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CHALLENGES EXPERIENCED BY DESIGN STUDENTS TRAINED IN A PUBLIC UNIVERSITY DURING INDUSTRIAL ATTACHMENT

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Abstract

Training in design related courses usually takes four years in the Kenyan setup. During this period, students are taken through various facets of the design discipline in a bid to prepare them for the industry. Topics covered in class include furniture design, history of art and design, interior architecture and space planning, in addition to other relevant courses, depending on one's specialization. In order to verify whether the students experienced any barriers in their industrial attachment, a study was conducted targeting 40 design students. Data was collected through focus group discussion, questionnaire and key informant interview. Despite the training given by the lecturers, the students experience various handicaps when they go for industrial attachment. Challenges highlighted include: lack of mastery of the computer aided design programs, design conceptualization and 3D modeling. The students noted that they overcame the design related problems by identifying a mentor who would guide them through the problematic areas. The amount of time taken to overcome the barriers ranged between 4 weeks to 11 weeks. Some students suggested that the industrial attachment period should begin in first year.

Keywords: Challenges, Industrial Attachment, Design Education

Introduction

Work-related learning refers to planned activities that use the context of work to develop knowledge, skills and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work (Day, 2010). The facets of work related learning highlighted all build up an attachee so as to make him/ her better suited for employment after graduation. Work related learning can also be referred to as industrial attachment which is a program whose main objective is to expose students to the world of work. This experience enables learners to connect the broad theoretical aspects of a given undergraduate program with the tangible experiences of a typical work place. In this light therefore, Industrial Attachment can be viewed as a bridge between the theoretical aspects of a discipline as taught in class and the actual day to day running of a typical employment set up.

McConnell (2008) explains further that periods in the workplace or connected with the world of work can help students to make sense of future career possibilities, become flexible learners able to learn in a wide range of situations, and ideally be better placed to translate their work-related experiences into academic development. This study therefore sought to evaluate certain aspects of the industrial attachment experience of Design students learning in a public university.

Work-related learning covers a broad range of activities for students of all ages. These activities help students to learn about the world of work by experiencing and preparing for it. Work-related learning helps students develop knowledge, skills and understanding that will be useful to them. Work-related learning is an important part of preparing young people for adulthood and the world of work. It connects learning to earning, and helpsyoung people understand how the economy functions, including the role of business and financial services (Qualifications and Curriculum Authority, 2005).

A successful work-related learning curriculum provides opportunities for students to become aware of the nature of shifting employment markets and prepare them to seek out companies and commit to updating their skills across their career by recognizing the importance of life-long learning (McConnell, 2008). This study sought further to establish whether the attachment experience enabled the students to improve on their design skills, which hitherto fore had been executed in a class room setting, rather than in a world involving various clients and other players in the design industry. Presence of a design portfolio would make the attachees stand out whenever they would seek

for design related assignments.

To most students, the Industrial Attachment experience is unique in terms of exposure to unfamiliar technology, work place expectations, work schedule, and the administrative/ organizational structure (Kiplagat, Khamasi, & Karei, 2016). In line with this observation, this study sought to establish whether the learners came across areas which were typically not covered in the curriculum and yet were a crucial part of the design process.

Many of the skills that are essential for both higher education and future employment can be developed through work-related activities. Work experience and enterprise activities, with their focus on social and personal skills, offer opportunities to stretch the most able students. Work-related learning can also offer students opportunities to be creative. Students are motivated by work-related learning activities. They enjoy having the autonomy to tackle relevant problems, take responsibility for their own actions, engage in real issues and evaluate the outcomes of their decisions. The business world strongly supports the acquisition of business and enterprise attributes as an important factor in developing a skilled workforce and a dynamic economy (Qualifications and Curriculum Authority, 2005).

Methodology

The study population was 45 design students trained in a public University. From these students, a representative sample of 40 students was used for the study. Data was collected through questionnaires, key informant interview and focus group discussion. The results have been presented herein.

Results and Discussion

Respondents were aged between 20-25 years as presented in Figure 1.

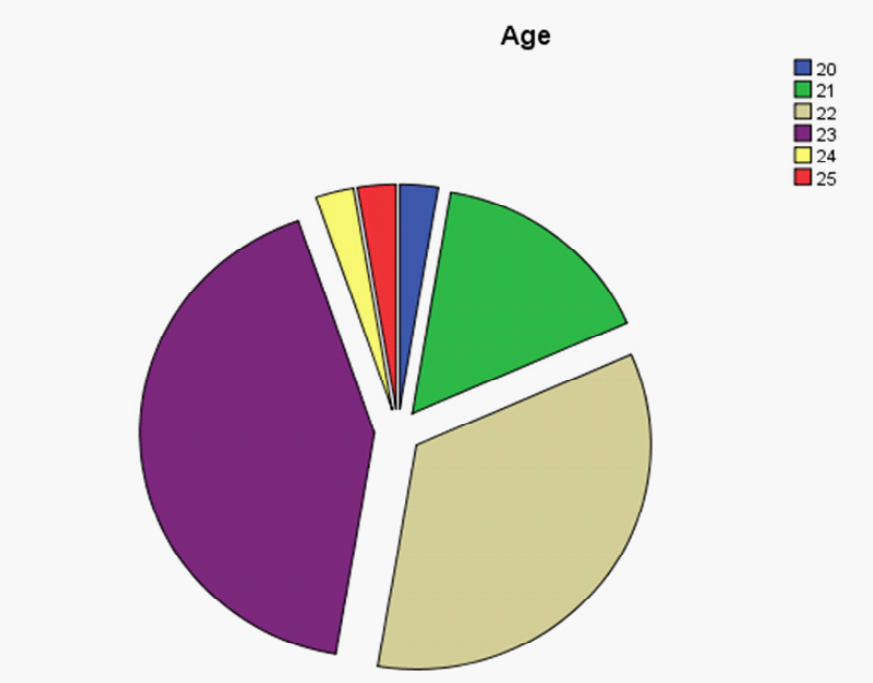

Figure 1. Age distribution.

Respondents aged between 22 years and 23 years accounted for most of the respondents, while the least representation came from those who were 20, 24 and 25 years old. Since Design is a technical field involving the use of creative power, the researcher sought to establish whether the students had been exposed to subjects which provoked their creative ability. Table 1 presents the results.

Table 1

Technical Subjects Done in High School

	Art and Design	Home Science	No Technical Subject	Woodwork	Total
Art and Design	.0%	2.6%	17.9%	.0%	20.5%
Home science	.0%	2.6%	12.8%	.0%	15.4%
No Technical Subject	.0%	.0%	33.3%	.0%	33.3%
Technical Drawing	5.1%	.0%	20.5%	5.1%	30.8%
Total	5.1%	5.1%	84.6%	5.1%	100.0%

Students who had done Art and Design were 20.5% of which 2.6% had also done Home Science, while 17.9% only did Art and Design as a technical course. Students who had done Home science as technical subject were 15.4% of which 2.6% had also done Art and Design, while 12.8% had only done Home Science. Slightly more than a third of the respondents (33.3%) had not done any technical subject. A third of the students (30.8%) had done technical drawing, of which 5.1% had also done wood work. The results show that at least two thirds of the respondents had done one technical subject. This shows that prior to joining the University, they had been exposed to the facets of the design process.

The researcher then verified if the respondents were aware of Interior Design Association of Kenya. This Association brings in various players in the Design field. Further, it is claimed that members of IDAK quickly get attachment places since the Association makes use of its network. The results have been presented in Table 2.

Table 2

IDAK Membership vs. Days it Took to Get an Attachment Place

Member of IDAK	Days it took Before Securing an Attachment Place													Total
	1	2	3	5	7	10	12	14	20	21	30	41	46	
No	2.6%	2.6%	7.7%	.0%	7.7%	7.7%	5.1%	7.7%	5.1%	.0%	10.3%	.0%	2.6%	59.0%
Yes	.0%	2.6%	5.1%	2.6%	2.6%	2.6%	.0%	12.8%	2.6%	2.6%	5.1%	2.6%	.0%	41.0%
Total	2.6%	5.1%	12.8%	2.6%	10.3%	10.3%	5.1%	20.5%	7.7%	2.6%	15.4%	2.6%	2.6%	100.0%

Amongst the respondents, 59% were not members of IDAK while 41% were members of IDAK. Respondents took between 1 to 46 days to secure an attachment place. The responses also show that the respondents experienced difficulty regardless of whether they were members of IDAK or not. This finding shows a weak point on the part of IDAK since despite its network, it does not assist junior designers to secure places of attachment. An evaluation of the location of Design firm vs. the days it took to get an attachment place has been presented in Table 3.

A total of 8.3% of the respondents were attached to Eldoret, of which 7.7% took 14 days before securing a place, while 2.6 % took 30 days before

securing a place. In Kisumu, 15.4% of the respondents were attached therein. Securing attachment places in this city took between 3 to 30 days. The bulk of respondents attached herein (5.1%) were however able to get places in three days. In Nairobi city, securing attachment places took between 1 to 46 days. Respondents attached herein were 61.5%. This accounted for more than half of all the respondents. In Nakuru, respondents noted that they took 30 days to secure a place of attachment. The only place which recorded a different trend was Nyahururu since all the respondents based herein secured attachment places in three days. These findings reveal that difficulty securing attachment places was experienced by the respondents regardless of whether the given firm's location was in a town or a major city. The level of difficulty securing a place was however most difficult in Nairobi City compared to all the other places since a significant portion of attachees passed the 30-day mark in looking for a place of attachment.

These findings are in line with that of a study investigating attachment issues in a University in Zimbabwe. These researchers established that challenges in securing industrial attachment place are a phenomenon not associated or limited to Chinhoyi University of Technology's students alone (Chinyemba, Chirimuta, Sithole, Bvekerwa, & Gwangwava, 2012). The researcher then compared the days it took to secure an attachment place vs. the duration of the attachment (Table 4).

Table 3

Days it Took to Secure an Attachment Place Vs. Location of Firm

Location of Firm	Days it took Before Securing an Attachment Place													Total
	1	2	3	5	7	10	12	14	20	21	30	41	46	
Eldoret	.0%	.0%	.0%	.0%	.0%	.0%	.0%	7.7%	.0%	.0%	2.6%	.0%	.0%	8.3%
Kisumu	.0%	.0%	5.1%	.0%	2.6%	2.6%	.0%	2.6%	.0%	.0%	2.6%	.0%	.0%	15.4%
Kampala	.0%	.0%	2.6%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%	.0%	.0%	5.1%
Mombasa	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%	.0%	.0%	.0%	.0%	2.6%
Nairobi	2.6%	5.1%	2.6%	2.6%	7.7%	7.7%	5.1%	10.3%	5.1%	2.6%	5.1%	2.6%	2.6%	61.5%
Nakuru	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%	.0%	.0%	2.6%
Nyahuru-ruru	.0%	.0%	2.6%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%
Total	2.6%	5.1%	12.8%	2.6%	10.3%	10.3%	5.1%	20.5%	7.7%	2.6%	15.4%	2.6%	2.6%	100.0%

Table 4

Comparison between Attachment Duration and Days it Took to Get Placement

Days in securing attachment place	Duration of Attachment in weeks							
	4	5	6	7	8	9	12	Total
1	.0%	.0%	.0%	.0%	.0%	.0%	2.6%	2.6%
2	.0%	.0%	.0%	2.6%	2.6%	.0%	.0%	5.1%
3	.0%	.0%	.0%	2.6%	7.7%	.0%	2.6%	12.8%
5	.0%	.0%	.0%	2.6%	.0%	.0%	.0%	2.6%
7	.0%	.0%	.0%	.0%	7.7%	2.6%	.0%	10.3%
10	.0%	.0%	.0%	.0%	10.3%	.0%	.0%	10.3%
12	.0%	.0%	5.1%	.0%	.0%	.0%	.0%	5.1%
14	.0%	2.6%	.0%	.0%	17.9%	.0%	.0%	20.5%
20	.0%	.0%	2.6%	.0%	5.1%	.0%	.0%	7.7%
21	.0%	.0%	.0%	.0%	2.6%	.0%	.0%	2.6%
30	.0%	.0%	.0%	2.6%	10.3%	.0%	2.6%	15.4%
41	.0%	.0 %	.0%	.0%	2.6%	.0%	.0%	2.6%
46	2.6%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%
Total	2.6%	2.6%	7.7%	10.3%	66.7%	2.6%	7.7%	100.0%

Students were attached for a duration lasting between 4 to 12 weeks. The bulk of students were attached for 8 weeks (66.7%). This duration was the prescribed minimum given by the institution providing training. A significant proportion of attachees were at the place of attachment for 7 weeks (10.3%). An interesting occurrence was observed from the respondents who were attached for an extra four weeks more than the prescribed minimum. These respondents were attached for 12 weeks (7.7%).

Respondents who managed to get a place between 1-10 days were attached for at least 8 weeks. This trend was then broken by the attachees who took 12 days since they were all attached for six weeks. Respondents who took 14 days were attached either for 5 weeks (2.6%) or 8 weeks (17.9%). Respondents who took twenty days were attached either for 6 weeks (2.6%) or eight weeks (5.1%). Students who took twenty-one days were all attached for 8 weeks, while those who took 30 days to get a place were attached either for seven weeks (2.6%) or eight weeks (10.3%). Attachees who took 41 days to secure a place were attached for eight weeks, while those who took 46 days were attached for 4 weeks (2.6%). Spearman's rho was run for these two variables and the results have been presented in Table 5.

Table 5

Spearman's Coefficient

Days it took before securing attachment place	Duration of attachment in weeks
Correlation Coefficient	-0.140

These responses show that duration of attachment was not significantly dependent on how long one took to get a place of attachment. The researcher then compared the barriers encountered to the attachment duration as is evidenced in Table 6.

Table 6

Barriers Experienced vs. Duration of Attachment

Number of Barriers Encountered	Duration of Attachment in weeks							
	4	5	6	7	8	9	12	Total
None	.0%	.0%	.0%	5.0%	5.0%	.0%	0%	10%
One	.0%	.0%	.0%	5.0%	5.0%	5.0%	0%	15.0%
Two	5.0%	.0%	5.0%	.0%	25.0%	.0%	0%	35.0%
Three	.0%	5.0%	5.0%	10.0%	20.0%	.0%	0%	40.0%
Total	5.0%	5.0%	10.0%	20.0%	55.0%	5.0%	0%	100.0%

The barriers experienced by the respondents varied between none to three. Attachees who did not experience any barrier were 10% and they were attached for either 7weeks (5%) or 8 weeks (5%). Respondents who experienced one barrier were attached either for 7 weeks (5%), 8 weeks (5%) or nine weeks (5%). Respondents who experienced two barriers were attached either for 4 weeks (5%), 6 weeks (5%) or eight weeks (25%). Respondents who experienced three barriers were attached either for 5 weeks (5%), 6 weeks (5%), 7 weeks (10%) or 8 weeks (20%). It is interesting to note that amongst the respondents attached between 4 to 8 weeks, the percentage experiencing barriers increased as the attachment duration progressed. Another interesting phenomenon is that those attached for between 10-12 weeks did not highlight the presence of any barrier.

From the key informant interview, it was established that the more time the attachees spent at a firm, the more they became acquainted with its organizational structure. As a result, they felt more at home and they ventilated whatever issues they felt were a problem. Attachees who left before the ten-week mark therefore left before becoming part and parcel of an organization. Further, the study evaluated the employee numbers versus the barriers experienced as has been presented in Table 7.

Barriers experienced varied between none and three. A quarter of the respondents (40%) experienced three barriers. This trend was reported in firms having 3, 6, 8, 10, 15 or 27 employees. Within this category the highest occurrence was reported in firms having 10 employees (15%). Slightly more than a third (35%) of the respondents experienced two barriers. This trend was reported in firms having 2,3,6,9, 20 and 100 employees. Slightly more than a tenth of respondents experienced one barrier (15%). This trend was reported in firms having 30, 70, and 120 employees.

Table 7

Employees in Firm vs. Number of Barriers Experienced

No. of employees in firm	Number of Barriers Encountered				Total
	None	1	2	3	
2	.0%	.0%	5.0%	.0%	5.0%
3	.0%	.0%	5.0%	5.0%	10.0%
5	.0%	.0%	5.0%	.0%	5.0%
6	.0%	.0%	5.0%	5.0%	10.0%
8	.0%	.0%	.0%	5.0%	5.0%
9	.0%	.0%	5.0%	.0%	5.0%
10	.0%	.0%	.0%	15.0%	15.0%
15	5.0%	.0%	.0%	5.0%	10.0%
17	5.0%	.0%	.0%	.0%	5.0%
20	.0%	.0%	5.0%	.0%	5.0%
27	.0%	.0%	.0%	5.0%	5.0%
30	.0%	5.0%	.0%	.0%	5.0%
70	.0%	5.0%	.0%	.0%	5.0%
100	.0%	.0%	5.0%	.0%	5.0%
120	.0%	5.0%	.0%	.0%	5.0%
Total	10.0%	15.0%	35.0%	40.0%	100.0%

Pearson's correlation was computed to establish whether there was a significant relationship between the number of barriers encountered and the duration of attachment. The results have been presented in Table 8.

Table 8

Pearson's Correlation for Number of Barriers Experienced vs. Duration of Attachment

	Duration of attachment in weeks
Number of barriers encountered	-.101

The correlation confirms that there was no significant relationship between the duration of attachment in weeks and the number of barriers encountered. Presence of barriers in a design firm can therefore not be used as an excuse for not finishing the assessment.

Respondents were then asked to highlight the two most prominent barriers which they had experienced. A presentation of specific barriers highlighted by respondents has been presented in Table 9.

Table 9

Exposition of Barriers Experienced During Industrial Attachment

Barrier I	Barrier II									Total
	Difficult clients	Inadequate exposure	little knowledge	no allowances	None	software	working conditions	Time lines	Unfamiliar Surrounding	
communication barrier	.0%	.0%	.0%	2.6%	.0%	.0%	.0%	2.6%	.0%	5.1%
difficult clients	.0%	.0%	.0%	.0%	.0%	.0%	.0%	2.6%	.0%	2.6%
inadequate exposure	.0%	.0%	5.1%	5.1%	.0%	.0%	.0%	.0%	.0%	10.3%
language	.0%	.0%	.0%	.0%	.0%	.0%	.0%	.0%	5.1%	5.1%
little knowledge	.0%	2.6%	.0%	5.1%	2.6%	.0%	2.6%	.0%	.0%	12.8%
no allowances	.0%	5.1%	10.3%	.0%	10.3%	2.6%	2.6%	7.7%	.0%	38.5%
None	.0%	.0%	2.6%	.0%	.0%	.0%	.0%	2.6%	.0%	5.1%
New software	.0%	.0%	.0%	2.6%	.0%	.0%	.0%	.0%	.0%	2.6%
poor working conditions	2.6%	2.6%	.0%	2.6%	.0%	.0%	.0%	.0%	.0%	7.7%
timelines	.0%	2.6%	2.6%	.0%	.0%	5.1%	.0%	.0%	.0%	10.3%
Total	2.6%	12.8%	20.5%	17.9%	12.8%	7.7%	5.1%	15.4%	5.1%	100.0%

Various barriers were experienced by respondents such that respondents who highlighted the presence of a communication barrier between them and the management or clients explained that they were either not given any allowance (2.6%) or they had a problem with timelines (2.6%). For this category of students, the lack of allowances dampened their creative potential. During the focus group discussion, some attachees explained that they would spend a lot of money in bus fare in the trip to and from the design firm. The dampened creativity also impacted negatively on their ability to beat deadlines.

Another group of respondents indicated that they had little knowledge (5.1%) or were given no allowances (5.1%) stated that by the end of the attachment experience, they had gotten little exposure on the design discipline (10.3%). From the focus group discussion, it was ascertained that those who felt they had little knowledge were not confident as designers. Some respondents noted that they experienced a

language barrier as a result of working in unfamiliar surroundings (5.1%). This phenomenon was present amongst learners who were attached in Kampala (Uganda). These attachees were not familiar with the local dialect given that they came from a neighbouring country. This barrier was experienced during times when they met clients who were not conversant with the English language.

Respondents who highlighted the presence of poor working conditions (7.7%) also experienced either of these barriers: difficult clients (2.6%), inadequate exposure (2.6%), or no allowances (2.6%). These results reveal that the students experienced more than one barrier when they were on attachment.

From the Table, the significant combination of barriers which recorded high percentages were:

- Inadequate exposure plus little knowledge (5.1%), inadequate exposure plus no allowances (5.1%), inadequate exposure plus poor working conditions (2.6%) and inadequate exposure plus timelines (2.6%).
- No allowances plus inadequate exposure (5.1%), no allowances plus little knowledge (10.3%), no allowances only as a stand-alone barrier (10.3%), no allowances plus new software (2.6%), no allowances plus poor working conditions (2.6%), no allowance plus timelines (7.7%).

These findings are in line with an observation made by Chinyemba, Chirimuta, Sithole, Bvekerwa, and Gwangwava (2012) who confirmed that authentic assessment of students on industrial attachment only takes place where the student is attached at a credible organization. In addition to this the student should be exposed practically to the broad categories of the specific field of study.

The findings from this study also agree with that of McConnell (2008) who chronicled statements of students who were on attachment. Examples of Statement include:

"The commute is killing me physically […] and financially....! I am working on finding somewhere to stay....to ease the purse strings

"I have made many sacrifices during my placement, on things such as travel expenses, long distance journeys and long hours, and they have all been worth it."

These statements chronicle the experience of students who were on attachment. These attachees confirm that when allowances are not paid, the attachment experience becomes an expensive venture on the part of the student. Based on the findings of the study, it can be verified then that the students who were not paid an allowance went through the experience with difficulty.

Another barrier highlighted by respondents was the presence of little knowledge on the part of the respondents. In a study conducted by McConnell (2008), an attachee made the following quote:

> "I have learnt how the industry works ……., I don't think that I want to be a designer as this is not my main strength."

It seems therefore that some attachees were exposed to the rigors of design practice and they confirmed that they would not like to pursue design as a career path.

Another barrier stated by respondents was little exposure. During the focus group discussion, some of the designers explained further that they were not involved in all the phases of the design process. During execution of projects they were given opportunity to handle bits and pieces of the same. As a result, they could not configure practically the all components of the design process. McConnell (2008) also established that sometimes students do not feel that they have gained anything from the attachment experience as is evident in the following quote:

"As a student in the company you are quite cut off from the actual running of the business. You are given work to do and you sit outside and do it. Sometimes it was difficult to know what was going on and gauge whether you were just a pair of hands or a free courier service."

There were a lot of ups and downs there. You did feel a lot like a student rather than a part of a work force or team. I would only recommend this placement if you are quietly confident, prepared for some really rubbish jobs and are ready for no thanks.

I was given a very basic brief (four lines to cover everything) and left in a room alone to get on with it. My work was supposed to be supervised by […] however she left early on and no one was willing to take responsibility for me. The company did not want me to get involved with the day to day running of the business but were neither willing to give me any direction on what to design (McConnell, 2008).

The presence of poor working conditions was also a barrier which was highlighted in the study. During the focus group discussion, the discussants revealed that sometimes they had to work in very dusty workshops with no protective gear. During some instances,

the office premises were very crowded. In this light, this study confirms a finding by McConnell (2008) who explained that key issue which attachees sometimes have to contend with is the implication of health and safety and legal compliance to micro, small and medium-sized enterprises (SMEs). These pose challenges as many are operating from small shared studios or from home and do not have the time nor resources to accommodate such measures.

In order to deal with some of the challenges the students experience during attachment, Kiplagat et al. (2016) recommend that training institutions play an active role in the placement of students for Industrial Attachment to minimize stress that is experienced by students. Evidently, when the students struggle individually to find placement, they end up taking 'anything' that comes their way. An experience from such a compromised option might impact negatively on the output and outcomes; consequently, an academic institution will end up producing graduates who are ill prepared for the workplace

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