

Factors Affecting Cheating-Behavior at Undergraduate-Engineering

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Abstract

This study is a fraction of a larger-research on cheating in exams at the School of Engineering (SOE). The study-design used a descriptive-survey-approach and a document-analysis. A designed confidential self-report-questioner was applied as the main-instrument for this-study, with the sample-size of 100-subjects, and a response-rate of 95%. The tool was pre-tested to ensure its validity and reliability. The study focused on the Attribution-Theory and the Pareto-principle. The data-collection-instrument was subjected to the statistical-analysis to determine its reliability via Cronbach's alpha-coefficient, and found high inter-item consistency ($\alpha > 0.9$). The major-results of this-study revealed that 65% of respondents declared that cheating is, in fact, a common-phenomenon in the SOE; 60% of students also affirmed, that it is, actually, difficult to eradicate cheating in examinations in the SOE; and 70% of students acknowledged that they use mobile-phones to Google or to assess notes, during examinations. The results also illustrate that cheating, undeniably, is a very-real-issue of massive-concern at SOE; accordingly, several-recommendations to fight cheating were given and areas for further-research were identified as well. The findings of the study would potentially help in curriculum-development and delivery approaches, and for the improvement of the exciting or establishment of new academic-integrity-polices, which would, in turn, limit the growing-tendency by candidates, to seek short-cuts to good-grades, in their academic-endeavors.

Keywords: cheating, engineering, students, questioner, integrity

1. Introduction

This-section will cover the background-information relevant to the study; such as: Academic dishonesty (cheating); Relevant International studies, and the problem-statement, along with the purpose for the study.

The review recorded below does not claim to be a fully-comprehensive-account of every-instance related to cheating-phenomena, but it does give a fairly-good-picture of the order of magnitude of activities, achievements, and problems encountered, and probably include the most-significant-ones, identified, for which information was available, at the time this-study was carried out.

1.1 Academic dishonesty: Cheating

Academic-dishonesty, a complex-behavior influenced by multiple-situational, contextual, and individual qualities, has gradually eroded higher-education-system. Academic-dishonesty is defined as the deliberate-behavior or action that interferes with or hinders the pursuit of knowledge and results in misrepresentation of academic-materials, taking credit or recognition for academic-work (including papers, lab-reports, quizzes, examination, etc.) that is not one's own, or fabricating-data, records or tampering with university-documents (UNESCO, 2003).

The cheating, is a part and parcel of academic-integrity, also is a complex-phenomenon that is neither confined to a specific-geographical-hemisphere, nor to any cultural-exclusivity (Chalghaf, 2013). It is also ironically assumed, that "Cheating" is universally-understood and that every-school or university-student knows what "cheating" is. However, it has been shown, that students and faculty differ widely on their-beliefs and perceptions of cheating (Roig & DeTommaso, 1995), so the definition of cheating is worthy of additional-reflections. Webster's New World Dictionary (1984), for example, defines cheating as "being dishonest or deceitful." Cheating is defined by Teixeira and Rocha (2010) as "acts which cover areas identified as illegal, unethical, immoral or that go against the rules, either in the course or in the universities" and they also stated, that countries, where cheating is most-prevalent, are highly-corrupt-countries.

While cheating may occur in any course-work (e.g., home-work, research-assignments, projects, and laboratory-reports), cheating in exams is a more-significant-problem, since is it the universal- benchmark-method of assessment in all the global-higher-educational-systems. Examination-cheating is an unethical-practice that some university-students often opt to, when they face a dilemma of failing an examination. Failing an exam is an awful-experience that frightens university-students, because of the severe-effects of the failure. For university-students, failing an exam involved the repeat of a semester, discontinuation of student support-grant or even getting expelled from a program. Armed with these-fears of failure, some-university-students are often filled with apprehension of how they would answer the difficult-questions, they assume will be asked (Peters, 2010).

1.2 Relevant International studies

Academic-dishonesty has gained a sizeable-amount of attention from both, the academic-community and popular-media, for several-decades now, which is likely due to the rigorous-implications that such-behaviour, has. Cheating in exams is a widespread-problem in higher-education, and it has been observed that the prevalence of this-problem is increasing (Fontana, 2009; Wilkerson, 2009; Lipka, 2009; McCabe, 2009; Danielsen *et al.*, 2006; Rosamond, 2002).

Students-cheating at undergraduate-university-level have been the subject of numerous-studies and discussions-forums, particularly in the last 70 years (e.g., Boehm *et al.*, 2009; Fontana, 2009; Lipka, 2009; Teixeira & Rocha, 2008; McCabe, *et.al*, 2008; ; Hughes, *et.al*, 2007; Lin & Wen, 2007; Grijalva, 2006; Olasehinde-Williams *et al.*, 2003; Decoo, 2002; Kerkvliet, 1994; Baird, 1980; Bowers,1964). Many other-researchers also reviewed the studies on cheating in the college/university (see Davis *et.al*, 2009; Anderman & Murdock, 2007).

Research in undergraduate-student-cheating revealed *several common findings* (Newstead, 1995):

(1) Cheating is a widespread-serious-problem in schools and universities; (2) The percentage of students, who admitted to having cheated, in their exams at university, ranges from 40% up to 80%; (3) Cheating is more-common in colleges; (4) Male-students cheat more than females;(5) Students of lower academic-achievement cheat more that students of higher-academic-achievement (for example, researchers have observed an inverse-correlation between cheating and GPA, meaning that students with lower-GPA tend to cheat more (Diekhoff *et al.*, 1996) ; (6) Cheating incidences increase in large and crowded classrooms; (7) Younger-students cheat more than older ones; (8) Very-few-students are caught cheating and very-little has been done, by universities and individual lecturers, to prevent cheating; (9) Stress, desire for good-grades, and time-pressure are the main-reasons, reported by students to justify cheating.

Reasons for Cheating In Exams (Abiodun, 2011): Time-pressure; Hard-courses; Laziness; Competition with others; Coping with stress; Difficult-exams; Chances of getting caught are minimal; Punishment is not serious; Improving one's grades; Peer-Pressure; Fear of failure; "Everybody does it"; Course was useless; Parents' pressure; Taking a chance; Lecturer does not care; Instructor-vigilance is low; High-course-load; and not understanding questions among others. Some-studies identify factors that contribute to cheating, as follows: students learning from a dishonest-society (Harold & Max, 2001), poor-teaching, poor-learning-environment and lack of facilities (Korbs, 2009), an education-system that is concerned only about-performance; poor time-management (Macdonald& Carrol, 2006), lack of effective study-habits (Chinamase *et al.*, 2011) and technology (Carpenter, 2006).

The question "Why do students cheat?" really interested researchers and academicians for some-time now; they typically divided reasons for cheating into three categories: psychological (Roth & McCabe, 1995), demographic (Stern & Havlicek, 1986), and situational (McCabe& Trevino, 1993). Of these-three, research indicates that psychological-factors appear to play the most-important-role in student-cheating. According to Cizek (1999), main-students'-responses on the question are: (a) competition for good-grades, (b) inadequate-time to study for exams, (c) unfair or overly-difficult-assignments, and (d) a lack of interest in the course and material.

Cheating seems very-easy-avenue for some-students, because they feel that the risk of detection is often minimal (Szabo & Underwood, 2004) and even if it will arrive, the penalty is low (Etter *et.al.*, 2006), since the seriousness of cheating is underestimated in some-institutions, that can encourage students to cheat (McCabe, 2005). Furthermore, these-students are not fully-aware of the penalties and therefore can violate the academic-rules (Ma & Wan, 2007). In another qualitative-study, McCabe *et.al.*(1999) identified factors that influence cheating, such as: pressure to get high-grades, a desire to excel, pressure to get a job, lack of responsibility, lack of good-character, poor self-image, lack of pride in the job well-done, and a lack of personal-integrity, among-others.

In particular, McCabe& Trevino (1997), collected data from 1,946 undergraduates at 16 institutions and found, that 82% of engineering-students self-report engaging in any-type of cheating compared to 91% of business-students, 73 % of social-sciences-students, and 71% of natural-sciences-students. More than 70% of students, of the Higher Institute of Sport and Physical Education of Sfax (Tunisia), also admit to having-committed, at least once, a fraudulent-act in exams and most of them recognize, that cheating is not only a non-compliance with the rules to get a result, but it is also an immoral-behavior. This-proportion (70%) seems high, but not exceptional, which is consistent with the results found by Pech (2011); and Teixeira & Rocha (2010), with similar-percentages and even-higher. In Europe, it was found, that only 12% of the respondents claimed to have never cheated. Therefore, the remaining 88%, could be classified as students, who have cheated in the examination, at one-time or the-other. The picture of the European- situation does not reveal anything to the contrary, because it shows that cheating in examinations is a real- problem, indeed (Blurton, 2002).

Cheating, on the-other-hand, is an extremely-addictive-habit, and after it starts, it usually has a trend to continue (under particular-circumstances) through the entire-lifetime of the cheater. Bowers (1964), in his

landmark-study found that 64% of students, who cheated in high-school also cheated in college, and Harding *et al.* (2003; 2004a; 2004b) found a strong-relationship between cheating in high-school and cheating in university. Research has also shown that students, who cheat in college, are more likely to shoplift (Beck & Ajzen, 1991), cheat on income-taxes (Fass, 1990), abuse harmful-substances (Blankenship & Whitley, 2004), cheat in graduate and professional-schooling (Baldwin, 1996), and engage in unethical- work-place-behavior (Ogilby, 1995; Sims, 1993).

A number of studies have also examined public-perceptions of academic-dishonesty. It has been found, that school-administrators and academicians perceive that cheating in examinations or academic-dishonesty is a serious-offense (Leonard & LeBrasseur, 2008). Coalter *et al.* (2007) found that academic-misdemeanor in a mid-size state university in the United States is “an important-issue that needs to be addressed”. However, Zauwiyah *et al.* (2008) discovered that business-students in a Malaysian-university perceived that various-levels of academic-dishonesty are acceptable in some-academic-settings. Prenshaw *et al.* (2001), found that students, who are more likely to view cheating as common at their-institution, are those who are younger, who have chosen rather lenient-teaching-staff, who see themselves as good-students, and who do not take seriously the university’s reputation for excellence.

Research on academic-dishonesty undergirds the dual-theory that most-institutions of higher- education adopt today: “Academic dishonesty is both a behavioral-problem and a developmental-issue”. Some-students, for instance, seem to be completely-uninterested in knowledge; their-goal is just to graduate, and with the least effort-possible, amplified by a logical-system of credits and points, which confirms in their-eyes, that everything can be sold and can be bought (Mazodier *et. al.*, 2012) and also, that everything can be acquired via any of the available-illegitimate-means.

Finally, there have been few-investigations into how situational-factors, such as the pressure to succeed in school, external work-commitments, heavy course-loads, and financial-aid or scholarship- requirements affect academic-dishonesty (McCabe & Drinan, 1999; Hall & Kuh, 1998). In general, these factors have little-effect.

Notwithstanding huge-amount of research done on the subject of cheating, there is still a need to receive continual-attention, from educators and administrators for more-deeper-understanding, because cheating undermines not only learning (Boulville, 2008), but also the validity and reliability of examinations and the overall-credibility of any academic-institution.

1.3 Statement of the problem and purpose for the research

Examination-dishonestly, also commonly-known as cheating, is a very-real and a heavy-burden that has been corrupting the Kenyan education-system for many-years. In Kenya, examinations are conducted from nursery schools, through primary-schools, secondary-schools, tertiary-colleges and universities. Students are expected to be honest, when taking examinations, but research has shown, that majority of students cheat in examinations (Mituka, 2001), as according to Siringi (2009), over 60% of the students in colleges and universities in Kenya admitted having cheated in examinations. This is particularly true in engineering, as according to previous research, engineering undergraduates are among the most-likely to cheat in college. Common-excuses include: unpreparedness for the exams, social-problems at home, illness, and theft of essential-reading-materials or death in the family, among-others. The authenticity of the examinations done in Kenya can be questioned. The sense of the fairness of the examinations to the individual and the system of education becomes an issue (Kagete, 2008). Despite the fact that many-institutions have examination policies, that give information on consequences of cheating in examination, there has been recurrence of cheating in the internal-examinations. Nearly 21% of students, who say cheating is bad, still engage in the behaviour (Kiogotho, 2009). Eshiwani (2009) and Mutisya (2010) findings confirmed, that the quality of education in Kenyan-universities is lowered by among other-reasons, cases of missing-marks, sexually-transmitted-grades and people, who write papers and projects for students in return for payment.

With regard to frequency of student's cheating in exams in universities, it was found that 21.9% and 31.3% of students from private and public universities, respectively, reported frequent examination-cheating; meaning that incidence of students’ cheating in examinations was higher in public-universities than private-universities. Cheating in examinations is an opportunistic-behaviour, attributed to inadequate- student-preparation and lack of confidence, to face examinations. Given that majority of students, admitted to public-universities, obtained higher-entry-grades than their-counterparts to private-universities (Gudo & Olel, 2011), this higher-prevalence in examination-cheating, than those admitted in private-universities, was attributed to lack of adequate-control-measures, taken against examination-cheating and remote-chances of detection. Other-findings showed that 9.7% and 14.2% of students in public and private-universities, respectively, used money to influence lecturers and fellow-students get undeserved-grades. Further-analysis showed that 26.8% and 27.6% of students in public and private-universities, respectively, used sex, to obtain undeserved-grades and that sex was a more-popular-tool in the hands of students, than money to influence the grades-obtained.

According to Ruto (2011), majority of the students involved in examination-irregularities were at 63.5%;

this could be attributed to the high-population of male-students in public-universities. This agrees with the Ministry of Education, Science & Technology's (2004) report, that female-students in public universities constitute only 33%, mainly in arts-based-courses.

Given the alarming-state of academic-dishonesty, among institutions of higher-learning, there is an apparent-need to comprehend what factors may reduce student-cheating. There is also an increasing-need to look into cheating in a more integrated-manner, which brings to bear, perception and attitude towards cheating. The purpose of this-exploratory-study is, therefore, to try to understand the internal and external-factors affecting the students' decision "to Cheat or Not to Cheat" and to investigate undergraduate-engineering-students' attitudes and self-reported-behaviors, related to cheating at the SOE, Moi University (MU). The findings of the-study would potentially-help in curriculum-development and delivery-approaches, and for the improvement of the exciting or establishment of new-academic-integrity polices, which would, in turn, limit the growing-tendency by candidates to seek short-cuts to good-grades in their academic-endeavors.

2. Materials and Methods

2.1. Relevant approaches and theoretical-framework for the study

The theoretical-framework for this-paper is supplied by the common-impression of university as an organization and a social-institution. The-research adopted an explanatory-approach of descriptive-survey-research-design. The study was superficially divided into 3 sequential-parts, which shown in Figure 1.

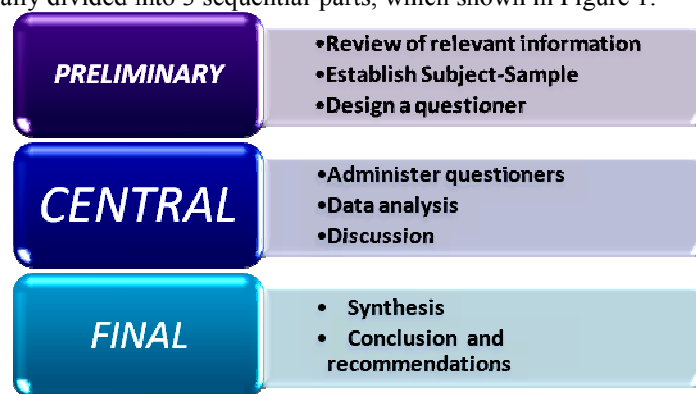


Figure1: Sequential-parts of the study (Starovoytova & Namango, 2016).

There are numerous-theories related to the cheating-behavior (see Starovoytova *et al.*, 2016a) this study, however, was focused on the Attribution Theory and on the Pareto's Principle. The study-design adopted a descriptive-survey-approach. The other-method used in data-collection was a document-analysis.

Attribution-theory is a theory about how ordinary-people perceive, give details, and how they make causal-explanations. This-theory is considered valuable to this-study, in the sense that examination malpractice is a social-vice and it is perceived differently by individuals in the society, based on internal or external or both-attributions.

The *Pareto-Principle* or, so-called "80-20 Rule" (among other variant-names), is named after Vilfredo Pareto (1848-1923), an Italian economist-sociologist, Professor of Political Economy at Lausanne, Switzerland, who first discovered and described the "80:20" effect. The Pareto-Principle (at a simple-level) suggests that, where are two-related data-sets or groups, exist (typically cause and effect, or input and output), for example: 80 % of output is produced by 20 % of input, 80 % of outcomes are from 20 % of causes; 20 % of the energy use in a household will offer 80% of the potential-energy-savings, 20% of the methods of cheating provide 80 % of the cheating-cases. In fact, the Pareto-Principle does not demand that the 80:20 ratios applies to every-situation, and neither is the model based on a ratio in which the two-figures must add up to 100. The principle is useful for this-study, as the research is focused on the factors (inputs) leading to cheating-behaviors (output).

2.2. Sample size and the rationale for its selection

To evaluate perceptions of cheating by students of SOE, Moi University (MU), a designed confidential self-report-questioner was used as the main-instrument for this-study, with the sample-size of 100 subjects. Purposive-sampling was adopted to identify 20 students per each of the 5 departments of SOE, where 4 students are chosen at random from each year of study, e.g. year1, 2, 3, 4, & 5 @ 4students each, where 1 student should be (if possible) a female.

2.3. Main instrument of the study - the questioner

A self-report-questionnaire was used in eliciting information from the subject-sample; it consisted of 20 simple-questions and one-additional-question, with 5 sub-sections; the respondents were supposed to answer each

question as either “Agree” or “Disagree”. The questioner consists of two-sections, first is the demographic-characteristics of the subjects, and, the second is, the main-body of the questioner. The respondents were guaranteed confidentiality, and the questionnaire was filled “incognito”, with no identification-information.

Using a survey for data-collection provides anonymity and simplicity and is the standard measurement instrument in research on cheating. Nevertheless, the accuracy of self-reports of engaging in cheating-behavior is debated. Some researchers have argued, that students may under-report their-cheating on surveys, because cheating is a socially undesirable-behavior (Scheers & Dayton, 1987), while others believe, such a survey-approach results in over-estimates of cheating (Sims, 1993). Despite these possible-sources of error, there is sufficient-evidence that, in many-situations, self-reports of dishonest-behaviors can be accurate (Erickson & Smith, 1974). Hence, student self-reports of cheating have been widely used in other studies by, for example, Anderman & Midgely (2004, 2007); and by Marsden *et. al.* (2005).

The questioner of Ongong & Akaranga (2013) was used as a main-point of reference; some-items were partially-modified.

2.4. Data Analysis

The questioner was pre-tested, to ensure its validity and reliability. The primary-purpose of pre-testing validity and reliability is to increase the accuracy and usefulness of findings, by eliminating or controlling as many-confounding-variables as possible, which allow for greater-confidence in the findings of a given-study (Hardy & Bryman, 2009). Cronbach’s alpha was used, as one of the most-common-methods of estimating reliability of an-instrument (Hardy & Bryman, 2009). The Statistical Package for Social Sciences (SPSS-17, version 22)-computer software-program was used to compute the Cronbach’s alpha co-efficient. Descriptive-statistics was utilized to analyze the quantitative-data.

3. Results

3.1. Validation of the instrument

From the validation it was found, that the questioner had sufficient-enough-information, which would answer all-the-research-questions. The instrument was found adequate; the length of the entire-instrument established was suitable and the material was logically-organized. The general-recommendation made is that, the instrument was acceptable with few-minor-editing.

Questionnaire-data were coded, entered into SPSS and checked for errors. Data were analyzed list-wise in SPSS, so that missing-values were ignored. Cronbach (1951) states, that “one validates, not a test, but an interpretation of data, arising from a specified-procedure”. Cronbach's-alpha-test of internal-consistency was performed and demonstrated high inter-item-consistency (Cronbach's $\alpha = 0.971 > 0.9$).

3.2. Analysis of the questioner- responses.

Total of 100 questioners were administered, out of which, 95 were submitted-back, giving a response-rate of 95 %.

3.2.1. Analysis of part 1: Demographic Characteristics

Demographic-characteristics of the respondents are as follows: 60% of the respondents were male, 16% females, while 24% provided no response. The majority, 46%, of the subject-students were in the (18-21 years old)- age-bracket, followed by 36% of those between 22 and 25 years old, and 5% in the age-bracket of (25-28 years old), while 13% of the respondents provided no reply regarding their-age. Majority of the students, 42%, were regular (sponsored by the Government) students, 30% were privately-sponsored, while 28% provided no reply.

3.2.2 Analysis of part 2: Research-questions.

Due to the relatively-large-number of questions, for the ease of reference and avoidance of repetitions and perplexity, the results, in this-section, are followed directly by their-analysis. The questionnaire was evaluated question by question. Questions (main part, without sub-sections) appear exactly the way, they are stated in the original-questionnaire, however for ease of the analysis, the questions were further-grouped into 3 groups: (1) internal and (2) external-factors influencing students to cheat, and (3) the cheating-behaviour experienced by the students.

3.2.2.1 Internal-factors that may influence cheating

Students were asked to provide their-honest-opinion on the following-questions/situations by ticking either “Agree” or “Disagree”. Figure 2 shows their-responses on the 7 internal-factors that may influence cheating, followed by the explanations on the same.

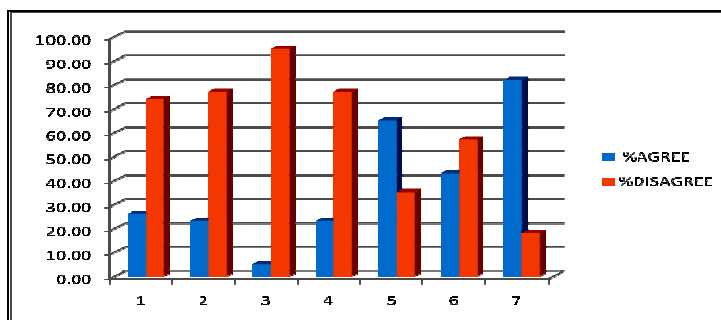


Figure 2: Responses on the 7 internal-factors

Q1. *I am interested in cheating, provided the examination is difficult:* In this-question, 26% of the students agreed that they would consider cheating, if they encountered a difficult-exam, while 74% disagreed with the fact that difficult-exams may cause students to cheat.

Q2. *Cheating is good since most people who cheat often pass their examinations without repeating or even being punished:* 23% of students agreed, that others, who often cheat in tests and exams, might do considerably better, than others who are honest, while 77% of the students disagreed with this-statement and this may attributed to that-assumption, that they are honest in their-work, or believe in hard-work.

Q3. *No matter how much you read, if you do not cheat, you will fail:* Only 5% of the student-sample agreed to the statement, that cheating helps a student get better-grades, the rest 95% disagreed, showing that good-grades are possible, or, even, that students are oriented towards mastering-skills, rather than just having good-grades, without any-skills in an education-system, that is more performance-oriented that mastery-oriented.

From the analysis of this-question, it is important to emphasize Mastery-goals over Performance-goals. Many-students today feel a tremendous-pressure to succeed, academically. Getting high-grades and test-scores (so called “performance-goals”) have become more-important, than learning and understanding the subject-matter (so called “mastery-goals”). Previous-research shows, that students, who are more performance-oriented, than mastery-oriented, cheat more-often (Newstead, 1996). For communicating to the students that learning and mastery of the material are more important than high-test-scores and grades, the following-strategies can be applied: (1) *Engage:* Create learning-experiences, that tap into students’ interest and make them learn what is useful or important to them. Students work harder (and cheat less) when their-perceptions of ‘task-value’ are high. (2) *Challenge:* Provide students with optimal-challenges (too-easy is boring; too-difficult leads to anxiety) and scaffold learning-experiences (i.e., provide relevant-examples of completed-work, encouragement). Students are more motivated to learn and persist longer at a task, when it is reasonable-challenge and they are supported in their-efforts. (3) *Empower:* Give students some-voice in the learning-process and the products they create (i.e., select product/project outcomes via classroom-decisions). (4) *Recognize:* Emphasize and acknowledge students’ effort to learn and understand. Make it clear, that what is most important is they are learning and developing competence. (5) *Individualize:* Provide private-individual-evaluation of progress and avoid practices that invite social-comparisons of performance-differences. Make it clear, that, students’ primary-goal should be self-improvement (that they are getting more knowledgeable and skilled) and not how they are doing compared to others.

Q4. *I cheat in examinations because I lack the necessary confidence in myself:* Here, only 23% of the students agreed to the fact they might cheat due lack of confidence, however, it should be noted that this-fact does not mean that, they lack personal-integrity or that they are lazy. The remaining 77%, however, disagreed. Although students, who commit examination-malpractices, may blame this on their-lack of self-confidence and low self-esteem, they should realize these are merely excuses; and their-behavior will not be justified and pardoned on this-basis.

Q5. *Cheating is very common in the SOE:* In this-question majority of the student-sample, 65%, agreed that cheating is actually a common-phenomenon in the school, while only 35% disagreed with this fact. Considering that students, who are forwarded to the Disciplinary Committee of Senate, due exam irregularities, have their-names put on the notice-boards in the school almost-every- semester, this fact may lead to the large-number of students agreeing that cheating is common. The occurrences of cheating may require the school to implement academic-integrity-principals at all-levels, come up with an academic Honor Code, and increase ‘lecturers to students ration’, during exam-invigilation.

Q6. *Only those who cheat have high-grades in examinations:* A considerable-number of respondents, 43%, agreed that many-students might get good-grades, without putting in the hard-work. The other 57% disagreed, showing that there are students with good-grades, that work-hard and diligently.

The following can be done, by the lecturers and administrators at SOE, to reduce in class test cheating, for example: Offer multiple-grading-opportunities versus only two-tests per semester; Space seating and monitor: Space students, if possible, and actively move about the room during-exams, with all desk and floor area clear of

student-resources; Create Multiple Forms: Do not re-use the same exam-paper every-year and/or randomize order of questions and answers; and Ban digital-technologies: Do not allow students to use mobile- phones, etc. during tests and exams.

Q7. *Cheating is not necessary if a candidate has adequately prepared before the exam:* Majority of respondents, 82%, agreed that with adequate-preparation there is no need to cheat in exams. The remaining 18% disagreed, and, therefore, it might be safe to assume, that some-students still see cheating as the additional-step to better their-grades. With all the academic-sanctions imposed by the university, in case of exam-failure, such as doing supplementary-exam; repeating the failed-subject next-academic year; repeating the entire-year; external-repeats, where the student is not allowed to proceed, but should repeat only the failed-courses; and expulsion from the university, students may resort to cheating, to avoid any of these.

3.2.2.2 Justification of the Cheating Behaviour (external-factors).

Q8. *I cheat because my colleagues cheat in examinations:* Only 23% agreed, the remaining 77% of respondents disagreed. Since cheating is wide-spread in the school, students who cheat are likely to develop attitudes and habits that can interfere with their-learning and this, may, ultimately, lead to practicing-engineers, who are insufficiently-prepared. Furthermore, acts of academic-dishonesty undermine the assessment of student-learning and interfere with the efforts of faculty to properly diagnose and address shortcomings in learning.

Q9. *I will cheat in examinations if my parents support the idea:* Only 18% agreed, the remaining 82% of respondents disagreed. Although all-parents want their-children to do well in school, they may not support the idea of cheating to get good-grades, however, this will largely-depend on religious-beliefs, culture and even social-status.

Q10. *Cheating is good in competitive examinations because passing will please both parents and friends:* Only 28% agreed. The remaining 72% of respondents disagreed.

Q11. *Most parents encourage their children to cheat in examinations:* Only 5% agreed, the remaining 95% of respondents disagreed. Although only a small-number of respondents agreed, the school might reduce cheating considerably, through involving parents. Suggestions how to get parents involved: a) Provide tips for parents on how to encourage academic-integrity in their-children, b) Require parents to sign the Acknowledgment (on the same) to be returned to the Head of Department, and c) Encourage parents to discuss integrity-issues at home.

Q12. *Cheating is recommended for difficult examinations:* Only 22% agreed, the remaining 68% of respondents disagreed. With adequate-preparation, cheating is not necessary; students can do this through proper-time management.

With a heavy Engineering-course-load, one of the most-essential-skills for engineering-students is Time-Management. In SOE, students are, usually taking-up seven courses per-semester, including attending lectures, laboratory-sessions and tutorials, completing homework-assignments, and also doing research-projects, within limited-time. Some-students tend to procrastinate at university. According to (Lisa, 2009), they tend to do so, mainly because of task-aversion. Studying, generally, is the very-last-thing that a student would think to do. Having all-kinds of entertainment and distractions, such as Internet, video-games, social-networks, and amusement-media, would really not make students get into study. Prioritization is one of the most-important-components of managing time. Engineering-students need to learn to prioritize duties and tasks to get everything-important done; they also should setting right-ordered and right-sized goals, recognizing and acquiring needed-skills, self-knowing and self-directing, and also have some fun (to stay in balance), as studies have shown, that students get higher-grades, when they are in a good-mood, and can get lower when they are stressed or upset. Finally, according to (Kelly, 2004), students should take notes during class and ask the lecturer about anything they do not understand, and immediately, which will save them a lot of time during-learning on their-own.

After a reflective-understanding of the problems that students face, regarding time-management, following are some simple and practical-recommendations for both, students and lecturers (Faisal, 2014):

For students: Do your-assignments as soon as you get them, and divide them into small-portions; Keep important-notes, books and papers, in places, where they can be easily-found; Consult a lecturer or a more-experienced-friend about the significant-things to study; Put all personal-devices, such as mobile-phones and tablets, away, while studying; Fight procrastination by making a deal with yourself, that you will study for 10 or 15 minutes, only. After these few-minutes, you will find yourself 'engaged' and you will, probably, continue studying.

For lecturers: You can help by creating a semester-plan and sharing it with the students in the beginning of the semester, so that students can plan ahead; You can give advice in class on the vital-topic of time-management, as it is directly affects the performance of your students; and most-importantly, you can be the example: be punctual, well-prepared, have an organized-office, grade tests as soon as they are over; and never procrastinate.

Q13. *If I do not cheat, those who cheat in the same examination will have an advantage over me:* Only

58% agreed, the remaining 42% of respondents disagreed. Behavioral-psychologists believe that behaviors, whether desirable or undesirable, are mostly learnt. Behaviors, that bring satisfaction, tend to be repeated, whereas those that bring dissatisfaction tend to be discontinued. Therefore, when some-students work-hard and fail in examinations, may be due to unfavorable-environmental-conditions, they may not want to go through that process again, because it is not rewarding. Having seen how their fellow-students performed better via cheating during-examinations, they also learn the undesirable-behavior and thus, get involved in examination-misconduct.

Q14. *Cheating is the only way out if a lot of work done over a long period of time is to be examined once in a short time:* Only 29% agreed, the remaining 71% of respondents disagreed. Another-explanation for why students cheat is the existence of situations in which students might consider it acceptable to cheat or situations in which students might rationalize their-behavior and behave differently, than their-responses indicate. According to research, neutralizations are used by students to justify their improper-actions, because of influences beyond their-control. Common-neutralizations include 'the course-information seems irrelevant'; 'the lecturer does not care if I learn the material' and 'the material is too-hard to understand'. Since these-influences are beyond their-control and are improper from the students' perspective, they provide an excuse for cheating.

Q15. *I can take examinations for another person:* Only 25% agreed, the remaining 75% of respondents disagreed. Although this is not common at SOE (as it is a relatively-small school), students may choose to impersonate others (particularly for the common-courses done by all the students from 5 departments of SOE) in order to help-them-out or have somebody with better-knowledge of a particular-subject, sit for exams, on their-behalf, to avoid failing, despite the fact, that if caught they may be disqualified.

Q16. *If the question paper is availed to me before the examination, I will definitely pass:* Only 68% agreed, the remaining 32% of respondents disagreed. Because students want to pass exams by all-possible-means they may opt to buy exams despite the consequences this poses. Previously, cases of buying examinations have been reported and students found guilty of this-offense and subsequently, have been suspended by the university Senate.

Q17. *It is good to arrange to sit next to someone in order to copy from his /her paper:* Only 32% agreed, the remaining 68% of respondents disagreed. Psychologically, it is believed that everybody has as strong need to succeed and will do well, if they have positive-concept and are exposed to the right-environmental-condition, such as curriculum, facilities and methods necessary for a maximum development of that-potential. However, if such unique-conditions are lacking for an individual, then failure sets in, even if such-individual have the right self-concept. In order to be branded a 'successful' students resort to cheating.

Q18. *Some lecturers encourage cheating in examinations:* 5 % agreed. While convincing faculty to enforce institutional-policies for academic-dishonesty deserves considerable-effort, the greatest-reduction in cheating may come from faculty, who promote and nurture the highest-levels of integrity, both, from the students and themselves, in their classrooms. Studies have found that students frequently place the blame for cheating on faculty, citing poor instructional-quality, irrelevant-course-material, and faculty-apathy about cheating. Therefore, it is logical to assume, that increasing instructional-quality, relevance in course-design, and faculty-concern for the learning-process may reduce levels of cheating. An additional-benefit of this-approach is that graduates will have a strong-ethical-foundation, rather than well-stocked toolboxes of techniques for covering-up cheating.

Q19. *It is in fact difficult to eradicate cheating in examinations in the SOE:* 60% of respondents agreed, while 40 % disagreed. While exam-malpractices cannot be eradicated, completely, measures such as use of mobile-detectors, signal-jammers, and metal-detectors can be used to reduce the use of mobile-phones during exams. Use of Honor Codes, already-mentioned before, could be also helpful in promoting academic-integrity. Encouraging students to sign an Honor Code pledge, committing signers to uphold the honor of their-school, the fairness of exams and their personal-integrity (by not giving or receiving assistance on exams, plagiarizing the work of others or otherwise acting dishonorably or dishonestly).

Q20. *I may not feel guilty to cheat if the lecturer does not teach properly:* 71% of students agreed with this fact, while 29% disagreed. Although students may shift the blame of cheating to some of their-teachers, the faculty should even more-consistently emphasize academic-integrity at all-levels.

Figure 3 shows students responses on external-factors causing cheating.

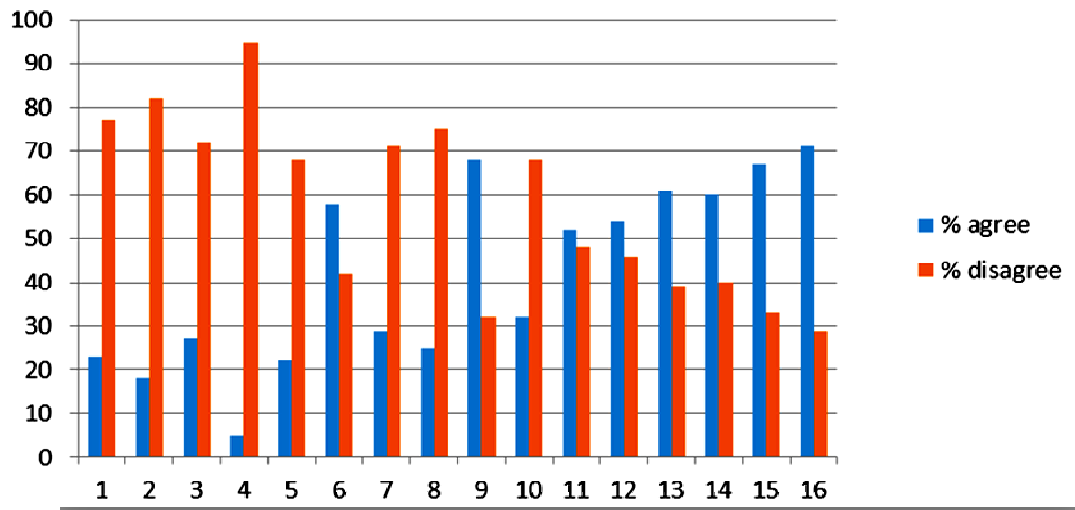


Figure 3: External-factors causing cheating

Keys:

1- I may not feel guilty to cheat if the lecturer does not teach properly; 2 - I cheat because my colleagues cheat in examinations; 3 - I will cheat in examinations if my parents support the idea; 4 - Cheating is good in competitive examinations because passing will please both parents and friends; 5 - Most parents encourage their children to cheat in examinations; 6 - Cheating is recommended for difficult examinations; 7 - If I do not cheat, those who cheat in the same examination will have an advantage over me; 8- Cheating is the only way out if a lot of work done over a long period of time is to be examined once in a short time; 9 - I can take examinations for another person; 10- If the question paper is availed to me before the examination, I will definitely pass; 11- It is good to arrange to sit next to someone in order to copy from his /her paper; 12- If I am offered to buy the examination I will be interested; 13- Some lecturers encourage cheating in examinations; 14- A few lecturers help their students to pass examinations; 15- It is in fact difficult to eradicate cheating in examinations in the SOE; and 16- Students should never write examinations without the presence of supervisors or invigilators

3.2.2.3 Cheating-Behavior Experienced

Finally, the students were asked to identify the cheating-behaviors that they have experienced at SOE (practiced, observed or heard about). The responses are as follows: Use of mobile-phone to Google or to assess notes-70%; Giving another-student help, when they ask for-75%; Placing script in a way, that other student can see-77%; Arriving early in exam-room and writing on the desk-61%; Storing lecture-notes in washroom to be used during exams- 48%. Figure 4 shows the summarized-graph of response-allocations. According to the Pareto-principle, this helps in identifying the vital-few out of the trivial-many. This is commonly referred to as the 80 – 20 principle; 80% of the problems are created by 20% of the causes ('the vital few and useful-many') to signal, that the remaining 80% of the causes should not be completely ignored. Hence the noted-behaviors, if restrained, will give a significant-result in drastically-reducing or, even, eradicating the cheating-behavior in the SOE.

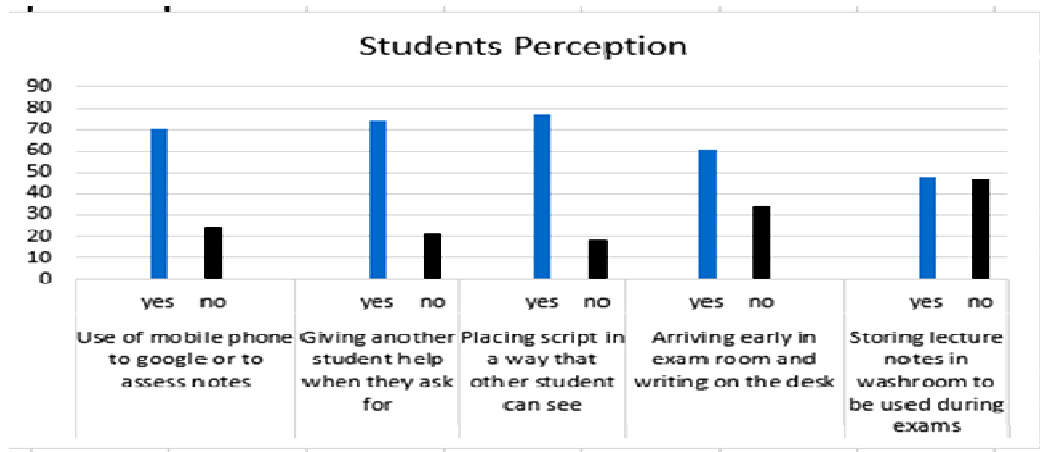


Figure 4: Distribution of the experienced-behaviors.

4. Discussions

4.1. Summary of the study-findings.

The summing-up of the study-findings is outlined below, to give a closer and digest-look at students' perception on cheating at SOE:

Internal-factors that may influence cheating: 82% of the students agreed that with adequate- preparation there is no need to cheat in exams; 65% of respondents agreed that cheating is actually a common-phenomenon in the SOE; 43% of respondents agreed, that one can get good-grades without putting in the hard-work; 26% stated that they could opt to cheating, if examination is difficult; 23% of students agreed, that: (1) Cheating is good, since most-people who cheat often pass their-examinations without repeating or even being punished, and (2) that they cheat in examinations because of lack the necessary self-confidence; and only 5% of students agreed, that no matter how-much you read, if you do not cheat, you will fail.

Justification of the Cheating Behavior (external-factors): 71% of students agreed, that they may not feel-guilty to cheat, if the lecturer does not teach-properly; 68% agreed that they will definitely pass, if the question-paper is availed to them before the examination; 60% of respondents agreed, that it is, in fact, difficult to eradicate cheating in examinations in the SOE; 58% agreed that, if they do not cheat, those who cheat in the same-examination, will have an advantage over them; 32% agreed, that it is good to arrange to sit next to someone in order to copy from his/her paper; 29% agreed that cheating is the only-way out, if a lot of work done over a long-period of time is to be examined once in a short-time; 25% agreed that they can take examinations for another-person; 23% of students agreed that they would opt to cheating, if colleagues cheat in examinations; 22% agreed that cheating is recommended for difficult-examinations; 18% confess that they will cheat if their-parents support the idea; and 5% agreed that: (1) Some-lecturers encourage cheating in examinations, and (2) Most-parents encourage their-children to cheat in examinations.

Cheating-Behavior Experienced: Placing script in a way that other student can see-77%; Giving another student help, when they ask for-75%; Use of mobile-phone to Google or to assess notes-70%; Arriving early in exam-room and writing on the desk-61%; and Storing lecture-notes in washroom to be used during exams- 48%.

The core-findings of the study, therefore, are: 65% of respondents declared, that cheating is, actually, a common-phenomenon in the SOE; 60% of students affirmed, that it is, in fact, difficult to eradicate cheating in examinations in the SOE; and 70% of students acknowledged, that they use mobile-phone to Google or to assess notes during-examinations.

4.2 Reflection on the consequences of the core-findings of the study on the educational-institutions.

The overall-results of the study pointed-up, that cheating, indeed, is an actual-issue of massive-concern at SOE. Students in their-desperate-efforts to obtain high-grades, by any possible-means, find themselves in a cruel-competition, often, opting, to corrupt-behaviors, such as cheating. The academic-malpractice is, in fact, not only a moral-issue, but it is also both a psychosomatic and socio-economic problem. Its presence can smash-up the standard of any given-academic-institution and even lead to segregation of the liable-institutions.

Universities are established to meet specific-objectives. In the event, that these-objectives are not met, then they cannot justify colossal-public-expenditure on their-operations. Today, Kenyan Government is pursuing its Vision, 2030, which is the country's new development-blueprint, covering the period 2008 to 2030. It aims to

transform Kenya into a newly-industrializing, “middle-income-country providing a high-quality of life to all its citizens by the year 2030” (Republic of Kenya, 2006). Education-sector, and universities, in particular, plays a critical-role in achieving Kenya Vision, 2030. This is because education and training, at university level, according to the Government, is expected to achieve the following: (a) Imparting hands-on skills and capacity, to perform multiple and specific-national and international-tasks, (b) Creation of dependable and sustainable-workforce, in a form of human-resource-capital for national-growth and development, (c) Creation of entrepreneurial-capacity for empowering individuals to create self-employment and employment for others, (d) Offering opportunities for advancement of learning, beyond basic-education, with strong-leaning towards scholarship and research, (e) Creation of a strong-national research-base at various-sectors of economic and national-development, (f) Bridging the gap between theory and practice, in various disciplines of education and training, (g) Creation of a strong-sense of nationalistic and global-development, and (h) Inculcation of a culture of precision, moral-discipline and work-ethic, which are necessary in modern industrial and technological-world.

In Kenya, results of examination are the major-determinants of future-success, access to the job-market and selection into institutions of higher-learning. The universal *sine quo non* (the necessary and sufficient) conditions for good-examinations, i.e., validity and reliability get violated, when irregularities are discovered. Given the very stiff-competition for job-places, it is imperative that objectivity and fairness be the overriding-concerns in the allocation of these-places. Any practice, that threatens fairness and objectivity in examinations, must be detected and if possible, stamped-out (Nyamwange, 2013).

This is particularly-important, at the SOE, due to the nationwide-accreditation-requirements for all engineering-programs (Engineering Accreditation Commission, 2005–2006). In addition, the importance of graduating engineering-students, who understand professional and ethical-responsibility, is becoming clearer, as evidenced by “The Engineer of 2020” report, produced by the National Academy of Engineering (NAE) in 2004. Therefore, all-the-stakeholders should be involved in fighting the dangerous, and even, illicit cheating-misconduct, at all levels, in order to keep the validity, reliability and overall-reputation of the school and of the university at large.

4.3 Motives behind cheating

The results of the study show (in the previous-sections) several-factors contributing to cheating.

According to the Beck & Ajzen (1991), there 3 categories of factors, which influencing students’ cheating- behaviour, that are situational factors, individual factors, and teacher factors. Cheating in the exam is done by the students, primarily, to get good-scores (Fass, 2004). The motives behind cheating-behaviour, apparently, a complex-intertwine of factors, which is shown in Figure 5, illustrating the model of contextual-influences affecting cheating, that can help to comprehend, further, and in a structural-way, why students do cheat.

First, there is a particularly-robust-relationship between a ‘grading’ motivational-orientation and cheating: students, who are motivated by grades, rather than a desire to understand the material, are far more likely to cheat. Second, students who feel alienated or dissatisfied with school-life are more likely to cheat. Finally, higher-levels of anxiety about academic-performance put students at risk for cheating. These three-variables may all lead to cheating via a common-pathway. They all lead students to care less about the real goal of classes: mastery of knowledge and skills.

From a psychosomatic-perspective, and in addition to material or financial-considerations, another-set of important inputs to the decision of whether to be honest (or not) is based on internal-rewards. Psychologists show, that as part of socialization, people internalize the norms and values of their-society (Henrich *et al.* 2001), which serve as an internal-benchmark against which a person compares his/her-behavior. Compliance with the internal-values-system provides positive-rewards, whereas non-compliance leads to negative-rewards (i.e. punishments).

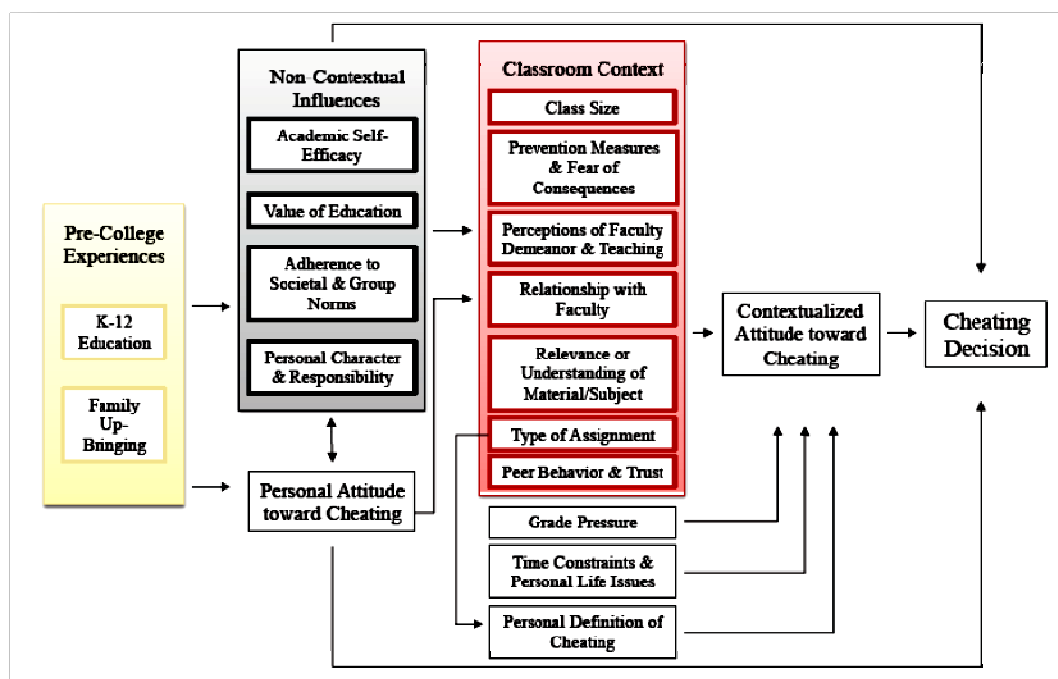


Figure 5: Contextual-influences affecting cheating (Lutovsky, 2010)

Peer-influence is another-factor that might influence students to cheat. At first, possibly, a person X does not intend to cheat, but because he/she saw his/her classmates or friends cheating in class, then they also participate in cheating, and the chain of events will continue, as the other (clean/et innocent of cheating) students will see the X person cheating, and the vicious-cycle will continue, until nearly all of the class will be involved in academic-dishonesty. The indigenous-species, of remaining, innocent non-cheating students, will be ridiculed and laughed at...until the time might come, when all of the students will be joining the cheating-club. This could be a result of lack of strict-invigilation, which allows those, who cheat not to be noticed. This makes other-students feel that one can cheat and still go unpunished. This corroborates with previous research-studies, which revealed the existence of many-university-lecturers, who hesitate to take action against cheating-behaviour of students because of stress and discomfort that follows (Murray, 1996).

Other-factors are also influence the decision to cheat. Rooted in the philosophy of Thomas Hobbes, Adam Smith, and the Standard Economic model of rational and selfish-human-behavior (i.e., *homo economicus*) is the belief that people carry out dishonest-acts, consciously and deliberately, by trading-off the expected-external-benefits and costs of the dishonest-act (Allingham & Sandmo, 1972). According to this-perspective, students would consider three aspects: the rewards, the probability of being caught, and the magnitude of punishment, if caught in the act of cheating. On the basis of these-inputs, people reach a decision, which maximizes their-interests (Hechter, 1990). Thus, according to this-perspective, people in general, and students, in particular, are honest or dishonest, only to the extent, that the planned trade-off favors a particular-action.

Based on the Connectionism theory, there are three-categories relevant to the subject-matter, that is law of readiness, law of exercise, and law of effect (Wikipedia: Connectionism theory). It means if the students are ready with the exercise, they are prepare for the exercise and doing a lot of exercise, consequently, they will reduce cheating-behaviour in the evaluation.

4.4 Solutions to fight cheating.

This-study found that 70% of students acknowledged that they use mobile-phone to Google or to assess notes during-examinations. According to Ataro (2016 c), the capability of today's mobile-phones gives a student numerous-ways to cheat in exams. During exams-period, a student may constantly-communicate with people outside the exam-room via email and use Short Messaging Services (sms). Students and outsiders can exchange information (Questions and Answers) via email-attachments. Through a mobile-phone camera, a student can snapshot questions and send as an-email or WhatsApp-attachment, to outsiders for help, and in the same-way student can receive answers. Moreover, as mobile-phone provides internet- connectivity, student can post questions online and receives responses instantly, and from many engines. Furthermore, with the storage-capacity that mobile--phone offers, students can pack lecture-notes, e-books and any other-unauthorized-materials, relevant to the exam in question, on their mobile-phones, every so often, before the exam-period. Other applications installed in a mobile-phone could also be used by a student to commit cheating; such

applications include dictionaries and scientific-calculators.

To reduce the illegal-use of mobile-phones during examinations, SOE has already developed several simple mobile-phone-detection and jamming devices. Interested-readers can refer to Starovoytova *et al.* (2016b); Ataro *et al.* (2016) and Sitati *et al.* (2016).

Support is also needed to assist lecturers in detecting cheating, fostering academic-integrity, among students, and addressing student-cheating, in general. Marcoux (2006) and Davis (1993) offer a number of recommendations. These include: (1) holding dialogues within and among various-departments, of the academic-institution, so that lecturers obtain a clear-picture of what constitutes academic-cheating; (2) providing an arena for disseminating the updated-information about cheating (written and verbal) to both lecturers and students, such as electronic-means; (3) initial meeting with a class and handling cheating by promptly reporting the incidents; (4) discussing the incident with the alleged-cheater; (5) developing skills for addressing cheating-behavior with students; (6) providing training and courses in academic integrity-issues; (7) discussing ethical-issues with students, after cheating-incidents, to develop students' moral-judgment and hold them accountable for their-decisions and behavior; (8) making sure students know the criteria for evaluating their-performance; (9) developing a climate and group-norms, that support honesty; (10) learning to recognize signs of stress in students; and (11) ensuring equal-access to study-materials and making students feel that they can succeed without having to resort to dishonesty.

Other practical-recommendations made by Kisamore *et al.* (2007), to minimize cheating in examinations are: (1) to provide large-examination rooms, (2) students should sign attendance- registers, whenever they attended lectures; and (3) that invigilators should be in the examination-rooms all the time, (4) searching students before start of examination, (5) spacing students far apart in the examination- room, (6) severe punishment to those caught cheating, expelling those who cheat, and (7) students avoiding overdrinking.

The other potential-solution to minimize cheating - is lecturers' vigilance during the whole-period of the exam. If, for example, the atmosphere of strict-teacher-guides, the tendency of cheating is small, otherwise, if the atmosphere loose guide, the tendency of cheating becomes large (Baldwin, 1996).

Roth & McCabe (1995) also found a strong-correlation between student-values and cheating. An example of this is the apparent success of Honor Codes, based on the idea of shared-communities and individual-responsibility at colleges and universities in reducing cheating (Diekhoff, 1996). Academic-dishonesty-policies can be effective if properly-designed, since, schools with well-designed and well-communicated Honor Codes, are known to have lower-rates of cheating (Roth & McCabe, 1995).

In fact, the implementation of strategies that promote academic-integrity may require a cultural-change (Leonard & LeBrasseur, 2008). Consequently, faculty, in cooperation with management, should play active-roles in fighting cheating, not only among students, but at all-levels.

5. Conclusion and Recommendations

The major-results of this-study revealed that 65% of respondents declared that cheating is actually a common and widespread-phenomenon in the SOE; 60% of students affirmed, that it is, in fact, difficult to eradicate cheating in examinations in the SOE; and 70% of students acknowledged that they use mobile-phone to Google or to assess notes during examinations. The overall-results of the study also pointed up that cheating, indeed, is an actual-problem, consisting of complex-intertwine of factors, of massive-concern at SOE. Students in their desperate-efforts to obtain high-grades, by any possible-means, find themselves in a cruel-competition, opting, often, to corrupt-behaviors, such as cheating. The academic-malpractice is, undeniably, not only a moral-issue, but it is also both a psychological and socio-economic problem. Its presence can smash-up the standard of any given-academic-institution and even lead to segregation of the liable-institutions. The study, accordingly, recommend for a cohesive-system of approaches to reduce, and, eventually, to eliminate cheating from SOE, and, probably, other academic-institutions.

Whilst there is subjective-evidence that the student-population selected was largely-representative of the population studying on those-programs, the results from this purposive-sample should not be assumed to be generalize-able to the wider engineering-student-population. Thus, this-sample is one of convenience and is not necessarily representative of engineering-students on any-single campus.

Recommendations

Numerous-recommendations to fight cheating were given in the precious-sections; recommended-strategies are divided into prevention, detection, investigation, confrontation, and outcomes. In particular, (1) university should develop and publish a comprehensive-statement on academic-dishonesty, or, so-called, Honor-Code; (2) SOE needs to create and fill an administrative-position, related specifically to addressing issues of academic-integrity; (3) Academic-integrity should be stressed, with special-emphasis on the school-definition of unacceptable-academic-behaviors; (4) the provisions should be made to encourage students to report cheating-incidents, ensuring that the identity of the reporter is protected in the process (by providing, for example, a direct-

anonymous-phone-line of communication) and (5) The SOE faculty should attend workshops on techniques to recognize and detect cheaters.

The sample-size for this *unfunded*-study was relatively-small; therefore (1) future-studies should include more-subjects, in order to obtain extra-information pertaining to the cheating techniques, used among students in Kenyan higher-education-institutions; (2) the study, should employ more-types of instrumentation, such as interviews, in order to gauge the various-techniques used by students; and (3) the study was only based on the perceptions of students at one-university. They may not have provided their actual and honest-opinions in the narrative-responses. To obtain a better and clearer-picture, probably more in-depth national studies should be conducted at various-universities (public and private) in Kenya.

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