EMPOWERING STUDENTS FOR QUALITY STUDY AS DEMONSTRATORS

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Abstract

This article describes and assesses a course design that uses demonstrators, i.e. peer student assistants (PSAs) to facilitate a collaborative, hands-on learning experience in an undergraduate management course at the Faculty of Administration (FA), University of Ljubljana. PSAs are in the same study year as other students and carry out the duties of teaching assistants (TAs) and have a role of a group leader of 4 to 7 students. This instrument is useful for courses that have large numbers of students and low faculty-to-student ratios. The use of PSAs allows the active integration of the individual teacher and student groups. Its purpose is to achieve higher effectiveness and quality of the teaching process and enables a prompt feedback about teacher's work. Results suggest how the integration of peer student assistants in class may contribute to the pedagogical process and to the academic excellence in teaching and learning at the faculty. The implications of these findings for those who study and apply various instruments and methods in pedagogical process and those responsible for promoting student learning are discussed.

Keywords: peer teaching, undergraduates, learning, teaching method, student competences, leadership, active student, pedagogical process, innovation, quality of education.

1 INTRODUCTION

Teaching within courses that have large numbers of students and low faculty-to-student ratios can present a great challenge [1]. A lot of research exist from the education literature that explore how to increase the quality of pedagogical process by incorporating different methods that focus on peer learning and teaching [2]–[7]. It has been proven that the use of peer learning brings cognitive, pedagogical, attitudinal, social and economic benefits, e.g. [7], [8]. A broad accepted definition of peer learning that seems sufficient inclusive is:

Peer learning means that people from similar social groupings who are not professional teachers helping each other to learn and learning themselves by teaching [9].

Due to different approaches and different academic disciplines several other definitions of peer learning is also found in the literature. When referring to peer learning researchers use expressions such as near-peer teaching [1], peer teaching assistants [6], peer assisted learning [10], self directed learning [4], structured teaching assistants [3], peer assisted learning and collaborative learning [7], peer mentors [5], [11], utilization of peer teaching assistants [6], peer educators [12], (near) peer teaching [13]–[16], near-peer facilitators [17], and peer leaders [18], to name a few. For a detailed review and different terms for peer learning in the literature and sinonims see Ross [7]. Bellow different definitions of peer learning are discussed.

Peer assisted learning is an approach in which peer students help their peers to learn. In this case all students are from similar social groupings to the learners (although not necessarily from the same course or year of study) and are not themselves professional teachers or ‘experts’ in the subject [7].

Peer learning is an effective tool to promote learning and retention of knowledge. Students are encouraged to construct their own learning program, so that they can explain effectively to fellow learners. [10]. Peer teaching has been broadly used in all academic disciplines, especially in medical studies, engineering.

Peer learning can be understand as “helping each other to learn”, and is adequately broad that is inclose peer participation in virually all educational activites that are perfomed by profession teachers in both informal and forma settings [7], [19]

Similar to peer teaching is near-peer teaching that is usually carried out in groups with high faculty-to-student ratio, and is widely regarded as an effective teaching modality [13]. Durán [1] uses an expression near-peer teaching that represents an educational format which utilizes tutors who are
more advanced in a curriculum's content to supervise students' activities and to act as instructors in laboratory settings teaching assistants. Durán argues near-peer teaching satisfies the demands of modern curricula but is limited to small groups. Peer teaching and near-peer teaching both play an essential educational role [15].

Also, the introduction of structured teaching assistant (TA) are not uncommon [3], especially in medical education. Programs, both nationally and internationally, have implemented and continue to provide established opportunities for under- and post-graduate students to develop teaching skills.

Chapin [2] uses term peer educators that present graduate teaching assistants (GTAs) or undergraduate teaching assistants (UTAs) who provide instruction in laboratory class sessions and can be a powerful addition to classroom learning environments. Similarly Weidert [20] show that across disciplines teaching assistants (TAs) may serve as positive resources for both students and instructors. TAs can also aid instructors in managing classroom group work, discussion, and grading, among other duties.

Another synonym is near-peer teaching (NPT). NPT is often used in medical schools not only provide additional learning opportunities for medical students. This approach increases the pool of tutors available to students, helps facilitate both practical and small group teaching and has other advantages, such as peer tutors being more approachable than senior staff [14]. Main reasons for establishing NPT are because it is beneficial for students, it offers one-to-one learning experience that helps to provide clinical skills and may therefore partly substitute the bedside teaching that is in decline [14].

Findlater [4] reports the introduction of supported self-directed learning improved students' engagement, leading to deeper learning and better understanding and knowledge of anatomy. In practical sessions, students are provided with a custom-made workbook that guides them through each session, with academic staff, postgraduate tutors, and near-peer teaching assistants present to deal with misunderstandings and explain more complicated topics. Results demonstrate that due to self-directed learning an increase in the average anatomy practical spot examination mark is reported. Less students also fail to obtain the pass mark and more students pass with distinction.

From the view of peer student’s engagement in the class the literature reveals three approaches:

- graduate student teaching assistant (GTA) and junior doctors assistant [2], [8], [11], [13], [21] [4], [14];
- undergraduate student teaching assistant (UTA) from higher class [2], [8], [12], [20], [22] or;
- peer student assistant (PSA) from the same class or course [7], [23].

Hereafter, we present the literature review regarding peer student’s engagement in the classrooms. Firstly literature involving graduate and undergraduate student teaching assistants (GTAs and UTAs) is discussed. Secondly, the literature that involves peer students assistants (PSA) from the same class or course is presented.

The historic overview of the literature reveals graduate student assistants have been the most commonly used at the university as teaching assistants (TAs). Most early study conducted by Goldschmid and Goldschmid [8] trace the evolution of teaching assistants in the university back in the 1960s. Graduate students TAs helped with grading and leading discussion sections, and undergraduates TAs assisted in classroom as peer instructors. Several other early studies, e.g. [9], [24]–[26] indicate that use of undergraduate peer educators in classroom has a positive effect on TAs because it increases their comprehension while at the same time improve class members’ motivation and learning [27].

TAs are often used in medical courses. Survey results conducted by Andre Jay et al. [13] indicate that graduate students that served as near-peer TA in the anatomy-based student-as-teacher program achieved core competencies of a medical educator and felt prepared for the teaching demands of residency. Similarly, results from Edinburgh University by Quereshi [14] demonstrate that involvement of recently graduated senior doctors serving as TAs in both practical and in small group teaching is found more approachable than from senior staff. 111 medical students that return the survey state that having a TAs present improved their confidence in clinical examination. Further, their results show that students who had attended one of the 30-minute prescribing tutorials led by TAs were significantly less likely to make a dosing error in a mock examination. Further, Tran et al. [15] argue recently graduate doctors are best placed to help deliver teaching, as they have recently been through the
transition process themselves. Forty-nine medical students and 122 TAs state that 98 per cent of mentors and 100 per cent of mentees would recommend the scheme to their peers.

Further, researchers Lindren, Meier and Brigham [27] studied the effects of two levels of peer tutoring on the academic performance of 193 undergraduates. Their results demonstrate that the use of experienced graduate students to help their undergraduate peer tutors colleagues how holds tutorials may enhance the academic performance of college students. Anstey [17] argue near-peer facilitators (senior students serving as facilitators to their more junior peers) bring a unique student-based perspective to teaching. Anstey shows the inclusion of facilitators within the classroom increase student’s motivation and boosts group creativity. Analysing near-peer education De Menezes [28] found TAs enjoyed the opportunity to develop their teaching skills, citing mutual benefit and gratitude to past peer-educators as strong motivators to teach others.

As noted from the above-mentioned studies undergraduate student are also often find to perform TAs work. Undergraduate teaching assistants are often selected from students who previously excelled at the course they are instructing, and the mastery of material is a natural outcome [12]. The most recognized advantage of serving as a peer undergraduate teaching assistant is opportunity to learn by teaching [12]. This means that in the process of learning, organizing, and synthesizing the study material for the purposes of teaching it appears to require different cognitive processes than those used in the rote memorization of material [24], [26], [29].

In contrast to research e.g. [12], [13], [16], that used graduate students as TAs in their courses Gill and Qing Hu [21] used undergraduate TAs who had recently completed the course to perform as peer-to-peer activities. They show using undergraduate TAs may give similar positive learning outcomes, comparable when using graduate TAs. Similarly, Chapin [2] showed undergraduate students may perform tasks of teaching assistants in laboratory class sessions equally well as graduate students.

By examining innovative uses of peer undergraduate teaching assistants Owen [12] demonstrates that involving undergraduate TAs as academic partners in the design, delivery, and evaluation of classroom-based learning enhances student ownership of the learning environment and stimulates peer interest in the transformative possibilities of education. Study by Roderick [22] show how serving as an undergraduate TA may impact a student’s learning and engagement and how undergraduate TA impact student learning at the Renaissance College at the University of New Brunswick in Canada. By conducting analysis of interview data combined with a review of relevant literature Roderich present that seven good practices associated with undergraduate teaching assistantships emerged and demonstrated how the use of undergraduate TAs helped to increase students’ assessments of college performance.

Similarly, in marketing classes the results from Metcalf [11] demonstrate that peer mentoring increased content mastery and had a positive effect on students’ perceptions of the learning experience. Rodrigues-Sabater [6] find out that inclusion of undergraduate TAs in a foreign language course results in high percentage of students who reported an improvement in speaking, pronunciation, grammar and vocabulary. Weidert et al. [20] explores the benefits of using undergraduate and graduate students as TA. The analysis of 70 UTAs/GTAs online self-report survey show that perceived benefits of the UTAs experience are higher than GTAs. UTAs report they have increased their responsibilities was connected with more satisfaction, enjoyment, and perceived benefits. UTA rated themselves as using humor and an engaging teaching style significantly more often than those TAs that were GTAs.

Within the Precalculus Mega Section project Brusi et al. [30] address the challenge of high drop-offs from Precalculus, a large group format (150 students) math course. These high failure rates reported to represent a tremendous human, academic and administrative cost. Their results show the employment of graduate TAs support help significantly to reduce students' withdraw and failure rates. Further, results from De Menezes [28] indicate the inclusion of graduate TAs help to improve preparation and perceived performance in summative examinations.

A comparison of student performance in a series of two introductory biology classes and one third-year class shows that students with GTA and UTA leaders earn comparable final course grades [2]. Additionally, both UTAs and GTAs are considered effective at encouraging a positive attitude toward science and fostering a positive laboratory environment, though the UTAs receive slightly higher scores on two measures of attitude toward science. These findings show that appropriately well-trained UTAs and GTAs have equivalently beneficial effects on laboratory learners. Chapin [2] indicate that UTAs may fulfill the tasks of TAs equally well as their GTAs colleagues. Similarly, in their study Galal et al. [16] compare peer (first-year) and near-peer (second year) students as TAs. The
evaluation of sixteen peer and 33 near-peer TAs by 210 first-year pharmacy students showed no significant difference between peer and near-peer TAs in both student perception of TA performance and in TA grading of student performance.

Rodrigues-Sabater [6] argue that employment students as TAs who are not graduate students is starting to attract attention in higher education as undergraduate are not very far removed from the novice students in knowledge, age, and status. Althow, we may also go a step further and explore the possibilities of involving undergraduate students from the same class or course to act as TAs during a lecture or tutorial.

Conventionally, the university science teaching model relies on graduate and undergraduate teaching assistants (GTAs) to provide instruction in class sessions [2], but there is increasing evidence that peer students assistants from the same class or course may fill an equivalent role if instructed adequately. Similarly Ross and Cameron [7] discusses a possibility of recruiting peer student from the same course or year of study, who are not themselves professional teachers or ‘experts’ in the subject. According to Ross and Cameron, althow these peer students typically have less expansive knowledge of subject matter, less developed teaching skills and less authority than UTA and GTA, they may also do the teaching with positive outcome. In another example M'Mworia [23] engaged students from the same class in the course titled "Introduction to Biblical Studies," at the Edward Waters College, to serve as teaching assistants. Since she started using this strategy she reports a tremendous increase in students’ engagement and interest in the class. Further, Galal et al. [16] assess differences between the use of first-year (P1; "peer") versus second-year (P2; "near-peer") students as teaching assistants (TA) in a first-year, skills-based course. Results showed there is no difference in the use of peer versus near-peer TAs in evaluating first-year pharmacy students in the skills-based course. They conclude that using peer TAs over near-peer TAs may be beneficial when faced with scheduling and other resource conflicts.

The aim of this paper is to explore this last option, namely: how peer students (PSA) from the same course can act as TAs and as team leaders in class sessions and whether their activities contribute to the quality of pedagogical process. The use of PSAs may be a powerful addition to classroom learning environments. Until now, this research question has not been systematically adressed in the literature and our article tries to fill this gap.

2 METHODOLOGY OF A CASE STUDY

In the 2014/15 academic year a pilot project that introduced peer students assistants (PSA) from the same way carried out at the Faculty of Administration (FA), University of Ljubljana, within the course Management in Public Sector (University undergraduate Study Programme in Public Administration - 1st Cycle, 3rd year). PSAs performed the duties of TAs and team leaders. The project investigated the perceptions of students about pedagogical process within this course. The aim of the project was to find out how students experience the pedagogical process and evaluate the quality of pedagogical process. The instrument of PSAs was introduced at the first class session and was applied in class on the third session. First two sessions were traditional ex cathedra lectures.

A group interview or short group evaluation was conducted at every meeting in order to shed a light on PSAs motivation for work, their perception of the class and behaviour of their individual students’ group. After the last session of the course an evaluation was carried out among all students that participated in the class experiment in order to obtain opinions from participants about whether the PSAs has enrich the quality of pedagogical process.

PSAs allows the active integration of the individual teacher and student groups. The purpose of introducing PSAs of is to achieve higher effectiveness and quality of the teaching process. To be an active PSA students need to go through several steps, namely:

Within the first class teacher explains the role of PSAs and conduct a preliminary meeting with potential PSA candidates. Thirteen students than voluntaire to act as PSAs. Each PSAs is than appointed to be in charge and guide a group of 4 to up to 7 students. Two weeks before every planned class activity PSAs are being prepared in two sessions for the learning process for upcoming week. PSA meetings took every Thursday, and lectures were on Monday, what indicate enough time for PSAa to get prepated for the class.

First PSA activity starts two weeks before the actual class. A week before first preparation for class session with PSAs teacher send e-materials to PSAs with literature guidelines. In the first week of
preparation teacher and PSAs meet and discuss the readings. In the second week of preparation the teacher explain the main study concepts again and performs a knowledge check so PSAs adequately absorb the study content and are prepared to the next lecture where they will perform a TA and a leader role.

The PSAs model in brief may be described in five steps, namely:

1. **Building healthy study habitats.** The idea of PSAs is to build healthy study habitats, where within every group there will be a group leader (PSA) that already master study materials.

2. **Materials with guiding questions.** Teacher sends PSAs learning material and guiding questions per e-mail in advance for the next lecture. PSAs prepare prior to class.

3. **Regular weekly meetings before lectures.** Meetings start with a reflexion of the past lecture. Discussion about study material for the next lecture. Within regulay meetings a group interview or a short group work evaluation was conducted at every meeting.

4. **Lecture.** Every lecture is structured in four parts: 1. 45 min teacher’s lecture; 2. 25 min PSAs’s activities. Their tasks was to present, discuss and answer questions about study material in their group, and to report about the findings (when applicable) to the other groups. Students practice team building and play different roles according to PSAs instructions; 3. 15 min group reports; and d) 4. 5 min teacher’s summary of the lecture.

5. **Teacher’s self-reflection** about the pros and cons of the past lecture and ways to improve it.

### 3 EMPIRICAL RESULTS

Introduction of peer student assistants in class turns out to be a great success. The results of students’ group interviews and evaluations of classes among PSAs indicate that since the introduction of the PSAs there has been an enormous increase in students’ participation and interest in the class “Management in public sector”. PSAs were from the same year and course as other students and therefore, the atmosphere in the classroom was collegial and relaxed.

The instrument of PSAs was introduced at the first class session and was applied in class on the third session. First two sessions of the class were traditional ex cathedra lectures. Within these teacher gave instructions to students to perform team work activites involving explaining and discussing study material. Our experience showed that within the first two sessions some students were not willing to participate and it took a lot of time to motivate and encourage them for work. Further, since no student had knowledge on discussed topic it was challenging for a teacher to ensure within every work group that subject matter was adequately and correctly analysed and discussed.

PSAs involvement as team leaders from third class session on had a positive effect on group dynamics, because some students that were not willing and motivated to actively participate in the first two sessions were mostly "pulled" into these peer-group flow with a new leader they know and trust.

The instrument proved to enable an active, intensive and accelerated teaching process, and strengthens students’ leadership competencies. As such, the instrument contributed to the academic excellence in teaching and learning and thus accelerated the improvements in the pedagogical culture of an institution.

Results demonstrated that the introduction of PSAs has an impact on the quality of teaching. Students reported that that PSAs increased the active participation and accelerated the work tempo in each student group, while strengthening leadership competences of group leaders. The introduction of PSAs in the teaching process required minimal additional engagement of a teacher in class, and presented a pedagogical disbudening for the teacher who can than focus more on supervision of the PSAs’s work. In this way students’ group relationship and teacher’s relationship with students was enriched by this experience.

Results from group interviews, short group evaluations and teacher’s experience indicate that this instrument has not only shown to be an effective direct real-time feedback on teaching from PSAs but a framework for future pedagogical process of planning strategies to address areas for improvements in teaching and learning. Without undermining the role of graduate and undergraduate student teaching assistants our results demonstrate that adequately prepared peer student teaching assistants may fulfil their place equally well when it comes to presentation, analysis, discussion and synthesis of study materials.
4 CONCLUSIONS

This article shows how the inclusion of students as peer student assistants (PSAs) helped to enrich the learning experience in an undergraduate course “Management in public sector” at the Faculty of Administration, University of Ljubljana. Literature reports how graduate and undergraduate teaching assistants (GTAs and UTAs) may promote and improve teaching and learning in the classroom. Our results suggest that the inclusion of well-trained PSAs has equivalently positive effects on students’ learning and teaching process in terms of presenting, analysing and synthesizing study material as UTAs and GTAs. Without diminishing the value of teaching by and for the GTA and UTA, this survey propose the comparable value of PSA class educators. In this way PSAs contributed to the academic excellence in teaching and learning and thus accelerated the improvements in the pedagogical culture of an institution.

Findings from this paper indicate how peer learning among students may be useful for the pedagogical process, because it contributed to a better working atmosphere in the class and to greater efficiency and quality of pedagogical work. Apart from that, the introduction of PSAs also provides the teacher an instant performance information feedback on his/her work in the class.

The method and implications of these findings are especially useful for teachers working with large numbers of students and low faculty-to-student ratios, researchers working with applications of various methods in pedagogical process, and those responsible for promoting student learning.

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REFERENCES


