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## Article

# Spatial readings in new generation learning environments: The case of Gökçeada High School Campus

Kübra GÜLÇEN AKYÜZ<sup>1\*</sup>, Elif TATAR<sup>2</sup>

<sup>1</sup>Department of Architecture, Eskişehir Technical University Graduate Education Institute, Eskişehir, Türkiye

<sup>2</sup>Department of Architecture, Eskişehir Technical University Faculty of Architecture and Design, Eskişehir, Türkiye

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## ABSTRACT

In the 20<sup>th</sup> century, learning spaces began to change in parallel with the transition from traditional pedagogies to student-centered learning. In the 21<sup>st</sup>-century, the transformation of space continues in the context of contemporary skills and new generation learning. This article aims to evaluate the relationship between learning and space in new-generation learning environments by examining the potential for spatial usage in educational buildings. The study will consider the Gökçeada High School Campus as a case study, as it was implemented as an innovative and exemplary model. Analyses were carried out on the educational building on the campus and the learning spaces associated with it. The learning approaches supported by the spaces were determined using a plan reading method developed by Dovey & Fisher based on Assemblage theory. The spatial usage potential of the school in the context of new-generation learning is evaluated based on the findings and learning modes obtained. According to the findings, while the school primarily offers traditional learning spaces, it also provides innovative ones. It has been determined that new-generation learning applications are possible in the educational building that accommodates innovative spaces, such as flexible classrooms, street-spaces and special open commons. The study's original contribution is its analysis of an implemented national innovative educational building, revealing formal, informal or integrated (formal & informal) learning modes through spatial typologies. In this context, suggestions are presented on how the current design of Gökçeada High School can be adapted to accommodate new generation learning and contemporary needs, and strategies are proposed for redesigning traditional learning spaces.

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## INTRODUCTION

The 20<sup>th</sup> century was a period of transformation in educational buildings under the influence of constructivist pedagogy. Pedagogical approaches that evolved in line with psychology-based learning theories also impacted the

learning space in parallel with the change processes. In this process of change, there was a transition from traditional pedagogies to student-centered, new generation pedagogies at all levels of education from pre-school to higher education (Tusting & Barton, 2013; Olugbenga, 2021; Shah, 2021). As the learning space was reshaped by these new generation

\*Corresponding author

\*E-mail adres: kubragulcenakyuz@gmail.com



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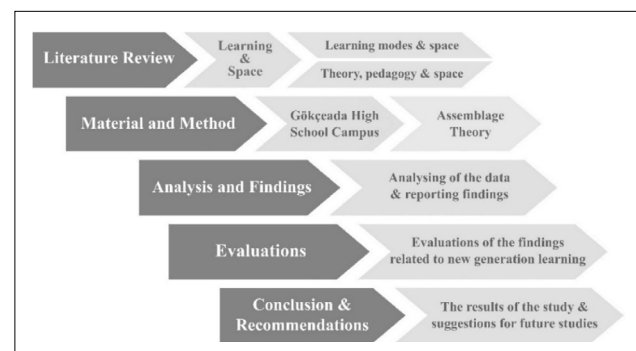
pedagogies, the act of learning moved beyond traditional classrooms behind closed doors accessed through closed corridors, and informal learning spaces, where a variety of experiences could be gained, have become as important as formal learning spaces. In this context, student-centered educational buildings have gained importance in order to achieve effective and successful learning (Oblinger, 2006; Nair et al., 2009; OECD, 2013). Learning spaces, redesigned according to changing pedagogy and needs, continue their transformation as a support system in the education of individuals according to 21st-century skills and learning frameworks (Çiftçi, 2021; Tang, 2020).

Today, student-centred and technologically advanced learning spaces are required to cater for the learning styles, interests and needs of the new generation of students. These innovative learning spaces are also required by the frameworks of 21st-century skills that aim to develop competent individuals in every field (Brown & Long, 2006; Nair et al., 2009; OECD, 2013; Tang, 2020; Çiftçi et al., 2021). However, while very few educational institutions can offer their students learning environments that meet contemporary needs, the majority are still limited to traditional classrooms, teacher-centred pedagogies that insist on uniformity and outdated standards. Since current educational buildings are shaped under the influence of traditional pedagogies, they cannot allow the implementation of new generation pedagogies and cannot meet the requirements of 21<sup>st</sup>-century education. The widening gap between the educational environments offered to students affects not only the education system, but also the personal development of individuals and therefore societal development. For this reason, spaces must be designed where new-generation learning can be implemented. These spaces must be adaptable to all segments and levels of educational buildings and take into account contemporary needs and current learning approaches (Atabay, 2014; Güzer, 2014; Tang, 2020; Petrova et al., 2022).

New generation learning spaces encourage educators to implement innovative pedagogies that were previously limited in traditional classrooms and allow students to participate in a variety of learning experiences that are common in many schools. These spaces make interdisciplinary education, collaborative learning and personalised curricula more accessible (Atabay, 2014; Dovey & Fisher, 2014; Imms et al., 2017). Against the backdrop of the importance of space in the learning process, this article aims to evaluate the relationship between learning and space in new-generation learning environments by interpreting the spatial usage possibilities in educational buildings. The Gökçeada High School Campus, implemented as an innovative national

exemplary model, is examined as a case study and its usage possibilities in the context of new-generation learning are analysed. To conduct this analysis, the method proposed by Dovey & Fisher (2014) to understand the connections between space and pedagogy is employed and evaluations made in line with data obtained through a literature review. Although this analysis method has been used in many foreign studies (e.g. Soccio & Cleveland, 2015; Imms et al., 2016; Imms et al., 2017), only Göksoy (2021) has included the method in a national study as a component of a model that she designed to understand the spatial approach of educational buildings. She examined projects that awarded in a competition but were not implemented, to analyse traditional and new-generation spaces. In this study, an implemented and national educational building example was taken into account. The findings were evaluated along with the learning modes included in the learning spaces and, how and to what extent new generation learning was provided was investigated. The results of the study will provide a valuable framework for identifying the critical factors that should be considered in the design and management process of new generation learning spaces.

As seen in Figure 1, a comprehensive literature review was conducted in the first stage of the study. As a result of the research conducted in this stage, learning modes, learning space shaped by the influence of pedagogies and new generation learning spaces are defined under the title 'The Relationship Between Learning and Space'. In the second stage, the methodology of the study using case analysis is mentioned. After defining the study area, the analysis process is explained. The third stage involves analysing the Gökçeada High School Campus and related learning spaces. In the fourth stage, all the findings obtained in the study are evaluated and in the conclusion section, the general purpose and importance of the study, rapid developments in the field of education, pedagogical and spatial dynamics are interpreted together.



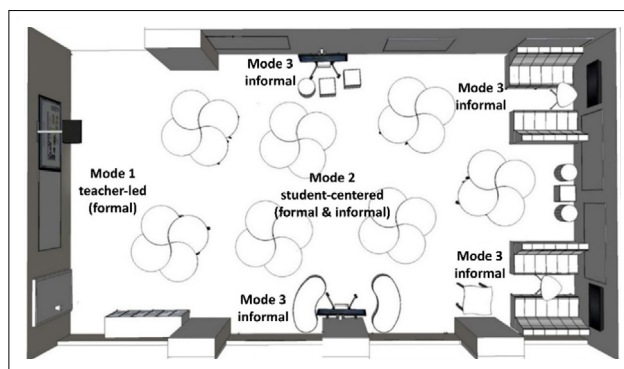
**Figure 1.** Flow chart of the study (Created by the Author).

## The Relationship Between Learning and Space

### Learning modes and space

While there are many definitions of the concept of learning, Taylor (2009) defines the realisation of learning as a system in which three components work together: The information learned, the learning model and the learning space. In summary, learning, defined as a permanent change in behaviour and meanings in the minds of individuals as a result of their observations and experiences, is a process that cannot be limited to formal education and training and continues throughout life, anytime and anywhere. Learning environments in school and out of school, in all natural and artificial environments include places where different modes of learning take place, which can be treated as formal, non-formal and informal (Eshach, 2007; Erman & Gümüşburun Ayalp, 2022). Learning is expressed in different modes depending on the place where it is planned and is evaluated in different categories. These learning modes are compared in detail in Table 1.

Formal learning, which consists of structured content organised for a purpose, takes place under the leadership of a teacher according to a pre-planned curriculum in formal places, such as schools, where there are rules and regulations. Non-formal learning, which, like formal learning, is organised for a purpose and occurs in the presence of a leader, is usually structured in non-school places. Informal learning, on the other hand, is a type of learning that, unlike formal learning, is not organised, structured in terms of time and place, whether it is purposeful or not, and anywhere from the schoolyard to the street can be a place for informal learning (Aydın, 2011; Danielle Colardyn, 2004; Dib, 1988; Eshach, 2007). Formal and informal learning modes, which are evaluated in separate categories and require different environments, constitute integrated learning environments when they are intertwined and designed together, as shown in Figure 2.



**Figure 2.** New generation learning space that accommodates formal and informal learning modes (Adapted from Byers, Imms & Hartnell-Young, 2014).

While non-formal learning cannot take place in educational buildings due to its content, learning spaces that integrate informal and formal learning modes, as shown in Figure 2, are replacing traditional classrooms where only formal learning takes place. Especially with the influence of new generation learning approaches, there has been a trend towards integrated learning spaces where different learning modes are intertwined. These approaches continue to shape learning spaces and are updated in line with the needs of the 21st-century learner (Oblinger, 2006; Nair et al., 2009; Dovey & Fisher, 2014).

### Learning theory, pedagogy and space

Questioning the relationship between learning and space is a deep issue that also requires questioning the relationship between theory and pedagogy. Learning theories are sets of principles that explain how learners acquire, store and remember information (Ormrod, 2011). Pedagogies are educational models that aim to use appropriate materials, methods and environments that will support student learning by benefiting from these theories (Olugbenga, 2021; Shah, 2021). Throughout history, pedagogical approaches have naturally changed and diversified in the processes of questioning learning and changing

**Table 1.** Comparison of learning modes (Eshach, 2007)

| Formal Learning                        | Non-formal learning                                            | Informal learning              |
|----------------------------------------|----------------------------------------------------------------|--------------------------------|
| Usually at school                      | At institution out of school                                   | Everywhere                     |
| May be oppressive                      | Usually supportive                                             | Supportive                     |
| Structured                             | Structured                                                     | Unstructured                   |
| Usually prearranged                    | Usually prearranged                                            | Spontaneous                    |
| Motivation is typically more extrinsic | Motivation may be extrinsic but it is typically more intrinsic | Motivation is mainly intrinsic |
| Compulsory                             | Usually voluntary                                              | Voluntary                      |
| Teacher-led                            | May be guide or teacher-led                                    | Usually learner-led            |
| Learning is evaluated                  | Learning is usually not evaluated                              | Learning is not evaluated      |
| Sequential                             | Typically non-sequential                                       | Non-sequential                 |

perspectives on learning. The spaces in which learning takes place have also been reshaped during these changes. Many pedagogies, from traditional to new generations, that have been influenced by learning theories have directly affected and shaped formal learning space in particular (Dovey & Fisher, 2014; Erman & Gümüşburun Ayalp, 2022).

In early educational buildings, learning spaces were shaped by traditional pedagogies under the influence of behaviorist theory. The traditional classroom layout is an example of the spatial equivalent of traditional pedagogy. In this layout, students sit at regularly arranged desks facing the teacher and the board. This minimises their interactions with each other and allows them to focus only on the teacher. This makes it easier for the teacher to discipline the class and observe and control all students (Erman & Gümüşburun Ayalp, 2022). As seen in the example in Figure 3, the Lancastrian or Monitorial education system, which emerged in England and is presented as an example of a classroom layout shaped by traditional educational pedagogy. In this education system, there are long desks lined up for students in a rectangular classroom and an area raised from the ground for the teacher's authority and dominance over the class. The classroom floor rising forward from the teacher's desk and the sloping seating arrangement further emphasise the teacher's authoritarian role. Thus, even students sitting at the back can be observed and supervised by the teacher (Figure 3).

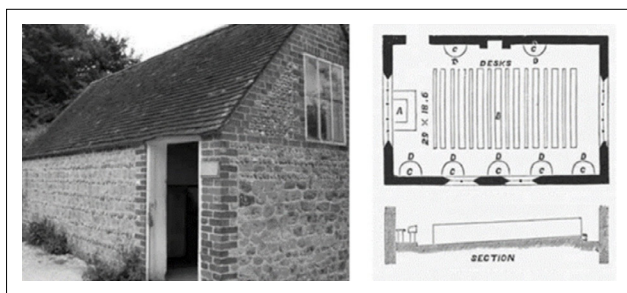
On the other hand, cognitive theory has fed into traditional pedagogies such as behaviourist theory, by limiting learning to mental processes and failing to take social and cultural factors sufficiently into account. According to cognitive theory, the way in which information is processed, stored and restructured in the mind is important. Individuals must actively attribute meaning to information (Piaget, 1950; Bruner, 1966; Tusting & Barton, 2013). Consequently, learning spaces are designed to enhance learner attention and facilitate information organisation. Quiet, orderly, individual study areas, such as laboratories and libraries, are examples of spaces that support traditional pedagogies influenced by cognitive theory, as they provide suitable environments for individual thought and information organisation (Brooks, 2012). For traditional pedagogies

based on behaviorist and cognitive theories, an educational building model emerged in which classes of the same size were lined up in two directions along a corridor, and this educational building model was called the factory type. This factory typology was typified as a plan in which classroom series were connected by corridors and became traditional, shaping school buildings throughout the 20th century (Erman & Gümüşburun Ayalp, 2022).

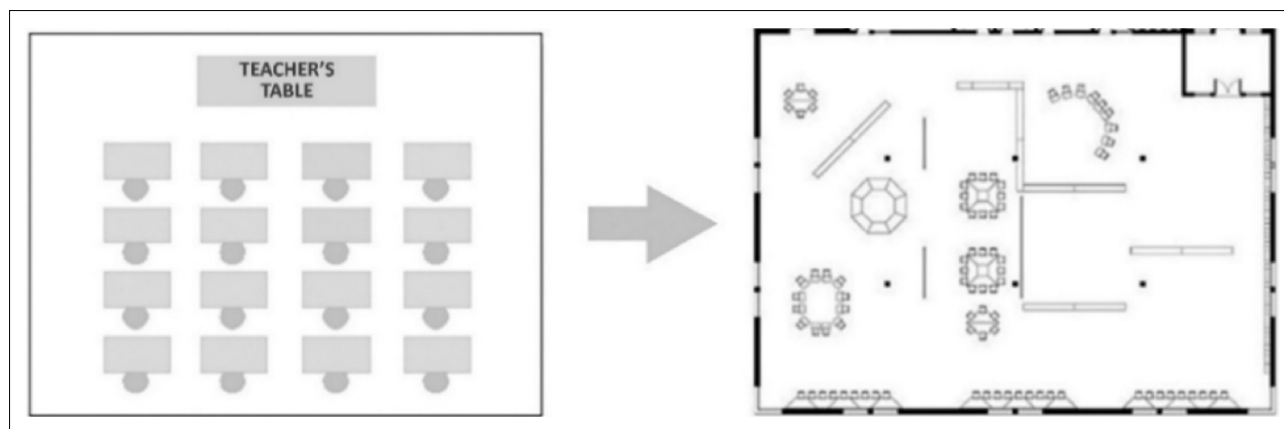
From the 20th century onwards, theories that centred on the student as an active participant in the learning process began to emerge. The most prominent of these are constructivist theory, social constructivism, social learning and experiential learning theories. As these theories emerged, traditional educational approaches became less effective, prompting a transition to new generation pedagogies. The progressive education model, the Montessori model, the Reggio Emilia model, social constructivist pedagogies and collaborative pedagogies are among these new generation pedagogies, which are still influential today and directly shape learning spaces (Driscoll, 2005; Woolner, 2010; Schunk, 2020; Olugbenga, 2021; Erman & Gümüşburun Ayalp, 2022).

Unlike previous theories, these new-generation pedagogies, which emphasise the importance of social interaction, collaboration and individual experiences for learning to take place, have transformed learning spaces in line with this perspective. As illustrated in Figure 4, there has been a shift towards spaces offering students greater autonomy and choice. These spaces include social areas for various purposes and encourage exploration and problem-solving. They are also flexible and modular, collaborating with students throughout the process (Erman & Gümüşburun Ayalp, 2022; Chand, 2024). Figure 5 shows examples of learning spaces that facilitate the implementation of these pedagogies.

In the 21<sup>st</sup>-century, technological advances have enriched and made learning more accessible. Current educational models, such as digital pedagogy, Education 4.0 and hybrid learning, have emerged under the influence of new theories, such as connectivism and technology-supported learning, which have been created by technological advances. These approaches emphasise the importance of digital literacy, access to information, and knowledge sharing (Siemens, 2005; Laurillard, 2012). This necessitates the digitisation of educational processes and learning spaces, as well as their integration with innovative approaches. Although these technological innovations do not directly transform the form of the space, they require the integration of digital tools in flexible spaces needed in the context of new generation learning and the creation of mobile learning areas. Smart classrooms, online learning platforms, VR/AR equipped learning environments, multi-purpose rooms supported by the internet and technological infrastructure are shown as examples of today's innovative understanding where flexible



**Figure 3.** An example for Lancaster type school (Burke & Grosvenor, 2008).



**Figure 4.** From a traditional classroom schema (Taylor, 2009) to an open-plan school schema (Lippman, 2010).



**Figure 5.** Learning spaces for new generation (Imms et al., 2017).

spaces are at the forefront and suitable for hybrid learning models (Brown & Long, 2006; Laurillard, 2012).

As shown in Table 2, effective learning models in the 21st-century are much more different and diverse than traditional learning models of earlier periods. Since the effective implementation of these new generation pedagogies requires appropriate physical environments designed to adapt to diversified needs, the functioning and appearance of learning spaces have also changed (Fisher, 2005; Oblinger, 2006; Tang, 2020). In this context, new-generation learning spaces allow educators to implement new generation pedagogies effectively and efficiently, becoming involved in the learning process as a third teacher (Edwards, 2011; Mahat et al., 2018).

## MATERIAL AND METHOD

The study was carried out within the scope of the educational building of Gökçeada High School Campus. The selection of Gökçeada High School Campus as the study area was influenced by the fact that it is a campus

that aims to implement an alternative, innovative, student-centred, participatory and transparent educational model (TRT 2, 2023); that it is a qualified building that is claimed by its architects to be an innovative and exemplary model by emphasising the relationship between the educational model and the space; and that it was obtained through a competition and received many awards after its construction was completed (Arkitera, 2019; PAB Architecture, n.d.).

The aim of the research is to analyse how all spaces, from classrooms to open spaces, and the relationship between these spaces respond to new generation pedagogies. The analysis is limited to the ground and first floors of the building, with permission to share. The method used is the plan reading method developed by Dovey & Fisher (2014), using the infrastructure of Assemblage theory.

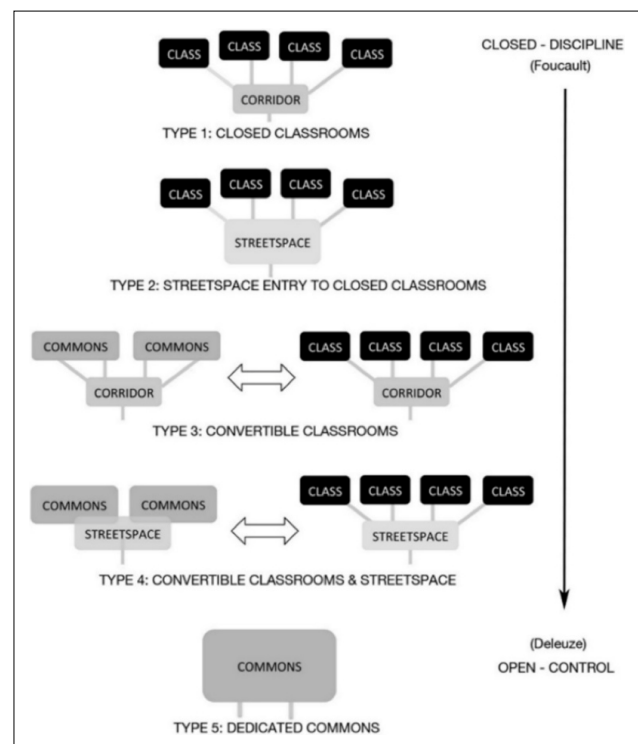
Assemblage theory, a concept developed by Deleuze & Guattari (1987), analyses how spatial processes and arrangements interact with not only physical but also social and cultural factors. The theory emphasises not only the physical characteristics of spaces, but also their interaction with the elements within them and how they carry meaning

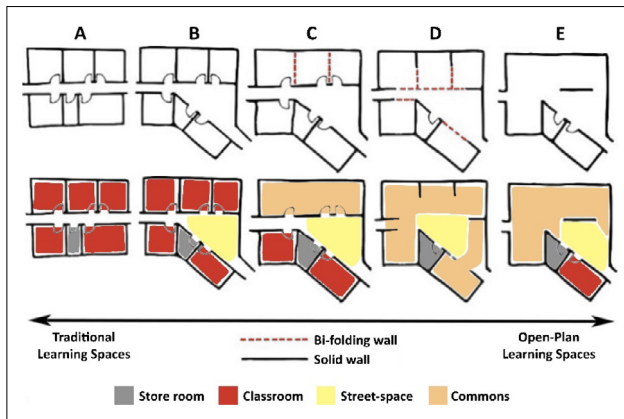
**Table 2.** Featured theories and pedagogies that have a significant impact on the learning spaces (Created by the Author)

|                         | Pedagogy/Education Model                           | Learning Theory                                                                       | Features and Impacts on Space                                                                                                                                   |
|-------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Traditional Learning    | Traditional Education Models                       | Behaviorism                                                                           | - Classroom management, teacher-centered<br>- Order of desks, emphasis on discipline<br>- Rigid and symmetrical classrooms                                      |
|                         |                                                    | Cognitivism                                                                           | - Focused on information processing<br>- Individual work areas, quiet and organized spaces<br>- Laboratories, libraries, study halls                            |
| New Generation Learning | Progressive Education Model                        | Constructivism, and Experiential Learning                                             | - Experience and active learning<br>- Teacher; guide and model<br>- Flexible classes, project-oriented<br>- Workshop, open-plan spaces                          |
|                         | Montessori and Reggio Emilia Pedagogies            | Constructivism and Social Constructivism                                              | - Student-centered, individual learning<br>- Natural materials, home-like environments<br>- Multifunctional, modular, flexible and individual&group work spaces |
|                         | Social Constructivist and Collaborative Pedagogies | Constructivism, Social Learning and Social Constructivism                             | - Group work and community learning<br>- Social areas, collaborative work areas<br>- Open and flexible spatial layout                                           |
|                         | Digital Pedagogy, Education 4.0, Hybrid Learning   | Constructivism, Social Constructivism, Connectivism and Technology-Supported Learning | - Technology-enhanced learning<br>- Smart classrooms, VR/AR, online/hybrid spaces<br>- Flexible, multi-purpose environments                                     |

as a whole. In Dovey's (2013) study, he drew on this theory to create plan diagrams of the relationship and clustering of learning spaces to each other, and represented these diagrams with codes according to the pedagogies he supported, as shown in Figure 6. From these diagrams, he coded the plans that allowed for traditional pedagogies as Type 1 and Type 2, and the spaces for student-centred learning as Type 3, Type 4 and Type 5. While he associated Type 1 and Type 2 with Foucault's (1980) theories of power, knowledge, authority and disciplinary perspectives, he associated the student-centred, new generation learning spaces, which he coded as Type 3, Type 4 and Type 5, with Deleuze & Guattari's (1987) open-control philosophy (Figure 6).

For his typology diagrams, Dovey (2013) later collaborated with Fisher (2014) to create a colour diagrammatic language scheme describing space types and connections. The typologies in numerical order (Type 1, Type 2, etc.) in Figure 6 were recoded with letters as Type A, Type B, Type C, Type D and Type E in the new study and they used these diagrams to analyse a number of innovative school plans. According to this method of analysis: Type A; completely traditional models, Type B; contemporary traditional models, Type C; models where classrooms can be combined for more pedagogical options, Type D; in

**Figure 6.** Typology diagrams of segmentarity (Dovey, 2013).



**Figure 7.** Plan diagrams of the typologies developed by Dovey & Fisher (2014) (Adapted from Soccio & Cleveland, 2015).

contrast to Type C, models where the transformed common space can open directly onto street-space areas, Type E; designed directly as a common space, specifically designed for new generation pedagogies. The method developed based on Dovey & Fisher's (2014) learning space typology plan diagrams in Figure 7 provides an analytical framework for understanding the pedagogies enabled by school plans, defining the typologies determined according to learning space configurations as traditional and new generation.

In addition to the physical characteristics of the space, the Assemblage theory also pays attention to the social interactions that take place in the space and the purposes of use. Therefore, the analysis of Gökçeada High School based on Assemblage theory, when evaluated the results alongside the data in Table 1 and Table 2, will enable us to concretely reveal the pedagogies supported in learning spaces and to understand how the space overlaps with learning.

### THE SPATIAL CONFIGURATION OF GÖKÇEADA HIGH SCHOOL IN THE CONTEXT OF NEW GENERATION LEARNING

In 2014, the Çanakkale Provincial Special Administration announced that the existing educational buildings would be demolished due to earthquake risk and opened the

Gökçeada High School Campus Architectural Project Competition. Before the pre-selection, the organisers stated that they expected an innovative campus model from the competing teams that would be open to island residents in the context of 'lifelong learning' and would bring together educational buildings in common areas in the context of 'social learning' (Arkitera, 2014). In this context, the PAB Architecture team's project was deemed worthy of 1<sup>st</sup> prize. The first project selected was completed in the summer of 2019 and opened for use as of the 2019-2020 academic year (Arkitera, 2019). In line with the expectations of the competition organization, the main goal of the project is to ensure that the educational building and other social facilities of the campus have a strong relationship with the city centre and to integrate education and social life with urban life (PAB Architecture, n.d.).

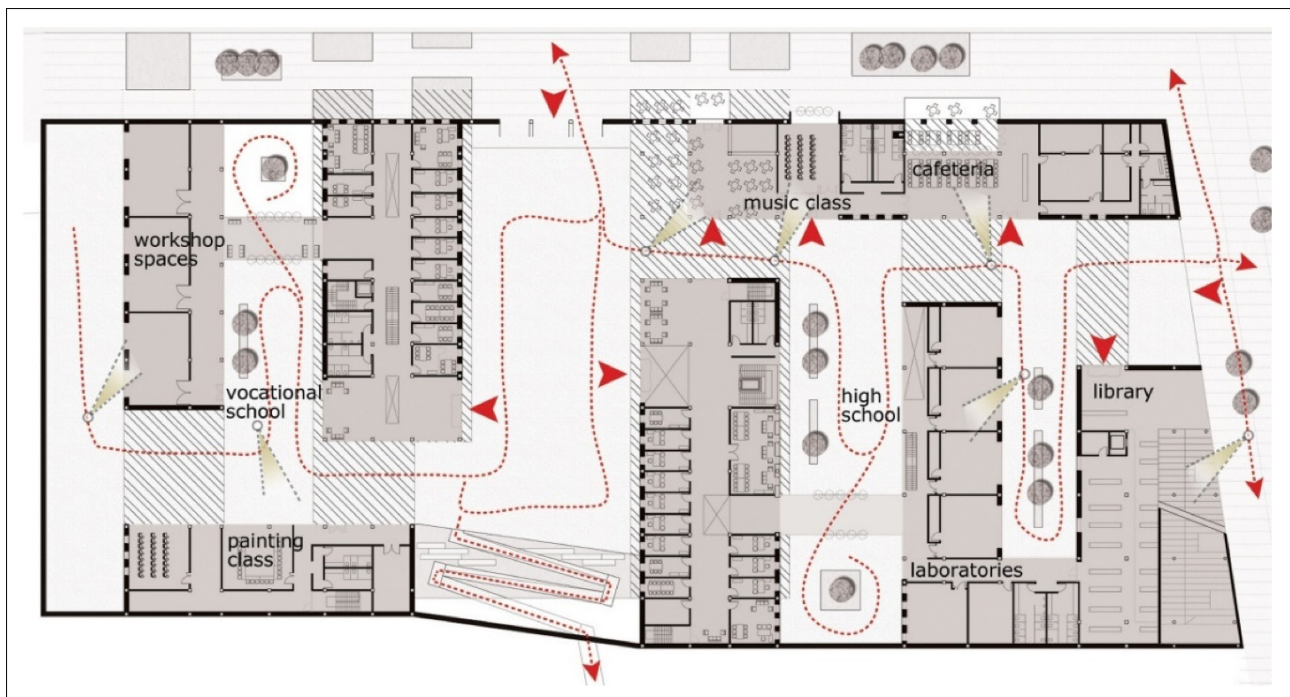
The campus, which consists of a dormitory, a gym, a conference hall and a library with the educational building seen in Figure 8, has been designed as an open campus, considering the small scale of the island and the limited opportunities for the islanders to access social facilities. The social facilities of the campus, the square and open sports areas are aimed to be used by the islanders as well as the students, and thus to increase social interaction on the island (Arkitera, 2019).

As seen in Figure 9, thanks to being an integrated and open campus to the city, the units on the ground floor of the educational building are visually and physically accessible from the street and the courtyard allows the islanders to have a direct relationship with the building and to openly observe the artistic and scientific activities. This transparent and permeable fiction, especially on the multi-door ground floor where entrances and exits to each unit can be provided from any point, continues in the corridors of the campus. While the corridor has a direct relationship with the garden, the corridor and the classroom behind the corridor can be observed from the garden (Archdaily, 2020; TRT 2, 2023).

This study analyses the usage possibilities of all learning spaces, from classrooms to open spaces, within the context of new generation learning spaces on the Gökçeada High



**Figure 8.** Gökçeada High School on the campus (Arkitera, 2019).



**Figure 9.** Flow diagram on the ground floor (Archdaily, 2020).

School Campus, which was implemented with the aim of being an innovative example. In the research, analyses were made based on the ground and first floor plans of the educational building on the campus (Arkitera, 2019). In the analyses made with the method based on the Assemblage theory, typologies of learning spaces were determined by reading the plans. The qualities of these typologies, which are shown in the plan diagrams in Figure 6 and Figure 7 mentioned in the method section, are explained in Table 3.

Within the scope of the study, the relationships and connections of the learning spaces were schematised according to the qualities listed in Table 3, and diagrams of the plans were drawn. These diagrams of the plans were used to determine which typology the learning spaces correspond to according to their clustering. Using this Assemblage theory-based method, (traditional or new

generation) learning models supported in the formal and informal learning spaces of Gökçeada High School were identified and demonstrated in a concrete way through a sample school. Additionally, the findings of the analysis were evaluated alongside the data obtained from the literature review on learning modes, learning theories and relations of pedagogy & space, and were interpreted in the context of new-generation learning.

**According to the analysis and research on the ground floor:** Due to the permeable and transparent organisation of the ground floor, the primary users, students and staff, as well as the local community, are active users. In addition to formal learning, there are spaces specifically designed for informal learning. Socialisation and collaboration are encouraged through this holistic design of formal and informal learning spaces (Arkitera, 2019).

**Table 3.** The typologies of learning spaces by Dovey & Fisher (2014)

|        |                                                                                                                                                                                                                                                                                                                      |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type A | It includes traditional classrooms that do not have direct access to other learning spaces, but are accessed only through an enclosed corridor or access area.                                                                                                                                                       |
| Type B | It is a contemporary traditional model with traditional classes accessed through street-space.                                                                                                                                                                                                                       |
| Type C | It is a model in which two or more traditional classrooms are converted into a single common space with movable partitions. It provides more pedagogical options than Type A and B. The transitional link between the merged classrooms and the street-space continues.                                              |
| Type D | It is a model in which traditional clusters of classes can become a larger common space and can be separated and return to their former state. The common space transformed by the merged classes can be opened directly to the street-space and integrated into the street-space.                                   |
| Type E | It is a special layout designed directly as a common space, which does not turn into a traditional classroom layout and includes spatial innovations. Although there is no return to the traditional model, a few traditional classrooms, meeting rooms, etc. can be added to the street-space or common space part. |

The ground floor plan in Figure 10 shows that there are 3 classrooms, 1 painting workshop, 1 music workshop and 5 fixed classrooms (laboratories) for formal learning; 2 free workshops, 2 private common spaces, street-spaces for access to classrooms and outdoor spaces directly associated with the building and open to the public for informal learning (Arkitera, 2019).

Classrooms, laboratories and workshops, which are formal learning spaces, are characterised as 'closed' because their dividing elements are fixed walls and cannot be transformed; while free workshops, private common spaces and street-spaces are characterised as 'open' because they are editable and free spaces (Dovey & Fisher, 2014). 'Closed' classrooms accessed through 'closed' corridors with no direct access to other spaces correspond to the purely traditional Type A model; 'closed' classrooms accessed from the street-space correspond to the contemporary traditional Type B model; free workshops accessed from the street-space correspond to the Type C model as they offer more pedagogical options and are open to transformation. Private spaces designed directly as common spaces and for new generation pedagogies correspond to the Type E model and have the characteristics of new generation learning spaces. These learning spaces and diagrams within the ground floor diagram in Figure 11 are grouped according to Dovey & Fisher's (2014) typologies and shown in Figure 12.

When the diagrams are evaluated, it is determined that there are a total of 15 different learning spaces on the ground floor, 3 Type A, 8 Type B, 2 Type C and 2 Type E spaces. There are 4 different typologies of spaces, 2 traditional and 2 new generation.

#### According to the analysis and research on the first floor:

On the first floor, a plan is read with traditional classrooms arranged in rows, similar to the layout often found in educational buildings. The floor plan in Figure 13 shows that there are 25 classrooms where formal learning takes place, 4 common spaces designed as informal learning spaces, and galleries with visual connections to other floors (Arkitera, 2019).

Looking at the floor plan as a whole, the integrated fiction with the outdoor spaces on the ground floor continues on this floor with open and semi-open terraces accessed from the street-space. Again, as on the ground floor, some of the classrooms on the first floor are accessed from enclosed corridors and some from street-spaces (Figure 13).

'Closed' classrooms accessed from 'closed' corridors with no direct access to other spaces correspond to the purely traditional Type A model; 'Closed' classrooms accessed from the street-space correspond to the contemporary traditional Type B model. On the first floor, as on the ground floor, in addition to the formal learning spaces, there are alternative spaces for informal learning that allow for various meetings, individual or group work, and resting niches. These special spaces, which are designed directly as common spaces and for new generation pedagogies, correspond to the Type E model where new generation pedagogies are applied. The learning spaces in the diagram of the first floor in Figure 14 are grouped according to Dovey & Fisher's (2014) typology, as shown in Figure 15.

When the diagrams are evaluated, it is determined that there are 29 different learning spaces on the first floor, 5

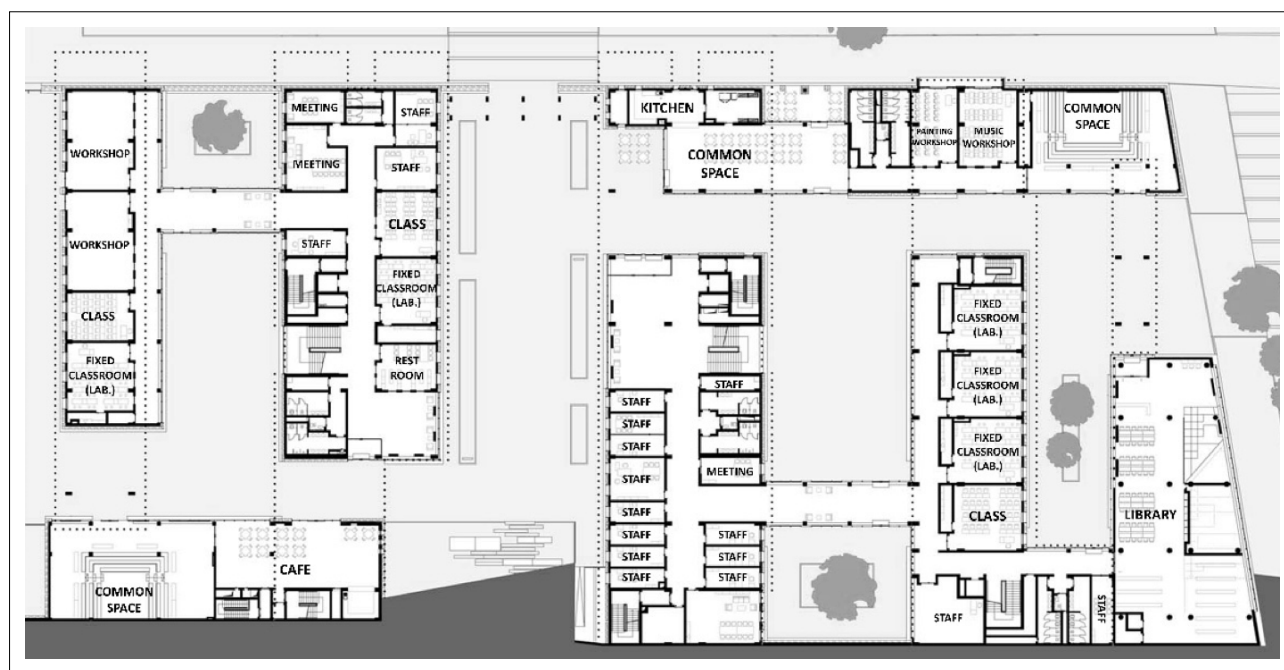


Figure 10. Ground floor plan (Adapted from Arkitera, 2019).

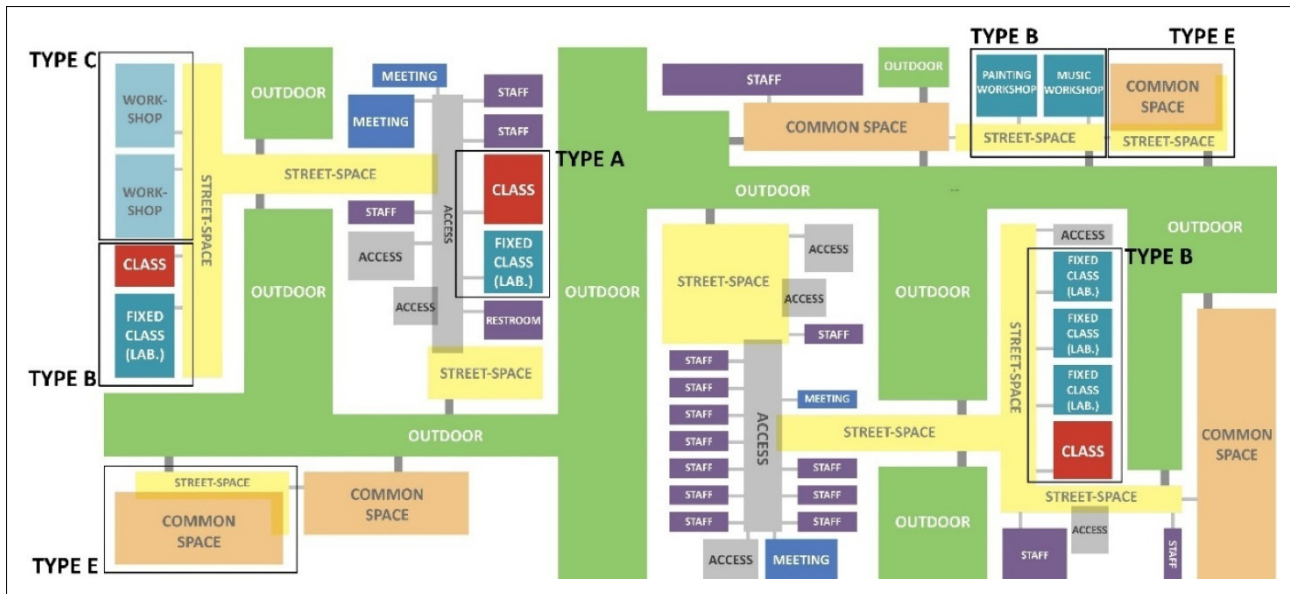


Figure 11. Ground floor diagram (Created by the Author).

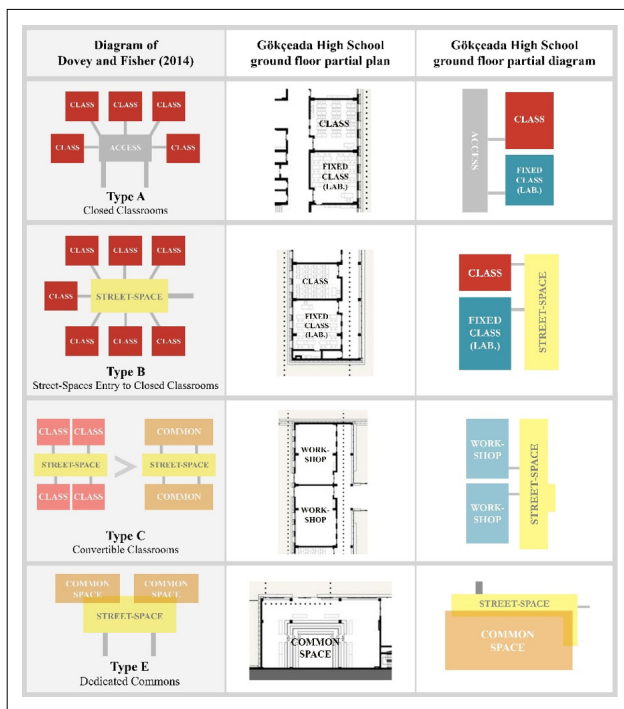


Figure 12. Diagram typologies on the ground floor (Created by the Author).

Type A, 20 Type B and 4 Type E spaces. There are 3 different typologies of spaces, 2 traditional and 1 new generation.

## EVALUATIONS

The analysis of Gökçeada High School revealed the traditional and new generation typologies of learning spaces. The numerical and percentage distribution of the

traditional (Types A and B) and new-generation (Types C, D and E) typologies which are considered as the determining factors for learning approaches supported in spaces, has been determined within the building. These distributions shown in Tables 4 and Table 5 are the first step in evaluating the educational building in the context of new-generation learning, and are evaluated with the learning modes that the spaces host and the learning models they support.

As seen in Table 4, the analysis findings show that there are 14 different learning spaces on the ground floor, approximately 71% of which are traditional and approximately 29% of which are new generation. The ground floor classrooms, defined as Types A and B, were designed according to traditional educational models influenced by behaviourist and cognitive theories, as shown in Table 2. Nevertheless, it can be said that opening eight Type B spaces onto the street-space, which is an informal learning space instead of a closed corridor, the transparent design of the facades of the painting and music studios facing İnönü Street as seen in Figure 16, and the effort to increase social interaction by establishing visual connections with the corridor, and indirectly with the courtyard, through the windows of the classrooms, are all attempts to adapt the patterns of the traditional education model to today's conditions. In this way, although these spaces are defined as Type B, which is the contemporary traditional model, they do not conform to the norms of 'closed' formal learning spaces. Instead, they become part of the permeable and transparent fiction on the ground floor.

However, the formal learning spaces required for theoretical courses at high school level could be designed as flexible, next-generation learning spaces, such as Types C and D. These spaces would comprise larger areas that

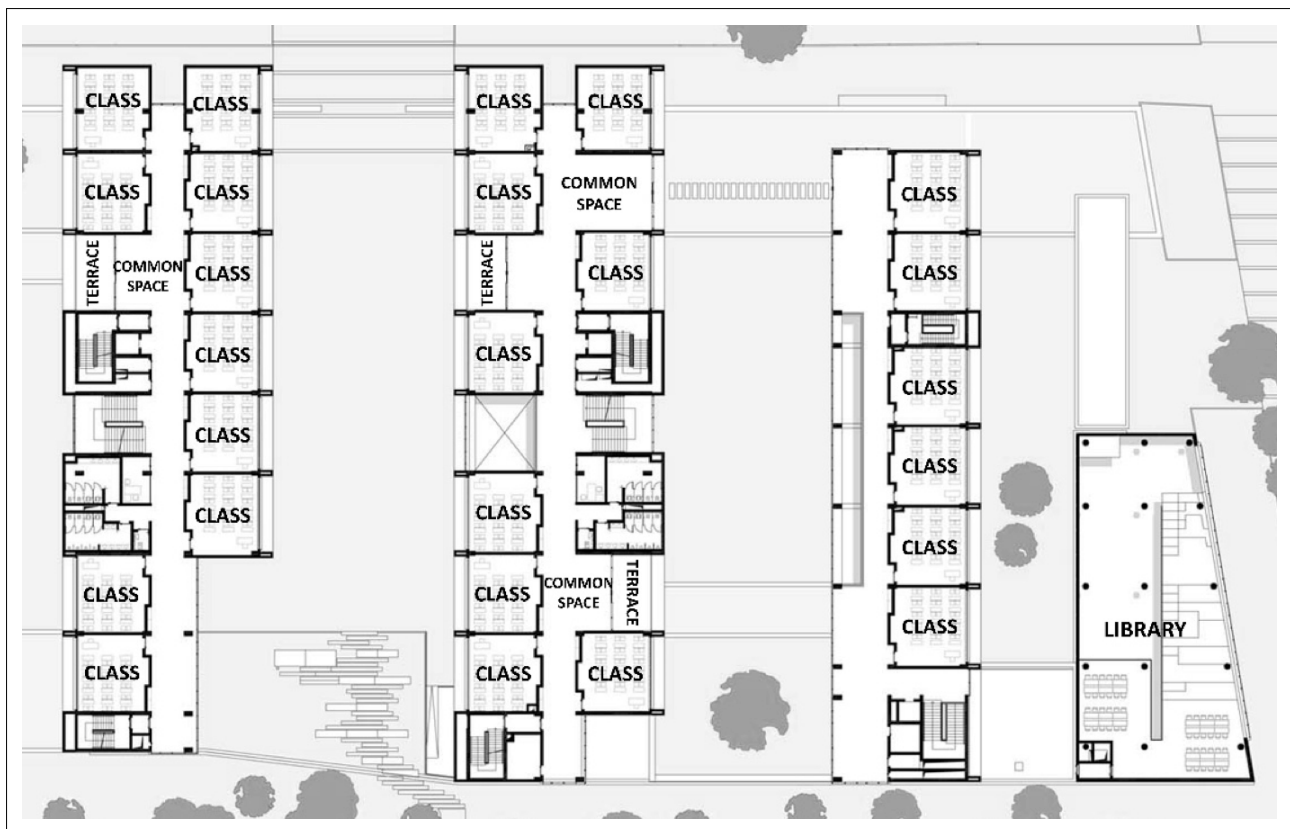


Figure 13. First floor plan (Adapted from Arkitera, 2019).

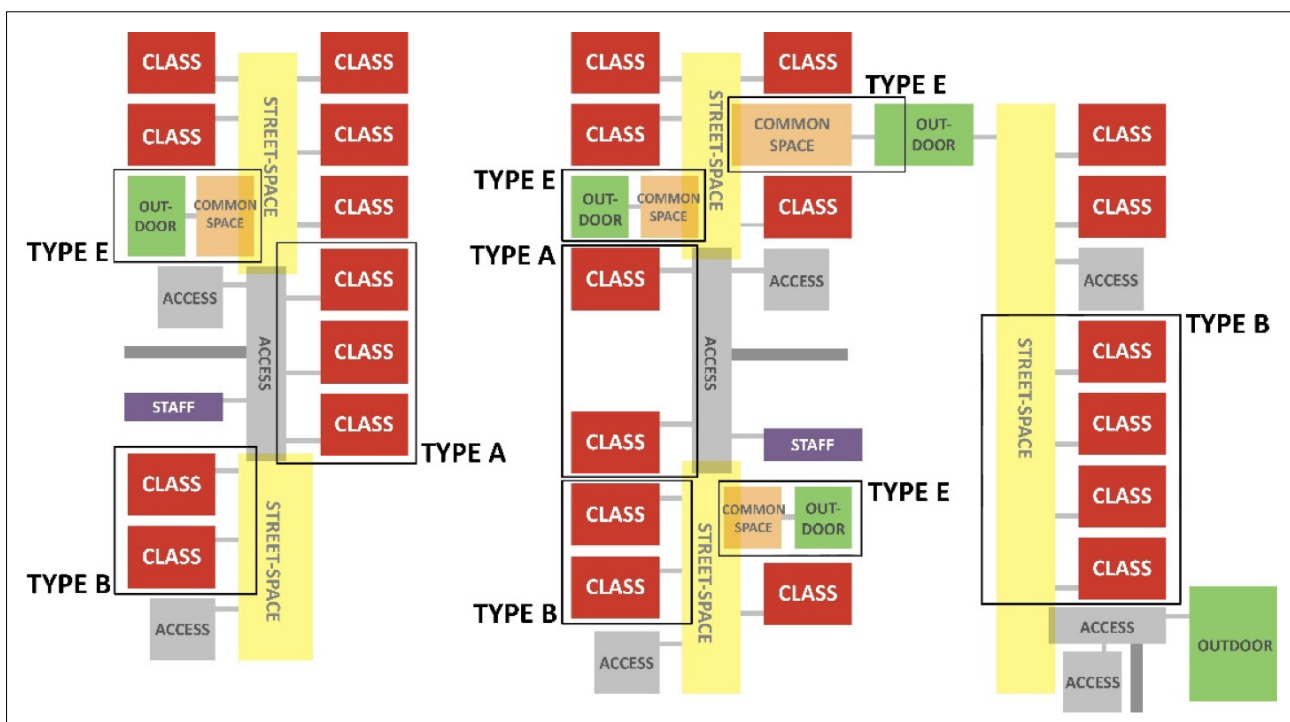
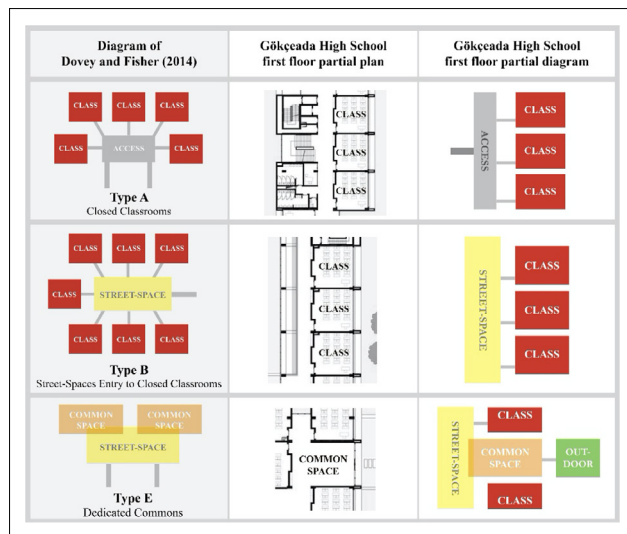


Figure 14. First floor diagram (Created by the Author).



**Figure 15.** Diagram typologies on the first floor (Created by the Author).

can be divided into classrooms with movable dividing elements, which can be removed and rearranged according to different purposes, instead of closed classrooms, such as Types A and B. Type C and especially Type D, which is not included in the building, have the potential to transition between formal and informal, or to be structured as an integrated (formal & informal) space, allowing new generation pedagogies to be implemented. In this context, especially including Type D on the ground floor, integrated with the city, and having more Type C spaces could have brought the high school building closer to achieving its innovative educational goals. Type E, on the other hand, meets the need for informal learning spaces in line with new-generation learning approaches, such as social learning and social constructivism, providing common areas where students can come together within the building (Table 2).

As seen in Table 5, the analysis findings show that there are 29 different learning spaces on the first floor, approximately

86% are traditional and 14% are of the new generation. Compared to the ground floor layout, the first floor has slightly more traditional learning spaces and classes defined as Types A and B. The transparent and permeable ground floor layout, where interior and exterior spaces actively communicate with each other, continues on the upper floors in the form of an integrated learning layout where spaces intertwine, as shown in Figure 17. These informal learning spaces, which are the Type E typology, allow learning to continue outside the classroom.

There are no Types C and D on the first floor, but the first floor, like the ground floor, is suitable for designing flexible large areas such as Type C and Type D. Although Type E is given more space on this floor than on the ground floor, it is solved in small areas. The necessity for formal space could be met by dividing large areas, as opposed to the current arrangement of have been limited classes of the same size situated adjacent to one another. Furthermore, pedagogical opportunities could be diversified through the implementation of diverse configurations to cater to a range of requirements.

As with Gökçeada High School, the sample innovative high school plans examined by Dovey & Fisher (2014) also include spaces for both traditional and student-centred pedagogies. However, the findings of the present study indicate a clear preference among innovative schools for transformable spaces as an alternative to traditional classrooms or special open layouts. Therefore, they argued that a completely open plan, while allowing for the implementation of new generation pedagogies such as social constructivist and collaborative, is not ideal because the space cannot be transformed when needed for the implementation of traditional pedagogies. They emphasized the importance of architectural capacity for ‘transformability’ from one pedagogy to another, i.e. flexible spaces. These flexible spaces are defined by the Type C and Type D typologies. It is evident that the spatial

**Table 4.** Learning space typologies in the ground floor (Created by the Author)

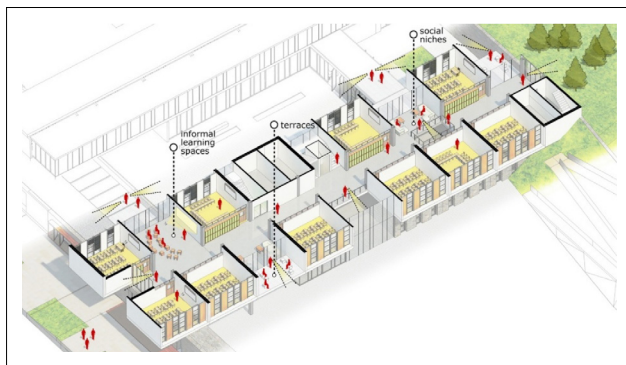
|                         | Traditional Learning Spaces |        | New Generation Learning Spaces |        |        |
|-------------------------|-----------------------------|--------|--------------------------------|--------|--------|
|                         | Type A                      | Type B | Type C                         | Type D | Type E |
| Ground Floor            | 2                           | 8      | 2                              | -      | 2      |
| % of Total Distribution | ~71%                        |        | ~29%                           |        |        |

**Table 5.** Learning space typologies in the first floor (Created by the Author)

|                         | Traditional Learning Spaces |        | New Generation Learning Spaces |        |        |
|-------------------------|-----------------------------|--------|--------------------------------|--------|--------|
|                         | Type A                      | Type B | Type C                         | Type D | Type E |
| First Floor             | 5                           | 20     | -                              | -      | 4      |
| % of Total Distribution | ~86%                        |        | ~14%                           |        |        |



**Figure 16.** The facade of the workshops on the İnönü Street side (Arkitera, 2019).



**Figure 17.** Common indoor learning spaces diagram (Archdaily, 2020).

configurations associated with the Type E model are not characterised by this degree of flexibility, as they are not 'transformable'. However, it is possible to implement new generation Type C and Type D models in terms of both economic and spatial transformation.

In the case of limited designs, where classes lack divergent usage possibilities, integrated learning and individual or group work environments can be designed with different types of furniture arrangements to accommodate formal and informal learning modes, as in the sample plan model of Byers et al. (2014). In addition, the integration of technology also plays an important role in the redesign

of learning spaces in the 21<sup>st</sup>-century. Spaces equipped with technological tools such as high-speed internet, computers, projectors and interactive boards can become more effective, innovative and student-centred. In this way, an environment can be created where students are actively involved, where interactive teaching is organised and where students can direct their own learning processes.

In parallel with the analysis made in the context of traditional-new generation in Gökçeada High School, the learning modes hosted by the learning spaces were also evaluated. The evaluation of the typologies and the learning modes it contains is shown in Table 6. The 'Type A' learning space does not include informal learning either in the classroom or in the corridors. Type B includes informal learning in the street-spaces outside the classroom and access to the classroom, but does not include integrated (formal & informal) learning. Non-formal learning, on the other hand, is not included in any of the typologies because it is not structurally included in the educational building, but is supported by informal learning in public social facilities on the campus.

The evaluation results in Table 6 shows that Type C and Type E, defined as new generation learning spaces, stand out for their integrated (formal & informal) learning fiction. These spaces are considered innovative according to 21<sup>st</sup>-century learning approaches. For this reason, as a

**Table 6.** Learning modes supported by the learning space typologies (Created by the Author)

|                                | Ground Floor |        |        |        | First Floor |        |        |
|--------------------------------|--------------|--------|--------|--------|-------------|--------|--------|
|                                | Type A       | Type B | Type C | Type E | Type A      | Type B | Type E |
| Formal                         | ✓            | ✓      | ✓      | ✓      | ✓           | ✓      | ✓      |
| Non-formal                     | -            | -      | -      | -      | -           | -      | -      |
| Informal                       | -            | ✓      | ✓      | ✓      | -           | ✓      | ✓      |
| Integrated (Formal & Informal) | -            | -      | ✓      | ✓      | -           | -      | ✓      |

result of the analyses and evaluations, although traditional learning spaces have a predominant percentage, it is seen that traditional and new generation spaces are designed together. The campus, designed to be open to the public to integrate education with social life, is integrated into urban life. With alternative learning spaces, from common spaces to outdoor spaces, and a transparent and participatory educational model, it supports students' formal education with informal learning at many points. In this context, the school is an exemplary model for the new generation, taking into account the relationship between space and users and taking initiatives towards the pedagogical potential of space.

## CONCLUSION

Learning spaces are nourished by the theoretical framework of learning theories and take concrete forms through pedagogies. While space is seen as passive in traditional education models, new generation pedagogies recognise that learning is significantly shaped by its environment, and it is considered crucial for spaces to facilitate learning through social interaction and community engagement. The defined 21st-century skills and learning frameworks emphasise the need for these learning spaces to ensure that students become competent individuals in every field. As pedagogy and needs evolve, redesigned learning spaces continue to adapt as a support system in the education of individuals according to these frameworks. New-generation learning spaces that take contemporary needs and learning approaches into account are the result of this transformation. In this context, today's learning space is an important component of the educational ecosystem, acting as a third teacher.

This study presents a comprehensive research on how learning transforms space, and how the space transformed according to current needs supports learning. Gökçeada High School has been selected as a case study within the context of exploring the relationship between new generation learning and space. Gökçeada High School is a nationally significant example and is discussed in detail in the context of new generation learning. Analysing the possibilities of using Gökçeada High School's learning spaces in the context of new-generation learning shows that, although it does not have a completely new-generation educational building, the campus is designed to offer students a contemporary and effective learning experience. While the building contains mainly traditional learning spaces, it also provides environments where new generation pedagogies can be applied and different learning modes can be accommodated. In informal learning spaces, social interaction and collaborative learning are encouraged through special common areas designed for socialising and group work. The design of the physical area is also

considered important in achieving innovative educational goals on a campus scale. The open campus, integrated into the surrounding area as an extension of real life, enables the implementation of current understandings such as social constructivism and social learning. The public-facing and city-integrated structure of the campus is also a response to the need to prepare 21<sup>st</sup>-century individuals for future social realities. The campus structure allows students to communicate with their environment, realise their individual contributions to social life at all times and feel safe and included. As a result, the design of the space is part of the education, providing students with a quality learning experience and supporting both the social and academic development of students. As learning and education models evolve, spaces must be open to change and flexible enough to support new practices. Indeed, the space itself should be capable of playing a transformative role in education.

Using the Gökçeada High School Campus as an example, this study reveals the importance of new generation learning spaces by highlighting the effects of space on learning processes and its role in student motivation. By providing information on the current needs and solutions to problems in educational buildings, the study enables architectural designers to make more informed decisions on future projects. In addition, the inclusion of learning modes in the evaluation process of this study offers a new perspective to the discussions on the relationship between learning and space in the 21<sup>st</sup>-century. In future researches, new generation learning spaces can be analysed in the context of the relationship between 'indoor' and 'outdoor', and joint studies can be carried out with various disciplines related to education, such as psychology. Moreover, studies on current issues such as sustainability, inclusivity, and digitalisation, all of which play an important role in 21st-century learning, can contribute to the development of new-generation learning spaces.

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