
ROLE OF SECONDARY EDUCATION IN LEARNING ARCHITECTURE FOR PAKISTAN

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ABSTRACT

Most research on the global level indicates that the education students receive before entering higher education impacts the way they perceive their learning situation. In Pakistan's scenario, the different types of secondary education (Matric & F.Sc., DAE, and O & A levels) emerging from various early education systems are identified in the literature as imparting unique skills in students. Upon entering the schools of architecture these skills can be found helpful or not by students and define the way they perceive and experience architectural learning. This in return has some pedagogical implications for architecture schools. Through extensive research in 14 architecture schools in Pakistan, the current study explores the types of early education students had before joining the schools of architecture and what is their perception about its usefulness. Data is collected through both the quantitative and qualitative means and analysed using SPSS and Nvivo 12. The findings show that students have found the O and A levels education most helpful in learning architecture, primarily because of its training for critical thinking.

Keywords: Secondary education in Pakistan, Architectural Learning, learning conception, critical thinking

INTRODUCTION

The purpose of this study is to highlight the difficulties and problems faced by the students in learning architecture as a direct outcome of their secondary education. Higher education is more students oriented as compared to early and secondary education. Here students are expected to be active learners, as literature identifies that learning takes place through the active engagement of the students. Biggs (1999) mentioned that learning occurs when students can make sense of the knowledge provided in a learning context in conjunction with the skills and understanding they already possess. This study explores how different types of secondary education in Pakistan define students' skills and understanding which impact their learning ability in the school of architecture. For this, types of secondary education in Pakistan are explained, also the teaching pedagogy of architecture as elucidated in the literature is discussed briefly. After this, a relationship between these two is explored through data collected in fourteen architecture schools in Pakistan.

SECONDARY EDUCATION IN PAKISTAN

Early and secondary education in Pakistan is extremely stratified based upon several factors including social class, geographical location, gender, and education provider (Government or private sector) (Andrabi et al 2008; Rahman 2004). This division is implemented at the primary and middle stages of school learning based on different types of curriculums and pedagogical practices (Alderman et al 2001; Aslam 2009). However, this division becomes most evident at the secondary education stage, which starts with the school year 6th to 8th and finishes with year 12, before entering higher education. There are two basic types of secondary education, known as "Matriculation and intermediate" or matric and FA/FSc, and "Ordinary and Advanced levels" or O and A levels. After completing the 7 or 8 years of education in schools and upon entering the final phase of secondary education, students can choose which type of secondary education they want to take. Matriculation and Intermediate is the national examination framework and managed by the "Board of Intermediate and Secondary Education" commonly

known as BISE. Whereas O and A levels are managed by “Cambridge International Education” also known as CIE UK. One is the local education system, and the other is internationally recognised. However, this is not the only difference. There are significant differences in the syllabus and teaching pedagogies of these two systems. O and A level education is comprehensive, and concept-based, whereas the BISE system is identified to be based on rote learning with a focus on quantity rather than quality (Raja, 2019).

Moreover, the BISE system is very strictly defined in terms of the options of subjects, mostly divided into two categories of “Science” and “General” subjects. Whereas, in O and A levels students can choose from a range of optional subjects which better prepare them for a range of university subject areas. Despite its reputation of a better system, only 3% of students in Pakistan complete their secondary education under O and A levels. The primary defining factor is finances, O and A levels education is significantly expensive, and only a handful of institutions in Pakistan are providing this education. So, this form of education is only available to a small percentage of the elite in Pakistani society (Ishfaq, 2009). The Single National Curriculum (SNL) that is planned to be implemented in Pakistan in the coming years also focuses on mitigating this gap in school education in Pakistan (MFEPT, 2020), but its effects are yet to be seen. Moreover, although so far it is only implemented at the primary education stage, at the moment it is dealing with the language and curriculum at the schools and not focusing on Pedagogy. Pedagogy is expected to have a more profound impact on students’ critical thinking ability (McDade, 1995).

Other than BISE, and O and A levels education system, there is a third system that is often not a part of mainstream education. It is called the Diploma of Associate Engineering or DAE and is a three-year post-secondary program offered in various engineering disciplines and architecture. This diploma is offered at a handful of government training institutions, individuals getting this diploma work as technicians, site supervisors, sub-engineers, operators, and draftsperson in their career. Families who cannot afford a full professional degree prefer this program for their young members. However, there is a possibility of further education; almost all universities have reserved seats for students with this diploma to get admission in different professional disciplines. These seats usually are very few, for example, 1 or 2 seats for a class of 40, so very few students entering this education system end up in university. However, there is not much competition on these seats, because mostly these students cannot afford a university education.

Language is another important aspect of learning in Pakistan,

as education is bilingual based on Urdu and English. The main language at a school majorly depends upon if it is a Government or private sector school, with Government schools being predominantly Urdu based and private schools English based. Also, within private sector schools, the fee structure is often found to be the defining factor for the quality of English language skills provided to students. Although a majority of the population in Pakistan speaks Urdu, English is considered as the language of power and it is believed to be associated with social mobility (Mansoor et al. 2005; Mehboob 2002; Rahman 2004, 2005). O & A levels education is mostly provided at expensive private schools, and these schools are also known for imparting good English language and communication skills in students, so students taking O & A levels are expected to be better in English Communication.

Based upon O & A levels training when students enter universities where academic language is predominantly English, and students are expected to think critically, these students are expected to perform better (Manan et al., 2017). This factor of English language and critical thinking ability is expected to have a deeper impact on architectural education, as it is an art field and students are expected to present and defend their work. This is further explained in the section below.

ARCHITECTURAL LEARNING

In order to explore the impact of early education on architectural learning, it is important to understand the pedagogical practice in the schools of architecture and students’ position in this.

The design studio is at the core of learning in architecture, it is the most dominant subject in architecture learning with the highest contact and credit hours per week. Other subjects serve the design studio by providing the necessary information to support the design project. McClean et al. (2013) argued that a design studio is a culture that is dependent upon a collective will of people to work together. It is a problem-based learning environment that is focused on critical thinking (Barker, 1994). Critical thinking ability is often described in the literature as the most important quality in learning to design. Clune (2014) claimed that the focus of the design studio is to develop critical thinking skills and reflective practice. However, the ability to think critically is highly dependent upon the education students have received before joining higher education (Santn & Torruella, 2017). Similarly, reflective practice that is the ability to think about one’s actions, learn from them and

improve the learning process, is highly dependent on students' thinking process developed as a result of their education. From the literature, it seems that if students were encouraged to think critically and question their actions and mistakes, it is more likely that they will find studio learning interesting and they will take initiative in developing pedagogical relations. Therefore, this study seeks to explore that how different schooling system in Pakistan impacts students' ability to think critically, and how it is impacting their learning experience in architecture.

Another important aspect associated with the design studio is the crit or review, which is identified as the most important activity in an architecture school's calendar (Webster 2005, 2006, and 2007). There is extensive literature on the importance and practice of architectural review. But the most relevant aspect of this practice that is affected by students' prior education is the ability to present their work. As mentioned before, learning in Pakistan is bilingual, however, university education is more dominantly based on the English language. Even though teachers do not always demand their students to speak in English, but the ones that do are often considered more intelligent and hard-working (Iqbal & Roberts, 2019). As mentioned before, only a handful of secondary education schools are able to provide a good grasp of the English language. So, it is important to investigate that how students' English language skill shaped up by their schooling is impacting their architectural learning.

METHODOLOGY

This study is part of a larger study conducted for PhD at the Welsh School of Architecture; the context of the study is

Pakistan. The larger study was based on mixed-method research incorporating both the qualitative and quantitative means and investigated students' learning experiences and approaches in the schools of architecture defined by their social background. However, secondary education was found one of the most important factors in the data, defining students learning experiences. So, the same data set collected from the quantitative and qualitative means is used for this study where a direct relationship of students' secondary education and their architectural learning is explored.

As identified in the literature, all research methods have certain limitations (Atieno 2009, Queirós et al. 2017). Thus, using multiple approaches offers diversity and provides the opportunity to examine the situation from different perspectives (Tashakkori & Teddlie 2003). This is 'triangulation' in research. The importance of triangulation has been discussed extensively in the literature (Carter et al. 2014, Smith 2003). Williamson (2005) suggests that mixed methods research allows the limitations of each method to be transcended, as the scholar is able to take different perspectives on the same phenomenon. For this reason, this research uses methodological triangulation and uses both qualitative and quantitative methods.

The quantitative study was conducted through a questionnaire survey. For this, all 21 accredited Architecture schools on the PCAPT website were contacted for the questionnaire survey. 14 schools responded and agreed to a visit, upon visiting these schools, hard copies of the questionnaire survey were circulated among the students from all 5 years of study. A total of 1345 responses were collected from all 14 schools. However, when entering data in the excel sheet,

Table-1: Number of Student Responses from the Universities Involved in the Study.

No.	The University	Frequency	Percentage	Valid Percent	Cumulative Percent
1	BNU	127	9.5	9.5	9.5
2	BUIITEMS	71	5.3	5.3	14.9
3	Comsats Islamabad	85	6.4	6.4	21.3
4	Comsats Lahore	117	8.8	8.8	30.1
5	Dawood	128	9.6	9.6	39.7
6	IVS	98	7.4	7.4	47.1
7	KU	70	5.3	5.3	52.3
8	NCA	88	6.6	6.6	58.9
9	NED	60	4.5	4.5	63.5
10	PU	100	7.5	7.5	71
11	Superior	81	6.1	6.1	77.1
12	UET	154	11.6	11.6	88.6
13	UMT	88	6.6	6.6	95.3
14	USA	63	4.7	4.7	100
	Total	1330	100	100	

15 questionnaires were discarded as the students had only completed their names and other necessary information and had not responded to the other questions. So, there are 1330 useable responses. Through frequency analysis, Table 1 shows the number of responses from all the universities in which the study was conducted.

The semi-structured interviews were conducted with a sample of students chosen at random during the visits to the schools. The researcher made this random selection after being formally introduced to the students. She began by introducing herself and explaining the research. A consent form was then given to the participants to be signed. As the interview was to be recorded, participants were given information about the recording methods, and their comfort was assured. A total of 44 interviews were conducted in 10 architecture schools.

Data is analysed separately for the quantitative and qualitative studies. Quantitative data is analysed using SPSS using frequency analysis and cross-tabulation. Qualitative data is transcribed in word and then analysed using NVivo 12 through the method of coding.

FINDINGS

The findings of this study are discussed based on the quantitative and qualitative data, a relationship of these is explored in the final discussion. For the quantitative data, along with frequency analysis on SPSS, the other test used is Crosstabulation. This test is used to find the correlation between two variables, in this study it is used to find the correlation between students' secondary education and different aspects of architectural learning. The Chi-square test is part of crosstabulation and it shows if the two variables mutually dependent or not. For each crosstabulation test conducted in this study, results of the chi-square show statistically significant evidence of very strong association ($p < 0.01$), and 0 (0.0%) cells have an expected count less than 5, so the null hypothesis is rejected. This means a statistically significant association exists between the two variables.

Table-2: Types of Secondary Education in Study.

Type of Secondary Education in the Study				
Matric & FA/FSc	Frequency	Percentage	Valid Percent	Cumulative Percent
Matric & FA/FSc	1006	75.6	75.6	75.6
DAE Arch/Civil	53	4.0	4.0	79.6
Matric & ICS	2	0.2	0.2	79.9
O & A Levels	267	20.1	20.1	100
Total	1330	100	100	

FINDINGS FROM THE QUANTITATIVE DATA

As mentioned above, data for this study is extracted from a larger study conducted as part of PhD. The original questionnaire was longer but it included 8 relevant questions for the current study. These are 1) what type of secondary education you had, 2) why did you choose to join architecture, 3) is your secondary education helping you to learn architecture, 4) Do you feel confident at the beginning of a new design project, 5) do you think that critiques are respectful and constructive, 6) Do you think Verbal skills in English are important in learning architecture, 7) How do you rank your ability to communicate in English before coming to architecture school, and finally 8) how much you think you are dependent on the guidance provided by the teachers. Findings from these questions are discussed in the next sections. The questionnaire is based on a four-point Likert scale to avoid the option of "neutral answers" that is often associated with the central or third option of 5 points Likert scale. This is done to get clear positive and negative answers from the students which make data more comprehensible.

DIFFERENT TYPES OF SECONDARY EDUCATION

The first question was focused on identifying different types of secondary education students had before entering the school of architecture. Four types of secondary education are identified in the data collected through the questionnaire survey as shown in table 2. Among these types, only 2 students among the total number of 1330 students had the secondary education of ICS. Therefore, ICS is not included in the further investigation process. Among the remaining three types, Matric and FA/FSc is the most popular among students, as 75.6% of students studied this before entering the school of architecture. O & A levels is the second most popular type studied by 20.1% of students. DAE Arch/ Civil is the third most famous type of secondary education, studied by only 4 percent of students.

PERCEPTION OF ARCHITECTURE

As an indicator of their perception of this profession, students were asked the reason for the choice of architecture. To comprehend their responses, the two variables, “secondary education” and “the reason for the choice of architecture” are cross-tabulated using SPSS. A statistically significant association is found between these two variables. The results of cross-tabulation are represented through pie charts in Figure 1. Students who entered architecture by being attracted to the profession indicate that they had done some research on the profession and develop an understanding before getting admission to the school. Only 24% of students with FA/FSc background, whereas 62% of students with O & A levels background chose architecture by being attracted to the profession. This shows that a maximum number of students with O & A levels understand the profession before entering the school.

Moreover, the difference is very clear for getting admission on the assigned merit by the university admission system, and this indicates a very important result. It shows that these students have no understanding of architecture and its learning requirements, and they entered this profession only because it was assigned to them. A maximum number of students with FA/FSc background, that is 29%, entered architecture school by getting admission on merit. 9% of students with DAE background and only 3% students with O & A levels entered the school for this reason. Some students in each group got admission to the school by getting inspired by some famous architect or some architect they personally know. Also, a significant number of students from each group entered architecture because of their family’s advice. However, the percentage of these students is quite similar in all groups and does not communicate any significant differences.

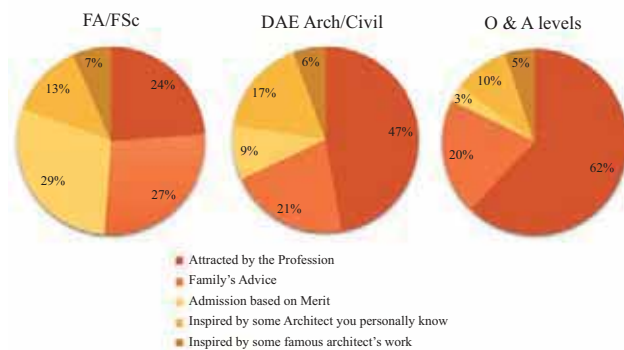


Figure-1: Students Response for Joining Architecture.

ROLE OF SECONDARY EDUCATION IN LEARNING

To draw a direct comparison between the type of early education and its usefulness, these two variables are cross-tabulated and found statistically correlated. Table 3 shows the cross-tabulation result; however, to make it more comprehensible, positive, and negative responses are added and shown in the form of a bar chart Figure 2. This result clearly shows a large variation in the level of satisfaction for the three types of secondary education. For O and A levels, a big majority (75.3%) of students responded that this education is very or moderately useful for them in learning architecture. For Matric & FA/FSc almost similar majority students (72.3%) expressed that this education is not helpful for them in learning architecture. The interesting aspect is that the subjects taught in both systems are mostly similar; only the pedagogical methods vary. DAE is also identified by the majority of students (65.8%) to be helpful in learning architecture. However, it was explored that the usefulness of O & A levels and DAE is very different in nature, which will be explained through qualitative data. Another way of observing the contrasting results of different secondary education is through the count and expected count in Table 3. For O & A levels students, the count of “very useful” is significantly high than the expected count, and for FA/FSc students it is significantly low. This shows that for O & A levels students, the usefulness of early education is much higher than expected in overall data, and for FA/FSc students it is much lower.

LEARNING EXPERIENCES

After the investigation of different types of secondary education students had, their reasons for joining architecture, and their opinion about the usefulness of secondary education in learning architecture. The remaining five questions focus

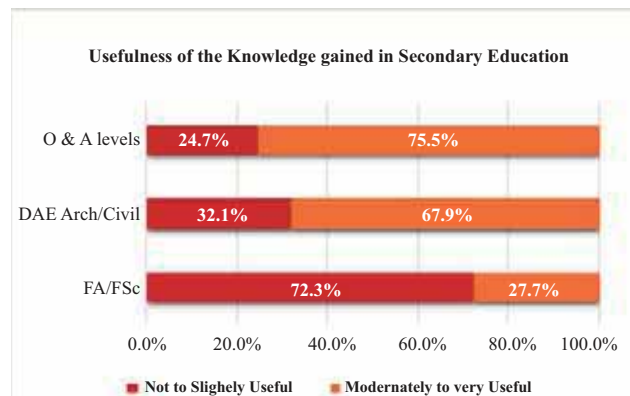


Figure-2: Student Response to Usefulness of Secondary Education.

Table-3: Usefulness of Secondary Education.

Secondary Education *Crosstabulation* Knowledge Gained in Secondary Education						
Secondary Education		Not Useful	Slightly Useful	Moderately Useful	Very Useful	Total
FA/FSc	Count	377	350	184	95	1006
	Expected Count	304.1	309.4	220.9	171.7	1006.0
	% within secondary education	37.5%	34.8%	18.3%	9.4%	100.0%
DAE Arch/Civil	Count	3	14	11	25	53
	Expected Count	16.0	16.3	11.6	9.0	53.0
	% within secondary education	5.7%	26.4%	20.8%	47.2%	100%
O & A Levels	Count	22	44	96	105	267
	Expected Count	80.7	82.1	58.6	45.6	267.0
	% within secondary education	8.2%	16.5%	36.0%	39.3%	100%
Total	Count	402	409	292	227	1330
	Expected Count	402.0	409.0	292.0	227.0	1330.0
	% within secondary education	30.2%	30.8%	22.0%	17.1%	100%

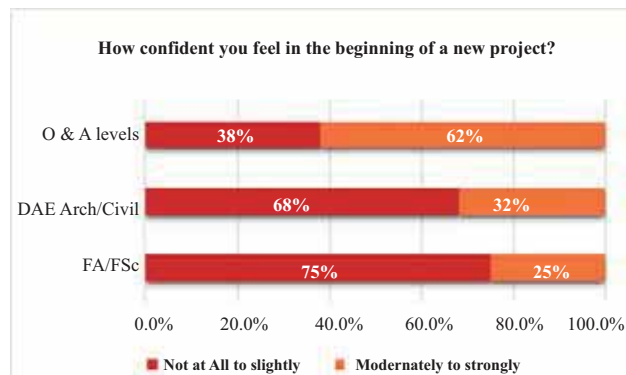


Figure-3: Students' Reasons to Confidence at the Beginning of a New Project.

to understand students learning experience of architecture in relation to their secondary education. Responses of all these questions are cross-tabulated with the students' secondary education and a statistically significant association is found in the results. For a clear understanding of the responses, the results are shown in the form of bar charts by adding the percentages of not at all to slightly and moderately to strongly

For the question "confidence at the beginning of a new project" 62% of students with O & A levels background answered that they feel moderate to strongly confident at the beginning of a new project, whereas only 25% of students with FA/FSc background responded that they do. This percentage is not very high (32%) for DAE students as well Figure 3.

The question of "if critiques are respectful and constructive", shows a huge variation of response from different secondary education students. A majority of 73% of students said that they are, whereas only 29% DAE, 38% FA/FSc students

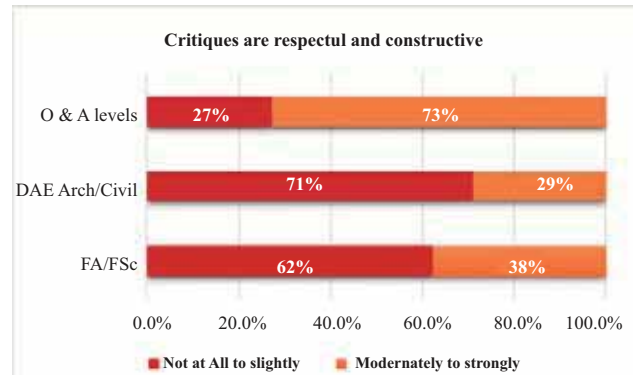


Figure-4: Students' Respons to Critiques.

responded that they are Figure 4.

To investigate this variation further, students were asked about their perception of English language communication skills in architectural learning. This is important because the de facto mode of communication in most architectural schools is English, and it is mentioned in the literature though teachers do not always ask or expect their students to communicate in English, they appreciate those who do (Iqbal and Roberts, 2019). Students in this study also agreed with this fact, as more than 90% of students from each secondary education group somewhat to strongly agreed with the importance of English language communication skills Table 4. Next, students were asked "how they rank their own ability to communicate and present in English", this question showed a large variation of response as well. 88.4% of students with O & A levels said that they have excellent or above average English communication skills, 41.3% students with FA/FSc background gave a similar response, whereas, only 18.9% of students with DAE background gave this response. The significance of this

Table-4: Importance of English Communication Skills.

Importance of English Communication Skills in Learning Architecture					
	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Total
FA/FSc	1.2%	2.9%	25.3%	70.4%	100.0%
DAE Arch/Civil	1.9%	7.5%	35.5%	54.7%	100.0%
O & A Levels	0.4%	2.6%	18.4%	78.7%	100.0%

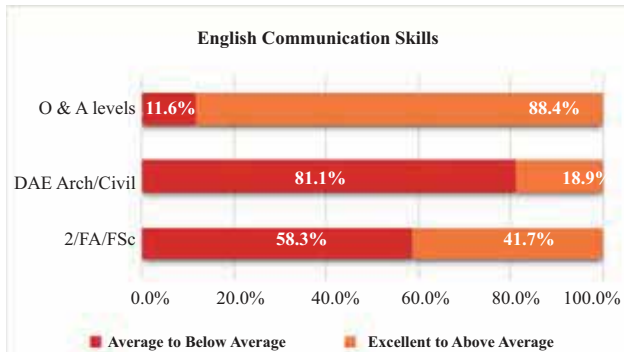


Figure-5: Students' Response to the English Language Skills.

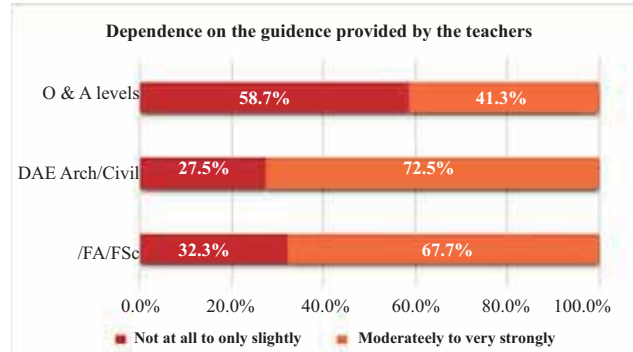


Figure-6: Students' Response to Dependence on Teachers.

finding is explored in the final discussion part of this paper Figure 5.

For the question of “dependence on teachers for guidance”, there is a clear variation of response from students with O & A levels background and the remaining two groups, as majority O & A levels students (58.7%) responded that they are much more independent of the guidance provided by the teachers Figure 6.

FINDINGS FROM THE QUALITATIVE DATA

Interviews for the original study (conducted for the PhD) were longer with questions exploring students' learning experiences and approaches from a wide range of perspectives. But for the current investigation, four questions are found relevant. These are 1) how useful you have found early education in learning architecture, 2) Do you try to question or understand what you have learned from a particular design project, 3) How important is teachers' guidance for learning in the design studio, 4) What is your opinion about presenting and defending the work in juries. The first question is intended to explore a direct relation of architectural learning with secondary education, and the other three questions explore an indirect relation between these two.

As mentioned before, Nvivo 12 was used for the coding process to explore the data received from semi-structured interviews. Since there was no prior assumption about the

role of secondary education in architectural learning, open coding was used, meaning all the answers to the relevant questions were coded in one place. Once coding was completed, codes were reviewed to explore any missing points, and most importantly, to identify and remove any biases.

Figure 7, 8, 9 and 10 shows the graphical representation of students' responses. Students are mentioned as numbers and not names in the images and while quoting them in the explanation. This is to keep their identity hidden that is an ethical requirement of social research, also to make the data more comprehensible. Students' quotes from the interviews are used for two purposes, 1) to define the categories of responses by analyzing all the answers provided by all 44 students, and 2) to show examples of students' responses from each secondary education group. For all four questions, students' answers are categorized into three groups. It is important to explain that students did not exactly provide three types of answers, but the answers they gave could fall into these three categories. In figures 7, 8, 9, and 10 the three categories of responses are shown on the left-hand side, circles in these figures represent students, and they are placed in front of the category to which their answers belong. Moreover, the colors of these circles represent students' secondary education.

For the first question, “How useful you have found the previous education in learning architecture?” there is a clear variation of students' responses from different groups of secondary education. Figure 7 shows the three categories

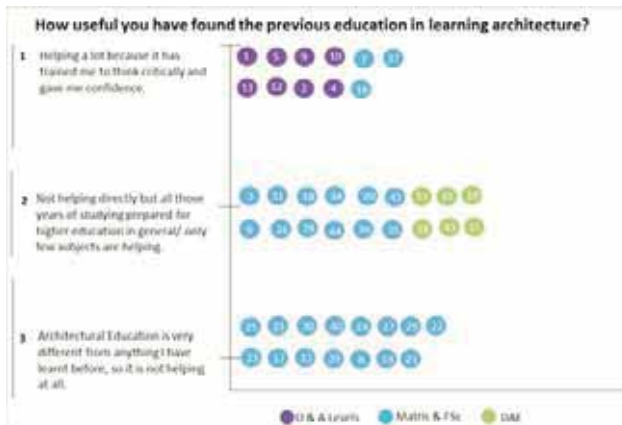


Figure-7: Student Response to Usefulness of Previous Education.

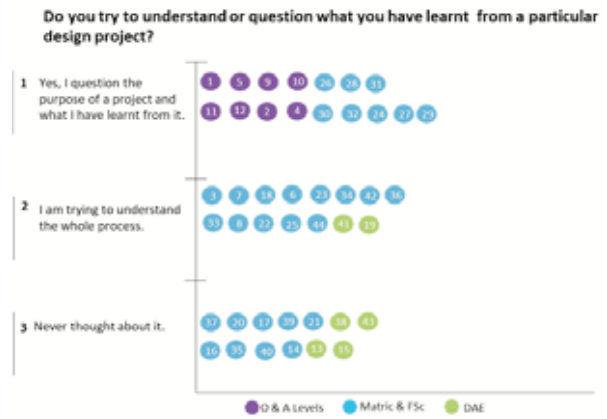


Figure-8: Student Response to Critical Thinking Ability.

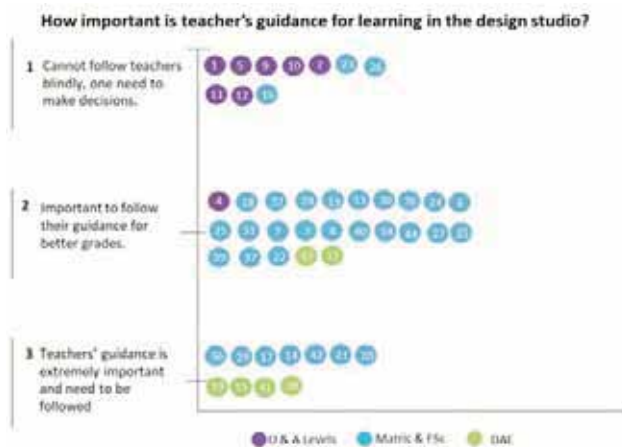


Figure-9: Student Response to Importance of Teachers' Guidance.

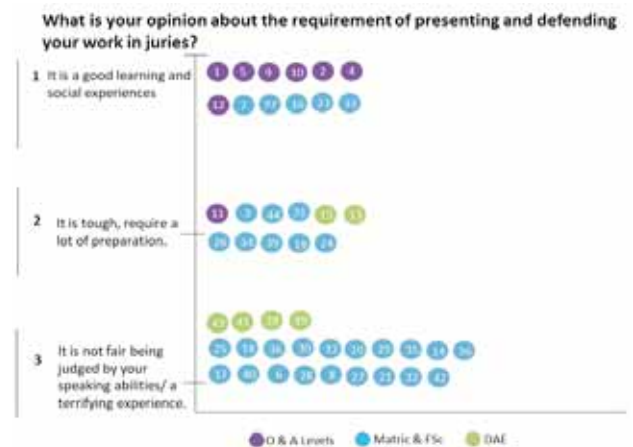


Figure-10: Student Response About Design Juries.

of students' responses. The response of the students with FSc. the background is majorly spread over the bottom two categories. Whereas the top category is filled up with students from O and A levels background. DAE background students' answers lie in the middle category, showing that they are finding secondary education helpful. This discovery confirms the finding of the quantitative study showed in Figure 2. However, qualitative data makes it possible to dig deep into the causes of students' answers.

Two students with O and A levels background stated:

- *I think a major difference was that we didn't memorise things rather tried to understand and question, now teachers ask everyone to question and to think critically, and I see my friends from FSc struggling with this concept. (Student No. 11)*
- *Students who have done O-A levels already have a habit of observing things very critically; they have this training*

in their education system they learn a thing by understanding the concepts. (Student No. 5)

Two students with DAE background said:

- *I am a diploma holder, so I had an understanding, but I saw everyone else struggling, teachers don't guide what a section is and how to draw sections, and in juries, they would point out that the sections are not right. (Student No. 13)*
- *Although they never taught us how to design, they taught us how to draw, and this has helped me here in architecture. Also because of the diploma, I had some idea about architecture that what I will be doing here. (Student No. 43)*

It is clear by these statements that students have found both O/A levels and DAE education helpful and they rely on it for learning architecture. However, there is a difference in

this usefulness, as O/A levels education has prepared students for critical thinking and self-reflection. Whereas DAE provided them with some tools and skills to be used while learning architecture. On the other hand, students with FSc background are not finding early education very helpful for learning architecture. As two of these students stated:

- *I do not think it is helping me; I mean, I understand that I could not get admission to this school of architecture if I had not gone through all those years of education. But I feel I do not remember what I learned in all the difficult science subjects. (Student No. 44)*
- *I have been never asked to think critically and give my own opinions about something than how I am supposed to develop an opinion. And now here teachers expect us to analyse buildings and the world around us and draw inspiration from it, I know I am supposed to do this I just don't know how. (Student No. 30)*

From the last quote of student number 30, it is clear that students' secondary education has impacted their ability to think critically and question the realities. This factor is further explored through the second question, which is "Do you try to question or understand what you have learned from a particular design project?". Figure 8 shows the three categories of students' responses.

It can be seen that all students with O & A levels background answered that they question the purpose of the project, as one student from this group mentioned.

- *I question the importance of design projects; if I don't understand the purpose of the work I am doing, I cannot motivate myself, I won't know what to think. (Student No. 9)*

Students' answers with FA/FSc background fall in all three categories of responses (see figure 7) however, the majority of students from this group mentioned that they are trying to understand the whole process, still showing some degree of critical thinking, as one student from this group mentioned.

- *Architecture is very different from anything I have studied before, that is why the first year was extremely difficult, it was challenging just to make sense of things, but with time I have learned to understand the requirements and purpose of projects, I had to learn how to ask right questions. (Student No. 34)*

Whereas majority of students from DAE group mentioned that they did not think about it, showing that their secondary education has not prepared them to think critically at all.

- *So far, I never question the purpose of the project, maybe because teachers explain it well and I never thought to question it. (Student No. 38)*

For the third question "how important is teacher's guidance for learning in the design studio?" Figure 9 shows the three categories of students' responses. Again, it is clear from the figure that O & A levels background students take charge of the pedagogical relations and believe that teachers' guidance is important but should not be blindly followed. One student from this group stated.

- *Teachers' opinions are mostly helpful, but sometimes they aren't, you have to be awake, you need to know what is happening because in the end it is your own project and you need to take ownership of it. Teachers will provide crit, and they will guide you, but you have to decide what to pick from it and what not to pick from it. It happens many times that the teacher gives you advice without maybe understanding some aspects of your project, but you are the one who knows that project in much detail, and you know that implementing that advice will be a good idea or not. So, you have to use your own mind that which advice is worth taking and which is not. (Student No. 10)*

Whereas the majority of students with FSc background take a strategic learning approach and believe that it is important to follow teachers' guidelines for better grades.

- *I think it is extremely beneficial to follow teachers as my design improves a lot based upon teachers' guidance. I think I do not have enough exposure to decide what is a good or bad form or spaces, so when I design something and show it to teachers, they can tell me if my design is good enough to take forward or should I improve it or change it, and what aspects of design needs to be changed for better grades. (Student No. 27)*

Many students from FSc background and the majority of students from DAE background stated that teachers' guidance should always be followed.

- *I think it is very important to listen to teachers. In the beginning, when you have no idea what to do with the projects, you start following the instructions and guidelines and slowly become familiar with the concepts. (Student No. 29)*

For the fourth question “what is your opinion about the requirement of presenting and defending your work in juries?” Figure 10 shows the three categories of students’ responses. A big majority of students among the 44 interviewed that design juries are tough and unfair practice.

- *I think juries are terrifying, no matter how confident you are and how good you think your design is when you have to stand in front of a panel and explain yourself it is very difficult. And I think if you have produced a good design but cannot explain it well in front of people, then your marks will suffer, because the people judging your design cannot understand your thought process behind it unless you explain it to them, you have to sell your design. (Student No. 40)*

However, almost all students from O & A levels background stated that design juries are a good learning and social experience.

- *I don't get very nervous in juries like my friends and class fellows. I did get nervous in the first one or two juries I think, but then I realised it is only about discussing my ideas and showing them what I have been doing and why so if I take it casually like a discussion I perform much better in juries, this is what I try to do now. I explain my work as I would explain to any friend and discuss with them my ideas and maybe because most of the time, I get good feedback I remain confident throughout in juries, and even if I get some criticism, I know I don't need to take it personally, and I only need to learn from it. (Student No. 4)*

FINAL DISCUSSION

It is clear from both the quantitative and qualitative data that students’ secondary education has a profound impact on the way they learn architecture. It doesn’t only define their perception of the profession before joining the school but also dictates their learning experiences in the school. A majority of students from O & A levels background enter the architectural education by their own choice, this shows that their secondary education has given them enough confidence and knowledge to make an informed career choice. In contrast, a big majority of Matric & FSc students rely on the merit system for their career choice. This is probably the reason when these students enter the school of architecture, they remain dependent on the guidance by teachers instead of taking initiative to develop the pedagogical relations as found in the quantitative and qualitative data (Figure 6 & 9). A majority of these students also find it

difficult to start a new project as they feel under-confident, in contrast to O and A levels students. An interesting finding of O & A levels students from the qualitative data is that a majority of them show critical thinking and try to dig deeper in the learning scenario (Figure 8), some FSc background students also showed this learning behaviour but a considerable number of students among them remain oblivious to the purpose of learning. It is mentioned in the literature as well that many students in Pakistan have an early education in which they were never encouraged to think and question, but rather to listen and learn (Iqbal & Roberts, 2019). After this analysis, it does not come as a surprise that the majority of students with O & A levels background have found their education helping them in learning architecture, whereas the majority of students with FSc background did not (Figures 2 & 7).

DAE is an interesting form of secondary education in the sense that it narrows down the career choices at a much early stage than the other two types, and that is why a vast majority of these students enter Architecture by their own choice as they get familiarised with the profession in the secondary education phase. However, once they are in the school of architecture, they find themselves dependent on the guidance provided by teachers (Figure 6 & 9). Also, 68% of these students responded that they do not feel very confident at the beginning of a new project. It is important to explore that even though these students joined architecture by their choice then why they don’t feel confident in starting new projects and developing pedagogical relations. A reason for this is that DAE introduces the students to the world of architecture through tools and techniques and not through the theoretical concepts the profession is built upon, as found in the qualitative data (Figure 7).

Design crit or review is the one activity that is most impacted by students’ past learning and training as mentioned in the literature review. In this study, a vast majority of students from FSc and DAE background (62% and 71% respectively) stated that they do not find critiques respectful and constructive. Whereas the majority of students with O & A levels background stated that they do. This fact is also proven through the findings of the qualitative study (Figure 10), even though a majority of students from all the groups stated that they find design juries very difficult and identified them as an unfair practice, none of these students are from O & A levels background. Almost all of the students with O & A levels background identified juries as good learning and social experience. This finding is in line with Stevens (2002), who stated that architectural crits favour the students from a certain social class and culture. Performance in the critiques is also widely dependent on students’

communication skills, as mentioned in the literature, the English language is associated with good communication ability in Pakistan. This study has also found that the vast majority of students with all kinds of secondary education believed that English communication is vital in architectural learning. However, students' confidence in their English communication skills is found to be greatly dependent on their secondary education (Figure 5). Also, as mentioned in the literature, only good quality expensive private schools are properly training students in the English language, hence, language skills and performance in the design crits remain associated with students' secondary education.

CONCLUSION AND RECOMMENDATIONS

This study has found that students' secondary education has a profound impact on their architectural learning as the training of critical thinking and good language and

communication skills provided by the O & A Levels education has better prepared the students for architectural learning. But this is not the end of the story, schools of architecture have a major role to play in facilitating the students that are not well prepared for architectural learning. It is identified in this study that Matric and FSc education often do not provide students with the critical thinking ability, they feel underconfident at the beginning of the projects and they do not take initiative in developing pedagogical relations. DAE provides a better introduction to the architectural profession and equips students with some necessary tools to learn in the school of architecture but these students still feel underconfident and heavily rely on teachers for learning. Architecture schools need to practice empathy in their pedagogic practices and understand the unique challenges faced by students rather than considering the students with O & A levels background naturally genius or "gifted" for architectural learning.

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