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ID 1449 | PROCESS-ORIENTATED LEARNING AS KEY ASPECT IN HANDLING UNCERTAINTY. EXPERIMENTAL TEACHING METHODS IN CONTINUING EDUCATION IN SPATIAL PLANNING

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1 INTRODUCTION

Understanding spatial planning as an action-oriented discipline allows planning to concern itself with the exploration, clarification, and resolution of difficult, unsolved tasks. The starting points for this are both spatially relevant conflicts and desirable spatial developments, as the latter too can likewise lead to future difficult and unsolved tasks. Due to the fact that solutions to spatial planning problems always lie in the long- term future, clarification processes must be able to adroitly handle circumstantial changes linked to uncertainties, such as changing political priorities or shrinking financial resources. Employing model calculations and perfecting forecasting methods alone is insufficient for appropriately dealing with the degree of uncertainty in a planning process. On the contrary, what is needed are methods that take into account the uncertainties, as well as desired and undesired effects of decisions in solution-finding processes. A universally valid approach for exploring, clarifying, and solving future spatially relevant problems cannot be prescribed; this depends on the given tasks, and must be tailored to the respective problem situation (SCHOLL 2011: 279). Moreover, what underlies most difficult, unsolved tasks is a decision-making problem (BEHN/VAUPEL 1982: 40 f.), which in turn triggers subsequent action. As such, approaches for laying the groundwork for decision-making and actions take centre-stage in research and teaching on spatial planning.

In Switzerland in particular, being a small country in the heart of Europe, with its topographically determined, limited availability of settlement areas, and its landscape as principal bearer of identity, problems of coordination in spatial planning tend to appear sooner in Switzerland than in other countries. Moreover, due to the small territorial extent of the country, most challenging planning problems are transnational tasks. As such, Swiss spatial planning is - to a greater extent than in other countries - dependent on applying methods for clarification processes which don’t rely on formal procedures but rather place informal problem exploration at the start of a planning task. These special conditions make Switzerland’s main settlement area a fruitful laboratory space for examinations in research and teaching.

1.1 PROBLEM ORIENTATION AS PREREQUISITE FOR HANDLING UNCERTAINTY IN SPATIAL PLANNING

In the field of spatial planning, there are few helpful theories which specific research questions can build on, and which can be transferred to any given spaces (SCHÖNWANDT, JUNG 2005: 790). Moreover, they are only partially good for exploring, clarifying, and solving new types of problems, which are, for example, emerging due to the primacy of inward development in Switzerland (GRAMS 2017: 43). The planning theoretician Horst Rittel had already in 1972 criticised that a rational planning model is ill-suited for future spatial planning tasks and developed the “planning model of the 2nd generation” (RITTEL 1972: 392). According to this model, planning doesn’t involve “tame problems” but almost always “wicked problems”. “Wicked” planning problems are characterised by their uniqueness and lack of a conclusive definition. Moreover, there are no demonstrable, conclusively quantifiable sets of solutions and measures for such planning problems. Therefore, solutions to “wicked problems” are not classifiable as either “right” or “wrong”, but only as “plausible” or “less plausible” according to the current level of knowledge.

What has proven to be of much greater help for solving problems than the discussion on spatial planning theories, has been the disclosure of approaches adopted by participants in a clarification process. Every planner consciously or unconsciously adheres to a system of values with regard to how he/she perceives and attempts to solve planning problems. Spatial solutions that lie in the future are highly dependent on assumptions made in the present. It is therefore essential that planners disclose their approaches at the start of a problem-solving process, including the assumptions they make, and how they intend to handle uncertainties. Without explicit formulation of approaches, solution variants cannot be compared and the process cannot be improved. Such an approach comprises problem orientation in the “planning model of the 3rd generation” (SCHÖNWANDT 2011: 295). Precise exploration of the initial problem of a planning task is the essential point in handling uncertainties. For if the problem is not formulated in a precise manner, the chain of reasoning cannot be developed, simply because the problem to be solved is unknown (SCHÖNWANDT 2011: 300).

The realisation of what exactly constitutes the basic problem in a specific planning task grows out of a structured clarification process. This must permit the conception as well as rejection of solution variants alike. When transferred to teaching, this means that students are, above all, given methodological guidance in the problem-solving process. To this end, a teaching concept has developed in the continuing education programme in spatial planning at the ETH Zurich in Switzerland2, which focuses on problem orientation and process expertise.

1.2 PROBLEM-ORIENTATED TEACHING

Action-orientated spatial planning develops recommendations for decision-makers acting in space on how invariably limited resources should be usefully applied to solve a current or future problem. To implement them, formal instruments and procedures are necessary whose regulation by law is different depending on the territory. Therefore, in teaching spatial planning, it hardly makes sense to exclusively focus on imparting expertise on which formal instruments and procedures are to be applied in different administrative units. Rather, teaching is directed towards methodological expertise on how problems can be solved in a limited time. To this end, first and foremost, study projects must be mentioned here (see 2.1) which are to be prepared and guided by experts with practical experience. Moreover, lectures and seminars also assist in defining problems from the perspective of different disciplines. Table 1 gives an overview of the learning units in the continuing education programme in spatial planning.

Learning unit	Problem-orientated learning objectives
Spatial Planning: Function and Methods	Familiarisation with and comprehension of the tasks of spatial planning. Methodologically important elements of spatial planning processes (assessment of the situation, focus decree, conception, decision-taking, reasoning).
Urban Planning and Urban Development	Methods and tools for urban design and working out urban development strategies.
Landscape Architecture	Impartation of a landscape-based approach to a given urban development project; critical consideration and review of landscape and tools; impartation of basic principles for a well-considered design understanding.
Landscape Planning and Environmental Planning	Understanding landscape development using system-dynamic analysis; methods for weighing of interests.
Transport Systems	Understanding the effects of infrastructure on space as accessibility-producing, vital network industries.
Communication and Conduct of Negotiations	Simulations of typical presentation and negotiation scenarios; introspection on one's own presentation style; reasoning.
Spatial Economics	Understanding spatially relevant economic relationships and driving forces of spatial development. Understanding and assessing existing spatial concepts, policies, and measures. Development of new concepts for spatial development policy.
Spatial Sociology	Understanding socially relevant relationships in spatial planning; methods of participation.
Planning and Policy	Familiarisation with, comprehension of, and structured discussion on the political science-based view of planning.
Spatial Planning: Theory and Methodology	Impartation of approaches and active application of basic principles of planning theory and methodology; plausibility and rigour in planning-related chains of reasoning; problem determination; analysis of the causes of problems
Academic Work in Spatial Planning	Procedures for clarification processes; basic principles of academic working and writing.
Law	Understanding the relationships between law and space. Understanding juridical thought and methods.

Table 1 – Overview of learning units in the MAS programme in spatial planning at the ETH Zurich

1.3 PROCESS-ORIENTATED LEARNING

Study projects form the core of teaching in the continuing education programme in spatial planning at the ETH Zurich (SCHOLL 2012). With this focus on the impartation of methodological knowledge, the continuing education programme corresponds to the needs of Swiss planning practice which, in the course of the paradigm shift from inward to outward development, especially requires experts who understand planning primarily as a problem-solving and formative process. By orienting continuing education in spatial planning in this way, Switzerland occupies a unique position compared to the rest of Europe (FRANK ET AL. 2014).

Implementing several study projects within the framework of continuing education of professionals in spatial planning basically simulates the method of test planning (SCHOLL 2011: 330). Competing, interdisciplinary teams work on a task within a limited time period while being regularly subjected to criticism by a circle of experts from the project field. Working on problem-solving in three cycles with different foci (see Fig. 1) leads to robust reasoning, which finally culminates in a recommendation to the stakeholders acting in space. In a first cycle, an overview of the main influencing factors and an assessment of the situation is made. At the end of this "opening and narrowing down" phase, a focus decree determines which problem is to be solved from the viewpoint of the students. In a subsequent procedure, the focus decree is examined and expanded into a concept. In conjunction with temporal structuring which divides the individual elements of the problem-solving process into short-term, medium-term, and long-term measures, the concept turns into a strategy. This forms the core of the clarification process. The last cycle serves to deepen and adjust the results, culminating in a draft proposal to the relevant actors in space.

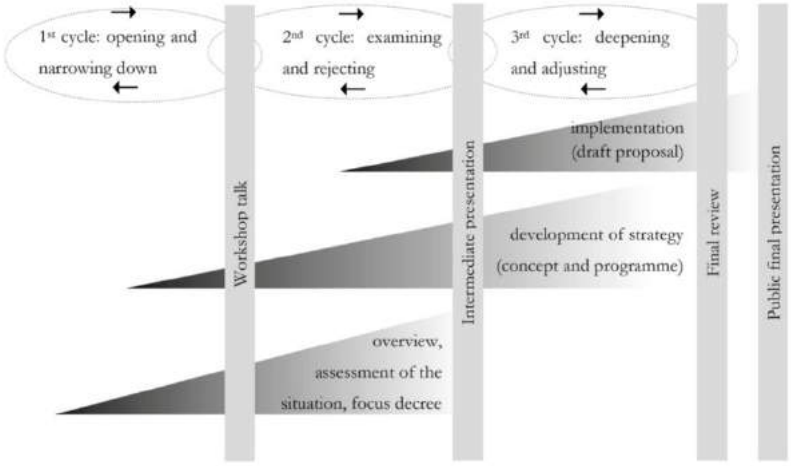

Figure 1 – Phases of the clarification process in process-orientated learning

Process orientation, in contrast to product orientation, is unfamiliar to most students at the start of continuing education. Only by an intensive engagement with the phases of the problem-solving process do they achieve sure-footed reasoning, partly leading to surprising results, especially when starting positions are uncertain.

2 EXPERIMENTAL SIMULATIONS OF PLANNING PROCESSES IN CONTINUING EDUCATION IN SPATIAL PLANNING

Handling uncertainty in a planning process can be trained in education. In the continuing education programme in spatial planning at the ETH Zurich, various interdisciplinary teaching methods have been continuously developed and extended since 1965. Essentially, they consist of simulation experiments of actions and decisions.

In this context, a most precise distinction between the terms ‘simulation’ and ‘model’ must be made. A simulation allows a scientist to simulate a process by means of another process (HEGSELMANN ET AL. 1996: 77). In doing so, the process is divided into various useful sequences, and is always tailored to a specific problem to be solved. Simulation results are open-ended. A model, by contrast, targets a mathematically backed up final condition of a process, which may lead to questionable results in the social sciences. The Process-orientated learning as key aspect in handling uncertainty philosopher of science, Mario Bunge, insofar warns of the irrelevance of mathematical models in the social sciences: “Some of these models are just intellectual games.” (BUNGE 1996: 64). In this context, he warns against viewing the computer as a substitute for theories: “Computing without theory is mere data processing devoid of explanatory power” (BUNGE 1996: 65). For problem-oriented spatial planning, simulations in the learning process are useful. The application of models can well be seen as a component in the clarification process, though they are far from replacing it.

2.1 REGIONAL AND SUPRA-REGIONAL STUDY PROJECTS

In academic continuing education, teaching and learning based on unsolved tasks is accomplished by working on study projects. Here, in contrast to basic training, participants can fall back on experiential knowledge from daily planning practice. Elementary knowledge in fields such as project management, as well as knowledge of formal procedures and instruments or skills such as the application of programmes for processing large amounts of geo-data are expected at the start of studies.

In the MAS programme in spatial planning at the ETH Zurich, a regionally oriented and a supra-regional study project primarily serve didactic purposes, though the task is based on actual planning problems. Solutions to complex tasks in spatial development must be drafted in a clarification process on the basis of

the given and respectively different spatial, factual, and operative conditions. As such, the MAS students are to be given opportunities to apply and bring together, as well as to supplement and deepen the knowledge and skills acquired during the MAS programme and in their own professional training on the basis of real spatial planning problems. Moreover, this also serves to address questions in the study projects which are interesting from a professional and practical viewpoint. Conversely, current information and new knowledge from scholarship and practice should, finally, also flow into the study projects as directly as possible.

The organisation of project studies presupposes only a few albeit important rules, such as division of students into groups, limited time for implementation, and a clear structure of the learning process (Table 2).

	Regional Project	Supra-regional Project	Project abroad
Scope of consideration	City and its agglomeration	Functional space	City and its agglomeration
Work parameters	As given in the assignment	Freely selectable, based on thematic focus decree	As given in the assignment
Focus decree	Spatial	Theme-specific	Spatial
Process time	10 months	8 months	1 week
Number of students	20 - 24	20 - 24	30 - 40
Number of teams	4	4	6-7
Number of students per team	5 - 6	5 - 6	7 - 10
Number of teaching staff	6	8	10-12
Language of instruction	German	German	English

Table 2 – Features of study projects in university-based continuing education in spatial planning

Though the groups simultaneously work on the same assignment, each of them focuses on a specific component deemed primary by the group on the basis of its selected strategy, in order to examine the feasibility of the selected approach, also with respect to costs, time constraints, and other important parameters. Projects are also especially suitable to establish and maintain links to practice. To this end, experts are consulted to supervise project work and to explain especially important aspects of a given task.

2.2 STUDY PROJECTS ABROAD

Methodological knowledge is acquired and trained in study projects. After successfully completing two projects, the students are ready to work on a third study project under more difficult terms. This serves to examine whether they have internalised problem orientation as an approach.

The project task is prepared during the course of one year in cooperation with teaching staff from abroad, and focuses on a city and its agglomeration (Table 2). Thematically, the main focus lies on coordination problems such as between urban development and railway development. Students face a demanding challenge insofar as, firstly, the project abroad is processed in only a week; secondly, the groups are interdisciplinary and intercultural; and thirdly, the procedural work takes place in English. Moreover, the students have to organise themselves into larger groups.

As the experiences over the last few years have shown, this type of process-orientated learning is a major challenge for students. Skills are trained to maintain an overview even under difficult conditions, while reasoning skills in different cultural contexts are also exercised. This project concludes the two-year continuing education programme in spatial planning, and especially supports students who intend to handle difficult, unsolved tasks in an international context in their subsequent career and to take on leadership roles.

2.3 EXERCISE: EXPERIMENTAL SIMULATION OF A TEST PLANNING PROCEDURE

The continuing education programme in spatial planning at the ETH Zurich in Switzerland incorporates a learning unit on “experimental simulation”. Experimental simulations are thought experiments in which students assume the roles of different actors and stakeholders of a planning procedure in role plays, representing their respective aims and reasoning. The learning objective is to explore possible decisions and actions in general. Over the course of several role-playing cycles, the students take on various roles in different settings. By combining their own daily work experiences with the presumed aims of the respective actors, they learn reasoning skills, and how to respond in messy situations where a given problem isn’t at all clear yet. For this reason, experimental simulations are only successful as a teaching method in continuing education where students already have a certain professional background.

The experimental simulation exercise is used to simulate the clarification and decision-making process of a test planning procedure (SCHOLL 2011: 330). The exercise follows the organisational and operational structure common for this procedure in a shortened time frame. As such, groups of students take on different roles and responsibilities (Table 3).

Role	Task	Group size
Assessment body, incl. chairperson	o Responsibility for correct implementation of the test planning procedure o Assessment of team contributions on the basis of the task formulation and assessment criteria o Conduct of dialogue with the teams o Proposal with recommendations addressed to the executive committee for the next procedural step	5-7
Executive committee	o Overall supervision of the procedure o Responsible for strategic decisions o Appraisal of drafts of teams	3-5
4-5 Teams	o Preparation of drafts o Presentation of findings o Revision of drafts on the basis of the recommendations of the assessment body	16 -20
Observers	o Continuous process observation o Regular report to the assessment body	3-4
General public	o Critique of final recommendations from the viewpoint of the general public	4-5
	TOTAL	**30 – 40 Students**

Table 3 – Roles and tasks of actors in a process simulation

The assessment body provides quality assurance in the test planning procedure. It strives for decisions by consensus, and is led by a unanimously elected chairperson. The following representatives constitute the assessment body: representation of property owners; experts from the fields of urban development, transportation, economics, open space and green space planning, and social issues.

The organisers are represented by an executive committee. This constitutes the commissioning authority, having oversight of the test planning procedure. It is informed of the work status by the chairperson of the assessment body subsequent to the presentations, and has the opportunity to ask questions to this end. The teams are composed in an interdisciplinary manner, consisting of experts in urban development, open space planning, transportation, and economics. The teams are led by the urban development representative (an architect or spatial planner). A group of observers takes part in all activities. They analyse the learning process, giving their feedback at the concluding discussion at the end of the exercise. This ensures that the didactic objective is met. The general public too must be represented within the framework of the simulation, including representatives of associations, organisations, owners of adjacent properties, and potential investors. Likewise, representatives of the media are to be included in this group.

The operational structure of the experimental simulation exercise follows the actual course of the procedure and must encompass several cycles. Three cycles on three consecutive days have proven themselves. On the fourth day, the simulation is concluded with a media conference. At this occasion, subject matters which have not yet been discussed can be addressed, also by teaching staff. The following illustration shows the operational sequence of the exercise (Fig. 2):

This thought experiment has to be prepared, performed, and assessed very carefully. It is based on an actual planning process, and active participation by the key actors is expected. By confronting the students with actual planning problems in combination with their own passive knowledge and intuition, they are able to simulate problem-solving. This leads to a hitherto underestimated intensification of teaching practice.

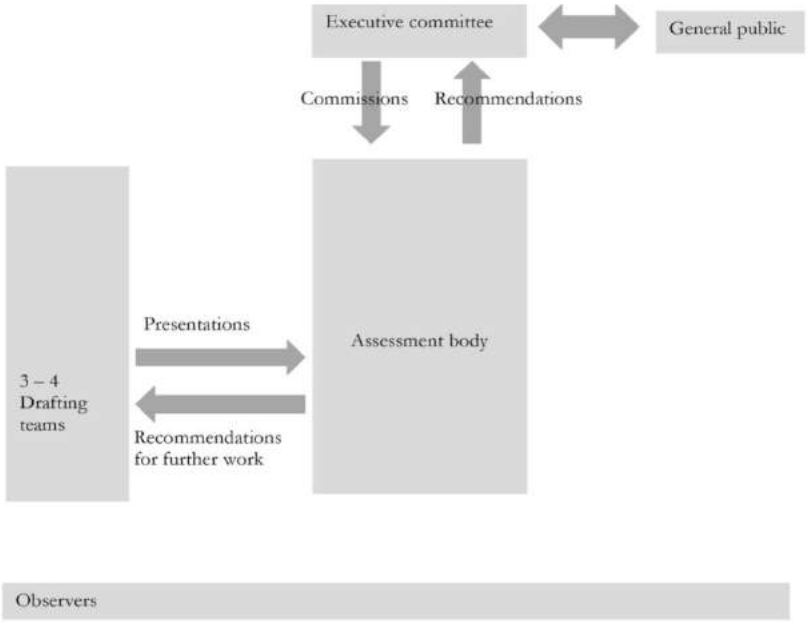

Figure 2 – Role differentiation of actors in the clarification process

3 SPATIAL SIMULATIONS AS A TEACHING METHOD IN CONTINUING EDUCATION IN SPATIAL PLANNING

With action orientation as the underlying basic conception of problem-based teaching, simulations and study projects become central to continuing education in spatial planning. As such, interdisciplinary work on difficult, unsolved tasks can be understood as a method to sensitise students with respect to uncertainties in the planning process. By internalising a three-phased problem-solving process graduates are conditioned to take on leadership roles for difficult clarification processes. The experience gathered in the continuing education programme in spatial planning at the ETH Zurich is leading to the emergence of several factors determining the success and failure of simulations as a teaching method.

3.1 FACTORS FOR SUCCESS

The impartation of methodological knowledge by means of difficult, unsolved tasks in the continuing education programme also requires teachers to come up with more than the usual forms of instruction in elementary studies. Firstly, lecturers must have accompanied an actual procedural process which is being used as an example for the simulation. This means that the professorship responsible for the course is participating in cooperation projects in practice, and has preferably even developed and led them. Practice orientation in spatial planning at university level cannot be taken for granted in Switzerland, though future problems in planning demonstrate that it is precisely problem orientation that is needed to attain new knowledge in research and teaching. Secondly, the application of simulations in teaching requires more preparation time than is usually available for conventional teaching methods in a daily teaching routine. It is useful to start drafting the task formulation already during an actual procedure in order to identify critical milestones in the procedural process at an early stage and to productively imbibe them in teaching. Moreover, a study trip to the site of a completed or ongoing test planning procedure following the simulation has proven itself. As such, students can get an idea of the circumstances on site, and look back on the procedure while being engaged in discussion with important process-specific actors. Questions which may have come up during the simulation, can be originally answered by the actual actors. This

dramatically enhances the learning achievement in continuing education in spatial planning. Another success factor has proven to be a clear rhythm during the implementation of simulations. Individual steps by students in the clarification process must follow the actual procedural sequence. Study projects carried out over two semesters and in sequences of about 3 months have proven their worth. An experimental simulation of a clarification process can be carried out during a week, whereby as much time should be devoted to self-study as to group work. This leaves sufficient time for a thorough familiarisation with a given role in the simulation, and for practicing adherence to temporal sequences. This also demonstrates the great responsibility of the role of the chairperson of the assessment body. This role should be taken on by practically experienced students.

3.2 STUMBLING BLOCKS

The basic precondition for learning on the basis of specific projects is a certain individual experience in handling problem-solving processes in practice. Therefore, continuing education in spatial planning is predestined for applying experimental simulations as a learning method. Students come from various spatially relevant disciplines, such as geography, architecture, construction engineering, etc., and must have at least 2 years of professional experience following their graduation. If such a first experience of real planning processes is lacking, an experimental simulation risks sliding off into a simple role play, which fails to lead to a satisfactory learning effect. Therefore, this method is hardly suitable for application during elementary studies in spatial planning. Another difficulty has proven to be allocation of too less time for role differentiation in the exercise schedule. Students must be able to come to grips with their role in the planning process as they ideally change their roles thrice during the exercise. This also necessitates that the individual cycles of an exercise take place on 4 consecutive days, with a new distribution of roles at the start of each day. It also requires the possibility for block instruction during a week, which is rather difficult to organise in elementary study instruction and its semester programmes. In conclusion, it must be stated that the preparation, implementation, and follow-up (study trip) of such a problem-orientated learning method requires more teaching staff than is the case for conventional exercises and lectures. It has proven to be beneficial to have 2-3 research assistants for formulating the task, of which at least one must have participated in an actual procedure. This requires specialists in teaching who ideally are at the doctorate or post-doctorate level.

4 RECOMMENDATIONS FOR FURTHER DEVELOPMENT OF TEACHING METHODS IN CONTINUING EDUCATION IN SPATIAL PLANNING

Spatial planning in Switzerland, with its more than 2,000 autonomous municipalities, requires extensive coordination and is a major challenge for planning practice. In continuing education in spatial planning, it is therefore useful to focus on imparting methodological knowledge on how difficult tasks can be brought into a clarification process. A spatial planner is not only responsible for supplying ideas at a very early stage of a planning process, but also for balancing interests and initiating interactions. This constitutes a major challenge, all the more so, considering that planning is also political consulting. In this field, planners must carefully assess ideas, interests, and interactions. As such, planners are also exposed to social and economic constraints, making planning - especially the teaching of spatial planning – extremely demanding. Handling uncertainty and understanding the various mechanisms in a planning process when it comes to negotiations can be trained in education. The most important element for coping with complex problems in teaching is illustrative clarity, bringing vitality and pragmatism to the process. Visualising a planning process by means of experimental simulations can most aptly be described by the term “enactment”. This also makes clear that careful adherence to role differentiation in the exercise is the essential factor for successful learning.

This results in the recommendation to focus more on the simulation of processes in continuing education in spatial planning. Designing and testing arguments in a negotiation process that feels “real” can greatly enhance personal motivation and sense of discovery in students. They are able to strengthen their judgement ability by learning to cope with opposition and criticism. At the same time, this method fosters an enthusiasm and a fascination for planning problems, which is important since the results of planning efforts often only become apparent decades or even generations later. A fascination for testing, experimenting, and of course solving problems should be a basic requirement for future planners. Training

these skills is highly stimulated by illustrative clarity. Teaching by means of discussions of case studies, experimental simulations, and on-site explorations is extremely demanding, confirming that teaching professionals require a certain practical background. This ensures that the concept of illustrative clarity and its teaching methods become a central aspect of learning and teaching spatial planning.

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ID 1468 | TEACHING-IN-THE-FIELD IN A “HUB” ACCOMODATING MIGRANTS IN TRANSIT IN MILAN. CHALLENGES AND OPPORTUNITIES FOR A “SOCIAL AND URBAN ANALYSIS” COURSE

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1 INTRODUCTION

The paper reflects on a teaching-in-the-field experience carried out in the context of the course of “Social and Urban Analysis” for students at the third year of bachelor in Planning at Politecnico di Milano. The course integrates the competences of two professors who are experts in urban sociology with a particular