Teaching Landscape Planning - Landscape Perception and Analysis

Class LEINER, Boris STEMMER

Accepted as fully reviewed paper in: “Buhmann/Ervin/Palmer/Tomlin/Pietsch (Eds.): Peer Reviewed Proceedings Digital Landscape Architecture 2011: Teaching & Learning with Digital Methods & Tools”, Anhalt University of Applied Sciences. Germany

1 Introduction

Landscape architecture education programmes at Kassel University where reformed in 2006 to comply with the Bologna Accord. In this process new educational courses were developed, and these were combined to form clusters called ‘Modules’. The first cohort of Bachelor students has graduated in 2010 and it is time to analyse and evaluate the new system. As an example this paper focuses on a module that, at first glance, appears to be working well. The example is a set of first year (second semester) courses that are integrated in a module called ‘Landscape Perception and Analysis’. The aims of theses course are for students to learn how to analyse landscapes by perceiving them from three different perspectives, and also to apply, as their analytical tool, a geographic information system (GIS).

2 Objectives of the module ‘Landscape Perception and Analysis’

2.1 An interdisciplinary Learning-Module for Landscape and Urban Planners

At Kassel University the interdisciplinary education in the fields of architecture, urban planning and landscape architecture and planning has a long tradition. It started when the School of Architecture, Urban and Landscape Planning was established in 1971, and earlier initiatives for integrated didactic approaches may be traced back as far as 1948/49 when the first ‘Master Class of Landscape Culture’ was established at the Kassel Art Academy. Today there still is a strong interdisciplinary philosophy at Kassel University that integrated education is based on. This thinking is reflected in the 2006 Reform as even some of the basic first year ‘integrated modules’ are obligatory for all students, including students of architecture, planning and landscape architecture. The module described in this text is offered to students of landscape architecture and urban planning. The module integrates three courses and is taught by three departments: Ecological Site & Vegetation Studies, Landscape & Land Use Planning, and Urban & Regional Sociology. Therefore it can be regarded as a “core-competences” module (BRUNS ET AL. 2010).
2.2 Objectives of the faculties teaching ‘Landscape Perception and Analysis’

Every one of the three departments involved in this module is, in some way, specialized in the collection and analysis of landscape related data. Each represents a different view on landscape.

Ecological Site & Vegetation Studies traditionally focus on ecological aspects of the landscape. Objective of their course contribution are to gain an overview on biotope-types and apply traditional ecological ways to describe and analyse the landscape: this is the landscape perceived from the ecologists’ point of view.

Urban & Regional Sociology, on the other hand, holds a sociologist’s position. Their contribution to the module is focused on people and human behaviour. Observing people in the landscape and describing their activity also offers an opportunity to describe the kind of space people are using. Most of all this course contribution shows what space people prefer and to try and explain why they might prefer specific locations over others.

Landscape & Land Use Planning assists students in learning to understand and analyse landscapes according to their visual appearance and atmosphere. Differences between landscape type and character are emphasized, and techniques of understanding landscape history are presented.

All together, some very different methods and techniques of landscape analysis are taught:

- Biotope and land use classification, using a typological approach;
- Landscape characterisation and landscape atmosphere;
- Observation of space and people behaviour.

On the one hand, all of these approaches are merged, partly for didactic reasons of integrated learning, partly by the needs of the GIS-System. GIS is a fourth component of this module. A GIS specialist takes the responsibility for teaching this component (As suggested by WATSON 2010). Didactically, the most important aim is to combine results produced from applying all of the different methods and techniques in a final synopsis.

Students are asked to answer the question how all methods they have learned may be used in concert, and which specific questions may be answered by which method individually? And, finally, how do these methods complement each other?

2.3 Didactic approach

The learning aims of this module are to teach different approaches of landscape analysis, using a GIS and giving an overview of the purpose and properties of each of the different methods. Usually a high number of students (about 200) enrol into this module every year.

Didactic approaches must be selected that accommodate the need for many students to achieve their learning goals. ‘Learning by doing’ has been shown to be the most effective way of learning, particularly in spatial and landscape planning. Also it has turned out that working in groups (collaborative learning) assures best learning effects (Z.B.YAMARIK 2007, HWANG 2008). Field work techniques were selected assuming they would provide the best learning effects also in these courses. A field based landscape analysis can only be a success if it is well prepared. The students must be prepared, as well as the chronological and spatial distribution of students and teachers in the field (Chapter 3).
Besides the methods used in GIS also need to be considered. GIS requirements were a permanent component of the semester cycle, not only due to the complexity, but also because it affected all other parts of the course.

3 Organisation and Programme

3.1 Semester Programme

The semester consists of 13 weeks of active teaching time, and several weeks of self study. The programme and thematic organisation for the ‘Landscape Perception and Analysis’ module is shown in Tab. 1. The programme is separated into three thematic blocks that relate to what the three participating departments are offering. The programme also begins with a comprehensive introduction and it ends with a closing event. Parallel GIS courses are held using ‘moodle’ (Chap 3.2). GIS was also a major topic of discussion during many of the meetings.

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Wed.</td>
<td>Introduction to the module and its courses</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Theory I: land use and land use types</td>
</tr>
<tr>
<td>16</td>
<td>Wed.</td>
<td>Field visit I: land use and land use types</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Theory II: landscape character, atmosphere, cultural landscapes elements</td>
</tr>
<tr>
<td>17</td>
<td>Wed.</td>
<td>Field visit II: landscape character, atmosphere, cultural landscapes elements</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Theory III: Landscape history, mapping changes in time</td>
</tr>
<tr>
<td>18</td>
<td>Wed.</td>
<td>General Excursion and Field trip week</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Wed.</td>
<td>Field visit III: Landscape change mapping</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Holiday</td>
</tr>
<tr>
<td>20</td>
<td>Wed.</td>
<td>Presentation No. 1: land use, character and atmosphere</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Theory I:</td>
</tr>
<tr>
<td>21</td>
<td>Wed.</td>
<td>Field visit I:</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Theory II:</td>
</tr>
<tr>
<td>23</td>
<td>Wed.</td>
<td>Field visit II:</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Holiday</td>
</tr>
<tr>
<td>24</td>
<td>Wed.</td>
<td>Presentation No. 2: landscape ecology</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>GIS Consolidation of part No. 1 and No. 2</td>
</tr>
<tr>
<td>25</td>
<td>Wed.</td>
<td>Sociology Theory I &amp; II</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Field visit preparation</td>
</tr>
<tr>
<td>26</td>
<td>Wed.</td>
<td>Field visit: Observation</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Presentation No. 3 Part 1</td>
</tr>
<tr>
<td>27</td>
<td>Wed.</td>
<td>Presentation No. 3 Part 2</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Formalties, requirements on the written report</td>
</tr>
<tr>
<td>28</td>
<td>Wed.</td>
<td>Comprehensive perspective, lessons learned</td>
</tr>
<tr>
<td></td>
<td>Thur.</td>
<td>Preparation of written report (Group work)</td>
</tr>
</tbody>
</table>

Tab. 1: Thematic organisation of the semester programme summer 2010
3.2 Logistics and Contents

Meetings were normally held in the auditorium on Thursdays’ evening, while field visits were arranged on Wednesdays during the morning. As students worked in groups of six they had to start the field trips on their own and then meet instructors at a certain time and place during their ongoing work.

The city of Kassel was subdivided into planning areas of 500 x 500 meters. (Fig. 1) Every quadrant was worked on by five groups. So it was possible to compare the outputs.

![Fig. 1: Map of Kassel, showing quadrants, meeting points and meeting times](image)

4 Teaching Methods

According to the decisions on didactic approaches (Chap. 2.3) a number of different teaching methods are integrated to run the courses of this module. Two major challenges are.

- A high number of students (ca. 200)
- A complex topic and a large number of different views on landscape
4.1 Lectures and Learning Papers

Lectures are part of the teaching programme. Lectures are used to give introductions to the theoretical basis and to outline analytical methods and techniques to prepare for the next field trip. Lectures also include small exercises that are designed to help students in transferring theoretical knowledge into practical applications of methods, and to build and improve practical skills. Homework assignments are given to the students, in most cases the purpose is to prepare for field trips (4.2 Field visits). Lecture sessions are usually held Thursday evenings. About one and a half hour of lecture appears to be the maximum in an evening according to the students’ ability to concentrate on a single topic.

4.2 Field visits

Field trips and field visits are frequently used learning methods. This module included five field visits (Tab. 1). For their perception and analysis students are required to refer to theoretical knowledge taught during lectures and apply methods and techniques prepared during lecture exercises. Field work is done by groups, and every group must work mostly independently. The need to work independently is one reason why good preparations are important. To support students during their work in the field, on Wednesday morning between 10.00-13:30, instructors meet with every group to help them with problems, to give advice, and to discuss the output produced so far.

4.3 Homework Assignments

Frequently, homework assignments are given to students at the end of lectures, and also at the end of field visits. Two types of homework are:

- Preparation for field visits;
- Preparation of presentations after field visit (output).

Preparations for field visits include the assembling of maps as well as readings of theoretical and practical literature. Maps are arranged with help of geo-data that are provided on ‘Moodle’. Texts were also available on this learning management system.

Preparing landscape analysis outputs after field visits mainly includes the digitalization and layout of hand drawn maps, scanning of sketches, arranging photographs and completing questionnaires with external information.

4.4 Presentations

Presenting one’s work is considered important in landscape architecture and in planning. As a key competence presenting skills are repeatedly trained. Students are asked to present results at the end of every thematic block, and special presentation events are arranged for this purpose (Tab. 1). Due to the large number of students it is necessary to select some groups to present their work and to use presentation meetings mainly to discuss standards and quality that is expected from landscape analysis work.

The presentation meetings are prepared, by the instructors, by reviewing the output of the ongoing work. A selection is made of those maps and sketches that would be most suitable
to illustrate certain aspects of the assignments. Presentations are given spontaneously by the groups whose work are selected to serve as examples. To minimize frustration effects students were not asked to prepare for presentations ahead of time, but for all students to be aware that they could be asked to comment on their work at any given time.

5 Excursus: GIS and ‘Moodle’

Landscape architecture and planning students who graduate with an emphasis on landscape planning or spatial planning are expected to have gained substantiated knowledge and expertise in GIS. However, universities appear to place less value on GIS related education as professionals in practice might expect them to. For students to prepare for future business requirements is one of the main challenges that institutes of higher education are facing (WINKELMANN 2007). At Kassel University the decision was made to include GIS-courses from the start, beginning in the first semester in first year, and to continue in the second semester including GIS as part of the module ‘Landscape Perception and Analysis’. During this course students get a first chance to apply knowledge gained in the first semester and place it in a professional context. The major aims of the GIS-training in the course are:

- Understanding the overall concept of desktop GIS;
- Understanding properties, analysis functions, visualisation and presentation of geo-data;
- Identifying errors and manipulations in geo-data;
- Ability to design readable maps.

The students GIS-Infrastructure is established during the first semester GIS course. In this course the open source Software ‘Quantum GIS’ (www.qgis.org) is used and students are made familiar with working in ‘moodle’. Therefore, during the second semester, it may be assumed that a basic knowledge of GIS is available and ‘moodle’ is well known. Students are used to receive distributions of PDF tutorials, scripts and geo-data. They are also used to receive mentoring using the learning management system. ‘Moodle’ is a well known learning management system that is used by many universities and other institutions of higher education. In this course the system was employed for central organisational and teaching purposes:

- Grouping of students and assigning of planning area (quadrants);
- Providing materials (e.g. maps, instructions, scientific texts);
- Forum for discussions, especially regarding GIS;
- Handing in of assignments and presentations.

Concerning GIS most of the problems occur when students are asked to create presentation maps. Obviously it is not hard to understand how a GIS works and how to use the technique; but choosing an easy to read layout appears to be much harder. Particularly the choice of colours for certain types of land use or biotope often appear to be difficult, and representation and legend layout require lengthy discussions. Many but not all issues can be solved using ‘moodle’ forums. And in many lectures GIS issues are also integrated (Chap 4.1)
Nevertheless, the learning management system (LMS) ‘Moodle’ as well as the individual availability of GIS software are important preconditions to make a success out of teaching this complex module.

6 Output and Outcomes

The semester output is a booklet. Each student group designs and produces a brochure booklet that contains results from all exercises and assignments. The deadline for handing in this booklet is a few weeks after lectures end. This allows for enough time to mainly design the booklet. Individual assignments such as maps had to be ready after every mapping exercise. This procedure assures that students continue working on assignments and exercises throughout the semester. Excerpts from an example booklet are included in Figure 2-4.

As may be expected, outputs qualities are quite diverse. Some products are excellent, while others are hardly able to meet minimum standards. Good working results clearly indicate that learning requirements are not being set at a too high level, however the wide range of grades earned also shows that all of the exercises also help identifying differences in group capabilities.

Some comments students made on the design of the course programmes are noteworthy. For example, students remarked that, when faced with problems in trying to adjust their group perceptions on landscape to what they remember was said during the lectures, it would have been helpful to receive more intensive tutoring during field visits. Other students comment on problems they encountered while using the GIS software, especially regarding the stability of it running smoothly. Unfortunately, it is difficult to evaluate such issues when using e-learning based methods.

7 Conclusions

The newly created ‘module’ serves to illustrate how to effectively organize a course designed to learn and understand basics of landscape assessment, and how to combine these not only with methods used in landscape planning, ecological and perception and cognitive methods, but also with modern digital techniques of data processing and communication.
This ‘module’ is now one of the best organized ones of the School, and it working quite well. Still there is room for improvement. Students should be encouraged more strongly to work independently and to rely more on the theoretical knowledge and on the methods presented to them in lectures. Additionally, while the ‘Moodle’ system presents a huge organisational benefit, communications and coordination could be improved even more. It can be observed that the strength gained from personal exchanges between teachers and
students is important and, due to a lack of face-to-face communication, no any e-learning system is able to be a good substitute.

Nevertheless the approach presented here is capable to ensure that learning goals are met and that participants are enjoying to produce good results.

8 References


Watson, David (2010): Are Landscape Programmes Meeting the Challenge of Educating the Second Generation of Digital Landscape Architects. In: Buhmann, Erich; Buhmann-Pietsch-Kretzler (Hg.): Peer reviewed proceedings of digital landscape architecture 2010 at Anhalt University of Applied Sciences. […] contributions from the 10th International Conference on Information Technologies in Landscape Architecture, held in May, 2009 at Valletta, Malta and contributions from the 11th conference held from 26 to 30 May 2010 at Aschersleben, near our Bernburg Campus ; 10th and 11th International Conference on Digital Landscape Architecture. Berlin: Wichmann,
