Challenges Facing Internship Programme for Engineering Students as A Learning Experience: A Case Study of Debre Berhan University in Ethiopia

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Abstract: *Internship is a period of time in which students can gain work experience related to what they have learned in their study programme. Debre Berhan University introduced internship programme to provide students with a smooth transition from the academic world to the working environment. The main objective of this research was to investigate the challenges facing internship programme for engineering students as a learning experience. This study was a descriptive research with the target population being all intern students, their lecturers, internship coordinator and intern company supervisors. Purposive sampling was used in selecting the sample for students and their lecturers while cluster sampling was used in selecting the intern company supervisors. Data was collected using semi-structured questionnaires and an interview and analyzed using both qualitative and quantitative techniques with Excel and Matlab. The study concluded that internship was facing many challenges included lack of adequate guidance and support to students during the internship, lack of adequate funds and little time allocated for internship visits, reversed priority of the roles played by the intern company supervisors and short duration of time for internship and report compiling. The researcher recommends that internship should be planned and implemented as a valid learning experience right from the start by allocating adequate funds to support the intern students and for supervision, allocating enough internship duration to enable the university to maintain vital link with the intern students and the industry.*
Key words: *Higher Education, Engineering, Internship programmes, Challenges, Intern students*

I.   Introduction

An internship is a period of time in which students can gain work experience in their field of study by doing in actual situations. This work is related to what they have learned in their study programme and contributes to the activities of the organization offering the internship. Debre Berhan University is, a higher education institution in Ethiopia established to furnish higher education, establish on 10 March 2005 through an Act of parliament. Internship programme was introduced in college of engineering under institute of technology. Internships have been hailed for integrating classroom education with practical experience in enabling graduates to develop their professional knowledge and professional skills [4]. However, unlike in the conventional system and owing to a diversity of factors in engineering setting, the concept has encountered challenges. The current study therefore, aims at assessing intern students' perceptions of internship programme at Debre Berhan University. The study seeks to identify areas in which they faced challenges as well as actions to remedy the situation for future improvement.

1.1 Objectives of the Study

The general objective of this study was to investigate the challenges facing internship programme as a learning experience for engineering students at Debre Berhan University. To accomplish this, the study was guided by the following specific objectives:
i)   To determine the extent to which theory and practice in engineering curriculum relate.
ii)   To investigate the problems experienced by students during their internship.
iii) To find out whether engineering internship programme provides a meaningful learning experience to the students involved.
iv)   Suggest the possible measures for the improvement of internship programme specifically in collage of engineering, in Debre Berhan University.

II. Literature Review

Internships are an increasingly common experience for postsecondary students [17] and have been recognized as an integral aspect of educational and professional development [18], [39]. Despite the perceived importance of internships for student development, there is little consensus about what constitutes an internship, which in turn complicates the matter for institutions looking to integrate them into their curriculum effectively. Internships are defined as programme engaging students in service activities primarily for the purpose of providing them with hands-on experience that enhances their learning or understanding of issues relevant to a particular area of study [14]. On the other hand, internships are supervised work experiences whereby students leave their institutions and get engaged in work related programme, during which period they are closely supervised by experienced job incumbents [28]. Internships vary in duration; they can last from a month to two years (or more) and may be part-time or full-time and can be paid or unpaid. They may be part of an educational programme and carefully monitored and evaluated for academic credit, as is the case with internship at Debre Berhan University.

The importance of integrating students' classroom learning with real-world practical experience has been recognized as a vital component of student engagement and development in higher education [23]. One of the ways in which students may bridge their learning in the classroom with professional practice is through internships [3], [34]. Internships have taken on an increasingly important role in education over the past decade since they present students with many advantages, ranging from gaining experience and obtaining career-related direction to networking with other students from various institutions as they at the organization providing the internship [41]. The learning or parent institutions offering internship programme have also benefitted through increased cooperation and rapport with the industry [13]. Employers have not been left out of the benefits as internships can provide them with inexpensive help, new ideas and potential future employees [37], [6] though at times complaints have been raised employers for treating the interns as cheap labor. The benefits have, therefore, accrued to the tripartite stakeholders: the students, parent institutions and employers [8], [25].

Theoretical framework from a variety of research available, internship programme, have tended to benefit the student, the student`s institution and the employer. However, for the student, it is the learning that is of utmost benefit. The individual can apply knowledge learned in the classroom to the workplace. The individual gains knowledge of the qualifications and duties of a position and can explore their interest in a field. The individual gains an understanding of the skills and knowledge required in the workplace. Personal development - the individual gains decision making skills, critical thinking skills, increased confidence and self-esteem. The vague understanding of what constitutes a student internship and of the role of student interns in the workplace raises significant concerns about the rights and safety of interns. Internships are therefore any carefully monitored piece of work or service experience in which an individual has intentional learning goals and reflects actively on what she or he is learning throughout the experience or duration of attachment.

2.1 Educational Purpose of Internships

The placement of students in various organizations as trainees is an academic requirement to foster the work experience so the students will attain the necessary skills to supplement their theoretical training [19]. Internship may be a feature that distinguishes courses giving them a distinctive role in the market. Internship also provides a valuable contact with industry for the academic. Objectives of internship programme appearing in course documentations are very varied and include: Linking theory and practice, Developing personal maturity, Exercising skills of thinking in a practical context, Gaining work experience generally and within a particular job function, Gaining personal insight including career preferences, Entering into a professional role and identifying with it, Developing professional attributes, Gaining knowledge of the working of a particular organization. The first three of the above objectives are of central importance both to the industrial and academic partner as they fulfill a purpose which is genuinely developmental on the individual as an educated worker [2]. The three are discussed below:

2.1.1 The Theory versus Practice Link

The internship experience enables students to apply classroom theory within the actual world of work thus bridging the gap between theory and practice. A positive perception occurs when practical knowledge gained by students during their programme can be applied to classroom theory and vice versa. A negative perception develops when students start to realize that many operational issues and practices, which have been learned in the classroom, are different from what they have experienced in practice. Such a perception causes student frustration and disappointment. This discrepancy may damage students' hopes, dreams, and long-term aspirations. The theory-practice link is much more dynamic, and there are many more ways in which academic and workplace experience relate than the idea of "application" implies [2]. For example, work experience can be merely "lived-through" experience, involving the unreflective day to day enactment of the work role; but it should be "reflected-on" experience. At the same time, theoretical knowledge can merely involve "detached

theory", unconnected with the student's life in the real world; but it should be "engaged" theory. It was in the light of the above that this study set out to find out whether theory and practice in engineering curriculum as taught in Debre Berhan University relate.

2.1.2 Developing personal maturity

By allowing maximum participation of students in setting the parameters of the attachment, and their genuine involvement in the management of the placement, students can be given the opportunity to see that they have responsibility, some autonomy, and must cope, cooperate, show creativity and develop competence [2].

2.1.3 Exercising skills of thinking in a practical context

One way in which internship can facilitate the development of critical but pragmatic thinking occurs when a student does manage to fulfill the roles of worker and learner. The two sidedness of this position of the student intern can be stressful, but it is an essential feature of a good internship experience. A certain personal distance is required so that the student is able to reflect on the role in a creative way.

2.2 Benefits of Internship

Internships can be beneficial for all parties (i.e., student, institution and employer), as they are believed to provide higher quality education and career preparation [15], build stronger resumes [7], [11] and generate new ideas within organizations [20], [38], [43]. In addition, numerous empirical benefits have been cited for each particular stakeholder group, as listed below:

2.2.1 Benefits of internship to the intern students

✓ Bridge classroom learning with professional practice [3], [23], [34]
✓ Opportunity to solidify knowledge learned in the classroom [38], [39]
✓ Develop an awareness of personal values [42]
✓ Enhance understanding of personal characteristics (e.g., strengths or weaknesses) [44]
✓ Increase exposure to ethical matters [36]
✓ Opportunity for career exploration [38]
✓ Increase marketability based on job-related skill development [27], [35], [40]
✓ Increase perceived employability [5], [15], [27], [38], [42]
✓ Expedite employment following graduation [5], [22], [42]
✓ Enhance understanding of realistic expectations in the workplace [21], [27]
✓ Higher salaries [7], [15]
✓ Higher job satisfaction [11], [16]

However, the students' ability to attain these competencies will depend on a number of factors such as the type of placement, level of work experience and the quality of supervision in the workplace [45].

2.2.2 Benefits of internship to industry

✓ Access to high-quality students for temporary employment [7], [20], [38]
✓ Obtain students with current theoretical knowledge of the workforce [37]
✓ Access to the perspectives of a younger population (e.g., greater understanding of social networking) [37]
✓ Opportunity to evaluate employee training protocols [38]
✓ Development and maintenance of a positive reputation [38]
✓ Enhance morale among colleagues (e.g., older employees mentoring interns) [37]
✓ Opportunity to select high-quality students upon graduation [7], [15], [37]

2.2.3 Benefits of internship to the educational institutions

Internship involvement imparts substantial advantages to educational institutions and their faculty members [26]. The increased contact and cooperation between educators and engineering industry could enrich the industry's input in course development and assist educators to keep abreast of company trends and future developments. Such relationships may provide channels for testing the compatibility and relevance of academic theory with the operational requirements of industry. In addition, improved relationships may be extended with further cooperation to other fields of mutual concern (e.g. college advisory boards, training seminars, mentoring programmes, student field trips, job fairs, and industrial visits). Finally, successful internship programmes may generate invaluable publicity by reiterating with tangible evidence an institution's commitment and contribution towards the local economy.

2.3 The Student in Internship

The student is the central character in internship. Therefore, the position of the student within the organization needs to be very soundly grasped, if learning is to be effectively managed [2].

The notion of work experience can be seen as a triangle incorporating three parties: the educator, the employer, and the learner [32]. The fact that three separate components are involved (each with its own agenda and goals) signals a complex nature. The researchers [2], provide definitions of two kinds of ambiguity in the role of students during internship: Essential and Accidental. Essential ambiguities involve those problems of the attachment role which are intrinsic to the design of the course incorporating attachment. They arise from the need to both work and reflect, to produce whilst consciously learning and to apply knowledge to real situations. Students on internship experience the world of work in all its variety and mundanity; boredom and pressure; injustice and helpfulness; comradeship and ill-articulated demands. It is supposed that it is to the great advantage of the students to become vividly aware of the world of work, and thereby come to understand the context in which academic learning is applied. Yet this virtue necessarily entails a set of difficulties for the student. If there were no difficulties in the attachment role, this would imply that there is no real gap between academia and industry, and the whole rationale of work experience within education would be lost. Attachment should therefore enthusiastically encourage gritty comparisons and contrasts. The other kind of ambiguity is accidental ambiguity. This refers to the circumstances of attachment that bring about unintended effects, e.g. the length of attachment is limited in a way which it is not for ordinary employees, which makes the role of the students in the organization anomalous; the student has an unclear organizational position, an unfitting background for the work being done and so on [2]. The practical implication is that management of the attachment experience should aim at minimizing the stress which students feel as a result of the ambiguity of their role.

Most students in previous studies felt confused on who should arrange the internships [15]. Asked who should be responsible for arranging their internship placement, the majority of interns feel faculty should work for their placement [41], [27]. Previous research studies also show that internship periods were too shot and the majority of interns think that the most appropriate internship period should be six months [33], [29]. Researcher [29] also found in his study that most of the interns preferred to have internship periods ranging from six to nine months instead of three months. This indicated that interns are willing to have a longer internship period and believe that they can learn more within a six month period. Researcher [33] remarks that the short amount of time an internship lasts really never lets the student become a fully functional employee because there is not so much to take in for them. Supervision of interns has been cited as being problematic. Qualified staff to supervise the interns has been in short supply [41], [16]. Universities should be responsible to ensure that internships are offering meaningful learning experiences for their students. According to researcher [41], students feel that there should be careful examination of feedback from employers and interns followed by the modification of the internship programme accordingly. The literature reviewed leaves no doubt about the importance of internship and dealt with challenges faced by educational institutions in meeting the needs of the industry. In an attempt to develop a strong discipline that would survive, the educational institutions incorporated internship into their curricula. Studies that had been done in other countries found out that experimental learning such as internship do not necessarily provide a meaningful learning experience due to many problems. This study was intended to investigate challenges facing by students during the internship programme in Debre Berhan University which may compromise the ability of the internship provide a meaningful learning experience.

III. Research Methodology

3.1 Research design

This study described the challenges facing intern students at Debre Berhan University in Ethiopia. The relationship between theory and practice in the curriculum was also explored to establish its possible contribution towards the challenges facing engineering internship programme in the institution. The study included the following steps which according to [31] are necessary in every descriptive study: formulation of objectives, designing of the method of data collection, selecting the sample, data collection and analyzing the results.

3.2   Study variables

The research variables in this study included both independent and dependent variables. Dependent variables are those that change as a result of changes in the independent [30]. The dependent variable in this study was internship as a learning experience. The dependent variable in this study was the challenges affecting internship program with regard to the following:-
✓ Duration of times a student is attached.
✓ Nature of work given to student interns.
✓ Entry behavior of the students

✓ Assessment of performance of interns by mentors and supervisors.

3.3 Location of study

The research was carried out in Debre Berhan University in Ethiopia and selected 45 companies around Debre Berhan town and other parts of Ethiopia where the students are usually attached.

3.4 Target population

The target population of the study was composed of three categories namely:

➢ Intern students pursuing a degree in engineering at Debre Berhan University from the official class lists in these institution they were as follows: Civil-328, Construction technology and management-225, Electrical-248, chemical-76 and Mechanical-163, giving a total of 1040 students.

➢ Intern company supervisors in different company where the students do their attachment. There are 56 companies where the students mostly attached.

➢ Lecturers at the selected institution from the records obtained from the institution they were as follows: Civil-58, Mechanical-33, Electrical-34, Chemical-27, Construction technology & management-35 and one university internship coordinator giving a total of 188 lecturers.

3.5 Sampling Techniques and Sample Size

The total population of students was total of 1040. The sampling procedure for the student sample from this university was purposive where only students who had attached at least one internship programme were included in the study. They were as follows: Civil-65, Electrical-49, Construction technology and management-45, Chemical-16 and Mechanical-33 giving a total of 208 students. Official class lists were used as the sampling frame. According to [1], 10-20% of the total accessible population is considered adequate in a descriptive research such as this. The total of 208 students selected represents 20% of the accessible population of 1040 students in the selected institution. The researcher therefore considered the sample adequate since it accounts the larger range. The lecturers sample included 38 from this University engineering stream from each five department. The researcher decided to include 20% of them in the study and additionally one internship coordinator. The students mostly attached in to 56 companies around Debre Berhan and different parts of the country. However, the researchers decided to use 80% of these supervisors as they were key respondents in the research. Totally 45 intern company supervisors are included in the study.

A sample of 292 respondents comprising of 208 students, 38 lecturers (mentors) & one internship coordinator and 45 intern company supervisors was drawn from the target population.

3.6 Research instruments

Data for this research was both quantitative and qualitative and was collected using questionnaires and interviews. Questions, both structured and open ended were used to collect data from the students, their lecturers and intern company supervisors. Face-to-face interviews using a semi-structured interview schedule was used to collect data from internship coordinator. As noted by researcher [12], qualitative data are 'most often' collected by researchers through interviews and questionnaires. However, interviews compared to questionnaires are more powerful in eliciting narrative data that allows researchers to investigate people's views in greater depth [24]. In a similar vein, researcher [9] add that interviewing is "a valuable method for exploring the construction and negotiation of meanings in a natural setting".

3.7 Data collection techniques

➢ The student's questionnaires were group-distributed personally by the researcher because it was a convenient and low cost technique for administering the questionnaires. The students filled the questionnaires on the scene and handed them over to the researcher after filling.

➢ The lecturers' questionnaire also personally given to one or several lecturers available at the institution at the time of collection those lecturers who had the time filled the questionnaires at that time and handed them over to each department secretary.

➢ The intern company supervisor questionnaire was distributed personally to them at the time of collection.

3.8 Data analysis

The raw data collected was edited and cleaned by checking for any inconsistencies then entered into spreadsheets and analyzed mathematically using Excel and Matlab. Cross tabulations were used to establish relationship between different variables. Chi-square tests were used establish the significance of the relationships between the variables. The confidence level was set at 0.05 (95%) is recommended for most descriptive researches. Descriptive statistics such as percentages and frequencies were used to describe the data while tables, bar charts and pie charts were used to present the result.

IV. Findings And Discussion

4.1 Demographic data

The demographic factors included gender, age, marital status and academic qualification. Table 4.1 shows the distribution of the demographic characteristics among the respondents. From Table 4.1 of the students who responded to the questionnaires 146(72%) were male while 57(28%) were female. 30(67%) of the intern company supervisors in this study were male while other 15(33%) were female. This may seem to suggest that the construction industry mostly dominated by men. Only 29(74%) of lecturers were male while 10(26%) were female. The majority of the students, 156(77%) were aged between 26-35 years while the remaining 47(23%) were aged between 26-35 years of age. 35(78%) of the supervisors were aged between 26-35 years and the remaining 10(22%) were aged between 36-45 years. Almost all 36(92%) of university lecturers were aged between 26-35 years, only 3(8%) were aged between 36-45 years. This shows that the university and industry employs the young and energetic man power due to the nature of the work. It can also be seen that from categories of the academic qualifications undergraduate degree and masters were dominated in the academic and industry. However, majority of the supervisors 38(84%) had attained a degree as their highest academic qualification while 23(59%) of mentors had a masters degree as their highest academic qualification. This is worth noting as it depicts the kind of industry the students are sent to. The low level of education attained by the majority of supervisors could mean that the quality of the internship experience is compromised.

Table4.1: Demographic characteristics of the respondents (own)

Demographic characteristics		Type of Respondent		
		Students	Supervisors	Mentors and Coordinator
Gender	Male	146(72%)	30(67%)	29(74%)
	Female	57(28%)	15(33%)	10(26%)
	Total	203(100%)	45(100%)	39(100%)
Age	16-25	156(77%)	-	-
	26-35	47(23%)	35(78%)	36(92%)
	36-45	-	10(22%)	3(8%)
	Total	203(100%)	45(100%)	39(100%)
Marital Status	Single	190(94%)	27(60%)	32(82%)
	Married	13(6%)	18(40%)	7(18%)
	Total	203(100%)	45(100%)	39(100%)
Academic Qualification	Degree		38(84%)	16(41%)
	Masters		7(16%)	23(59%)
	Total		45(100%)	39(100%)

4.2 Objectives (I): To determine the extent to which theory and practice in the Engineering curriculum relate

The study sought to answer the question "How relevant to the internship are the skills acquired by the students prior to internship?" To answer this question, the students and their supervisors were investigated through the questions discussed below.

4.2.1 Usefulness of the skills taught at university

Students were asked to rate the usefulness of the skills they were taught at university in performing the duties they were given during internship. Figure 4.1 below shows that, 94(46%) of the students rated the skills they were taught in a university as useful and 79(39%) as very useful while 30(15%) said the skills were not useful. This implies that the skills taught at the educational institution are relevant and useful to the industry for the majority of the students.
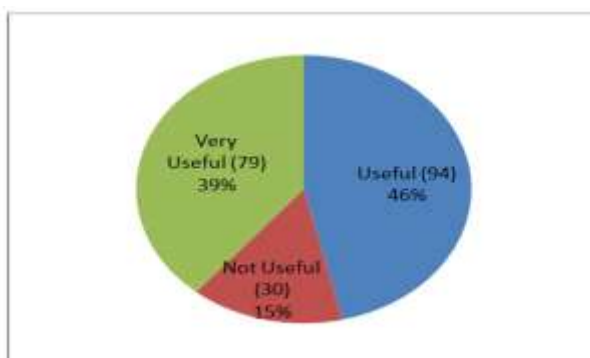

Figure4.1: usefulness of the skills they were taught at university (own)

4.2.2 *Students mastery of the basic technical skills*

When student supervisors asked how the students' mastery of the basic technical skill by the time they came for internship, they responded as shown in the figure 4.2 below.

Seventeen (38%) of the supervisors said technical skills was average, 13(29%) said it was good, 10(22%) said it was poor and only 5(11%) said it was excellent. Being rated as average, good and relatively poor respectively by the majority of the supervisors implies that the industry was not happy with the students' mastery of the basic technical skills. The reason why the students' mastery of basic technical skills was rated like that could be due to inadequate time allocated for practice in the curriculum. With less time allocated for practical skills training, the students cannot be able to master the basic technical skills to the expectations of the industry.
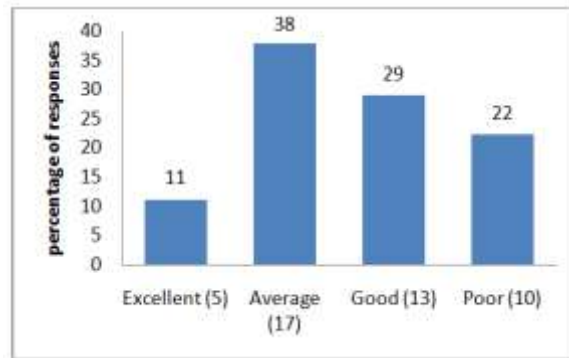

Figure4.2: student's mastery of the basic technical skills (own)

4.2.3 *Qualities students must possess by the time they go for attachment*

The qualities students must possess by the time they go for internship according to their supervisors are shown in Figure 4.3.
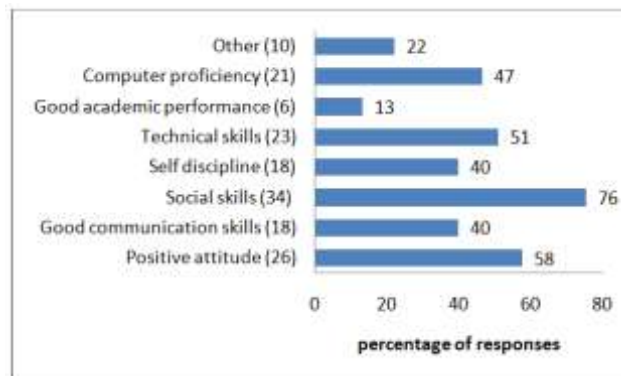

Figure4.3: Qualities to be possessed by students (own)

This was a multi-response question. A majority of the responses, 34 (76%) were on social skills as a quality intern students must possess, followed by positive attitude which elicited 26 (58%) of the responses. It is important to note that 6 (13%) of the responses were on good academic performance. This finding fits into the explanations of some researchers that students with high academic achievements fail to adjust to the volatile industry environment due to the unrealistic level of their expectations. Other skills were given by the respondents included language and responsibility amounted to 10 (22%) of the responses.

4.2.4 *Students' weakest areas during internship*

Supervisors were also asked to cite what they noticed to be the students' weakest areas during the programme. This was a multi-response question. Their responses were as shown in figure 4.4 below. Lack of technical skills was cited as the students' weakest area by the majority 25(56%) of the supervisors. Interacting with staff and lateness received equal emphasis each of 6 (15%) of the responses. This concurs with researchers [10] who argue that the industry has a strong preference for people with strong practical skills and soft people management skills. This also explains why the supervisors in an earlier question (4.2.2) labeled the students' mastery of basic technical skills as average, meaning not strong enough.
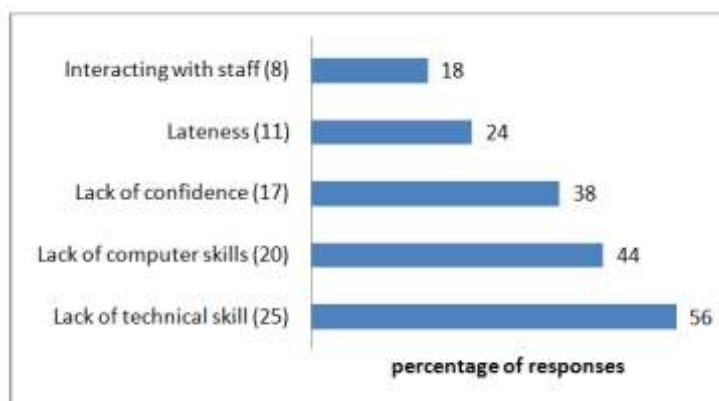
Figure4.4: Students' weakest areas during internship (own)

Lateness for work was cited by 11(24%) of the supervisors. It is important to note that lack of computer skills was cited as a students' weakest area by 20 (44%) of the supervisors. This shows that engineering curriculum is lagging behind in incorporating the technology that the industry requires.

4.2.5   Skills supervisors would train students on internship
When supervisors were asked what skills they would train students in bearing in mind the kind of industry they were to work in, they responded as shown in figure 4.5. This was a multi-response question.
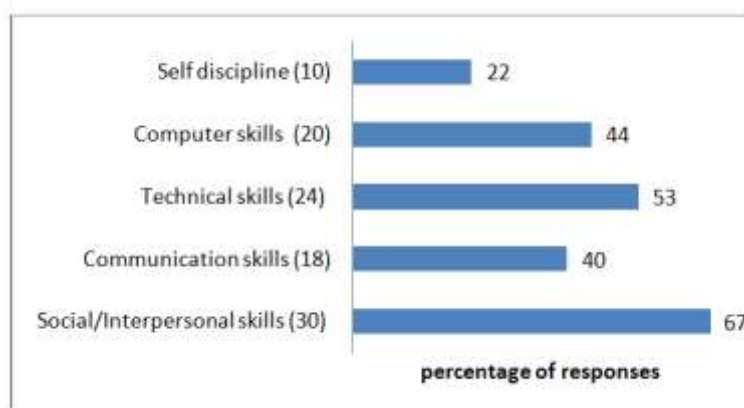

Figure4.5: Skills supervisors would train students on internship (own)

The majority of the responses 30(67%) were on Social/Interpersonal skills as a skill the supervisors would train the students on. Technical skills, computer skills and Communication skills received slightly equal emphasis, each being cited by 24(53%), 20(44%) and 18(40%) of the supervisors respectively. These findings continue to concur with [10] assertion that the industry has a strong preference for people with strong practical skills and soft people management skills. The implication of this therefore is that the learning institutions need to revise upwards the strength of the practical skills and softness of the people management skills taught to the students. In addition, the learning institutions need to incorporate technical skills and computer skills in their curriculum so as to address the changing needs of the industry.

4.3 Objective (II): To investigate the problems experienced by students during internship
Students experience many problems during internship which start right from getting the internship place, continue throughout the internship period and even to compiling the after internship report. These are discussed below.

4.3.1   How the internship place was sought
When asked how they got their internship place, it was found out that 120 (59%) of the students had got the place of attachment through their own initiative, 78 (38%) of the students had been sent to the place of attachment by their internship coordinator, while 5 (2%) had got the place of attachment through other ways such as through friends and relatives. Further probing of those who had sought for the attachment places themselves revealed that sixty seven of them experienced the challenges shown in Table 4.2. This was a multi-

response question with base n=67, students who had challenges. 50 (75%) of the students said they had difficulty in finding host companies and also 45(67%) of the students said they had financial problem in assessing places while 33(49%) were discriminated on the basis of the university they came from due to too much students in the organization where they were seeking internship. Twenty-five (37%) of the students said they had to wait for unresponsive officials before being attached.

Table 4.2: Challenges faced by students as they sought for internship programme place (own)

Challenges faced by students as they sought for place	Count(n)	Percentage of responses
Finding internship companies	50	75%
Unresponsive officials	25	37%
Late exit from university	12	18%
Transport Cost for assessing companies	45	67%
Too much students and discrimination on the bases of university	33	49%

It is important to note that other 12 (18%) of the students were late exit from university also contributes challenge for the students. This may have resulted from a poor working relationship between the industry and educational institution. By establishing a close working relationship between the educational institutions and the industry, it would be possible to place all the students without the students having to go through all the challenges they cited.

4.3.2   *Place where the student was attached*
Regardless of how they got their internship, the students ended up in various institutions ranging from contractors to factories. The majority 76 (37%) of the students had done their internship with contractor, 64 (15%) in factory, 32(16%) in institutions such as schools, colleges and universities and 31 (15%) with consultants. Where the students were attached was important in this study as it is believed that where the student is attached influences the internship experience due to the nature of opportunities availed by different work places. The interviews with the internship coordinator revealed that they all vetted the adequacy of the attachment before the students were subjected to the rigours of a particular workplace. This he did through previous experience with institutions offering the attachment and by checking the reports brought back by the students to see what was covered. This is not enough as it leaves a loophole for the institutions offering attachment for the first time not to be vetted. The researcher suggests that vetting could be pegged on the fact that institutions benefit by having students on attachment and therefore they must not give the students a raw deal.

4.3.3   *Negative experiences of students during internship*
During internship, students get attached at different sections in the companies. More than half, 170 (84%) of the students said they had negative experiences in the sections they were attached at. On further probing, the students who had had negative experiences during internship explained their experiences as shown in Table 4.3 based on 93 students.

Table 4.3: Negative experiences of students during internship programme (own)

Negative experiences of students during internship	Count(n)	Percentage of responses
Bias to/treat badly intern students	37	40%
Unwillingness to give information	9	10%
Theft at site	13	14%
Sexual harassment	6	6%
Concentrated in one activity	26	28%
Lack of Computer skill for some works	65	70%
Short internship time to grasp practical works	55	59%

This was a multi-response question. From Table 4.3, 65 (70%) of the students said lack of computer skills in the sections they were placed. Short internship time to grasp practical works was cited here by 55 (59%) of the students. Discrimination by staff was cited here by 37 (40%) of the students. Twenty-six(28%) of the students were frustrated by Concentrated in one activity internship programme as they were placed in a section for too long before being changed or were changed from one section to another without notice. This reveals some form of exploitation of the student interns as these changes suggest that the industry deployed the student interns where they were needed most rather than where the students were supposed to be. Other negative experiences here were Theft at site, Unwillingness to give information and Sexual harassment cited 13 (14%), 9(10%) and 6(6%) of the students respectively. This emphasizes the magnitude of these negative experiences by the student interns which should not be ignored. All these challenges concur with the explanation by researchers [2] that the student on attachment experiences the world of work in all its variety and mundanity; boredom and

pressure; injustice and helpfulness; comradeship and ill-articulated demands. A cross tabulation between gender of the student and whether the student had any negative experiences in the areas they were attached at during the internship revealed that 72 (77.42%) of the male students had negative experiences while only 21(22.58%) of the female students had negative experiences. This is shown in Table 4.4.

Table 4.4: A cross tabulation between gender of the student and whether the student had any negative experiences in any of the areas they were attached (own)

Respondent Gender	Did you have any negative experience in any of the areas you were attached?		Total
	Yes	No	
Male	72 (77.42%)	74(67.27%)	146
Female	21(22.58%)	36(32.73%)	57
Total	93	110	203

Chi-square value=2.5691, df=1, p=0.108967

However, the Chi-square test revealed that there was no significant statistical relationship between gender of the student and the student having negative experiences during the attachment as the p value = 0.108967 was greater than the critical value of 0.05 at 95% confidence level.

4.3.4   *Duration of the internship*

The duration of the internship is fixed mostly at the end of fourth year and beginning of fifth year depends on the length of the course according to internship coordinator interviewed. However, students revealed that they were on internship for a period which ranged between one and four months as shown in Figure 4.6. One month of internship programme for a course of between two and four years is obviously too short for the student to learn anything meaningful.
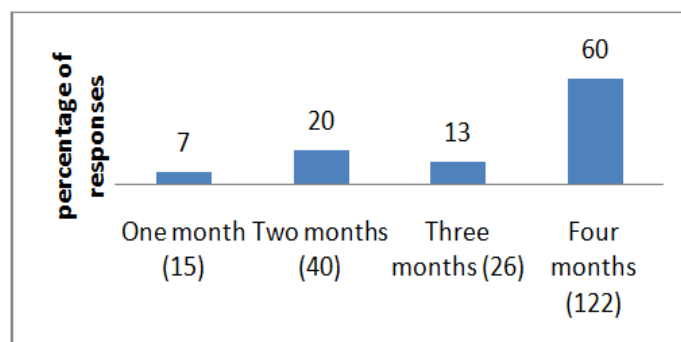

Figure 4.6: Length of the internship (own)

In addition students were asked in the questionnaire about "Was the internship programme duration enough?" and "What should be the minimum internship duration? Why?" 104 (51%) students said it was not enough where as 99 (49%) of students said it was enough. This shows that the internship programme was too short to cope up with the objectives. For some of the students, they were unable to did basic works due to unavailability of material, too many students in the company (to solve this problem the company arranged them in shift), no construction was completed within such a short period of time and even too short time to compile project.

When students were asked about the minimum internship programme duration they answered as follows. 65 (35%) of the students replied it should be one year, 55 (30%) of the students also replied it should be six month and 24 (13%) of the students were said three month was enough. Previous research studies also show that internship periods were too short and the majority of interns think that the most appropriate internship period should be six months [33], [29]. Researcher [29] also found in his study that most of the interns preferred to have internship periods ranging from six to nine months instead of three months. This indicated that interns are willing to have a longer internship period and believe that they can learn more within a six month period. The short amount of time an internship lasts really never lets the student become a fully functional employee because there is not so much to take in for them [33]. Here in this study intern students said one year will enough but it is relatively exaggerated to the time given for the curriculum but six month will be sufficient. Twenty-one (12%) of the students said four month was enough and 19 (10%) said five month was enough.

4.3.5 Students' visiting during the internship

During the internship, the students are supposed to be visited by their lecturers at least twice according to internship coordinator interviewed. When asked how many times they were visited, the students responded as follows. It is worthy to note that 35 (17%) of the students were never visited during their internship, 147 (72%) were visited only once and only 21 (10%) were visited twice. This visiting is important as the visiting lecturer is often the only link the student has with their educational base with respect to the learning benefit students derive from the attachment, to their general well-being and to the relationship with the industry [2]. Thus if not visited, this vital link is severed and the student misses the guidance of the educational institution necessary to make the internship meaningful.

4.3.6 Students' difficulties in compiling report

Students are supposed to compile a report or keep a diary about the work they are involved in and relevant information (such as management structure, staff and their duties) about the sections of the company they get attached at. 75 (51%) of the students said they experienced difficulties in compiling their reports while 128 (63%) said they did not experience any difficulties compiling their report. Further probing of those who had difficulties, compiling their reports revealed the nature of their difficulties as shown in Table 4.5 based on 75 students. Multiple responses were allowed in this question.

Table 4.5: Students' difficulties in compiling report (own)

Students' difficulties in compiling report	Count(n)	Percentage of responses
Short time to compile	25	33%
No computer access	20	27%
Skill to compile report	15	20%
Shortage of Information about company	8	11%

From Table 4.5, 25(33%) of the students said there was short time to compile the report as they worked for long hours during the internship programme leaving no time to compile the report. No computer for writing and less knowledge of compilation were cited 20 (27%) and 15 (20%) of the students respectively. Eight (11%) of the students said they were not able to get information about the companies and some sections as was expected in the report. With proper structuring of the internship programme, students could be placed in all the expected sections of the company and given ample time to reflect on their experiences so as to compile a good report.

4.3.7 Other problems encountered by students during internship

Other problems students encountered during internship revealed that the students experienced a countless of other problems which touched on the internship itself as well as on the general welfare of the student interns as shown in Table 4.6 based on 85 students with other problems. 27 (32%) of the responses were on financial strain. This was made worse by the fact there was no monetary compensation for the work done at the company. The students on internship require funds for various reasons which include searching for the attachment place, to settle down in a new residential area necessitated by the internship, transport to and from the internship place among other reasons. Finances were therefore, key in contributing to the overall quality of the internship.

Table 4.6: Other problems encountered by intern students during internship (own)

Other problems encountered by intern students	Count (n)	Percentage of responses
Transport was not available	23	27%
Poor communication skill (Site Language)	7	8%
Financial strain	27	32%
Unsuitable climate condition	13	15%
Petty work within the company	9	11%
Poor coordination from university mentor	5	6%

Nine (11%) of the responses were on being engaged in petty work within the company while 5 (6%) were on poor coordination from university mentor. This could be solved by properly structuring the internship programme such that the nature of work to be given to the intern students would be known by their intern supervisors. The number of times intern students would be visited would be known and adhered to so as to maintain the vital link with the educational institution.

4.6.8 Students' summary of nature of work done during internship

To conclude this objective, the students were asked to summarize the nature of work they were given to do during the internship. They responded as shown in Figure 4.7 below.
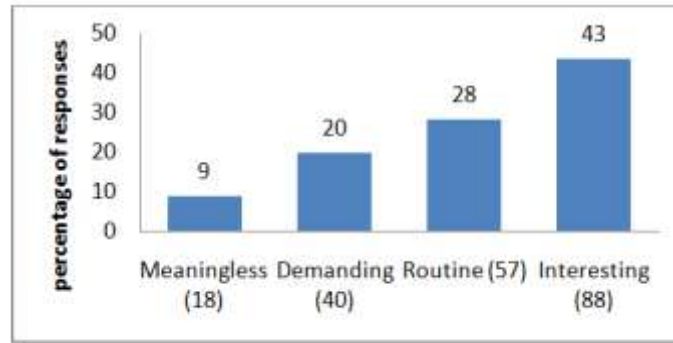
Figure 4.7: Students' summary of nature of work done internship (own)

From figure 4.7, it can be seen that 88(43%) of the students said the work was interesting, 57 (28%) said the work was routine, 40 (20%) said the work was demanding while 18 (9%) said the work was meaningless. This suggests that despite all the challenges they faced, majority of the students found the work they were engaged in to be interesting and this contributed positively to their overall attachment experience.

4.7 Objective (III): To find out whether the internship provides a meaningful learning experience to the students involved

It was in the interest of this study to inquire whether internship provided a meaningful learning experience to the students involved. To do this, various questions were posed to the mentors, coordinator, supervisors and the students. These are discussed below.

4.7.1   Lecturers' expectations of the students after internship

When asked what they expected of the students after internship, lecturers gave their responses as shown in Figure 4.8. This was a multi-response question where the lecturers were allowed to tick more than one expectation from the list provided. This explains why the responses were more than 100%. The majority of the lecturers, 27 (71%) expected the students to improved skills in practical works. Gaining general work experience received 23 (61%) of emphasis while better understanding of theory and develop professional attitudes received 22(58%) and 21(55%) of the emphasis respectively. Only 10 (26%) expected the students to bring new information to be integrated into the curriculum. This implies that the majority of university educators saw the internship experience as a good experience, involving the reflective day to day performance of the work role. This may explain why educational institutions may plan the internship as a genuine learning experience right from the start.
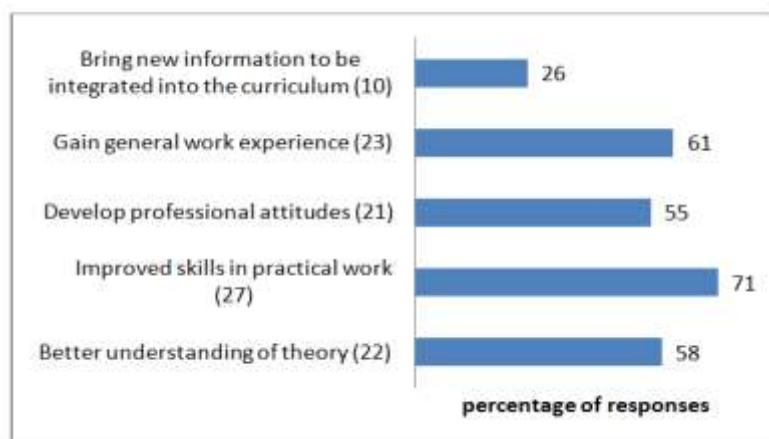

Figure 4.8: Lecturers' expectations for students after internship (own)

4.7.2   Extent to which students achieved objectives of the internship programme

For the internship to be said to be meaningful, the students should be able to achieve the laid down objectives by the end of the internship. When asked to tick the extent to which they felt they had achieved the given objectives by the end of the internship programme, the students responded as shown in Table 4.7.

Table 4.7: Extent to which students achieved objectives (own)

OBJECTIVE	1-To a Very Limited Extent	2- To a Limited Extent	3- To a Large extent	4- To a very large extent
i) Gain general work experience	32 (16%)	83 (41%)	70 (34%)	18 (9%)
ii) Gain a better understanding of Theory	25 (12%)	66 (33%)	81 (40%)	31 (15%)
iii) Acquire confidence for future Work	24 (12%)	71 (35%)	59 (29%)	49 (24%)
iv) Create networks with potential Employers	31 (15%)	79 (39%)	60 (30%)	33 (16%)
V) Improve skills	28 (14%)	67 (33%)	80 (39%)	28 (14%)
vi) Become familiar with new technologies in the industry	45 (22%)	94 (46%)	48 (24%)	16 (8%)
vii) Help integrate the new developments into the curriculum	66 (33%)	90 (44%)	39 (19%)	8 (4%)

From Table 4.7, almost all the students 88 (43%) gained general work experience both to a large and to a very large extent. A good number, 91 (45%) gained a better understanding of theory both to a limited and to a very limited extent. For these students, it seems that their work experience was merely lived through without being reflected upon to bring a better understanding of theory as advised by [2].This may have been due to the myriad of challenges cited earlier on such as uncooperative staff and not being visited among others. Almost all the students, 108 (53%) acquired confidence for future work both to a large and to a very large extent while 110 (54%) created networks with potential employers both to a limited and to a very limited extent. Almost all the students, 108 (53%) improved their skills during the internship programme both to a large and to a very large extent. A substantial number of students, 139 (68%) became familiar with new technologies in the industry to a limited and to a very limited extend and this could be attributed to the place of internship not having these new technologies. This serves to emphasize the importance of the place of internship with regard to the level of opportunities afforded to the student intern. A majority of the students 156 (77%), helped integrate the new developments in to the curriculum both to a limited and to a very limited extent. This may be because the students are not given the opportunity as 91 (45%) of the students did not have a debriefing session with their lecturers after the internship programme. It would be important to provide a forum where students from internship programme can exchange ideas and share their experiences for the benefit of all.

4.7.3   *Students' summary of the internship experience*
The students' summary of their internship experiences as shown in Figure 4.9. As can be seen from Figure 4.9, 60 (29%) of the students said it was a meaningful learning experience, 54 (27%) said it was not what they expected, 46 (23%) said it was excellent, 33 (16%) said it was a mere course requirement and 10 (5%) said it was a frustration that could be removed from the course.
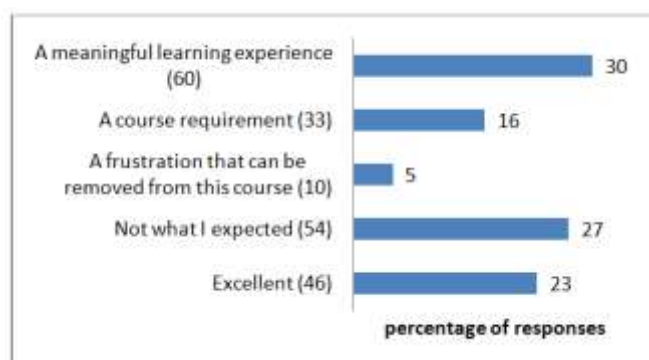

Figure 4.9: How the students summed up internship experience (own)

A cross tabulation between gender and the students summary of the internship programme experience revealed that more females 34 (56.67%) than males 26 (43.33%) summarized the experience as a meaningful learning experience as shown in the Table 4.8 below. However, a chi square analysis depicted that there was no significant statistical relationship between the two variables. This is because p = 0.000 is greater than the critical value of 0.05 at 95% confidence level.

Table 4.8: A cross tabulation between gender and the students' summary of the internship experience (own)

Gender	Summary of internship programme experience					Total
	Excellent	Not what I expected	A frustration that can be removed from this course	A course requirement	A meaningful learning experience	
Male	40(86.96%)	47(87.03%)	8(80%)	25(75.76%)	26(43.33%)	146
Female	6(13.04%)	7(12.97%)	2(20%)	8(24.24%)	34(56.67%)	57
Total	46	54	10	33	60	

Chi-square=36.1, df=4, p=0.000

4.7.4 What the students would like to see changed concerning internship

As can be seen from Table 4.9, 40 (20%) of the students would like to see the placement in good companies providing all works and 33 (16%) would like to see about financial support and exam & grade for internship programme given to intern students to encourage them. It is important to note that 30 (15%) of the students would like to see improved supervision works within the company and the university where as 17 (8%) of the students would like to see suitable duration of internship programme.

Table 4.9: What students would like to see changed about internship programme (own)

	Count (n)	Percentage of responses
Visiting industries& Rotation of students	8	4%
Supervision work (mentor/supervisor)	30	15%
Software training at university	15	7%
Exam and Grade for internship	33	16%
Financial support	33	16%
Workshop and laboratory at university	15	7%
Duration of internship programme	17	8%
Treatment within the company	12	6%
Placement in good companies	40	20%

The students also suggested that there should be software training at university and also the university should provide good quality workshops and laboratories. Twelve (6%) of the students said the companies staffs should treat the students equally without any discrimination. Finally, 8 (4%) of the students suggested students should visit industries before the internship programme and during the internship programme rotation of students within different companies must be applied. These suggestions show that a lot needs to be done about engineering internship programme ranging from where the student is attached (i.e. the internship place), how this internship place is got, the nature of work done during the internship programme to problems experienced by the students outside the internship place. To address these concerns, it is important to develop a closer working relationship between the university and the industry.

V. Conclusion And Recommendations
5.1 Implications of the major findings
5.1.1 The extent to which theory and practice in engineering curriculum relate

It was found out that 94(46%) of the students rated the skills they were taught at Debre Berhan University as useful in performing the industry tasks. But, majority 17(38%) of the supervisors said technical skills was average. In fact, 23 (51%) of these supervisors cited students' lack of basic technical skills as their weakest area. Another great weakness in the students was a negative attitude towards work. The industry also through the supervisors would rather train the students on social/interpersonal skills, technical skills, computer skills, communication skills, positive attitude, among other skills as opposed to multiskilling which the educational institutions seem to emphasize. The implications of these findings are that the practical/technical skills as well as the people management skills taught at the university are relevant to the industry which prefers people with strong practical skills and soft people skills butwas not up to the expectations of the industry. Also, the engineering curriculum was lagging behind in incorporating the technology (computer skills) that the industry requires. In addition, there seems to be a conflict between the academia and the industry on whether to specialize or to multi-skill with the industry keen on specialization perhaps so as to achieve the level of "strongness" and "softness" in the skills it requires.

5.1.2 Problems experienced by students during internship programme

Students experienced many problems during their internship programme which started right from getting the attachment place, continued throughout the attachment period and even to compiling the report. The most important problems were the following:

Many of the students' responses twenty-seven (32%) on problems they experienced during the internship programme were on financial strain. Financial strain was a key problem to the students during

internship as attachment brought with it a lot of changes such as change of residence which required finances to meet. The implication of this finding is that the university sending their students for internship needed to give them enough financial assistance and to revise this assistance upwards. Moreover, the industries where the student is attached could give a token either in terms of transport, accommodation or cash to the intern students to help ease this financial strain.

Various questions responded by intern students revealed that they were discriminated against in terms of the college they came from, gender and also with their educational status since most site workers were diploma and less. This finding is important as it shows the students' need to belong and to be accepted in the industry regardless of their college, gender, tribe and age. This resulted in students being engaged in petty work and being supervised by uncooperative staff which were cited by 9 (11%) and 5 (6%) of the students who had negative experiences during their internship programme. This implies a lack of commitment on the part of both the university and the industry to plan and implement the internship programme as a genuine learning experience right from the start. These problems become worse when the students on attachment 35 (17%) are not visited by their lecturers from the university to give them the necessary guidance and reiterate the learning opportunities afforded by some of the challenges the students faced.

5.1.3 *Whether engineering internship programme provided a meaningful learning experience to the students involved*

Internship programme was a meaningful learning experience to the majority 60 (30%) of students involved despite the challenges facing it. However, the remaining 143 (70%) of the intern students who were of a different opinion could not be ignored. This implies that the challenges facing engineering internship programme were significantly affecting the overall quality of the internship to the extent of not providing a meaningful learning experience.

5.2 Conclusion

From this study, it was concluded that internship programme as conducted in Debere Berhan University was facing many challenges which were felt arbitrarily by the students.The most important challenge was a lack of a close working relationship between the industry and the university. The industry was not given proper instructions on how to conduct the internship programme through a structuring of the internship programme and clearly defining the assessment guidelines. Consequently intern company supervisors engaged them in petty work, discriminated against them and were pre-occupied with assessing the student interns while neglecting their most important role of being there for the students. Another challenge was inadequate times spend with student and supervisor and lack of enough funds allocated for the internship programme in university. This meant that the students could not settle down smoothly for the internship programme due to financial strain. The students also missed the necessary guidance from the university to make the internship programme meaningful as they were not visited by their lecturers due to lack of funds.

5.3 Recommendations

The researcher recommends a new and innovative approach to engineering internship programme, one that will provide a meaningful learning experience beneficial to all the stakeholders involved. The following could be done as a matter of policy:

1. The university should increase contact and cooperation with the industry to enrich the industry's input in course development and assists educators to keep side by side with engineering trends and future developments. This could be done through seminars and workshops, appointment of industry representatives in college advisory boards, more industrial visits and so on.
2. The curriculum developers in the engineering discipline should revise the curriculum to address the needs of the industry fully. This could be done by stepping up the strength of practical skills. To achieve this, more practical hours need to be allocated both in the academic institution as well as in the industry.
3. The internship programme should be structured and harmonized. The university should strive to structure and harmonize issues like the sections the students should cover while on internship depending on the course they are pursuing, the duration of time to spent in each section, nature and amount of work to be performed by the intern students, mode of assessment during and after the internship, duration of the internship period, number of times the students are to be visited and so on.
4. The university should take it upon itself to search for the attachment place on behalf of the students through a closer working relationship with the industry.
5. The intern supervisor should be given more authority, responsibility for the students' education during internship and should be trained through specific seminars.
6. The university should consider introducing financial assistance or revising upwards the amount given in order to afford the students a smooth transition into the internship.

7. The university should commit itself to the internship programme by allocating enough funds essential for effectively managing the required internship visits.
8. The university mentors visiting the students on internship should be given basic guidelines on how to conduct the visit.
9. The university together with the industry should collaborate to clearly define the internship evaluation guidelines for use by university mentors and supervisors.
10. The university should provide the students with quality workshops, laboratories and software trainings.
11. The university should give an exam and letter grade for the internship to minimize unwillingness for the programme.

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