

DH2321 2021 Information Visualization Course Analysis

By Marko Petrovic and Mario Romero

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Description of the course analysis process

The course instructor and examiner, Mario Romero, together with the course teaching assistant, Marko Petrovic, together analyzed the results of the course evaluation. They synthesized the main topics and included them in this report.

Changes introduced in 2021

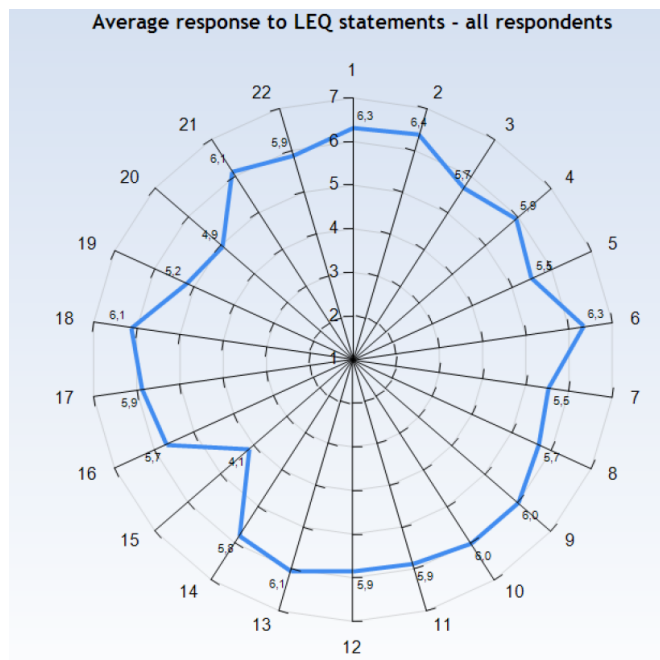
1. The course in 2020 had two individual projects and one group project. To cope with the additional stress of the COVID19 pandemic and in response to the survey performed at the end of 2020, we decided to reduce the number of individual projects from two to one. This allowed the students to focus on their group projects. We redistributed the points of the second project to the individual and group project and the readings in the course. The readings ended up with 20 points, which may have been too many. Otherwise the change seems to have worked well.
2. We replaced a spreadsheet documenting The Learning and Development of each student with a journal which had a much better reception. We plan to continue to use the journal but provide opportunities for lightweight but timely feedback for all the students. Isis noted in some of the comments to the course evaluation survey.
3. We gave the course online through zoom and we recorded all the meetings and events so that the students can return to the media content and consume it at the wrong time and Pace. This received very positive feedback and in fact the students request that we continue to do this even after the pandemic.
4. Because of the pandemic we removed an element of the course that we usually include which is to create a list of industrial partners who provide data and visualization tasks to the students and who meet with the students regularly to assess their progress. Industrial Partners also provide feedback and typically domain expertise and clear directions of development. We will reintroduce this after the pandemic. The main challenge of including industrial Partners during the pandemic was the organizational issues which we decided to bypass. Nevertheless, some of the projects seemed to have gained diversity and in some cases maintained depth and richness of analysis. Some of the projects may have been better had they been partnered with an industrial collaborator. It is difficult to tell.

Comparing results with previous years

The main difference with previous years is that we have decreased the amount of work by removing one project. previously the students had stated that they were working too much for a 6 credit course. As we describe below, we have mostly addressed this concern.

Analysis of the course evaluation with planned developments for the next round of the course

The course is a 6HP course. Using 27 hours of work per credit, that amounts to 162 hours of work which distributed over 9 weeks from week 3 to 11 gives 18 hours of work per week. Students reported working 18.8 hours per week. One student stated in writing that they worked too much for a 6-credit course. Yet, the student stated that with clear goals and structure this workload was acceptable.



All the LEQ survey statements were above 4.0, meaning all average entries are positive. The three statements we will focus on to analyze are 15, 19, and 20, which received the lowest scores. Statement 15 is "I could practice and receive feedback without being graded." We gave the students the opportunity to practice and receive feedback without being graded but we asked the students to schedule time outside of class to do this. We also provided scheduled open office hours. Yet, most students did not take advantage of this opportunity. They seem to be under the impression this practice should happen within the course hours. Next year, we will explicitly schedule time with individual groups to provide feedback without grading and confirm every team member participation. We will schedule short 15-minute meetings with the students and make

sure that at least half of the team members are present and take copious notes to share with students that are not there. The main point is that the students have an opportunity to share their work without being evaluated or graded.

The split averages by gender and by nationality of the students is not significantly different from the overall average and, thus, will remain marginal to this course analysis document.

Statement 19 is "The course activities enabled me to learn in different ways". We designed the course to allow people to learn from different perspectives and enhance different skills. Some key members will focus on programming, some members will focus on graphic design, and yet another group of students may focus on evaluation. From the beginning we state that the students may choose and mix from skills they want to develop and focus on that. It is possible for them to learn different sets of skills. Maybe what we can do here is provide a structure or a template that allows the students to pick and choose different skill-sets which they want to develop from the beginning so that they can choose the profile of the professional they wish to become through the acquired skills in the course. In the course we ask the students to perform a set of tasks that include programming, reading, criticizing, communicating, designing, doing graphic design, doing interaction design, evaluating, discussing, and presenting. It is not easy to think of what other ways of learning we can present to the students, but we will think about it and perhaps engage future students in thinking on different ways they wish to be engaged in learning together with us from the beginning.

Statement 20 says: "I had opportunities to influence the course activities". We designed the course carefully to be structured in such a way that we can fit relevant activities that are structurally aligned with intended learning outcomes from the beginning. There are very few opportunities to have a flexible structure of activities supporting the students' learning. Yet, we think that we can engage the students in thinking about different activities that they can do that relates to their learning both as part of the regularly scheduled meetings and as part of events which students handle on their own as team members. It is important to note here that we aim at enhancing the richness of activities at the students to to learn without increasing the responsibilities of and time required from the instructors.

One student answered the survey for the incorrect course. This is a note to the administrators of the course for the future. And note to ourselves. We have to State and make sure that the students answer the right survey for the right course. The student who answered the wrong course was very unsatisfied with a course the student thought it was answering and included a lot of detail about the frustrations and challenges faced. From these details we were able to clearly infer that the person was answering the survey for the wrong course. How could this happen? We must ensure that this does

not happen in the future and the kth Central's infrastructure to evaluate and analyze courses should and must provide clear visual signs of the course that is being evaluated.

To the general question "what was the best aspect of the course?", we received a number of replies. Here's a representative sample directly quoting the students:

- The best part is we have the opportunity to share and express our own opinions and receive feedback not only from teachers but also from the class.
- How organized it was. Good use of Zoom.
- The atmosphere is the greatest. The course organization is also awesome. For example, the individual contribution doc indeed helped me reflect on myself, which is rarely seen in other courses.
- The ability to choose our own project
- To create something where you really had to use what you've learned throughout the course!
- Great mix of logic and creativity.
- The topic of the subject is specially interesting
- That the course was well organized and that it was very clear what we were expected to do.
- Good lectures, fun projects, interesting course contents
- The ability to choose our own project

For the question "What would you suggest to improve?", we have a number of answers which we synthesize below.

By far the most common suggestion to improve the course is to improve the way that the weekly quizzes are delivered. The quizzes are meant to ensure that the students are keeping up with the readings. They were not designed to test the main material of the reading. Instead they are designed to make sure that the students have familiarized themselves with material and can answer very specific questions quickly. Part of the reason for the design is that the quizzes can be created automatically because they are multiple choice or true-false questions. The students suggest for example, first giving the reading, second talking about it during the lecture and third taking the quiz so that the students ensure that they have handled the material in the quiz. These are good suggestions which we will consider in redesigning both the pace of the learning, the reading, and the testing.

The second most common suggestion is to do something about the long four-hour presentations of group project deliverables. There is very little we can do about this if we want all the students to attend all the presentations. We do provide 15-minute breaks across every 45 minutes.

One person commented on the Learning and Development Journal. This person would have liked to see more feedback and in a more timely manner. The course of ministers agree that this should be the case and we need to find structures that provide timely feedback to every student without overwhelming the administrators. This is an open challenge which we will continue to discuss and address.

We included a question specifically targeting the experience of online learning through the covid-19 pandemic. The reply to the question was only through text as comments. The overall Sensation that we capture in this analysis from all the comments is that the transition to digital education online was positive, the lectures were managed well, the student presentations were long but manageable, and it seems that student attendance to team meetings improved through online media. Overall The Experience seems to have been very positive and the students gave very high reviews of recording and posting the meetings so that they could structure their schedule accordingly. In fact the students seem to be suggesting that some of these features remain even after the pandemic. The course administrators will consider this and find a practical solution that does not require an excessive amount of extra work as they agreed that many of these features do provide a positive learning environment.

For the question “What advice would you like to give to future participants?”, we list all the answers as we find all them valuable.

- Brainstorming a lot and time management is very important.
- As with all courses, divide your time well.
- Have previous experience in JavaScript.
- Devote yourself to it.
- Make sure to keep up with the deadlines for the final project, the feedback that you get is very valuable.
- Start early with the projects!
- Pick a project you like because you'll be working on it a lot.
- Start gathering data EARLY!
- Start early and learn D3, Vega, etc.
- Focus on Data! It should probably be where you put 80% of your time!
- Take the course if you like the topic, but be aware that you will need to learn most of it by yourself. [After careful consideration we have interpreted these two mean most of the programming and not the theory of information visualization]. In this case, a Udemy course might even be more useful.
- Be good at working in a group haha.
- Have some knowledge on web development, especially front-end.
- Better to have prior knowledge about web development and full-stack development.

Finally, to the question “is there anything else you would like to add?” Oh, we included some representative replies and also those that we found particularly encouraging.

- Probably one of the best courses I've taken at KTH.
- Thanks for a great course!