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Evaluating the Effectiveness of Student Instructors (SI) In a South African University

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ABSTRACT The focus of this study centres upon the role of Student Instructors (SI) as a means of enhancing student performance in a South African university. In order to have a quicker and direct communication with the respondents, the delivery and collection type of questionnaires is used on a sample of 58 students and 30 Student Instructors. We conducted in-depth interviews with the SI supervisor, observed and recorded the behaviour of a selected set of students over a year. We report the use of three sets of questionnaires; one for the SI, and two for the first and last phase of the students' survey respectively. Questionnaires for SI were composed of classification questions, behavioural and attitudinal questions. With these sets of questions, we were able to gather their personal demographics data, what they do during their sessions (their preparedness) and motives, expectations, beliefs and attitudes respectively. We obtained Student's demographic and academic data from student records. This data revealed vital background information of students such as their matric or FET college results, reenrolment, term and semester mark. Data obtained from the attendance

register of SI was compared with students' academic records. The students' questionnaires enabled the quantification and qualification of students' learning activities during and after their SI sessions. This information was then used to measure and validate the feasibility and effectiveness of SI. The results indicate that students attending SI perform better than those who do not attend. This is supported by the quality of course grades, re-enrollment and lower withdrawal rates. We argue that many students encounter difficulties because they lack an understanding of what learning in higher education entails. As such we encourage the use of collaborative and active learning, which is facilitated by Student Instructors so that students will be able to integrate course content with study strategies.

INTRODUCTION

It is often perceived that attaining Higher education opens doors of opportunities for one to improve his/her socio-economic status, their families and their communities (Valentine *et al.*, 2009). However, the dream of university education is not always realised by everyone, as reflected by high level of student failure, coupled with an increased drop-out rate (Willcoxson, Cotter & Joy, 2011; Plessis & Gerber, 2012). This has prompted many universities, worldwide, to strategize their teaching and learning activities. Different intervention tactics (Bashford, 2008; Blanc, DeBuhr & Martin, 1983) were introduced to help students who are either at the first year level or other higher levels with most schemes designed to assist students at risk of dropping out (Cabrera *et al.*, 2006). This includes investing heavily in assets like human resources, Information and communications technology (ICT's) and changing or introducing certain policies. For example, one of South African government policy directive is to broaden access in the scarce skills areas so as to increase student throughput (Plessis & Gerber, 2012). Several universities introduced bridging courses and Student Instructors (SI). For example, Student Instructors have been used on hundreds of campuses throughout the USA (Etter *et al.*, 2001).

However, several studies have found SI to be ineffective in improving student performance and that SI attendance and final course grades were not positively associated (David, 1997). Moreover, there were no significant differences in SI and non-SI student grades. Unfortunately, there is very little evidence (Kelly *et al.*, 2007) and documentation on the importance and usefulness of the SI except on their job descriptions (A Department in the Division of Academic Affairs, 2013 and Wayne state university, 2013).

Supplemental instructors are students who are involved in a peer led academic assistance program that is meant to enhance students' academic performance and retention in courses with a history of high failure and withdrawal rates (A Department in the Division of Academic Affairs, 2013; Etter *et al.*, 2001; Widmar, 1994; University of Missouri-Kansas city, 2013; Clemson Academic Success Centre, 2013; LSU website, 2013; Iowa state university, 1995-2011 & Washington state university, 2013). They do not use any specific teaching method during their session, except voluntary cooperative/collaborative learning (Johnson *et al.*, 1991; Tomlinson, 1989; Whitman, 1988 & David, 1997), and active learning teaching (Iowa state university, 1995-2011) methods. These are used out-of-class (Etter *et al.*, 2001) to integrate instruction in learning and reasoning skills with a review of the course content selected. This includes discussing difficult concepts, sharing ideas on improving class material, reading strategies, questioning techniques, vocabulary, exam and test preparation, note taking and comparisons (University of Missouri-Kansas city, 2013; Washington state university, 2013 & The university of Tennessee, 2013). During that process (collaborative learning), a medium for building classroom cohesion and strong inter-student bonding is built as students, despite of their social, personal status are given equal opportunity to interact with their classmates (Tobias, 1990; Kiesler, Siegel & McGuire, 1984). This Social integration is an important introduction to learning (Pascarella and Terenzini 1991) as it acts as a catalyst for academic completion and success (Christie and Dinham 1991; Tinto 1975).

This research was designed to measure effects of SI in Information Technology course at a university in South Africa. This was done by analysing students' customs, attitudes, values, ethics, rapport, reasons for attending or not attending SI sessions as well as analysing descriptive data on their performance, failure, and withdrawal rate on one hand and intentions, anticipations and preparedness of the SIs on the other.

METHODOLOGY

This study uses a combination of qualitative and quantitative approaches. We conducted in-depth interviews with SI supervisors, observed and recorded behaviour of a selected set of students over a year. Two sets of questionnaires were also administered to a randomly selected first year Information Technology students so as to quantify and scrutinize their customs, attitudes, values, ethics, rapport and reasons for attending or not attending SI sessions. We administered the first set of questionnaires at the first day of the students' SI session so as to ensure that their answers were not influenced by their experiences on the university. The other set was administered on the last day of session so as to check whether

there were any divergences on students' perspectives over the SI sessions. In both cases, the students were informed of the objectives of the study and were reassured of confidentiality on their response. As a quantitative measure, the questionnaires composed of classification, behavioural and attitudinal questions were also applied to thirty Supplemental instructors. With this set of questions, we were able to gather their personal demographics data, what they do during their sessions (their preparedness) and motives, expectations, beliefs and attitudes respectively. We obtained Student's demographic and academic data from student records. This data revealed vital background information of students such as their metric or FET college results, re-enrolment, term and semester mark. Data obtained from the attendance register of SI was compared with students' academic records. Using SPSS software, we were able to determine data tendencies such as means, standard deviations and frequencies. The following section discusses the results obtained.

RESULTS

In a way of measuring the effectiveness of the SI, we considered variables like what motivated them to support the students at lower levels, their appointments, time allocation for SI sessions, students' attendance rate, support they get from all stakeholders, evaluation, their preparedness, students' views and experiences, feedback on academic and retention records and SI-Lecturer relationship.

16 male and 14 female SI students took part in the survey, of which 16 were second, 8 third and 6 fourth years. Results indicated that 3% of the SIs are motivated by intrinsic needs only, 3% by extrinsic needs only, 87% by both and 7% were not sure. SIs who were motivated by both needs felt that financially, earning a certain income complements what they get from their parents or guardians. However, they quickly pointed out that they were chiefly inspired by the desire to help others on the subject they enjoy most. In the process, this equips them with necessary future skills and knowledge. For example, others felt that it was an opportunity to gain experience since they were training to be a teachers or college lecturers. Because of the experience they had, they also highlighted that they understood the importance of those sessions since they were also helped by others during their first year. For example, they pointed out that, as students they used to be shy to answer or ask questions to their subject lecturer, but could do so with their SI.

Senior students (second, third and fourth year) who have previously and successfully completed their academic courses with high grades are advised to apply for the SI positions.

Through the course lecturer, the SI coordinator appoints a relevant student on that position who is paid a competitive wage.

This research also considers time and the frequency at which the students meet their SI as a variable of determining the usefulness of the SI. Results revealed that 73% of the SIs have one session a week, 20% twice a week, and 7% more than twice. Results showed that 73% of the SIs, believed that the frequency of the sessions were enough for the students to understand, while 20% argued that it was not enough and 7% were not sure.

A scale used to rank the attendance of the students, showed that 57% of the SI felt that it was satisfactory, 26% fair and 17% poor. However, many of them agreed that attendance fluctuates during and after tests/exams as the majority of them attend only when they do not understand certain concepts and when there is a test/exam to be written. According to the SIs, and records, the 17% of those who did not attend was because of the fact that they felt that they did not have time and some felt that it was degrading.

Regarding receiving help from the subject lecturer, some of them acknowledged that they get slides, past exam papers, notes and other relevant materials of the lesson taught upon request. 75% of the SIs professed that they discuss what they do in their session with the subject lecturer and 1% pointed out that the subject lecturer visits them during their sessions. Sometimes, they (SI) are informed in advance of the lesson to be taught so that they could prepare. The subject lecturer sometimes asks them to repeat the topic that he/she feels is giving the students some challenges.

All the SIs, felt that the initial underperformance of students was not on unavailability of resources since resources like prescribed text books, study guides, syllabus, necessary notes, past exam papers, intra(Blackboard)-and extranet were available. Instead, many reported the lack of basic understanding of their subject content, chiefly because of poor understanding of English, lack of studying techniques, limited time (too much subject content taught within a short period of time and too many subjects to attend to) and also certain social challenges. As a result, when queried about their job description, 99% of the SI stressed that they do not lecture, but create a conducive environment for their peers to work together in order to improve their academic excellence through guidance and facilitation during and after sessions. Since SI sessions are not remedial, 88% of the SI mentioned that they do not evaluate students. However, 12% of those who said they did pointed out that they do so through informal group works and quizzes. Administratively, they argued that they prepare

and keep session records, prepare and submit initial term, mid-term and end-of year reports to their supervisors.

Of the 58 students evaluated, 46 did not have an IT background. During the first survey 87% reported that they had challenges related to the understanding of IT. They also reported that initially, they felt ignorant, empty and were timid to ask or respond to questions raised by their lecturer but it was different with the SI. Like, their SI, students also 99% reported that their subject lecturer does not attend their sessions. 96% argued that they do not discuss what they do during the sessions with their subject lecturer.

Regarding evaluations, only 12% reported to get any form of evaluation from their SI. We later discovered that what the students were referring to as evaluation was informal group work and quizzes they got from the SI.

The last survey indicated that 13 % of the students reported to have challenges with IT. The other 87% argued that this was due to the fact that they attended the sessions. This argument was based on the feeling that the sessions solidify what they were taught in class as they help them to understand better. Again, they recounted that it helps those who did not understand in class since they are given an opportunity to revise the work covered by their lecturer. Again the observation of the students was supported by the comparison of students' available academic records. All students who participated in sessions were compared with the entire enrolled number of first year students. Results indicated that 97% of those who attended the session had better marks than those who were not attending. Besides, those who were attending felt confident to ask and or respond to questions asked by their lecturer. Several students indicated that attending SI sessions was a more effective and efficient use of their study time than studying on their own. As such, 97% of them gave their SI leaders very positive evaluations and agreed that they will recommend the SI sessions to their colleagues who were not attending. Sharing of their (SI) personal experience proved as a motivational factor to the students as it helped to widen their social, academic, and professional growth. That is why 98% argued that SIs (Student instructors) have a major role in the promotion of quality of education.

The majority of the students reported that they met once a week, and that was enough since they had also an opportunity to contact their SI anytime. However, even for that session only, SI records indicated that their attendance fluctuates due to reasons like limited time. The analysis of the IS attendance registered, showed that the frequency is high towards tests or exams.

To validate the impact of SI on student academic success, we compared all students who participated in sessions with all the enrolled first year students. We also held interviews with the SI coordinator, course lecturer and considered comments from SI's initial, mid-term and end-of year reports. Results indicated a tremendous increase of both the quality and quantity of grades as observed in table 1.

Table 1: Number of Students who passed with certain marks

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Students who got marks from 70-100%	9	15	12	14
Students who got marks from 50-69%	15	29	37	44
Students who got marks from 30- 49%	27	12	9	4
Students who got marks from 0-39%	16	9	7	3
Total	67	67	65	65

Table 1 shows the results of the evaluation for the year. For this study, the marks are categorised into four sections; Quarter 1, for the first quarter of the year, Quarter 2 for the second etc. Each evaluation mark is obtained by averaging different assessments such as tests, exercises, group work, presentation marks and assignments. From the table we can observe that only 36% of the students managed to obtain 50 or more during the first quarter of the year. Second quarter indicates that 66% managed to obtain 50 and more. Analysing all the results shows that the third quarter had 75%, and the last one had 89%. A further analysis revealed that, initial outcomes (first quarter) were caused by the fact that students were still trying to muster the demands of learning in higher education. In fact, many of them failed the first assignment that they wrote before attending the SI session. The mark (Quarter 1), later improved when they wrote a test after meeting their SI. As can be noted from the table, apart from quantity, quality of grades also improved. A comparison of the results, with the report of the SI reveals that the quality and quantity of grades increased tremendously because fast learners started to avail themselves more to the sessions and this helped and encouraged slow learners.

DISCUSSION

This research evaluates and reports on the impact that the SI program has on the students' success; as such certain variables were considered so as to highlight their (SI) importance.

This includes motives of the SI to support the students at lower levels, their preparedness, and the support they get from all stakeholders, time allocation for SI sessions, students' views, students' attendance rate, feedback on academic and retention records and SI-Lecturer relationship.

The fact that a high percentage of SI joined that type of job explains its importance. Like other universities, (Lowa state university, 1995-2011 & Washington state university, 2013), the competitive stipends or wages they get complement what they get from their parents or guardians. The experience they get prepares them for future. For example, they highlighted the importance that the sessions have on the networking with other SIs, students enrolled in the course, lecturers, and their coordinator. Moreover, that feeling of helping their peers to succeed drives them to achieve more results.

The SI stressed that they neither lecture nor assess the course, the lecturer; agree or disagree with student comments, but just create a conducive environment for their peers to work together in order to improve their academic excellence, this concurs with the opinions of the Clemson Academic Success Centre (2013) which stated that they do not lecture, re-teach or tutor. Instead, they facilitate a peer to peer or collaborative learning environment where students are supported, guided and empowered to become independent learners (Wayne State University, 2013; David R, 1997; The University of Tennessee, 2013). As observed by the study and the literature (Clemson Academic Success Centre, 2013; Lowa state university, 1995-2011; Martin *et al.*, 1983), they integrate course content (what to learn) with study strategies (how to learn) in the SI sessions. By combining the two (what to learn and how to learn it), 'students are able to develop both content competency and transferrable academic skills that pay off in higher grades during future academic terms' (David R, 1997). In most cases, the SI listens to the students' 'comments and then redirect the students toward developing strategies to cope with the situation' (David R, 1997).

The results of this study and others (David R, 1997) concur that 'students generally hesitate to be candid about academic concerns to course instructors for fear of demeaning themselves or offending the professor' (David R, 1997) but are free to 'openly acknowledge their problems to the SI' (David R, 1997) since they are given the opportunity to work together with other classmates to ask questions, prepare for examinations, compare notes, discuss readings, and develop organizational tools" (Lowa state university, 1995-2011). The study shoes that the students both enjoy their work and learn more. Such experiences improve both the cognitive and affective domains of the students (Sandberg, 1990).

Although this research concurs with other researchers on the type of students to be appointed for SI positions, it differs on the reasons and the type of students who are assisted. For example, (University of Missouri-Kansas city, 2013; The University of Tennessee, 2013; Wayne state university, 2013; Geogia State University, 2013 & Etter *et al.*, 2001) emphasis that SI session are meant for courses that a deemed traditionally difficult academic courses or high-risk courses. We disagree with that because we regard every course as challenging. We argue that the demands of a course are determined by a student's background knowledge on that course and the new environment (new studying strategies, new social life etc). The question is therefore not on content only (which is used to classify a course being challenging or not), but also the how part.

Since the SI sessions have the following characteristics; (i)do not identify high-risk students, but high-risk classes/courses (David R, 1997), (ii)do not pre-test students into the SI program, (iii) is voluntary(Etter *et al.*, 2001) and (iv)not viewed as remedial, we therefore conclude that there is no stigmatisation attached to it. As such, the research through the SI reports, reports that many unprepared and prepared students joined the SI sessions. Like studies of David (1997), this research observed that in most cases, the academically prepared students volunteered first. In most cases, their willingness to participate motivate the less 'able students who often find it difficult to admit that they need assistance' (David R, 1997 to join as well.

The importance of the first SI sessions cannot be overstated. They need to be well prepared and conducted as they are crucial in the maintenance of students' interest in SI (Etter *et al.*, 2001). The results of this study indicated that SIs get slides, past exam papers, notes and other relevant materials of the lesson taught upon request. This is contrary to a general trend in some universities where they attend all lecture sessions, perform as models to those currently taking the course, take notes, do homework, and complete all assigned class material for the course section they support (South Dokata university, 2013; Wayne state university, 2013; Geogia State University, 2013; The university of Tennessee, 2013; University of Missouri-Kansas city, 2013 & web site Supplemental Instruction (SI) Leader). Apart from getting all the relevant materials, 75% pointed out that they also meet the course lecturer for clarification; as a result, they do not lose much if they do not attend the lessons for the lecturer. In fact, they passed the course so there is a high probability that they are well conversant with the course's content. Not attending the lecturer session, would also mean that

they dedicate that time for other things e.g. attending to their own lectures, writing assignments.

The number of sessions to be held depends on many factors, for example, it differs from university to university, course being taught, availability of resources like time, etc. For example, the students felt that the session allocated to them was sufficient. However, other universities have between 3-5 SI sessions per week (Wayne state university, 2013), 2 or 3 times a week (California State university Long Beach), 3 one-hour SI sessions per week (Supplemental Instruction Leader, Job description), 8-14 hours per week (SI LEADER JOB DESCRIPTION), at least three 50-minute sessions per week (Lowa state university, 1995-2011), 2 one-hour sessions per week (South Dokata university), at least 2 one-hour sessions per week (Washington state university, 2013), 3 or more out-of-class SI sessions per week (David R, 1997).

To validate the impact of SI on student academic success, we compared the number of students who did not have IT background, those who initially had challenges related to the understanding of IT, those who had IT related challenges at the end of the last survey, number of initially enrolled first year students who were either enrolled or not in the SI sessions, number and quality of those students who passed at the end of the year, and reports from the SI session. Results of that process tallies with the one done by Harding and Mariann (2012).

We also held interviews with the SI coordinator, course lecturer and considered comments from SI's initial, mid-term and end-of year reports. Results indicated that both quality and quantity had increased tremendously. This concurs with research done by David (1997), Bridgham and Scarborough (1992), Martin, *et al* (1993), Martin (1980), Clemson Academic Success (2013), Blanc, De Buhr, and Martin (1983), Burmeister, Kenney and Nice (1996), Congos and Schoeps (1998), Kochenour, *et al* (1997), Loviscek and Cloutier (1997), Martin and Blanc (1981), Warren and Tonsetic (1997–1998), Webster and Dee (1998).

The research also noted that the SI's content-competency was high, had good interpersonal and communication skills, thus concurring with the (Supplemental Instruction (SI) Leader, 2013; SI LEADER JOB DESCRIPTION), 2013, Lowa state university, 1995-2011 & Supplemental Instruction Leader, Job description, 2013). As indicated by the results, with the help of the lecturer, they plan and prepare material and activities for each session. Since they get all the relevant study material from the course lecturer they do not attend lessons by the course lecturer, do not create hand-outs and study materials for use in SI sessions as a

requirement for (Wayne state university, 2013; web site Supplemental Instruction (SI), SI LEADER JOB DESCRIPTION & Supplemental Instruction Leader, Job description).

As noted by (David R, 1997), this research also argues that during the SI session “students are given the opportunity to master course content while they develop and integrate effective learning and study strategies”. “Therefore, learning/study strategies (e.g., textbook reading, note-taking, organization, test and exam preparation) are integrated into the course content during the SI sessions. Immediate practice and reinforcement of these acquired skills is provided” (David R, 1997). We thus, argue that SIs are aimed at retaining quality and quality graduates in any needy course.

Unlike (Supplemental Instruction Leader, Job description, 2013; *David R*, 1997 and SI LEADER JOB DESCRIPTION) which reports that the SI meet their mentor every week, results indicate that they meet at least once per fortnight. These debriefing sessions are used share their experiences, thus concurring with (Supplemental Instruction (SI), 2013; Supplemental Instruction Leader, 2013 & SI LEADER JOB DESCRIPTION, 2013). They usually attend a mandatory Supplemental Instruction orientation and training before session commencement where they are taught how to complete and submit initial, mid-term and end-of-term reports, manage the sessions, evaluate the successfulness of IS sessions based on available data and other relevant paper work (SI LEADER JOB DESCRIPTION, 2013).

The frequency of their meetings with course lecturer differs as well. For example, (SI LEADER JOB DESCRIPTION) reports that they meet every week. Like (Washington state university, 2013) this study observed that they meet periodically.

RECOMMENDATION

We observed that people have different personal and academic backgrounds when they are enrolled in a course. As such, measures must be put in place to accommodate those who know something already, and those who do not have any background knowledge on the course. As such, every course must be treated as a high risk and demanding courses. We hope that this can also eliminate the stigma attached on “the traditional high risk” and motivate everyone to attend the sessions. Benchmarking with other universities offering the same programme can help to identify current trends and increase the effectiveness of the SIs.

CONCLUSION

Many universities have employed numerous measures to support the academic performance of their students. For example SI, was introduced by many universities many years ago, but

there is very little evidence and documentation that supports its importance and usefulness. Moreover, some studies found that it does not improve academic performance of students. This research, however argues that, it actually plays a pivotal role on the improvement of academic excellence. This was supported by results on the analysis done on students' customs, attitudes, values, ethics, rapport, reasons for attending or not attending SI sessions, academic and attendance records one hand and intentions, anticipations and preparedness of the SIs on the other hand.

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