Educational Outcome of Students' Group-Table Arrangement for Collaboration in Architectural Thesis Studio

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Abstract

The aim of this paper is to demonstrate the learning outcome of students' Group-Table method when employed in an Architectural Thesis Studio and their communication, collaboration and social interaction levels after all. The group-table method has been applied for a period of time in the studio to discover the effects of the seating arrangement on the educational and behavioural pattern of students in their learning activities. The methodology was designed qualitative methods specifically the open-ended questionnaire, observation, and in particular, the photography techniques were applied to measure the behaviour of the students. The finding of the research indicates that the students' change of seating arrangement and grouping, constantly introduce healthy learning competition and access to more space, more facility and equipments. Accordingly, some aggressive behaviours to grab more space is constantly observed, hence, the results strongly contradict the purpose for which group-tables was introduced as a learning method. In conclusion, despite the fact that the grouped-table provided advantages to share data, information, and idea on the tables, the application of this seating arrangement requires a certain level of maturity and privacy for the students to concentrate on the study and research in a common room.
Keywords: Architectural Design Studio, Collaboration, Grouped-table, Research Project, Privacy, Social Interaction

Introduction

Architectural design studios take into consideration in terms of the core educational part of the architectural programs. The studio normally consumes a major part of times the students in the learning process such as knowledge transforming, training activities, and skills development. A studio room normally includes drawing tables, discussion tables, seating desks and tables, shelves for archiving of the productions, walls for the pin-up and the hanging the precedents projects, black-white-board, wall or screen for the projection, and poster stands for the presentation of the projects. This spaces either would be divided by partitions, portable walls, tables, shelves into different subareas, or a big hall which all activities take the place in there. In a big hall, each student personalizes, specifies, and arranges a location for design, product, and desk critics depending on the topic of the project, the scale of the production, and the working style either individual or teamwork.

Furthermore, the architectural thesis studios include the same activities by the individual, which everyone should work individually to produce the thesis project. In another aspect, the students simultaneously research on the thesis topic to develop the idea for the production, presentation, and discussion. This activity includes different stages based on the policy and the style of the architectural department; at least this common stages include some steps such as research, drawing, digitizing, model making, discussing, writing the results, and revising activities. This process was theorized by Frayling as the research in architecture, research through architecture, and research for architecture (Frayling, 1999); also as researching, preparing, and presenting (Borden & Ray, 2000). Seemingly, the final year students need both passive and active areas for the research and production simultaneously.

The architectural students pass the thesis program in two continued semesters in the University of Rwanda, which they research, program, and conceptualize in the first semester, and in the second design, develop, and detail the thesis topic (DoF, 2014). This process takes the place in the final year studio including a big hall without divider,

partitions, or subspaces as figure 1. In this area, the students have right to arrange, disarrange and rearrange the drawing tables, chairs, and equipment as their agreements according to the collective reason, which the effects of the seating arrangement on the educational outcomes takes into consideration in this research.

 Statement of the Problem
The seating arrangement discussed in terms of the supportive context to facilitate the progress of students in different levels (Wannarka & Ruhl, 2008), which plays an important role as a hidden curriculum in the academia (Taylor & Vlastos, 2009). In detail, studies on the seating arrangement listed the typology such as row-column, joined, cluster or grouped, the circular, and free form (Yang, Becerik-Gerber, & Mino, 2013; Gremmen, VandenBerg, Segers, & Cillessen, 2016) although current studies criticized that this classification less adapted with higher education targets (Xi, Yuan, YunQui, & Chiang, 2017). Nonetheless, studies introduced the joined seating arrangement as a most adapted form for peer-to-peer learning (Gump, 1987; Callahan, 2004) and the discussion (Rosenfield, Lambert, & Black, 1985). In addition, other studies theorized that the grouped-table arrangement increases the social interaction (Kregenow, Rogers, & Price, 2011) among students in the classroom and reduced the disruptive behaviour (Van den Berg & Cillessen, 2015).

According to the precedents studies, the grouped-table increased the level of communication, collaboration, and social interaction among the students (Armstrong & Chang, 2007; Bicard, Ervin, Bicard, & Baylot, 2012). Seemingly, the students with the research objective in the architectural thesis could benefit from this seating arrangement to enhance the level of the studies, research, and the production. However, according to the limited equipment for the interior arrangement of the studio, the students rearrange the studio based on their interests, inter-personality, and intra-personality (Burke & Sass, 2013; Van den Berg & Cillessen, 2015). The seating arrangement normally are not a stable form and the students change the form many times based on the activities (Tanner, 2009; Vander Schee, 2011; Bicard, Ervin, Bicard, & Baylot, 2012) in the studio such as study,

model making, or presentation. However, the competition for the occupying the better space such as size, accessibility, and facility exist (Wannarka & Ruhl, 2008). Therefore, it was supposed that with putting the students in grouped-tables seating arrangement, the students support each other not only based on the same topic and task for the study but also to share the common space, equipment, and furniture in the studio.

The grouped-table mentioned as the most effective style for social interaction (Kregenow, Rogers, & Price, 2011) of students, which is part of non-cognitive learning process as the soft skills. However, in the major group of the students in the architecture department could be seen some isolated students (Burke & Sass, 2013), which less integrated with the whole classmates and they face with difficulty to communicate, collaborate (Callahan, 2004), and teamwork in studios (Van den Berg & Cillessen, 2015). Therefore, it was assumed that this seating arrangement could bring together all the students for a collaborative activity at the studio, which does not only increase the productive of the students but also the level of social interaction among them for a greater positive studio atmosphere.

According to the objectives of the architectural thesis project, it was supposed that the students for both study and research stages need more collaborative activities (Rosenfield, Lambert, & Black, 1985) to share the idea, data and information to develop the thesis project (Callahan, 2004). Therefore, with this assumption that the seating arrangement in the grouped-table supports communication of the students in the thesis research, the grouped-table from applied to find out the results on the progress of the students.

Discourse on the grouped-table
The studies on the seating arrangement and the effect on the students' behaviour were included a rich background, particularly in educational psychology area in recent years (Wheldoll & Brodd, 2010). Despite the long list of the studies on the raw-column seating arrangement (Gifford, 2002; Atherton, 2005; Bonus & Riordan, 1998; Fernandes, Huang, & Rinaldo, 2011; Kaya & Burgess, 2007; Wannarka

& Ruhl, 2008; Haghighi & Jusan, 2012), studies on the grouped form of the seating arrangement such as grouped-table and joined-table was started from critiques on the classical pattern of the classroom in the mid of the twenty century (Steinzor, 1950; Gump, 1987) to evaluate the peer-to-peer effects on the learning process and outcomes through a new form of seating arrangement concept (Callahan, 2004; Burke & Sass, 2013). Seemingly, the theory of the seating arrangement has been evolved from the raw-column to the joined form, and then grouped from (Gremmen, VandenBerg, Segers, & Cillessen, 2016) to facilitate the performance of the students efficiently (Gillies, 2003; Serpell, 2011).

However, the grouped-table took into consideration as a small scale activity, which could be achievable in a small classroom with a few numbers of the students (Callahan, 2004; Xi, Yuan, YunQui, & Chiang, 2017). Therefore, despite the fact that grouped-table called as an old fashion in the seating arrangement studies (Yang, Becerik-Gerber, & Mino, 2013) with less flexibility in the classroom (Bicard, Ervin, Bicard, & Baylot, 2012), this form still applied as a method for the peer-to-peer-learning activity (Gump, 1987; Callahan, 2004). In addition, this particular style of the seating arrangement was explained as an effective shape for the social interaction (Marx, Fuhrer, & Hartig, 2000), discussion and collaboration (Rosenfield, Lambert, & Black, 1985) although this from reduces the ability of the instructor to control all activities of the participants in the classroom (Marx, Fuhrer, & Hartig, 2000).

In a wider perspective, scholars emphasized that all seating arrangements were designed for a specific educational objective due to the curriculum (Bonus & Riordan, 1998), which supposed to facilitate the educational outcomes (Cinar, 2010). For example, Bakare revealed that the seating arrangement positively affects the process of the assimilation of knowledge by the students through the innovation and creativity (Bakare, 2012), which a flexible form of the seating could better adapt to a new educational perspective effectively (Bicard, Ervin, Bicard, & Baylot, 2012). Apparently, the grouped-tables arrangement contradicts the conceptual meanings of

seating positions at the front, corner, middle, and rear, which applied to rationalize the theory of the action zone in the raw-column classrooms (Burda & Brooks, 1996; Parker, Hoopes, & Eggett, 2011; Bradova, 2012). In fact, the grouped-tables challenged the action zone theory based on the possibility to rearrange the tables, change the groups, and circulation around the tables by both students and lecturers (Marx, Fuhrer, & Hartig, 2000).Certainly, the seating position influences the personal, group, and social interactions of the students. For example, Dunn and Dunn theorized that the seating arrangement could increase the interaction among the students (Dunn & Dunn, 1979) such as the peer group learning (Fernandes, Huang, & Rinaldo, 2011), positive behaviour in the classroom (Wannarka & Ruhl, 2008), and to facilitate the learning process (Gest & Rodkin, 2011).

In addition, studies of researchers exposed a possibility of the effects the grouped-tables to increase the link between the students (Gump, 1987; Callahan, 2004), positive personality (Burke & Sass, 2013), and mitigating the aggressive behaviours (Van den Berg & Cillessen, 2015). Furthermore, Burke and Sass emphasized grouped-table as a solution for the isolated students in the classroom (Burke & Sass, 2013) , while researchers mentioned that this form of the seating arrangement was normally faced with the personalization of the seating area by the students. For example, Weles initiated observation showing that the process of personalization of the classroom by the students through the seating arrangement is to form their personal space (Wiles, 1978) via individual material and belonging (Kaya & Burgess, 2007) to present their personality (Hemyari, et al., 2013). Therefore, seemingly two contradictive trends including the grouping and personalization coexist at this seating arrangement in the same time.

 In addition, studies on the effects of the seating arrangement on the learning outcomes have been contradictive. On one hand, some scholars discussed both positive and negative effects of the seating arrangement on the performance of the students including the level of scores (Perkins & Wieman, 2005; Zomorodian, et al., 2012), on-task and off-task behaviours (Rosenfield, Lambert, & Black, 1985; Wannarka & Ruhl, 2008; Simmons, Carpenter, Crenshaw, & Hinton,

2015), and collaborative activities in the classroom (Xi, Yuan, YunQui, & Chiang, 2017). On the other hand, another group of researchers believed that the evidence could not confirm a relationship between the seating arrangement such as grouped-table and the level of the activeness between the students in the classroom (Armstrong & Chang, 2007; Kalinowski & Taper, 2007). It meant the effects of the seating position were depended on both numbers of the students in the classroom (Xi, Yuan, YunQui, & Chiang, 2017) and the level of the educational programs (Perkins & Wieman, 2005).

In the opposite point of view, the study criticized that the higher education system needs to another style of the seating arrangement based on the large scale classes, distance learning, e-learning styles (Yang, Becerik-Gerber, & Mino, 2013) and cultural background (Haghighi & Jusan, 2012). In the Africa context, it was claimed that despite curricula of academia less supported this collaboration due to the colonial background of the curriculum, the collaboration activities in the Africa context established due to the contextual and ethical relationship to construct a new form of meaning for collaboration, (Serpell, 2011).

In summary, the grouped-tables structure was grounded on the changing the atmosphere of the classroom from one centre to multicentre for more interaction between the students and lecturers. This seating arrangement provided opportunities to increase collaborative activities, peer-to-peer learning, and positive behaviour among the students. However, some challenges were discussed by researchers on the personalisation of the area, unclear outcomes, a small scale activity, and diminishing the ability to control the class activities. Seemingly, the important criteria for checking the outputs of the seating arrangement on the learning achievement would be based on the review on collaborative activities by the students in the position.

Methodology
The methodology of the research was grounded on the qualitative methods (Dandekar, 1988; Ezzy, 2002; Groat & Wang, 2002; Miller,

Dingwall, & Morphy, 2004; Neuman, 2006; Niezabitowska, 2018) with the application of the open-ended questionnaire, structured observation, and photography (UDA, 2003; Silverman, 2004; Silverman, 2010; Frankfort-Nachmias, Nachmias, & DeWaard, 2014; Tafahomi & Nadi, 2020). The open-ended questionnaire was applied to discover opinions of the users such as personality, satisfaction, and perception (Zandvliet & Straker, 2001; Wheldoll & Brodd, 2010; Hemyari, et al., 2013; Harvey & Kenyon, 2013; Gremmen, VandenBerg, Segers, & Cillessen, 2016; Xi, Yuan, YunQui, & Chiang, 2017). The observation also applied to analyse and interpret the behavioural pattern of the users in the spaces (Wannarka & Ruhl, 2008; Haghighi & Jusan, 2012; Simmons, Carpenter, Crenshaw, & Hinton, 2015), which supports with the photography (Tafahomi & Nadi, 2020), storytelling (Groat & Wang, 2002), and interpretation (Mugerauer, 1995).

The questionnaire was designed with two groups of the questions including the graphical question to find out the three important interrelations between of the students such as where the students sit, what was the interaction between of the peer group, where they wish to sit, and how they changed the position. The writing questions were asked about the effectiveness of the grouped-table to enhance the level of collaboration, to increase the personal interaction if they were faced with any aggressive behaviour, the level of personalization in the shared table, and if this form of seating arrangement was affected encouraging and discouraging the students to participate in the studio.

The draft of the questionnaire was checked with three senior staff in the department to discover any ambiguous question or other aspects was missing in the structure. The comments of the lecturer focused on the graphical aspects and scale of the image in the questionnaire. After that, the questionnaire was checked with the three of the students to see if the structure of the questionnaire was understandable for the users and perhaps any question was missing in the structure. The recommendations of the lecturers and students were applied and the final questionnaire distributed between the

students. The observation was based on the sessional visiting of the studio three times peer week including Monday and Wednesday afternoons, from 14.00 to 17.00, and Friday mornings from 9.00 morning to 13.00 afternoon. The observation was designed to discover first, the evolution process of the forming, changing, splitting the groups of the students, second, the collaborative activities such as discussing, reading, drawing in the group forms. Some photographs were taken to record the pattern and activities.

Process of the research:
At the beginning of the first trimester, the exercise was explained to the students in terms of experimental activities to ascertain which of the seatings position forms could support the activities of the students in the process of the architectural thesis production. For clarification of the outcomes of the seating arrangement in the classroom and the studio, some of the researches on the seating arrangement were explained and the relevant literature was illustrated in the studio. Therefore, the students have been informed about the outputs of each stage and what kind of the expectation will be requested. Indeed, the students in the research were conscious group of the participants, which it was supposed to the record all the experience in the timing of the activities to report to the instructors. At the studio activities, some photographs were taken to see if there was some changing in the seating positions and any trend among the students.

The statistical society: the research was ground on the total number of the students in the in the architectural thesis studio as the final year students including 22 final year students including 19 males and 3 females.

The location: the location took the place on the second floor of the school of architecture and built environment, architectural thesis studio.

Results

The analysis was encompassed two parts, first, analysis of the open-ended questionnaire, and second, a structured observation in the studio sessions which exposed with the analysis and interpretation.

A number of 20 students answered the open-ended questionnaire. The students mentioned that they sat in a group of the 3-4 tablemate, just three in number of the students mentioned in fewer number of the group mates and none of them pointed out to a bigger group. The students also expressed that they had a significant peer-to-peer connection with both sides' students although the level of interactions with both sides was not on the same level. Just one of the students revealed without any connection with any of tablemates.

The students shared many items together such as cable extension, pen divers, pen and pencils, earphone and headsets, and USB chargers on the table. However, one of the students mentioned noting, and book and sketchbook were mentioned just once. In the opposite side, there were some conflict items in the grouped-tables, which the students mentioned such as the extensions, personal materials and stuff, changing position by the students without informing, and personal bags on the tables. Just four students pointed out that no items for the conflict. The students were believed that this form of the seating arrangement increased their empathy with other students, particularly in the "personal help", "sharing information about the studio", "to find out the answers about the research process and stages", "chatting, discussion, movie-watching, and joking". The major part of the students was believed that the grouped-table enhanced collaboration between the students. In detail, they highlighted some aspects such as "increasing a competitive sense", "sharing idea and information", "learning from other students", and "helping in the research process".

A minor part of the students (six students) did not believe any positive effects of the grouped -table. In detail, they indicated that they collaborated based on the "personal relationship than the form of the table arrangement" and the tablemates. In addition, they exposed that they arranged tables as "the request of the instructor, just in the

studio times" and after the studio sessions, they "changed the form again", therefore, "the grouped-table was not an effective form". Besides, one of the students criticized that "in the missing of a collaborative cultural background, when everyone works on their computer, collaboration never happened". Also, another one highlighted that this form "created a fair among students to fight for the better location and position around the tables".

A half part of the students exposed that were faced with both aggressive behaviours and personalization attitude in the studio. In detail, the students dissatisfied with attitudes of both tablemates and classmates such as load discussion, unwanted questions, to enforce them to change the position around the table, and plug off the laptop, power, and Wi-Fi connection. Despite thirteen number of the students mentioned that no personalization in the studio observed, another part of the students uncovered that some of the students had priority to select better table also seating position around the table. In addition, a major part of the students mentioned they would have wished to be seated in other locations and positions, particularly in the corner sides of the studio, in the front and rear parts. Despite the fact that the just six students were satisfied with the seating position and the group mates, other tables and location attracted the rest of the students to change the position. Furthermore, just six numbers of the students mentioned that they did not face any unwanted contacts. The rest of the studio members claimed about unwanted contacts such as physical contact specifically elbow, leg, and hitting in the passing, and unwanted action such as occupying the seats, plugin and off by both tablemates and classmates on the grouped-tables.

In the last part of the questionnaire, thirteen number of the students mentioned that the grouped-table did not discourage them to take the position on the location. However, other seven number of the students highlighted the problem of communication with rest of the class, limitation of the power sockets and extensions, and the sunlight radiation on the position in the grouped-table as the main reasons to be discouraged to participate in the position. However, a major part of the students did not change the location to find a better position

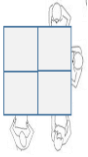on the other tables. They just turned around the table to increase comfort ability.

Observation: Despite the fact that the grouped-table was grounded on the selection and arrangement of the students, the observation of the instructor identified that the students changed the form of the grouped-tables and their location and position in each session. Seemingly, the concentration in the rear part of the studio was more than another part of the studio, apparently, the area in the north part of the studio between the shelves were more interesting areas for the students. In this case, some of the areas were reserved by some of the students particularly male, extroverted, and expressional, which was observed other students preferred to engage less with them about chairs, tables, and spaces. Both the number and combination of the students on the tables were changed in all sessions of the studio and just three groups kept the structure; however, other groups were flexible. Therefore, the human landscape in the studio was unstable and varied in the experimental period. This process also revealed that some of the students were isolated, and some of the areas were more crowded than in other areas. In detail, three groups of the students performed in the same number, participant, and arrangement, whist those isolated students took the position on the grouped-tables randomly. Despite the instructor deliberately attempted rearranging the group members to add the isolated students into the interactive groups, the pattern of the original grouping emerged again in the next sessions.

In the case of the three female students, observation identified three different attitudes. First one was so self-directed, independent, and isolated. She was confident in the grouping and she arranged own group with the isolated students. The activities on the grouped-table were individual, silent, and official with a low level of the interaction. The second one created a peer-to-peer and student-group due to the same supervisor for the thesis projects. This grouping helped her to be flexible in the grouping with adding or cutting the members based on the topic of the activities in the class. Despite the size of the group, the main interaction was arranged with the peer-student than others.

The third one was so active and a permanent member of the one of the active group in the studio. In the grouping normally this group invite other students in the group and after that, the group return back to the three fixed number of the students. The instructor observed neither prioritizing nor depriving situation for the female students in all sessions.

Table 1: Seating and Grouping Pattern by the Students

No	Groups	Pattern	Recorded Images	Expectation
1	5-6 students in a big group			The students grouped large number due to the different purposes in the sessions of the studio, all large groups include a leader who influenced on the scale and member of the group
2	2-4 students in an average group			The groups four students was based on the sessional activities and normally the non-members took the place randomly on the tables, which it was empty and available.
3	2-3 students in a normal group			Despite the students changed the group combination, in the small group observed consistency than larger groups.

4	2 students in a peer group			The two students group was more stable in the location although the combination of the students changed. Seemingly, this number of the groups was more adapted with the location and the form of the grouped-table.
5	Isolated member in group			It observed that three students in the studio were isolated from others although they never made a group together, rather than preferred to join other groups and do the own activities.

Analysis of the Results

The students formed the groped-tables and the grouping based on the interpersonal relationship than targeted outcomes, which is formed before the academic year. They formed the groped-tables based on the availability, agreement, and a hidden hierarchy. This result also was confirmed with the answer of the students, which highlighted that each of them just communicated with one side more than the rest of the tablemates although all the students had the same opportunity. In addition, the observation confirmed that the students changed the position continuously, which revealed both flexibility and instability. The students formed different size of the groped-tables although they just mentioned to the average number and did not expose both higher and lower number; however, the camera caught the experience. It was not that the students did not mention the activity, it was just that perhaps they did not also mention all important activities, which included profound interpretation.

The groped-tables arrangement enhanced the level of empathy, collaboration, and competition among the students. The students took the advantages from the opportunity to find out the progress of other students in the research process with the sharing of information and idea to overcome their competitive sense. This form not only increased the level of the research activities as proposed by the curriculum but also improved the level of communication and social interaction due to the answers of the students. Despite a minor part of the students criticized that the groped-tables did not exist in the whole times of the studio as a reality and they changed the form of tables times by times based on their interpersonal relationship, seemingly this group of the students pointed out a variety of interpretation in the studio about the effectiveness of the grouped-tables. With respect to this point of view, however, one of the outputs of the studio was to enhance the non-cognitive skills through pushing for collaborative activities, teamwork, and personal discipline. It meant that despite the exercise was faced with critics, this critical thinking also was part of the syllabus as a cognitive approach to analyse, criticize, and problem-solving.

However, the grouped-tables form revealed that there were some unobvious aggressive behaviours in the studio, which the students did not expose publicly. Despite the main objective of the research was not to discover the on-task and off-task behaviours in the studio, the pattern of the using the grouped-tables addressed both aggressive behaviour and the personalisation of the studio which neither officially permitted nor ethically accepted. This trend was expressed by the minority, which faced with such kind of discrimination in the studio. Seemingly, this activity took the position in the unofficial time of the studio than official hours with the participation of the instructors although such kind of the negative behaviour reduced general level of collaboration among the students. Despite the fact that the students changed their location and position on the tables in each session, the grouping created opportunities for all students to share an idea, information, and research activities in both active and passive manner. In detail, the students either communicated through the question, answer, and comment with other group members, or

they received data in the process of the interchanging the ideas among other students in a passive way. Both outcomes of the activities formed a competitive atmosphere for peer-to-peer learning although some of the students were not perceived this process as an effective process of the learning.

The students preferred to sit in the other forms than grouped-table although they were believed that the grouped-table could be positively effective on the learning outcomes. This attitude happened based on some factors, which were mentioned by the students. First, privacy, which the students were believed that the grouped-table reduced the level of privacy. Despite the fact that the students did not clarify the meaning of privacy in terms of any contradiction with the seating position, they were not happy to expose the laptop and other materials to the tablemates or classmates. For this reason, a major part of the students expressed their interest to change the seating position from the central part of the studio to any corners, particularly the front and the rear. Second, the shortage of the power sockets and extensions also affected the decision of the students to take the place close to the wall, which the socket just installed. It meant that the level of effects of the availability of the power sockets on the behavioural pattern of the students was not clarified although they used shared power extensions. Third, the skylight windows on the roof of the building radiated an unwanted light on the students, tables, and the screen of the laptops in the daytimes, in the central part of the studio, which pushed the students to change continuously their positions.

Discussion

Apparently, the seating arrangement with the grouped-table shape was effective, particularly in the terms of linking individuals (Burke & Sass, 2013; Van den Berg & Cillessen, 2015) in the studio. The students rearranged the grouped-tables in a wide range of variety based on freedom (Vander Schee, 2011) to represent the intra-personality, inter-personality, social interaction, similar to the findings of researchers (Parker, Hoopes, & Eggett, 2011; Burke & Sass, 2013; Kregenow, Rogers, & Price, 2011; Van den Berg & Cillessen, 2015). However, this variety contradicted both findings of Yang in terms of

the old fashion for seating (Yang, Becerik-Gerber, & Mino, 2013) and Bicard as a less flexibility form of seating to organize (Bicard, Ervin, Bicard, & Baylot, 2012). Despite the fact that other studies widely expressed positive effects of this seating arrangement, the students exposed two problem including first, a low level of the privacy, and second, disruptive behaviours in this seating position, which contradicted the findings of Burke and Van den Berg (Burke & Sass, 2013; Van den Berg & Cillessen, 2015). In fact, the students communicated frequently just with one of the tablemates, while other students were engaged in a lower level of the collaborative contribution on the table. It meant that the students linked with one the tablemates more than others based on the interpersonal connection than an open forum. Perhaps this trend referred to the contextual background of the students to interpret the meaning of the collaboration due to findings of Serpell (2011) in terms of the contextual and cultural interpretation.

The grouped-table seating arrangement slightly enhanced the level of the collaboration based on the sharing the information, data, and perception about the tasks in the architectural studio, which support the previous findings of other research (Rosenfield, Lambert, & Black, 1985; Marx, Fuhrer, & Hartig, 2000; Callahan, 2004). Despite the fact that the students expressed contradictive feedbacks about the positive and negative effects of the grouped-tables, the results addressed that a major part of the students took into consideration the seating arrangement as an advantage for peer-to-peer learning particularly through the motivation for competition in the same alignment with studies of Callahan (2004) and other researchers (Burke & Sass, 2013; Van den Berg & Cillessen, 2015). However, the minor part of the students claimed about the low level of privacy and concentration in this position and some unwanted communications, which were disruptive, similar to findings of Wasnock (2010) and in the opposite with the conclusion of Burke and Sass, Ver den Berg and Cillessen in the case of the increasing the positive personality and mitigation of aggressive behaviour (Burke & Sass, 2013; Van den Berg & Cillessen, 2015).

In detail, the aggressive behaviour and the personalisation attitude both tables and the spaces in the studio areas contradicted the results in terms of the on-task behaviour in the joined-tables (Wannarka & Ruhl, 2008; Fernandes, Huang, & Rinaldo, 2011). Seemingly, the hierarchy and privilege of the students was a hidden layer of the social interaction in the studio, which did not reveal by other researches. However, this relationship never found an opportunity to uncover when the instructor was in the studio. Despite the fact that this negative behaviour was exposed with a minority part of the students, this point highlighted that the vulnerable students need better mentorship in the studio to mitigate possible side effects of those negative behaviours on the personality of the participants in the studio (Hemyari, et al., 2013), which it was the missing aspects of the training process in the department. Apparently, the cultural, social, and family context (Serpell, 2011) of the students, were effective to emerge this attitude although the level of the effeteness requires another research to measure different aspects.

Importantly, the adaptability of the grouped-table with the interests of the students, particularly providing a certain level of the privacy and for concentration on the study required some architectural elements, which was missed in the studio. According to the results, despite the application the joined-tables and grouped-tables in the higher education was highlighted in the precedents studies, the major body of the precedents research on the joined-tables took the place in schools (Steinzor, 1950; Gump, 1987; Callahan, 2004; Burke & Sass, 2013). However, the level of privacy in normal school was lower than the higher education, which emphasized by Xi and colleagues (Xi, Yuan, YunQui, & Chiang, 2017). Therefore, the grouped-table was deficient in other qualities in the place, which underlined by the students in three categories including building, facilities, and personal attitude. First, the building quality was included the lighting, space for archiving-model making, and proper space for circulation. Second, the facilities were encompassed the power sockets, cable extensions, and Wi-Fi connection, which all of them for thesis students was compulsory to accomplish the research. Third, the students were

unsatisfied with the behavioural pattern in terms of the aggressive behaviour, unwanted contact, and personalisation the space, which both curricula and the context had a significant role to construct this attitude, which the missing aspect of this kind of research certainly exist in the context.

Furthermore, despite the fact that the grouped-table as a format for the active learning discussed in the literature (Rosenfield, Lambert, & Black, 1985; Marx, Fuhrer, & Hartig, 2000; Callahan, 2004), the level of activeness in the learning process due to target and topic requires to be clarified. It meant, in the case of this research, it was supposed that this form of the seating arrangement may be supported the research, studies, and sharing the data and information with a collaborative approach among the students similar to the findings of researchers (Rosenfield, Lambert, & Black, 1985; Marx, Fuhrer, & Hartig, 2000). In the contrast with the expectation, despite the major part of the students were satisfied with the seating arrangement, the minority of the students pointed out that for each stage of the research and production a certain level of the focus, concentration, and privacy need, which it was the missing aspect of the grouping form of tables in the studio.

Conclusion
The grouped-tables provided advantages for the students to share data, information, and findings as peer-to-peer learning in both passive and active manner. In detail, a great number of the students asked questions, opened the discussion, and shared ideas around of the tables although some of them just listened to the stories on the boards. This style attempted to change the individual connections based on the objective of the studio to form a new arrangement to link the isolated students with the rest of students in the studio. However, the grouped-table achieved slightly to the target due to the temporal form of this seating arrangement and changing the arrangement after the official time of the studio by the students. The shortage of the facility and equipment caused to expose the aggressive behaviours and personalization attitude by the students in the studio. In detail, the students competed with others to select a

more comfortable position based on the facility, accessibility, and lighting in the studio. Despite the low level of observation to approve this trend, the answers of the students revealed that a vulnerable group of the students were affected by this attitude. In detail, this minor group of the students faced with a higher level of the problem for both contribution and collaboration in the studio. The archived data demonstrate neither cultural nor contextual relationships with the attitude in the studio although this personal attitude existed.

The collaboration among the students reflected a certain level of the competition simultaneously. The students claimed about the low level of the privacy in this seating arrangement, which the table, equipment, and desktop exposed to the studio. In addition, this form increased the level of the disruptive behaviours among the students to talk loudly, ask question, and discussion, which decreased the level of the concentration on the study. In the light of the evidence, despite the fact that the literature discussed the grouped-table in terms of the efficient style of the collaborative activities, this form of the seating arrangement requires the facility, equipment, and training to apply in the studio and classrooms in the higher education.

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