

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

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**ABSTRACT** Qualitative and quantitative approaches were used in this study to evaluate the role played by Student Instructors (SIs) in enhancing learning at a South African university. Four quarterly in-depth interviews were conducted with SI supervisors and 4 quarterly reports on the students' academic performance made. Two different samples were selected and used throughout the year. These groups were made up of 58 randomly selected first year Information Technology teacher (IT) education students and 30 purposefully selected SIs. Each group was given a set of questionnaires made up of closed and open ended questions to respond to during every quarter of the year. Results of the study indicated that students attending SI sessions performed better than those who did not attend. This was supported by the quality and quantity of course grades, low re-enrolment and lower withdrawal rates.

### INTRODUCTION

It is often perceived that reaching higher education levels provides opportunities for students to improve their 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 an increased drop-out rate and high levels of student failure (Willcoxson et al. 2011; Du Plessis and Gerber 2012). This has prompted many universities worldwide, to strategize their teaching and learning activities in better ways to improve throughput rates. Different mediation tactics (Blanc et al. 1983; Bashford 2008) were introduced to help students who were 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 included investing heavily in assets like human resources, Information and Communications Technology (ICT's) and changing or introducing certain policies. For example, one of the South African government's policy directives was to broaden access in the scarce skills areas so as to increase student throughput (Du Plessis and Gerber 2012). Worldwide, several universities introduced bridging courses and Student Instructors (SIs). For example, Student Instructors have been used on hundreds of campuses throughout the USA (Etter et al. 2001).

However, there is very little evidence (Kelly et al. 2007) and documentation on the importance and usefulness of the SIs except on their job descriptions (Huang 2013). In fact, some studies have found SIs to be ineffective in improving student performance (David 1997).

This research was designed to measure the value of SIs in promoting teaching and learning of the Information Technology course at a university in South Africa. This was done by analysing students' customs, attitudes, values, ethics, and rapport, reasons for attending or not attending SI sessions, as well as analysing descriptive data on their performance, failure, and withdrawal rate. At the same time intentions, anticipations and preparedness of the SIs were also evaluated.

### METHODOLOGY

This study used a combination of qualitative and quantitative approaches. Four in-depth quarterly interviews with SI supervisors were conducted during the year. Two different samples were selected and used throughout the year. One group was made up of 58 randomly selected first year Information Technology teacher (IT) training students and another by 30 purposefully selected SIs. Each group was given a set of questionnaires made up of closed and open ended questions to respond to during every

quarter of the year. The first set of questionnaires was administered in the laboratory at the first day of the students' SI sessions. The other three sets were administered in the lecture hall at the end of every quarter of the year. In all cases, the students were informed of the objectives of the study and were reassured of confidentiality on their responses. As a quantitative measure, the questionnaires were composed of classification, behavioural and attitudinal questions. These attributes were used to reveal the respondents' activities during their meetings with SIs, their motivations, expectations, beliefs and attitudes towards SIs. Students' demographic and academic data were obtained from student records. The data revealed students' information such as their Grade 12 results, re-enrolment, term and semester marks. Data obtained from the attendance register of SI were compared with students' academic records. SPSS (Statistical Package for the Social Science) software was used to determine data tendencies such as means, standard deviations and frequencies.

## RESULTS

To measure the importance of the SIs in improving teaching and learning at the university, this research considered the SIs' perceptions on supporting the first year students, SIs-Lecturer relationships, as well as the support they got from all stakeholders, their evaluative procedures, their preparedness before and after the SIs sessions, their views on students' attendance and participation rate, their appointment requirements and procedures. Other variables included were time allocated for SI sessions, students' views and experiences, and feedback on academic and retention records.

### Reasons for Students to be SIs

#### *SIs' Reasons for Supporting the First Year Students*

Results indicated that three percent of the SIs were motivated by intrinsic needs only, three percent by extrinsic needs only, eighty seven percent by both and seven percent were not sure. SIs who were motivated by both needs felt that, earning a certain income complemented what they got from their parents or guardians and therefore eased their financial burdens.

However, they quickly pointed out that they were chiefly inspired by the desire to help others in their favourite subject. Meanwhile, they argued that in that process of helping, they were equipped with necessary future skills and knowledge. For example, SI number 3(#3) clearly pointed out that it was an opportunity to gain working experience since they were training to be teachers or college lecturers. Ninety-seven percent of the SIs also alleged that they shared their SI experiences with their students attending their sessions as a way of motivating them. The type of information they shared included the help they got from SIs during their first year, their performance in other lectures after and before the SI sessions, what they used to do during SI sessions and so on. For example, SI number 7 highlighted that, as a student he used to be shy in responding to or asking questions to his subject lecturers, but could do so with more confidence after his SI experience.

### *SI Appointments*

All SIs (100%) indicated that only senior students (second, third and fourth year) who had previously and successfully completed their academic courses with high grades were eligible to apply for the SI positions. Through the course lecturer, the SI coordinator would then appoint relevant student(s).

### *Time Allocated for SI Sessions*

This research also considered the time and frequency at which the students met their SIs as a variable of determining the usefulness of the SIs. Results revealed that seventy- three percent of the SIs had one session a week, twenty percent twice a week, and seven percent more than two times per week. Results showed that seventy- three percent of the SIs believed that the frequency of the sessions were enough for the students to understand, while twenty percent argued that it was not enough and seven percent were not sure.

### *Students' Attendance Rate*

A scale used to rank the attendance of the students showed that fifty- seven percent of the SIs felt that attendance was satisfactory, twenty- six fair and seventeen poor. According to the SIs, and the records, seventeen percent

of those who did not attend felt that they did not have time, whilst some felt that it was degrading. However, the majority of SIs (89%) agreed that the attendance fluctuated during and after tests/exams.

### ***SIs Lecturer Relationship***

Fifty-eight percent of the SIs acknowledged that they got slides, past exam papers, notes and other relevant materials from their subject lecturer(s). Apart from getting all the relevant materials, seventy-five percent of the SIs pointed out that they also met the course lecturer(s) whenever they had concerns. As a way of enhancing and delivering quality service, seventy-five percent of the SIs professed that they discussed what they did in their sessions with their subject lecturer(s) and one percent pointed out that the subject lecturer(s) visited them during their sessions. SI number seven (#7) argued that, at times, they(SIs) were informed in advance of the content of the lesson to be taught so that they could prepare for it. SI number 12 pointed out that there were rare cases when the subject lecturer would ask them to repeat a certain topic or concept that he/she felt could be giving the students some challenges.

The majority (99%) of the SIs stressed that they did not lecture to students. They created conducive environments by guiding and facilitating collaborative activities for their peers. Most (88%) of the SIs pointed out that they did not evaluate students. The remaining twelve percent pointed out that they gave mini evaluations through informal group work activities and quizzes. All (100%) the SIs confirmed that they prepared and kept session records, prepared and submitted initial term, mid-term and end-of year reports to their supervisors.

### ***Students' Reflections on SIs and Their Sessions***

#### ***First Years IT Students' Initial Experiences***

Lack of IT background and lack of basic studying skills were viewed as the main contributor of students' failures during their initial academic period. For example, eighty-seven percent of them had no IT background and they professed to have challenges related to the understanding of IT during the first survey. They also reported on their feelings of being igno-

rant, confused and timid to ask or respond to questions raised by their lecturer(s). As time went on, responses and results of the students indicated that eighty-nine percent of those attending SI sessions felt confident to ask and/or respond to questions raised by their lecturer(s).

#### ***Students' Views on the Frequency of SI Sessions***

The majority (73%) of the students reported that they met once a week and they could meet their SIs anytime outside the sessions if there was need to do so. They pointed out that their attendance fluctuated due to lack of time and other commitments. They however noted that their attendance rate was higher towards the test or exam periods because of need of being taught exam/test answering techniques.

#### ***Students' Opinion on the Evaluations***

Eighty-eight percent of the students testified that SI sessions were not remedial, thus no formal tests, assignments, exams or other formal evaluations were carried out. However, twelve percent of the respondents reported to get some form of evaluation from their SIs. Further investigations revealed that the students were referring to informal group work and quizzes they got from the SIs.

#### ***Students' Perceptions on SIs***

The majority of the students (91%) indicated that they preferred attending SI sessions than spending most of their time studying on their own. As such, ninety-seven percent of the students gave their SIs high positive evaluations and agreed that they would recommend the SI sessions to their fellow-students who were not attending.

#### ***Students' Results of the Last Quarter***

Results of the last quarter indicated that only thirteen percent of the students experienced few challenges in understanding IT as a subject. The other eighty-seven percent argued that their academic performance increased because of the help they got from SIs. They (87%) argued that the sessions helped them to understand better as they consolidated what they were taught in class. They emphasised that SIs helped those who did not understand in class since they were

given opportunities to revise the work covered by their lecturer(s). For example, respondent #11 argued that they also discuss certain basic or background concepts that could have been overlooked by the lecturer. Seventy-seven percent of the students felt that there were two kinds of opportunities created by SIs during their sessions; fast learners were given opportunities to explain certain concepts they already knew to slow learners; by so doing (repetition), they were given an opportunity to remember and reinforce what they already knew. On the other hand, slow learners were given an opportunity to clarify any uncertainties they may have had. Most of the students (94%) professed that their SIs always shared their academic experiences with them which motivated them to study.

To validate the impact of SIs on students' academic success, an analysis was made on comments from the SI coordinator, students' academic and retention records and the initial, mid-term and end-of-year reports of the SIs. Results showed a tremendous increase in both quality and quantity of marks as observed in Table 1.

#### *Academic and Retention Records*

Available academic and retention records were used to analyze the performance of the students who were enrolled for SI sessions and those who were not. All students who participated in SI sessions were compared with the entire enrolled number of first year students. Results indicated that 97 percent of those who attended the session had higher marks than those who did not attend.

**Table 1: Students' quarterly marks**

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

Table 1 shows the results of the students' yearly evaluations. The marks are categorised into four sections; Quarter 1, for the first quarter of the year, Quarter 2 for the second and so on. Each evaluation mark was obtained by averaging

different assessments such as tests, exercises, group work, presentation marks and assignments. The table clearly indicates that only thirty-six percent of the students managed to obtain a mark of 50 percent or more during the first quarter of the year. Sixty-six percent managed to obtain 50 and more in the second quarter whilst 89 percent had more than 50 percent in the last quarter.

## DISCUSSION

Some studies have found SI sessions ineffective in improving students' academic performance (David 1997). However, results from this study indicated otherwise. For example, the results of the first quarterly evaluation indicated that most students underperformed. As professed by the majority of SIs (93%), this study speculated that the initial deficit of students was not due to the unavailability of resources. This was evidenced by the confirmation of the existence of resources such as prescribed text books, study guides, syllabuses, necessary notes, past exam papers, intra(Blackboard)-and extranet by both SIs and students. Instead, both students and SIs reported the lack of basic understanding of their subject content, chiefly because of their background and lack of studying techniques. However, with time, students' academic performance improved. In fact, students' first, second, third and fourth terms' results and grades proved that they positively correlated with SI attendance (Martin 1980; Martin and Blanc 1981; Blanc et al. 1983; Bridgham and Scarborough 1992; Martin and Arendale 1993; Burmeister et al. 1996; David 1997; Kochenour et al. 1997; Loviscek and Cloutier 1997; Congos and Schoeps 1998; Harding 2012; Amanda 2013).

The reasons why students applied for SI positions were also analysed so as to determine their effectiveness. Although monetary rewards complemented whatever they got from their parents or guardians (Knoespel et al. 2011; Lim et al. 2013), their desire to help others to succeed was commendable. They were involved in a peer-led academic assistance program meant to augment students' academic performance and retention in any course (Widmar 1994; Etter et al. 2001; Knoespel et al. 2011; Amanda 2013; Beatty 2013; Lim et al. 2013). The fact that SIs applied voluntarily (Etter et al. 2001) meant that the students joined and accepted those posts willing-

ly, to diligently, effectively and passionately help their peers. Being an SI helped them to be equipped with necessary future skills and knowledge, enabled them to network with other SIs, students enrolled in the course, lecturers, and their coordinator. Moreover, that experience of motivating the lower performing students and helping them to succeed motivated them to achieve better results.

SIs' effectiveness was also noted in the way in which sessions were conducted. In order of encouraging students to attend the sessions and not to display/distinguish between fast and slow learners (David 1997), no assessments were held, thus removing stigmatisation. As such, the research through the SIs' statements, reported that many unprepared as well as prepared students joined the SI sessions. In most cases, academically prepared students volunteered first to attend SI sessions only to be followed by the less "able students who often find it difficult to admit that they" needed assistance (David 1997).

The study also speculated that stigmatisation was eradicated by the fact that SIs never used any specific teaching method during their session, except voluntary cooperative/collaborative learning (Whitman 1988; Tomlinson 1989; Johnson et al. 1991; David 1997), and active learning teaching methods (Knoespel et al. 2011). Thus, they did not give any lectures, re-teach, disagreed or agreed with students' comments. Instead, they created an environment for their peers to work together in order to improve their academic excellence (Amanda 2013). They facilitated a peer- to -peer or collaborative learning environment where students were supported, guided and empowered to become independent learners (David 1997; Huang 2013; Osborne 2013). They integrated course content (what to learn) with (how to learn) study strategies (Blanc et al. 1983; Knoespel et al. 2011; Amanda 2013). Combining the course content and study strategies enabled the students "to develop both content competency and transferrable academic skills that" paid off in higher grades during future academic terms (David 1997). In most cases, the SIs listened to the students' comments "and then redirect the students towards developing strategies to cope with the situation" (David 1997). This included discussing difficult concepts, sharing ideas on improving class material, reading strategies, questioning techniques, vocabulary, exam and test preparation, note tak-

ing and comparisons (Beatty 2013; Lim et al. 2013; Osborne 2013). During that process (collaborative learning), a medium for building classroom cohesion and strong inter-student bonding was built as students, despite of their social or personal status were given equal opportunity to interact with their classmates (Kiesler et al. 1984). This social integration was an important introduction to learning (Pascarella and Terenzini 2005), as it acted as a catalyst for academic completion and success (Tinto 1975; Christie and Dinham 1991).

This study concurred with David (1997) who noted that students were largely hesitant to be frank about their "academic concerns to course instructors for fear of demeaning themselves or offending" their lecturer (David 1997). They were however, free to "openly acknowledge their problems to the SIs" (David 1997) since they were given the opportunity to work "together with other classmates to ask questions, prepare for examinations, compare notes, discuss readings, and develop organizational tools" (Knoespel et al. 2011).

In order to maintain students' interest in SI sessions (Etter et al. 2001), this research viewed planning and preparedness of the SIs as fundamental. As such, results of this study indicated that SIs did not attend the subject lecturer's sessions. Instead, they got slides, past exam papers, notes and other relevant materials from the lecturer. This was contrary to other studies that noted that SIs attended all lecture sessions, performed as models to those currently taking the course, took notes, did homework, and completed all assignments (Beatty 2013; Byrd 2013; Huang 2013; Murray and Wease 2013; Osborne 2013; White and Li 2013). The fact that they got all relevant materials and could schedule meetings with the course lecturer(s) for clarification means that they did not lose much even if they did not attend the lecturer(s)' sessions. In fact, they passed (Knoespel et al. 2011; Byrd 2013; Murray and Wease 2013) the course so there was a high probability that they were well conversant with the course content. Not attending the lecturer's session, would also mean that they could dedicate that time for other things, for instance attending to their own lectures and writing assignments.

The frequency that the SIs held their sessions was guided by factors such as course being taught and availability of resources like time

and venues. For example, SIs at some universities had between 3 to 5 SI sessions per week (Huang 2013), 2 or 3 times a week (Glover et al. 2016), 3 one-hour SI sessions per week (Byrd 2013), 8 to 14 hours per week (Murray and Wease 2013), at least three 50-minute sessions per week (Knoespel et al. 2011), 2 one-hour sessions per week (Murray and Wease 2013), at least 2 one-hour sessions per week (Lim et al. 2013), 3 or more out-of-class SI sessions per week (David 1997). However, as noted by the results, the students felt that a single session allocated to them per week was sufficient as they could use the other time for other commitments.

### CONCLUSION

This research evaluated and reported the pivotal role that the SIs played in the students' academic success. This was chiefly contributed by the SIs' high content subject –competency and their good interpersonal and communication skills. These attributes facilitated an active, collaborative learning environment where junior students were allowed to freely learn and express themselves. The importance of the SI was also 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. It showed that results and marks of students attending SIs sessions positively correlated with their attendance.

### RECOMMENDATIONS

Students enrolled in a specific course have different personal and academic background. As such, measures must be put in place to accommodate those who have as well as those who do not have background knowledge with regards to the course being taught. Thus, every course must be treated as a high risk course and must have an SI. SIs must be supported by all stakeholders as they play a pivotal role in increasing both the quality and quantity of students' grades at the universities. All students must be encouraged to attend SI sessions and all conditions which allow and promote stigmatisation must be eliminated. Benchmarking with other universities offering the same programme can help to identify current trends and increase the effectiveness of the SIs.

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