, the strategies included to support student participation in the evaluation of their learning generated consistently positive feedback. Students appreciated the TA-led tutorials, the online quizzes and the general availability of resources to help them succeed in the course.

Overall, the implementation of DE yielded no statistically significant impact on either grades or performance on traditional examinations. However, student perception of the implementation of DE was generally positive.

Additionally, we found few differences between students based on their choice to participate in DE or based on the option of term project chosen. Qualitative analyses resulted in the identification of two potential student profiles associated with participation in DE. The first profile is characterized by a student who is underperforming and perceives the term project as an opportunity to increase their grade by demonstrating their understanding of the coursework using a format over which they feel they have more control. Often, these students would have consulted with the teacher and/or the TA and expressed an interest in doing something that is more applied or concrete and that helps them manage stress related to traditional examinations. The second profile is characterized by a student who is performing well in the class and views the term project as an interesting opportunity to add to their curriculum vitae (e.g., participating in the Community Service Learning program), or more generally to engage in the assessment of learning in a new and creative way.

Student surveys also pointed to some drawbacks of completing a term project. For instance, some students noted that it contributed to an increase in their workload and that engaging in one of the options for their term project (e.g., participating in the Community Service Learning program) was challenging at times due to scheduling conflicts. Finally, some students shared that because they waited too long to make a choice regarding their evaluation options, these became more limited.

The findings of this study demonstrate that it is possible to implement an alternative evaluation strategy that can foster student engagement and success in upper-year courses. TA support was instrumental in achieving this, as most of the added teaching workload related to the implementation of DE fell to the TA. However, the authors' experience is that the TAs did not experience this as problematic and that it in fact created opportunities for them to interact more directly with students and help them generate learning products that tended to be of higher quality and easier to mark properly. The objective of this study was to create an evaluation strategy that would stimulate student engagement by allowing them to choose how their learning would be evaluated, to create evaluation options that are fair and equitable, and to address challenges linked to increased student diversity. Overall, the study yielded moderate success, with the most positive impacts identified qualitatively, as reported in student surveys conducted at the beginning, after the midterm exam and at the end of each semester.

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Introduction

The Undergraduate Classroom Experience in Psychology at the University of Ottawa

Maintaining teaching and learning quality in larger classes has become a real challenge for university programs across Canada. Within the undergraduate programs in psychology (BA and BSc) at the University of Ottawa, class sizes have consistently grown larger in the last few decades, with upper-year class size currently capped at 100 students. Instruction in larger classes has been linked to a variety of negative effects on student learning. Of note, it has been shown to reduce the level of active student involvement in the learning process, the frequency and quality of instructor interaction with and feedback to students, and student motivation and learning inside the classroom (Cuseo, 2007; Iaria & Hubball, 2008; Teaching and Educational Development Institute, 2003). These findings have implications for student success, as student engagement has been strongly correlated with academic achievement, the development of critical thinking skills, and student persistence (Pacarella & Terenzini, 1991; Tinto, 1993).

In response to these findings, efforts have been made through teaching and assessment reform to raise standards and improve the quality of university education and the student experience. Although empirical data on the variety and efficacy of various teaching and evaluation methods used in higher education remain scarce, there is no doubt that universities have focused their attention on promoting student engagement through innovative approaches that recognize the fact that the larger classroom is unlikely to disappear (Gilles, Detroz & Blais, 2010). The use of new technologies (e.g., clickers, Blackboard, etc.) and teaching approaches (e.g., the inverted classroom, online forums, etc.) has provided new options to instructors to help stimulate student engagement and learning. Some other examples of innovations in this area can be found in the growing number of programs focusing on experiential learning and/or work-integrated learning (or co-operative education, internships, work placements and apprenticeships), because these offer students the chance to apply what is taught in class to real-life situations and enhance the competitiveness of recent graduates on the labour market by giving them more hands-on experience (Fisher, Rubenson, Jones & Shanahan, 2009), thus stimulating student engagement in the learning occurring in and out of the classroom. For example, the University of Ottawa recently launched the Centre for Global and Community Engagement (CGCE), which hosts the Community Service Learning (CSL) program, to complement the teaching that occurs in the classroom and to enhance the student experience. The CSL allows students to get involved in course-based projects or volunteer work that are related to their program of study. The use of these methods, however, varies greatly among disciplines and among instructors.

Additionally, the increase in student diversity and the responses that postsecondary establishments have adopted to it remain important issues for academic institutions like the University of Ottawa (Tamburri, 2012). Indeed, the growing number of students presenting with special needs (Craig & Zinkiewicz, 2010) has been an especially salient issue for psychology departments. As was evidenced by a recent report (Craig & Zinkiewicz, 2010), in comparison to most other UK undergraduate students, a greater proportion of UK undergraduate students in psychology declare mental health difficulties. These findings echo campus survey results that highlight increasingly high levels of anxiety and depression among graduate psychology students (Willyard, 2012) in both Canada and the US (McCloskey & Meissner, 2013). Therefore, methods of assessment that can foster inclusiveness and academic success, whilst upholding high standards for the quality of student learning, would represent attractive innovations for the undergraduate psychology classroom, as well as help meet the diverse needs of its student populations more effectively. Interestingly, most innovations in this context have focused on teaching rather than student learning. In response to this observation, this research project presents an innovative approach to evaluation that can be used in undergraduate courses.

Differentiated Evaluation as an Inclusive Strategy for the Evaluation of Learning in the Undergraduate Classroom

There is a very limited body of knowledge on the use of differentiated instruction in postsecondary education. Only one report, published by Quebec's Ministère de l'éducation, du loisir et du sport (2007), discusses differentiated evaluation (DE)'s nature and how it can be used in the primary and secondary classroom, and only one peer-reviewed article has presented pilot data related to DE's use at the undergraduate level (Gosselin, 2012). DE is rooted in pedagogical differentiation as a process that draws upon a diversified set of teaching and learning methods in order to allow students of different ages, backgrounds, abilities and skills to reach common goals via different paths and, ultimately, to achieve educational success. DE describes the impact of pedagogical differentiation on the evaluation process. It offers choices to all students regarding evaluation that are deemed equivalent and fair. While it has been used at the primary and secondary school levels, it constitutes a valid strategy for use at the undergraduate level, where we are observing growing diversity within the student body. DE consists of: 1) pedagogical flexibility (offering choices to all students regarding evaluation situations), 2) adaptation (changing the way students become involved in learning and evaluation), and 3) modification (an exceptional measure that involves changing the very nature of the evaluation situation for students with special needs).

DE falls within these new approaches to the evaluation of learning as it represents an opportunity for students to demonstrate their learning through 1) a method of their own choice (among a pre-set number of options), 2) often in a context that is more realistic and that challenges them to use what they have learned in the classroom, and 3) by asking them to complete a task or investigation and to create a final product determined by the instructor. Differentiation must complement, rather than replace, high-quality curriculum and evaluation. There is no contradiction between effective standards-based evaluation of learning and differentiation. Curriculum tells us what to evaluate, and differentiation tells us how to do so. Coupled with traditional examinations, the use of DE in undergraduate classes represents an approach to assessment that aims to be inclusive, rigorous and fair. In short, it aims to create an optimal learning environment for all students.

DE also underlies a belief that the purpose of assessment in classrooms must be changed fundamentally so that it is used to help students learn and to improve instruction rather than being used only to rank students or to certify the end products of learning. Theoretically, DE could be implemented in a variety of ways that could include one or more options within the same course. For instance, Magner (2000) reported on the use of differentiated assessment in grade school. In that instance, students chose test items to complete. Test items were given 2, 5 or 8 points depending on difficulty and students could choose any combination of test items that totalled 10 points. Another option (which was retained for our course) was to offer students the option of completing a term project in addition to a traditional examination. In our course offering, we also provided students with two options for a term project. These options were chosen based on the course topic, the discipline in which the course was taught and the perceived relevance of term project options to the students enrolled in the course. Another instructor could decide to offer students the option to hand in a number of assignments and to count only a portion of them toward their final grade, instead of providing a term project option. The flexibility of this approach highlights its novelty and the need for further investigation of its efficacy in increasing student engagement and generating higher academic success at the university level.

Research Objectives

The purpose of this study was to collect empirical evidence concerning the efficacy of this novel pedagogical assessment strategy, given the little data currently available. In return, the data collected would serve to improve both the efficacy and the equity of the approach and would help to disseminate information about this novel practice to other teachers in other universities and in other areas of study. DE could be applied in other fields of learning and, if supported by empirical evidence, could prove to represent a valid evaluation strategy

for a variety of undergraduate classrooms. Based on the three criteria proposed by Wolfe, Bixby, Glenn and Gardner (1991) for the evaluation of a new form of classroom assessment (efficiency, equity and evidence), we decided to assess the efficacy of this method in improving academic success and student learning experience, as well as its perceived equity/fairness.

Specifically, we formulated two main research questions to guide our assessment:

a) Which students chose to participate in DE and why?

- What impact does participation have on their academic success?
- What impact does participation have on their learning experience?
- Are there personality and/or other characteristics that differentiate students who elect to participate in DE from those who do not

b) How do students perceive DE itself?

- Do students perceive it as adding value to the learning environment?
- Do students perceive each option as fair?
- Do students perceive that each option is equitable to the others?
- Do students understand their options regarding how their learning can/will be evaluated?
- Are students satisfied with the manner in which DE is implemented/managed in the course?
- What is the overall impact of DE on their perceived learning experience?

To answer these questions, a model for the use of DE was developed and implemented in two separate course offerings of PSY3523: Psychologie de la famille (Psychology of the Family), a third-year undergraduate course in psychology. A comparison was then made between students who elected to produce a term project and those who chose the traditional offering for learning evaluation. In line with Wolfe et al.'s (1991) criteria, a successful implementation and management of DE would be demonstrated by:

- **Efficiency:** A new form of assessment of learning must be efficient in that it should not require a significant additional effort or resources to be implemented and managed, and it should be implemented in a manner that can be reproduced (e.g., it can be standardized through the use of a grading matrix, formal teaching/learning aids, etc.). In this context, our objective is to show how we created, implemented and managed DE within the scope of the resources generally available for this course.
- **Equity:** New modes of assessment should provide means for helping less traditionally skilled students demonstrate their abilities in a greater variety of ways to excel in the course. In this context, students who tend to perform below the class average should see the most improvement in their overall performance, as evidenced by their result on their final exam.
- **Evidence:** Clear expectations must be established so that a new form of assessment's capacity to improve the assessment of learning can be evaluated. In this context, we would expect that participating in DE through the production of a term project should also be linked to higher performance in traditional examinations.

Methods

Overview of Study Design

This study involved two consecutive offerings of the same course in both Winter 2012 and Winter 2013. Psychology of the Family (PSY3523) is an elective three-credit course offered within the School of Psychology at the University of Ottawa. Given its focus, it often attracts students from psychology, social work, criminology, nursing and biomedical sciences. For the purpose of this study, the two separate iterations of the course were taught by the same instructor, with the same basic syllabus and same approach to assessment. Table 1 provides basic information about both offerings of the course, including the DE project options (CSL program and mini-classes). In both course offerings, the maximum possible enrolment was 100 students.

All students registered in the course were participating in DE and had three options to choose from regarding how their learning would be evaluated (Appendix A). The first option did not include the production of a term project and so their learning would only be evaluated through traditional examinations and class participation activities. The second option offered students the opportunity to add a term project, thus reducing the value of each exam toward the final grade. This option required students to enrol at the beginning of the semester in the Community Service Learning program on campus, where they would be matched with a community organization appropriate for the course (i.e., one that involved delivering services to families or family members). It was expected that these students would complete 30 hours of community service at the organization during the semester and that they would write a 10-page report related to their experience (Appendix B). The third option offered the students the opportunity to work as a team to develop a mini-class for the course. This option required students to create a team of two or three classmates, to choose a topic related to the course and to create a didactic and interactive mini-class that would be offered at the end of the semester. It was expected that students would also hand in a 15- to 20-page report on the topic chosen for their mini-class (Appendix C).

Table 1: Summary of the Course Offerings Highlighting Participation and Structure

| | Class size | Completion rate | Participants in DE term projects | CSL program participants | Mini-class presenters | Hours of lectures | # of TA-facilitated tutorials |
|-------------|-------------------|------------------------|---|---------------------------------|------------------------------|--------------------------|--------------------------------------|
| Winter 2012 | 74 | 98.7% (73/74) | 19 (25%) | 9 | 10 | 30 | 6 |
| Winter 2013 | 50 | 94% (47/50) | 18 (36%) | 6 | 12 | 30 | 6 |

General Procedures

First, all students completed a summative midterm and final examination, each covering half of the course content. Short formative quizzes had been developed by the class instructor for each component of the course content in 2010 and were available online through Blackboard for students to complete throughout the semester. Each featured 10 questions on important concepts and themes, and students received feedback on their answers. These quizzes were meant to serve as study aids to prepare students for the formal examinations. The two formal examinations were structured as a combination of multiple-choice (30% of the exam) and short- to medium-length essay questions (requiring students to demonstrate their understanding of the course material by applying it to specific scenarios).

In addition to these two examinations, students were informed at the beginning of the semester that they could also choose to complete a term project, either by participating in the university's Community Service Learning program or by preparing a mini-class on a topic relevant to course content in small groups of two or three students. If students did not elect to produce a term project, each exam counted for 45%, with an additional 10% devoted to class participation during mini-class learning activities. For students who produced a term project, each exam counted for 30% of their final mark. An additional 10% was still devoted to class participation, and their term project was valued at 30%. Additionally, students were given the following guarantee: their term project would only count towards their final mark if it was advantageous to them. This meant that if their final grade was higher with the score on the term project removed, that mark would not be included and their final grade would be calculated in the same manner as for students who did not produce a term project (see Appendix A). Each type of term project was graded using a similar marking matrix (see Appendices B and C).

To help students produce quality term projects, a series of TA-facilitated tutorials were developed for this course in 2011¹. Specifically, there were six one-hour tutorials scheduled throughout the semester after class time for students to meet with the TA to discuss topics of relevance to the completion of a term project. The presentations and additional learning resources made available to students at these meetings were also posted on Blackboard so that all students could benefit from this support material. The list of topics covered at these meetings appears in Appendix D.

Student Recruitment and Ethics

Before the research project began, ethics approval was obtained from the University of Ottawa Research Ethics Board. At the beginning of the first class of the semester, students were introduced to the research project, its objectives and its structure. They were informed that their de-identified achievement data would be used in the data analysis and that they could also participate more fully in the data collection by completing student surveys at different points in the semester (i.e., after the first class, after the midterm exam and at the end of the course). This second part of the data collection was managed by a research assistant, who visited the class to give students information about the project and to collect completed surveys. During those visits, the instructor would be absent from the class in order for students to ask questions openly to the research assistant about the project and freely agree or decline to participate. Surveys were available online and in paper form. Students were informed that they could participate in none, some or all of the data collection and that participation would be kept confidential and completely anonymous (no sociodemographic data was collected). This choice was made in order to be able to use all student achievement data. Students who elected to fill out any of the student surveys could be entered into a draw for a \$20 gift certificate for the University of Ottawa Bookstore.

Data Collection

The project was structured over a two-year period. The first year was devoted to the design of the surveys, the development of online resources and tutorials to help students prepare quality term projects based on their choice, the application for a research ethics certificate and the first part of the data collection. The

¹ When students are allowed multiple ways to show what they have learned and can do, evaluation becomes more complex. It becomes essential for us to define "high quality" and to let students know what variations on this quality look like. Clear scoring guides and examples of student work of varying kinds and degrees of quality are needed. Therefore, students received models, scoring guides and examples of what constitutes excellent work for each of the options of term projects at the beginning of the semester to inform their choice. Regular meetings between the teaching assistant and students that focused on the differentiated evaluation component of the class were scheduled to help to integrate this approach fully into the learning process.

second phase of data collection took place the following year, and the data analysis was completed in the latter part of the second year.

In order to reach our research objectives and to assess the impact of participation in DE on student engagement, inclusiveness and success, information was collected using students' final grade breakdown, as well as three surveys conducted throughout the semester (after the first week of class, after the midterm exam and at the end of the semester) to determine how student choices were informed, what impact DE had on their perception of their learning experience, as well as students' perception of the use of DE and their reasons for choosing it or not.

Additionally, students were invited to fill out the Big Five Inventory (BFI) at the end of the semester at the same time they filled out the last student survey. The BFI is a 45-item self-report inventory designed to measure the Big Five dimensions of human personality (e.g., neuroticism, openness to experience, extraversion, conscientiousness and agreeableness) (John, Naumann & Soto, 2008). A typical question begins with "I see myself as someone..." followed by a description of a personality trait. The validity of this instrument is well established within the literature, and its French version has been shown to be consistent with the NEO Personality Inventory (Plaisant Courtois, Réveillère, Mendelson & John, 2010). Overall internal consistency is very good (0.74), as well as internal consistency for each subscale (varying between 0.77 and 0.84). The BFI was used in this study to determine whether any of the five broad dimensions to describe human personality could be associated with students' choice of evaluation option, or with their choice of a particular option for their term project.

Student Surveys

Three student surveys were developed using questions from the University of Ottawa Customized Formative Evaluation question bank as a basis. The first survey consisted of 12 multiple choice questions on the clarity of the information provided to students about DE, the perceived value and attractiveness of participation in DE, as well as how it fit within the larger evaluation strategy of the course. Student response statements included:

- The teacher explained the rationale for using DE in this course.
- Options for term projects are appropriate for this course.
- I have been given enough information about my options for evaluation in this course to make an informed decision.

The second survey consisted of 31 multiple choice questions that repeated some questions from the first survey, as well as added questions on the usefulness for preparing the term project of the teaching assistants' facilitated meetings with students (if participating in DE) and the quality of the support materials available to students. Multiple choice questions included:

- The midterm exam was consistent with the material covered and the objectives of the course.
- My performance on the midterm exam influenced my choice to produce a term project.
- The teaching assistants' facilitated meetings to help with term projects met my expectations.
- I have consulted the support materials (PowerPoint presentations, quizzes) on Blackboard.

Finally, the last survey consisted of 24 questions pertaining to students' choice of participating or not in DE, their use of information provided in class and through Blackboard to support their learning, and their perception of the use of DE within the larger evaluation strategy of the course. This survey also included some open-ended questions.

Multiple choice questions included:

- (If you did not produce a term project) for what reason(s) did you not produce a term project? (options: satisfactory result on midterm; lack of time; options were not interesting to me; options were too demanding; other reason).
- Did you complete any of the online quizzes to prepare for the exams in this class?
- Did you consult any supportive materials in preparing your term project?

Open-ended questions included:

- What did you like about having the option of producing a term project?
- What was most useful about the teaching assistant's facilitated meetings to help you in preparing your term project?
- Do you have suggestions to improve our evaluation strategy in this course?

The Big Five Inventory (French version, Plaisant et al., 2010) consisted of 45 self-reported items pertaining to students' endorsement of various traits associated with the five most basic dimensions of personality (John et al., 2008).

Achievement Data

Student grades at each examination and on their term project were collected throughout the semester to calculate their final grade in the course. This information was deidentified to be used in the context of this research study. Achievement data included:

- Midterm examination result
- Final examination result
- Term project result (if available)
- Participation points²

Data Analysis and Results

In Winter 2012, 19 students participated in DE (class size = 74 students). Out of these, 10 chose to participate in the experiential learning program and nine chose to prepare a mini-class. In Winter 2013, 18 students participated in DE (class size = 50 students). Out of these, six chose to participate in the experiential learning program and 12 chose to prepare a mini-class. Over the two years of the project, on average about one-third of the students enrolled in the course produced a term project (29.9%).

² Students who prepared a mini-class were asked to prepare a learning activity (e.g., quiz, interactive task, etc.) as part of their mini-class. Students who attended the mini-class were given participation points for participating in the learning activity. Their participation was monitored by the course instructor and the TA.

Achievement Data Results

Table 2: Impact of the Use of DE on Overall Class Average

| Class | Participation in DE | Average (%) | Difference (%) |
|-------------|---------------------|-------------|----------------|
| Winter 2012 | With | 78.16 | 1.14 |
| | Without | 77.02 | |
| Winter 2013 | With | 76.47 | 1.90 |
| | Without | 74.57 | |

T-test analyses showed no significant differences between DE and the traditional evaluation strategy on students' final course grades. However, descriptive results indicated a modest impact from the implementation of DE on overall class average (Table 2). This would suggest that the inclusion of DE within the learning evaluation framework of the course did not lead to a significant inflation of the final class average.

Table 3: Benefit of Producing a Term Project on Student Final Grades

| Class | Production of a term project | Student final grade average (%) | Difference (%) |
|-------------|------------------------------|---------------------------------|----------------|
| Winter 2012 | With | 77.48 | 4.76 |
| | Without | 72.72 | |
| Winter 2013 | With | 77.46 | 4.29 |
| | Without | 73.17 | |

Table 3 demonstrates the benefit of producing a term project on students' final grades. In both years, participation in DE resulted in an overall grade improvement of almost 5% for those who produced a term project. Taking the results of Table 2 and 3 together, we can see that although DE did not change class average in a significant manner, it did have an appreciable impact on the final grade of those who elected to produce a term project. Neither of these differences reached statistical significance.

Table 4: Benefit of Participation in DE Based on Student Performance Related to Class Average

| Class | Student final grade in relation to class average | Benefit of producing a term project on final grade | Difference (%) |
|-------------|--|--|----------------|
| Winter 2012 | Below N= 9 | + 6.40 | 4.65 |
| | Above N= 10 | + 1.75 | |
| Winter 2013 | Below N=11 | + 5.81 | 2.55 |
| | Above N=7 | + 3.26 | |

Table 4 presents the relative benefit of participation in DE, for those who completed a term project, based on student performance related to class average. This indicates that students who would have obtained a final grade below the class average (if they had not elected to produce a term project) benefited much more from participating in DE in terms of their overall achievement in the class. Interestingly, students who elected to participate in DE appeared to fall into one of two groups. About half of the students who produced a term project were performing below the class average, while the other half performed higher than the class average, during both course offerings. Observations made by both the teacher and the TA would support the identification of two distinct profiles of students engaging in DE. The first profile is characterized by a student who is underperforming and perceives the term project as an opportunity to increase their grade by demonstrating their understanding of the coursework in a format over which they feel they have more control. Often, these students would have consulted with the teacher and/or the TA and expressed an interest in doing something that is more applied or concrete and that helps them manage stress related to traditional examinations. The second profile is characterized by a student who is performing well in the class and views the term project as an interesting opportunity to add to their curriculum vitae (e.g., participating in the Community Service Learning program, gaining experience doing oral presentations), or more generally to engage in assessment of learning in a new and creative way. Interestingly, we could not identify any particular pattern in terms of the option of term project favoured by students who either performed under or above the class average. Students who elected to participate in the Community Service Learning program had to make that decision within the first two weeks of the semester to have time to complete all their community hours, while students who chose the mini-class option could wait until after the midterm to confirm their intent to present. Overall, more students chose this option (22 vs. 15), but there was similar diversity in the range of student performance (before taking DE into consideration) across both term project options (mini-class= 42.82; CSL= 37.29). None of these differences reached statistical significance.

Table 5: Impact of Participation in DE for Student Performance on Examination

| Class | Participation in DE | Exam (Midterm = 1; Final =2) | Average (%) | Difference (%) | Improvement for DE participants (difference in %) |
|-------------|---------------------|------------------------------|-------------|----------------|---|
| Winter 2012 | Yes | 1 | 66.07 | 7.90 | 5.35 |
| | | 2 | 73.97 | | |
| | Class average | 1 | 73.34 | 2.55 | |
| | | 2 | 75.89 | | |
| Winter 2013 | Yes | 1 | 70.52 | -7.8 | -1.83 |
| | | 2 | 69.74 | | |
| | Class average | 1 | 71.31 | 1.05 | |
| | | 2 | 72.36 | | |

Finally, Table 5 indicates a mixed impact of participation in DE on students' result on the final exam. In 2012, students who produced a term project saw a larger improvement on their mark on the final exam (in comparison to the mark received for the midterm exam) than those who did not participate in DE. In 2013, a similar effect was not observed. Therefore, it is unclear if participation in DE can contribute to increased learning and capacity to perform on future examinations, although the first year's data suggest that it may be a possibility worth studying further. None of these differences reached statistical significance.

Student Survey Results

Student surveys and completion of the BFI provided some additional insights into how this approach to evaluating learning was perceived by students enrolled in the course. Results included responses from students enrolled in both Winter 2012 and Winter 2013 course offerings to increase overall sample size for our analyses (given that t-t-tests revealed that the distribution of grades across course offerings was not statistically different ($p= 0.08$)). Because filling out the surveys was optional, response rates varied across years and across surveys (between 20% and 65%). The most notable findings are reported below.

Table 6: Participation in DE and Results on the BFI

| Did you participate in DE? | | Extraversion | Agreeableness | Conscientiousness | Neuroticism | Openness to experience |
|----------------------------|----------------|--------------|---------------|-------------------|-------------|------------------------|
| Yes | Mean | 3,72 | 3,82 | 3,92 | 2,49 | 3,59 |
| | N | 26 | 26 | 26 | 26 | 25 |
| | Std. Deviation | ,68 | ,38 | ,72 | ,79 | ,63 |
| No | Mean | 3,41 | 3,77 | 4,01 | 2,68 | 3,57 |
| | N | 49 | 47 | 49 | 49 | 49 |
| | Std. Deviation | ,75 | ,42 | ,50 | ,77 | ,73 |
| Total | Mean | 3,52 | 3,78 | 3,98 | 2,61 | 3,57 |
| | N | 75 | 73 | 75 | 75 | 74 |
| | Std. Deviation | ,74 | ,40 | ,58 | ,77 | ,70 |

BFI items are scored for each subscale and present an overall personality profile, where a person is found to endorse certain personality traits that are consistent with one of five broad categories (extraversion, agreeableness, conscientiousness, neuroticism and openness to experience). Scores can range from 1 to 5, with 5 indicating that the participant highly endorses this category of personality traits. Results from our participants are generally consistent with those found by Plaisant et al. (2010) in their validation of the French version of the BFI. Specifically, students who completed the BFI reported that they were moderately extraverted, more than moderately agreeable, very conscientious, less than moderately neurotic and moderately open to experience (Table 6). T-test analyses yielded no significant findings related to the Big Five Inventory. There was only one modest correlation identified between participation in DE and extraversion ($r=0.200$, $n=75$, $p=0.085$), which suggests that being more extraverted could be positively related to the choice of producing a term project, although we could not test if this was truer for those who chose the mini-class option or those who completed a CSL placement due to sample size. Given that a majority of students enrolled in the course were registered in programs relating to degrees in the helping professions, this profile would appear to be consistent with general personality profiles that may be attracted to this type of career.

Student survey results supported the idea that DE was generally well received by students (Table 7 and 8). Specifically, we compared how students perceived the introduction of DE into the evaluation framework of the course at the beginning of the semester and after the midterm, to gauge how perceptions may have evolved over time (Table 7). First, students reported generally high ratings regarding the overall quality of the evaluation experience within the course (Table 7). Most students who responded to the surveys agreed that the options were clearly explained (Table 7, questions 2, 5, 7 and 10) and understood that the term project was optional (Table 7, question 6). However, ratings regarding the equivalence between options for term projects were more mixed, especially after the midterm (Table 7, questions 1, 3 and 4). Finally, students had a generally positive perception of the options that were offered for the term project (Table 7, questions 8 and 9).

Table 7: General Questions Relating to DE/Grading: Student perceptions at beginning of semester and after midterm

| Question | First survey (First week of class) | | | | | Second survey (After midterm) | | | | | | |
|---|------------------------------------|--|-------|-------|-------|-------------------------------|---------------|--|-------|-------|------|-------|
| | N | Scoring: 1 – Yes, absolutely to 5 – No, not at all | | | | | N | Scoring: 1 – Yes, absolutely to 5 – No, not at all | | | | |
| | | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 |
| 1. The options offered for evaluating our learning in this course were fair. | 69 (n/a=0) | 72.5% | 17.4% | 8.7% | 1.4% | 0% | 55 (n/a=1) | 44.4% | 40.7% | 11.1% | 3.7% | 0% |
| 2. I was given enough information to make an informed decision about how my learning was going to be assessed in this course. | 69 (n/a=0) | 47.8% | 27.5% | 17.4% | 5.8% | 1.4% | 54 (n/a=0) | 59.3% | 18.5% | 14.8% | 5.6% | 1.9% |
| 3. The options for completing a term project were fairly equivalent in terms of time. | 69 (n/a=0) | 21.7% | 29% | 23.2% | 17.4% | 8.7% | 55 (n/a=0) | 23.6% | 14.5% | 21.8% | 20% | 20% |
| 4. The options for completing a term project were fairly equivalent in terms of effort. | 69 (n/a=0) | 27.5% | 29% | 21.7% | 15.9% | 5.8% | 54 (n/a=0) | 22.2% | 24.1% | 18.5% | 13% | 22.2% |
| 5. The teacher clearly explained what were the expectations in regards to the use of differentiated evaluation. | 69 (n/a=0) | 79.7% | 14.5% | 1.4% | 4.3% | 0% | 56 (n/a=0) | 73.2% | 21.4% | 5.4% | 0% | 0% |
| 6. The teacher requires us to complete a term project. | 69 (n/a=0) | 11.6% | 5.8% | 5.8% | 5.8% | 71% | 55 (n/a=0) | 16.4% | 3.6% | 1.8% | 7.3% | 70.9% |
| 7. The instructions regarding the options for a term project are clear. | 69 (n/a=0) | 69.6% | 18.8% | 7.2% | 2.9% | 1.4% | 55 (n/a=2) | 47.2% | 43.4% | 5.7% | 3.8% | 0% |

| Question | First survey (First week of class) | | | | | Second survey (After midterm) | | | | | | |
|--|------------------------------------|--|-------|-------|------|-------------------------------|---------------|--|-------|-------|------|------|
| | N | Scoring: 1 – Yes, absolutely to 5 – No, not at all | | | | | N | Scoring: 1 – Yes, absolutely to 5 – No, not at all | | | | |
| | | 1 | 2 | 3 | 4 | 5 | | 1 | 2 | 3 | 4 | 5 |
| 8. The options for completing a term project are interesting. | 69 (n/a=0) | 46.4% | 36.2% | 13% | 2.9% | 1.4% | 55 (n/a=1) | 42.6% | 35.2% | 14.8% | 5.6% | 1.9% |
| 9. The options for completing a term project are appropriate for the course | 69 (n/a=0) | 53.6% | 29% | 11.6% | 4.3% | 1.4% | 55 (n/a=1) | 61.1% | 27.8% | 9.3% | 0% | 1.9% |
| 10. The teacher explained the rationale for using differentiated evaluation. | 69 (n/a=0) | 79.7% | 10.1% | 7.2% | 2.9% | 0% | 55 (n/a=0) | 80% | 14.5% | 3.6% | 1.8% | 0% |

Additionally, student perceptions were also assessed at the very end of the semester (Table 8). Students who completed this survey reported that they generally believed that completing a term project could help them gain better mastery of the course material (Table 8, question 1), but had more a mixed sense of whether or not it enabled them to show their full potential (Table 8, question 7). As with the responses to earlier surveys, students reported that they found that the options for the term project were well chosen (Table 8, question 3) and that the time and effort required were generally appropriate (Table 8, question 10). Students reported some concern about having enough time to complete a term project (Table 8, question 4), and a more mixed perception of how completing a term project could help them better understand the course material or link the class material to applied work (Table 8, questions 4, 5 and 9). Finally, students reported generally positive perceptions of the learning experience created by the instructor, how much they had learned in the course, and how the course had succeeded in stimulating reflection about the material presented in class (Table 8, questions 2, 6 and 8).

Table 8: General Questions on Grading in the Course: Student perceptions at the end of the semester

| Question | Third survey (End of semester) | | | | | |
|---|--------------------------------|---|-------|-------|-------|------|
| | N | Scoring: 1– Yes, absolutely to 5 – No, not at all | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
| 1. In my opinion, completing a term project can help achieving higher mastery of the course material. | 74 (n/a=45) | 47.4% | 24.6% | 12.3% | 10.5% | 5.3% |
| 2. The teacher contributed to making this course a rich learning experience. | 81 (n/a=0) | 58% | 37% | 3.7% | 0% | 1.2% |
| 3. The options for completing a term project were well chosen. | 81 (n/a=3) | 44.9% | 29.5% | 19.2% | 5.1% | 1.3% |

| Question | Third survey (End of semester) | | | | | |
|---|--------------------------------|--|-------|-------|-------|-------|
| | N | Scoring: 1– Yes, absolutely to 5 – No, not at all | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
| 4. I had enough time to complete my term project. | 81 (n/a=45) | 19.4% | 27.8% | 16.7% | 22.2% | 13.9% |
| 5. Completing my term project helped better understand the course material. | 81 (n/a=48) | 24.2% | 24.2% | 24.2% | 12.1% | 15.2% |
| 6. I learned more in this course than in other courses I have taken at this level. | 81 (n/a=2) | 35.4% | 35.4% | 26.6% | 1.3% | 1.3% |
| 7. I was given the opportunity to show my full potential in this course. | 80 (n/a=5) | 24% | 25.3% | 37.3% | 6.7% | 6.7% |
| 8. The course was good at stimulating reflection about the material presented in class. | 81 (n/a=0) | 43.2% | 35.8% | 17.3% | 3.7% | 0% |
| 9. Completing my term project helped me link the didactic material to applied work. | 81 (n/a=51) | 40% | 36.7% | 13.3% | 10% | 0% |
| 10. The time and effort required for completing a term project were appropriate for the course. | 81 (n/a=43) | 40% | 36.7% | 13.3% | 10.0% | 0% |

Students were also asked at the beginning of the semester and at the end of the semester if they thought the number and frequency of evaluation activities were appropriate for the course. Both at the beginning of the semester (N= 61) and at the end of the semester (N=81), a large majority of students agreed with the appropriateness of the evaluation framework (e.g., 80.3% and 87.6%, respectively). Students were also asked at the beginning of the semester and after the midterm if they found the learning activities reflected the course objectives and material well. Again, an overwhelming majority agreed that this was the case (94.5% (N=55) and 86.1% (N=81), respectively). Also noteworthy, 86.2% of students reported after the midterm that completing the weekly online quizzes on Blackboard helped them prepare for the exam (N=81). A total of 77.2% of them agreed that the teacher had explained what was expected and how to prepare for the midterm exam (N=80), and 77.5% felt that they could turn to the instructor or the TA when they needed help to understand the material in order to succeed in the course (N=55). However, only 53.9% felt after the midterm that the instructor and the TA took enough time to explain how they would be graded and that this explanation was clear (N= 54). That information was presented in class (see Appendices B and C), during the TA-facilitated meetings, and was also available to download on Blackboard. Perhaps the question was not specific enough (asking multiple things out of respondents in a single question), which contributed to mixed results.

Table 9 presents information relating to student participation in the TA-facilitated meetings, which were designed to provide support in the preparation of a term project and in studying for the examinations. Students gave consistently good reviews of these meetings, indicating that the information provided by the TA

helped them in completing their term project and/or studying for examinations, although overall student participation in these meetings was consistently low. It is important to note that all of the material presented at these meetings was also available on Blackboard, so that all the students enrolled in the course could still benefit from these learning aids.

Specifically, students found the meetings to be well organized (91.7%, question 1) and to complement well the information presented in class (91%, question 5). There was also generally positive feedback about the clarity of instructions and examples relating to term projects (questions 2, 3, 4 and 7). The support learning aids were also deemed to be appropriate and useful (question 8). The only question garnering more of a mixed response asked how much students had participated in the TA-facilitated meetings (question 6), which was consistent with the TAs' own observations.

Table 9: Questions Related to the TA-Facilitated Meetings with Students

| Question | Second survey (After midterm) | | | | | |
|--|-------------------------------|--|-------|-------|------|-------|
| | N | Scoring: 1 – Yes, absolutely to 5 – No, not at all | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
| 1. The meetings are well-organized. | 12 | 66.7% | 25% | 8.3% | 0% | 0% |
| 2. Instructions regarding project options are clear. | 12 | 41.7% | 41.7% | 8.3% | 8.3% | 0% |
| 3. Examples provided of past projects are clear and concise. | 12 | 41.7% | 41.7% | 16.7% | 0% | 0% |
| 4. Examples provided of past projects were helpful in organizing my own project. | 12 | 41.7% | 50% | 8.3% | 0% | 0% |
| 5. The meetings complement well the information presented in class. | 11 | 45.5% | 45.5% | 0% | 9.1% | 0% |
| 6. I participated actively in the meetings. | 12 | 33.3% | 25% | 25% | 0% | 16.7% |
| 7. The meetings were helpful in preparing my term project. | 12 | 25% | 58.3% | 16.7% | 0% | 0% |
| 8. The support materials were sufficient and useful. | 12 | 41.7% | 50% | 8.3% | 0% | 0% |
| 9. The support materials were easy to access. | 12 | 58.3% | 33.3% | 8.3% | 0% | 0% |

Given that most students chose not to produce a term project, we also collected information on the reasons why students elected not to do it at the end of the semester. The two most common reasons given by respondents were that they had received a satisfactory grade on their midterm exam and did not see a need

to complete a term project and/or that they were too busy/lacked time to invest in completing a term project (Table 10).

Table 10: Reasons for Not Participating in DE

| Reasons* | Frequency (f) | Percentage (%) |
|-----------------------------------|---------------|----------------|
| Satisfactory grade on the midterm | 19 | 25.6 |
| Lack of time; too busy | 26 | 35.1 |
| Neither option interested me | 5 | 0.7 |
| Both options were too demanding | 6 | 0.8 |
| Other(s) reason(s) | 18 | 24.3 |

*Students could choose multiple responses

Qualitative Data Analysis

Open-ended questions were included in the third student survey administered at the end of the semester, to gain additional insights into student perceptions regarding DE. We asked four questions:

- a. What did you like about having the opportunity to produce a term project?
- b. What did you not like about having the opportunity to produce a term project?
- c. What were the most useful aspects of the TA-facilitated meetings and the associated support materials available on Blackboard?
- d. Do you have suggestions for improving our strategy to support you in achieving success in the class?

Each student comment was transcribed into an aggregated file that contained each response to the four questions posed. All responses were combined into a single pool of responses for content analysis. The following tables show a summary of the student responses, with representative comments for each of the questions. The comments are listed in their order of frequency and significance.

Table 11: Positive Aspects of DE

| Student comments (28 comments) | Comments related to the Community Service Learning program | Comments related to the mini-class presentation |
|--------------------------------|--|---|
| | <p>The experience of working in the community – it was a good choice for a term project.</p> <p>It gave me an opportunity to get additional experience in working in a place where I want to have a career.</p> <p>I liked that there was a choice.</p> <p>Applying what we learn in class to real-life situations.</p> <p>I felt like I got to increase my understanding by completing the placement.</p> <p>It was a different way to be assessed.</p> | <p>It was good to be able to use what we learned in class and apply it to a specific issue.</p> <p>I liked that there was a choice.</p> <p>It lowered the stress associated with the exams and gave me a chance to have a better grade.</p> <p>It was nice to do a term project that was different than what is normally asked of us.</p> |

Table 12: Negative Aspects of DE

| Student comments (22 comments) | Comments related to the Community Service Learning program | Comments related to the mini-class presentation |
|--------------------------------|---|---|
| | <p>It's a lot of hours (30 hours) when you also have classes.</p> <p>There was scheduling conflicts that made it difficult for me to complete my hours.</p> <p>It was a long report to write.</p> <p>At first, it was difficult to find a topic to do my report.</p> <p>The instructions for the report could be clearer.</p> | <p>I wasn't sure what was expected at first.</p> <p>The report took a long time to write.</p> <p>It took me a lot of time to prepare the presentation.</p> <p>I would have liked more advice in preparing the report.</p> <p>I had to do a mini-class because I waited too long to do the other option.</p> |

Table 13: Usefulness of TA-Facilitated Meetings

| | |
|---|---|
| Student comments (32 comments) | <p>The support material was well-prepared and gave us a lot of suggestions to succeed.</p> <p>It helped to clarify the objective and the expectations for the term project.</p> <p>Having the support materials available online.</p> <p>The TA was very available.</p> <p>Teaching us about how to do a good oral presentation.</p> <p>Helping us identify a good theme for our project.</p> <p>It was a good place to revise class content before the exam.</p> <p>It was good to have an opportunity to ask questions.</p> |
|---|---|

Table 14: Suggestions for Improvements

| | |
|---|--|
| Student comments (12 comments) | <p>More availabilities for the TA meetings (I couldn't attend because of my schedule).</p> <p>Take more time to go over the course content before the exams.</p> <p>More meetings on other relevant topics (e.g., meeting on how to use PREZI, meeting on how to apply to graduate studies, etc.).</p> |
|---|--|

The comments received from the qualitative data sources provided more information on student perceptions relating to the options chosen for a term project, how information about DE was communicated and how they used the TA-facilitated meetings in preparing for assessments of learning in the class. Comments regarding positive and negative aspects associated with DE were consistent with student responses to survey questions (Tables 7 and 8). Mainly, students appreciated having an opportunity to show their learning in a different (applied) manner, the opportunity to choose how their learning would be assessed, and to lower stress associated with exams. At the same time, the most negative aspects of completing a term project included the demands in terms of time and effort. Some also mentioned issues with scheduling conflicts contributing to difficulties or limiting their choice of term project. Finally, some also felt that they could have used more support in preparing their term project.

Students also provided feedback about the experience participating in the TA-facilitated meetings, as well as using the support materials available on Blackboard. Comments regarding the usefulness of these measures were consistent with student responses to survey questions (Table 9). The vast majority of responses indicated that the information provided was clear, useful and well prepared. Additionally, many mentioned consulting the materials available on Blackboard throughout the semester and appreciating the concrete support provided by the TA. Based on survey question responses and student comments, it would appear that this strategy to support student success largely met its objectives. Finally, a few students also provided suggestions to improve our approach to assessment of learning. The most frequent comment related to scheduling more TA meetings or making the meeting times more flexible. This further supports the notion that students considered these meetings to be useful.

Summary of Findings

This project was designed as a pilot study to assess both the impact of DE on student achievement in the course, as well as on student perceptions of the learning environment in the class. We aimed to demonstrate that DE is an efficient, fair and valid evaluation strategy that can be implemented successfully to stimulate student engagement and success, especially for those who are less traditionally skilled (Wolf et al., 1991).

Findings from both achievement data and student surveys supported the conclusion that DE could contribute to creating a more inclusive evaluation strategy in an upper-year undergraduate course. The implementation of DE was related to an increase in student achievement for those who elected to choose the new options for evaluation of their learning (especially those who traditionally would not have succeeded as well on traditional examination), while student perception of its use showed a generally positive response from all students enrolled in the course.

Our findings showed mixed results in terms of DE's impact on improving student performance on traditional examinations. Past results have shown that DE can have such an influence (Gosselin, 2012). In the context of this study, however, we only found a positive trend in one of the two course offerings. At the same time, even though students reported that producing a term project required additional time and effort, none of them saw a decline in their performance on traditional examinations as a result of their performance. At worst, it is clear that DE has no significant negative impact.

While it is interesting to note any potential impact of DE on achievement data (especially for those who would tend to perform below the class average) to demonstrate its inclusiveness, another important aspect of this project related to the general student learning experience and to students' perception of the learning environment in the course. In this context, the impact of DE and the support strategy put into place throughout the semester were much clearer. Even though students themselves appeared undecided as to whether or not DE could help them learn more and show their full potential, we received consistently positive feedback about its inclusion in the course, as well as the way in which it was introduced and managed. Although some students reported wanting more support than was provided, students found what was provided to be generally well designed, well presented and useful to them.

Overall, these findings are encouraging and support continuing to study the impact of DE on assessment for learning. Students enrolled in this course reported consistently positive feedback about the implementation of our strategy. They welcomed and appreciated the support given to them both live in TA-led tutorials and online on Blackboard. Most students also welcomed the opportunity to choose how they would be evaluated, even if they chose not to produce a term project. Additionally, many students welcomed the opportunity to be assessed in a context that felt more realistic and in line with their career aspirations. For instance, some students commented that producing a report on a CSL placement or preparing a mini-class challenged them to use what they had learned and to show their skills, as opposed to simply finding the right answers for an exam.

Recommendations for Practice

The results of this study show that it is possible to implement alternative evaluation strategies in upper-year classrooms successfully, in order to contribute to improving the quality of the student experience, as well as to respond to challenges linked to increased student diversity. It can be daunting for teachers to add a term project to their evaluation strategy when enrolment in their course is high, but making it optional reduces the additional workload. Additionally, creating group project options (e.g., mini-class) and capitalizing on programs already available on campus (e.g., Community Learning Service program) can also help to manage

the demands imposed by this measure. Finally, by enlisting the help of a teaching assistant, instructors can provide ongoing support (both live and online) to students so that they can make informed decisions and produce quality work.

Given the recent interest in learner-centered approaches to teaching and the growing focus on differentiated instruction, DE can represent a natural partner in creating learning environments that are flexible and adaptive, while promoting quality learning and a rich student experience that is fair and inclusive. What appears clear from our experience is that the success of any such initiative relies on the clarity and quality of the options selected for term projects, on the availability and quality of the support offered to students in making their choices and preparing their work, and on the communication between the teacher and the students concerning expectations for learning in the course. DE also transforms the relationship between teacher and student, in that both parties can now collaborate and share power when it comes to making decisions about assessing learning. The implementation of DE also requires that teacher and teaching assistant (TA) become partners in structuring and managing this evaluation initiative, which can give TAs a larger pedagogical role within the course. Faculty who are interested in this approach do need to invest time and effort in the original design of DE for their course, but once it has been implemented, it is relatively easy to manage. The initial time investment can be substantial, however, so faculty should be mindful of their workload and seek out additional sources of support (e.g., Centre for University Teaching) as needed.

Suggestions for Future Research

In order to build upon lessons learned from this study, it would be warranted to construct and evaluate DE initiatives in other types of undergraduate courses, both within and outside psychology. Given universities' increasing interest in evaluating learning outcomes and creating assessments of learning that are better connected to the career aspirations of students, DE appears to represent an interesting option worth exploring in many disciplines. Additionally, given the growing diversity of students enrolled in undergraduate programs, offering options to students regarding how their learning will be evaluated may represent an inclusive strategy to help those students who face greater challenges related to traditional examinations succeed and thrive academically.

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