Aspect 1
The relationship between research and design

With taking the whole process of this graduation project into consideration, it can be found that researches and design have close relationship from begining to end. By looking back to the graduation plan which was proposed at the beginning of project, the research was the first step which was divided to research on material properties of glass, glass connections and available moving systems for bridge. According to dramatic change in glass technology in last decades, knowing the latest achievement in glass production technique was so essential especially because my first intention was to use glass as structural load bearing elements without supporting from the other components.

What is more, it is so significant to investigate different moving mechanisms which are already designed and implemented before starting the architectural design. However these movable bridges were all designed with other materials which have been proven to be reliable from structural point of view. As a result, special consideration and modification were devoted to use glass as new application due to the fact that it has not been used for movable bridge until now.

However my research was not finished completely before designing because the methodology was not a linear procedure but instead it is a complex system of information exchange. As a result, researches have been continued even during the other steps of architectural design such as detailed structural design in P3 and P4. Additionally, the evaluation of calculations and finite element analysis had crucial role in updating the bridge configuration and finding the optimum shape. A good example of that is finding the optimum dimensions and shapes of structural components and proposing proper connections for glass based on calculations and stress analysis.

As a consequence, the research had key role in bringing the efficient good results by filtering and narrowing the design possibilities step by step in the mentioned multi-dimensional approach.

Aspect 2
The relationship between the theme of the studio and the subject/case study chosen by the student within this framework (location/object)

This project was done for the “sustainable design graduation studio” at the building technology department. The master studio of this department covering three fields of structural design, climate design and façade design which are all related to sustainability.

Two different approaches of design by research and research by design are implemented for the graduation studio.

This graduation project with the subject of movable glass bridge is oriented toward structural design. Sustainability in this project can be investigated with these methodologies: Minimizing and optimize the material use, minimizing the required energy and maximizing the structural durability through skillful design. In addition, sustainability can also be found through material choice owing to the fact that glass is completely recyclable and produced from materials which exist widely in the earth.
Aspect 3
The relationship between the methodical line of approach of the studio and the method chosen by the student in this framework

As mentioned before, the methodology of sustainable design studio was based on research and design which will be evaluated through five defined presentations. Each presentation is mostly devoted to specific purpose including conceptual research, research results, design, detailed design and final design which are not strictly separated from each other. As a result, most of the literature study and researches were presented on P2. In P3 presentation, the research was at final stage and most parts of the design were presented. For P4, the design is almost completed. So, it is obvious that interaction between research and design was essential in all steps and the methodology of this graduation project is mostly based on aforementioned approaches.

Aspect 4
The relationship between the project and the wider social context

I think bridge has crucial role in our everyday life. It presents a state of connection of pieces of land together. As a result, the social life of the people in two separate areas is affected by bridges by providing an opportunity to come together. Additionally, bridge is the best example of engineering and physics which lead to saving many hours in travelling time each day.

In addition, designing a glass bridge provides a unique experience and spectacular panoramic view to the river for the people. In this regard, glass bridge is not only appreciated as a way that people simply pass and use to get from one land to another but as place for staying and pondering.

It should be mentioned the proposed site location of this project is situated in Delft in Netherlands. However, the proposed channel has standard size so the design can be implemented in other places with minor modifications. One of the main reasons for choosing this location is minimum intrusion in the historical environment of the Delft because the transparency of glass can play an important role for this purpose.

At the moment a metal bascule bridge is located over the channel which tarnishes the view to the new church as monumental place. Consequently, another influential aspect of this design is related to its material. Glass does not have the appearance similar to common concrete or steel but it is pleasing aesthetically.

What is more, glass is relatively new and gives more innovation theme to the structure. So, movable glass bridge can attract people to pass over, to stand and see the below water. Furthermore, glass folding bridge has appealing movable mechanism. Therefore, it can become a new landmark in historic city of Delft which can play significant role for more tourist attractions and economical promotion.