

Educating collaborative planners: the learning potential of multi-actor regional learning environments for planning education

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Abstract: Recent changes in planning context, object, subject and approaches characterised by the key words wickedness, collaborative processes and boundary crossing, require a reconsideration of competencies needed for professional planners and evidence for the effectiveness of learning environments in which student planners can practice these competencies. This study explores if five “regional learning environments” (RLEs) contribute to students competence development and if working in multidisciplinary groups and with multiple external actors has an added value for this learning. Results show a differing pattern of competence development across RLEs. Multidisciplinary RLEs more strongly foster students’ competence development. Quantitative data show less effect of multi-actor collaboration while qualitative data show a wide range of potential learning outcomes typically related to multidisciplinary group work or multi-actor collaboration. It is concluded that the learning potential of RLEs is not optimally utilised yet and that process coaching is an important precondition for increasing students’ learning.

Keywords: authentic learning environment, boundary crossing, competence development, multi-actor, multi-disciplinary, planning education

1 Introduction

Recent changes in planning context, object, subject and approaches require additional competencies for professional planners and evidence for the effectiveness of learning environments in which students can practice these competencies. This study explores the contribution of “regional learning environments” to competence development of planning students, and if working in multi-disciplinary groups and in close collaboration with stakeholders has an added value for this learning.

Developing insight in the effectiveness of regional learning environments for planning students entails a deeper understanding of the characteristics of the current planning context (1.1), the required capabilities of professional planners performing in this context (1.2) and theoretical insights in educating higher education students in authentic learning environments (1.3). Section 1 finalises with the introduction of the research questions (1.4).

1.1 Collaborative planning in times of “wickedness”

The context in which planning operates has changed dramatically in recent years. Economic processes have become increasingly globalised, the Brundtland Report as well as the Rio Earth Summits prioritized the goal of

sustainable development, and climate change is causing unpredictable changes in land use systems.

The planning object is characterised by its high degree of “wickedness” (Rittel and Webber 1973, Booher and Innes 2002, Balassiano 2011). This means that planners face complex, ambiguous and ill-defined problems, incomplete information about the background of the problem, about the range and content of values, preferences and interests, about potential solutions, about permissible operations that may be incorporated in the plan and uncertainty about the impact of different solutions. Every wicked problem is essentially unique. There is no immediate or ultimate test of a solution to a wicked problem.

Looking to the planning subject, major modifications in various administrations of countries over the world can be recognised (Allmendinger 2009). In most cases, this has resulted in an increased participation of stakeholders, other than governmental, in public decision making (Bäckstrand 2003).

Postmodern approaches to planning theory identify collaborative (or interactive, participative or communicative) planning, although not yet ascribed a single position or coherent theory (Watson 2008), as increasingly influential (Healy 1997, Forester 1999, Innes and Booher 1999, Allmendinger 2009). Although planning practices vary between the U.S., Australia and

Europe, all planners work in communicative and collaborative planning processes (Forester 1989, Healy 1993) engaging with different stakeholders from government, the private sector and non-governmental organizations.

Collaborative planning deals with the question “how to make sense together of what is happening and plan for the future within a dynamic and increasingly complex society” (Allmendinger 2009, Forester 1999). Planning problems cannot be solved without taking account of the perspectives of multiple actors with diverse interests (Balassiano 2011, Sol *et al* 2012) and multiple understandings and interpretations of reality (Domingo and Beunen 2012). These kinds of problems require boundary crossing between different sociocultural sites (Akkerman and Bakker 2011). This means acknowledging that one person cannot be an expert in all sites and that solving these problems requires the collaborative creation of new knowledge across sites around the boundary.

The role of the planner switches from being a neutral expert using rational, objective, technical and absolute knowledge (Nienhuis *et al* 2012) to being a communicative actor in the world (Innes 1995) and facilitator also called mediator (De Roo and Silva 2010) of collaborative multi-actor processes aiming at tackling wicked problems for which boundary crossing is needed, serving both the quality of place and process (Healy 2003). This role switch consequently challenges the required capabilities of planners.

1.2 Capabilities of collaborative planners

The role switch of planners acting in collaborative planning processes requires to reconsider their necessary professional knowledge, skills and attitudes. Many scholars from the fields of planning, communication and education investigated professional capabilities for collaborative planners, both from a theoretical and/or practical perspective (Dalton 2008). Two competence domains, containing competencies needed to work in boundary crossing settings, can be extracted from the literature namely (1) the ability to set up and act in multi-actor processes and (2) the ability to think across disciplinary professional boundaries and co-create new knowledge (Akkerman and Bakker 2011). Competencies included in the domains are defined as comprehensive clusters of knowledge, skills and attitudes (Mulder 2001).

Domain 1 (the ability to set up and act in multi-actor processes), includes competencies like being able to:

- cultivate community networks (Forester 1989) and stimulate interdependence (Booher and Innes 2002),

- set up effective organizational structures (Alexander 2009) that promote collaboration (Balassiano 2011),
- facilitate respectful discussions within and between discursive communities. These discussions are characterised by differing, sometimes competing and in time varying needs and intentions, inequities in power and differing values, norms and beliefs ((Healy 1993). Facilitation of these types of discussions f.e. includes to listen carefully (Forester 1989), exchange values and beliefs and use Habermas’ four criteria for ideal speech (comprehensibility, sincerity, legitimacy, accuracy) (Habermas 1984, Forester 1989, Forester 1999),
- anticipate political and economic pressure (Forester 1989),
- make legitimate decisions that reflect a comprehensive understanding of values and issues and improve equity (Balassiano 2011),
- facilitate reflection that encourages regular and systematic evaluations of efforts (Balassiano 2011) and mutual learning.

Domain 2 (the ability to think across disciplinary professional boundaries and co-create new knowledge), includes competencies like being able to:

- understand and intertwine basic knowledge of different disciplines (Akkerman and Bakker 2011),
- quickly switch between scale levels in space and time (Wiek *et al* 2011),
- admit to differences, enable others to communicate authentically, acknowledge different arguments in a plan (Healy 1993, Booher and Innes 2002),
- embrace rather than shrink from what is new and experimental (Booher and Innes 2002),
- strategically approach the “governance of place”, involving attention to both the qualities of place and process (Healey 2003).

To support future planners in their preparation for a professional career within the collaborative planning context, planning curricula should regard this context and provide students with possibilities to acquire their competencies needed to act as a professional within this context. Authentic learning environments have proven their effectiveness in the support of developing competencies (Van Merriënboer 1997, Wesseling *et al* 2007).

1.3 Educating planning students in authentic regional learning environments

Learning from authentic tasks that are (perceived as) relevant beyond school, is repeatedly found important for stimulating student learning (Newmann and

Wehlage 1993, Gulikers *et al* 2006, Herrington and Herrington 2006). Although many planning scholars emphasize the need for incorporation of current planning practices in planning curricula (e.g. Friedmann 1996, Baum 1997, Alexander 2001) and, more specifically, for the development of collaboration skills (Booher and Innes 2002), only a few refer to *how* this can be done. Studies of the effectiveness of learning environments specifically aiming at training competencies needed for collaborative planners are scarce (Long 2012a). This study, investigating the competence development of planning students in authentic “regional learning environments” in which students work in a multi-actor context and, preferably, in multi-disciplinary student groups, brings new insights. These two elements are supposed to represent contexts in which competencies required for boundary crossing situations, as described in section 1.2, are needed.

In recent years, different Dutch planning education programmes have been developing authentic “regional learning environments” (RLEs) (Meijles and Van Hoven 2010). The RLE aims at stimulating student’s competencies, meanwhile stimulating sustainable development in the region. From an educational point of view, the RLE has three core characteristics (see also Foorthuis 2005, Kuijper 2010, Oonk *et al* 2011, Wesselink *et al* 2011):

1. students work on real world, interdisciplinary regional planning problems identified by actors (persons or organizations) “in the field” (i.e. an external problem holder). Examples of problems that have been tackled in RLEs included in this study are developing future perspectives for farmers in a marginal peat district, suggestions for using the economic value of a regional landscape including sustainable energy transition, pros and cons of landscape management by farmers and locating water retention basins along the river Regge (all in The Netherlands),
2. solving the problem with an unknown answer requires co-creation of new knowledge between students, always working in groups, preferably multi-disciplinary, on the one hand, and researchers, policy makers, members of NGO’s, entrepreneurs and citizens on the other hand,
3. the end result is of value for the external problem holder and contributes to regional development. In practice, the type of delivered products differs as a result of agreements between the students, their supervisors and the external problem holder(s). Examples of products that resulted from the studied RLEs are consultancy reports, policy advises, budget calculations, maps and/or

landscape designs, often delivered in coherent combinations.

Comparing the RLE with existing authentic learning environments as used in planning education, similarities in characteristics can be identified in studio courses. Studios, originating from architecture education in the 19th century (Long 2012b), also start with an open-ended problem, often, but not necessarily, taking account of current issues in the “real world” with “real clients”. The studio is finalized with a final presentation to faculty and/or the client. Compared to architecture studios, planning studios even conceive a broader role for the client, use a higher degree of team assignments, and place more emphasis on working across disciplines (Long 2012b). Additionally, Balassiano (2011) pleads for increasing the complexity of studio problems to represent the wickedness of the planning object. The RLE differentiates from the studio in that sense that the RLE (1) always works with a real problem identified by and currently relevant for one or more external actors, that (2) students always work in groups, preferably multidisciplinary student groups, and that (3) solving the problem requires collaboration with multi-actors. It’s just these elements that represent the collaborative planning context.

Another parallel between the RLE and an existing authentic learning environment used in planning education can be drawn to service learning. Service learning aims at integrating classroom based instruction and community service (Ward 1999). Forsyth *et al* (1999) describe the model of community service learning as used in landscape architecture education in which students learn through service to the community. Service learning is comparable to the RLE in that sense that students really contribute to problems as brought in by external community members. Forsyth *et al* asked students what they learned from their service learning project. Almost half of the responses referred to the aspect of interaction with external partners, grouped in the learning outcome categories “understanding cultural issues” and “interaction skills”. Although we can learn from the learning outcomes of interaction with external partners in service learning, the RLE differs in several aspects from service learning. Service learning carefully connects the students activities to the learning goals for an academic course. Students learn how to use the knowledge and skills from that specific course in providing service (Ward 1999). RLE projects are demand-driven, have an interdisciplinary character and require the integrated use of competencies acquired through the whole curriculum to co-create new knowledge. In addition, RLE students preferably work in multidisciplinary groups. Until now, working in Until

now, working in multidisciplinary student groups is not regarded a prerequisite for service learning.

The expectation that the RLE, including the elements of multi-disciplinary group work and multi-actor collaboration, contributes to the competence development of planning students, requires a study on the effectiveness of RLEs in relation to these characteristics. Insights from this study are relevant to current planning curricula that show an increased outbound focus for which long-term partnerships between universities and the outside world to build on social relevance and civic engagement, are of the utmost importance (Forsyth *et al* 1999, Lieblein *et al* 2012, Sletto 2011, Long 2012a).

1.4 Studying the learning potential of regional learning environments

Resulting RLEs are emergent, but their implementation varies, including the utilisation of learning in multidisciplinary groups and with multiple external actors. Moreover, the added value of learning in multidisciplinary student groups with multiple external actors for student learning is yet unanswered. This study has been conducted to acquire first insights into the learning outcomes of RLEs for planning students and to identify the added value of working in multi-disciplinary groups and with a high level of multi-actor collaboration. The study addresses the three following research questions:

1. To what extent do regional learning environments stimulate planning students to develop (a) domain specific professional expertise and (b) eight more generic transferable competencies identified as relevant for working in a RLE setting (e.g. “to collaborate and discuss”, “to create and innovate”, “customer-oriented acting”)?
2. Do the characteristics of learning with students from different disciplines and with external actors from different sociocultural sites, have added value for students learning in terms of competence development or otherwise?
3. What do teachers perceive as preconditions for utilising the learning potential of RLEs?

A quasi-experimental study using a quantitative pre- and post-test design examines students’ competence development in five RLEs in planning education in The Netherlands. To deepen understanding, a semi-structured workshop with 25 experienced teachers provides qualitative data specifically addressing research questions 2 and 3. The design of the study will be explained in section 2.

2 Method

The method section consecutively describes the participants (2.1), the data sources (2.2) and the analysis (2.3).

2.1 Participants

Five RLEs in planning education, as implemented in educational practice, were monitored: three in academic study programmes ($n = 81; 64; 52$) and two in professional bachelor programmes ($n = 15; 13$).

Additionally, 25 teachers experienced in working in RLEs (including teachers from the five monitored projects) participated in a semi-structured workshop.

2.2 Data sources

Observations, interviews with teachers and document analyses were used to characterise the RLEs (table 1). All studied RLEs met the core characteristics (see 1.3) and all students worked in groups of 4-6 students. The RLEs differed regarding educational level, study load, and total number of students involved. The RLEs were classified as (1) mono-/multidisciplinary student groups and (2) low/high multi-actor collaboration. In multidisciplinary student groups land use planning students collaborated with students from other life science education programmes, e.g. landscape architecture, environmental science and forestry and nature conservation. Additionally, the variable coaching intensity was added as observations of the RLEs illuminated this as an important varying variable and teachers participating in the workshop identified a high degree of coaching as crucial for effective RLEs.

A validated pre- and post-test assessed perceived level of domain specific competence and eight generic competencies (Bartram 2005, COLO 2006, Khaled *et al* in prep.) that planning students and their teachers identified as relevant in RLEs (see table 2). Every competence mean score was based on students’ rating of 4-6 performance indicators each scored on a 10-point scale. The scales were reliable ($\alpha > .80$), except for one scale. The non-reliable scale became reliable ($\alpha > .80$) after the deletion of one item. RLEs were compared on their development scores between pre- and post-test (dependent variables).

During the structured workshop teachers first individually and then in five groups of 4-6 participants wrote down experienced learning outcomes typically resulting from (1) mono-/multidisciplinary student groups and (2) multi-actor collaboration. Every statement was individually written down on a post-it to allow coding and counting. Additionally, teachers wrote down statements regarding experienced preconditions for optimal learning conditions in the RLE.

2.3 Analysis

Paired sample *t*-tests were used to calculate development on the nine competencies per RLE. Effect size was measured in Cohen's *d*. Three multivariate General Linear Models (GLM) compared competence development using ono-/multidisciplinary groups, low/high multi-actor collaboration, and low/high coaching as independent variables. Combining all variables in one multivariate analysis was not possible due to the quasi experimental nature of the study. Effect size for the GLM's was measured in partial Eta-Squared (partial η^2).

Two independent raters first individually openly coded all statements on learning outcomes and preconditions. In discussion, codes were clustered into meaningful learning outcome or precondition categories, after which axial coding was used (Miles and Huberman 1994) with an interrater reliability of .88. Additionally, learning outcome statements were coded as representing one of the nine measured competencies or 'another learning outcome' with an inter-rater reliability of .84.

3 Results

Results show a differing pattern of competence development between the five RLEs ranging from no development (RLE 5), via three developed competencies (RLE 4), four developed competencies (RLE 3) and five developed competencies (RLE 2) to significant development of all competencies (RLE 1) (see table 1 for developed competencies and effect sizes). In all four RLEs that showed competence development, domain specific competence was the most developed competency.

GLM analyses showed a positive multivariate effect of:

1. multidisciplinary student groups ($F(9, 113) = .2432, p < .05, \text{partial } \eta^2 = .162$). Development scores were significantly higher in multidisciplinary groups for the two competencies "to decide and initiate activities" and "to collaborate and discuss", but the trend showed a higher development score in multidisciplinary groups for all competencies, except for "domain specific professional expertise".
2. high coaching intensity ($F(9, 113) = .2373, p < .05, \text{partial } \eta^2 = .159$). Development scores were significantly higher in student groups with a high coaching intensity for four competencies, namely "to decide and initiate activities", "to show attention and understanding", "to plan and organize" and "to collaborate and discuss". Next to this, the trend showed a higher development score for all competencies in groups with a high

coaching intensity, except for "domain specific professional expertise" for which the trend showed a very small lower development score for high coaching intensity.

Multi-actor collaboration showed no multivariate effect, but showed a trend, although not significant, of higher competence development scores for all competencies of students participating in RLEs with a high level of stakeholder collaboration.

Qualitative data from the workshop with teachers showed six typical learning outcome categories from multidisciplinary groups. 85% of the statements related to one of the measured competencies with 53% to "domain specific competence" including statements like "development of domain specific professional expertise because of explaining my own expertise knowledge to others". Multi-actor collaboration stimulated eight typical learning outcome categories. 59% of the statements reported for multi-actor collaboration was related to the measured competencies. Other statements referred to additional learning outcomes like "professional identity development" and "learning to situate a problem in its context". Seven categories of preconditions were deduced of which "process coaching (to explicate learning opportunities)" was mostly mentioned.

4 Conclusion and discussion

The study shows the learning potential of regional learning environments, both for domain specific and for generic competence development of planning students.

Although the pattern of competence development differs per RLE, four out of five studied RLEs show significant competence development for three to nine competencies, all identified by participating students and teachers as relevant for working in RLEs. The significant development of domain specific professional expertise in four out of five RLEs is relevant with regard to discussions about the maintenance of professional knowledge and expertise in competence based education (Biemans *et al* 2004, Wesselink *et al* 2007).

Results show that working in multidisciplinary compared to mono-disciplinary student groups results in a higher competence development score. This result is of value in the light of the attempt to develop planning students' boundary crossing competence by working in multidisciplinary settings (Akkerman and Bakker 2011).

Results also show that a high level of multi-actor collaboration does not necessarily contribute to students' competence development over a low level of collaboration. However, participating teachers identify

the added value of intense multi-stakeholder contact for planning students' learning by reporting other learning outcomes than measured in the competence test and the important role of coaching in this respect, with regard to explicate the learning potential of intense multi-stakeholder collaboration.

Subject for discussion and future research is how to design the RLE to further optimize the learning outcomes of this learning environment. Future research will include experimental studies to the effect of multi-actor collaboration related to the level of coaching on this element.

Results will contribute to a new learning environment in which boundary crossing, identified as a key element in competence for collaborative planners, can effectively be practiced by future planners.

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Table 1. Characteristics of and developed competencies in the studied Regional Learning Environments

	RLE 1. ACT	RLE 2. CAH/VHL	RLE 3. LUP/NHN	RLE 4. LUP/GV	RLE 5. SAXION
<i>General characteristics</i>					
Educational level	Academic MSc-year 1 or 2	Higher professional Bsc-year 3	Academic Bsc-year 1	Academic BSc- year 2	Higher professional Bsc-year 3
Study load	8 weeks fulltime	16 weeks, 2 days/week	2 weeks fulltime	8 weeks, 1 day/week	20 weeks, 2 days/week
Total number of students	81	15	52	64	13
<i>Classification</i>					
Mono-/ multidisciplinary groups	Multi	Multi	Mono	Mono	Mono
Active stakeholder collaboration	Yes	Yes	Yes	No	No
Coaching intensity	High	High	Low	Low	Low
<i>Results</i>					
Developed Competencies as a result of paired sample <i>t</i> -tests ($p < .05$) including effect size	All 9 competencies	▫Domain specific competence ▫Deciding & initiating ▫Collaborating ▫Planning & organising ▫Customer oriented working	▫Domain specific competence ▫Creating & innovating ▫Collaborating ▫Researching	▫Domain specific competence ▫Collaborating ▫Acting commercially	None
Effect size competence development (in Cohen's d)	0.3 - 0.67	0.69 – 1.29	0.32 – 0.97	0.39 – 0.64	Not applicable

Table 2. Competencies as assessed in pre- and post-test

1	Domain specific professional expertise
2	To decide and initiate activities
3	To show attention and understanding
4	To collaborate and discuss
5	To investigate
6	To act commercially
7	To create and innovate
8	To plan and organize
9	Customer-oriented acting