Moving towards community-based nature management: Processes and effects of the set-up of a nature community in Delfzijl

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Abstract

Community-based nature management is becoming more common around the world. Non-governmental nature organisations in the Netherlands, such as Natuurmonumenten, are responding to this trend by setting up communities. Since Natuurmonumenten has limited experience in this respect, this study aimed to provide insight in the processes and effects of the set-up of a nature community around two newly acquired nature areas in Delfzijl. The processes of the set-up of this community were studied by observing the community group and the Natuurmonumenten delegates, and by subjecting the delegates of Natuurmonumenten to a questionnaire. Further insights were gained by measuring the effects of the processes of the set-up of the community using a pre- and post-test among the community group and a control group. The observations indicated that the Natuurmonumenten delegates were very dedicated during the set-up of this community, while the community group was hesitant and somewhat non-active during most part of the set-up. A significant increase in the scores given in the questionnaires, measuring the effects of the process, was found after the set-up of the community in both the community group and the control group. This indicates that factors other than the set-up processes may have caused the significant increase. Even though a basis for a community was formed at the end of this study, it is advisable Natuurmonumenten tries to enhance community building processes during the set-up of similar communities in the future.

Keywords: *Community-based nature management; community building; measuring knowledge, participation and attitude; community processes; effects of processes.*

1. Introduction

1.1 A change in nature management

Several studies (Van Dam, During & Salverda, 2008; Giddens, 1991) show that trends of globalisation, individualisation and secularization in the Western world have led to changes in the behaviour, feelings and perceptions of people towards society. This has resulted in people trying to be more in control of their individual lives (Giddens, 1991), but also in an increase in their insecurity (Van Dam et al., 2008). Increased insecurity triggers the need to belong somewhere, on a social or spatial level (Van Dam et al., 2008). Moreover, it has made people become less eager to participate in traditional ways of top-down and formal social involvement (Dekker & Hooghe, 2003) and more eager to participate in non-structural social involvement activities, such as volunteer work (Veeneklaas, Salverda, Van Dam & During, 2011).

The trend of increasing active participation in combination with an increasing level of devolution and decentralisation within many (governmental) organisations worldwide is leading towards a change in the way nature management is approached (Shackleton, Campbell, Wollenberg & Edmunds, 2002). This change is visible through the increased popularity of projects where local people play an active role and a decreasing popularity of government directed projects (Shackleton et al., 2002). The increasing emphasis on self-reliance and the ability of citizens to self organise has resulted in the fact that almost every country in the world has some form of community-based nature

management involving 'citizen participation' (Frieling, 2008). Community-based management generally arises from interaction between people and an organisation, in which participation in and being responsible for the public good is meant (Frieling, 2008). When organisations want to implement community-based nature management they need to be aware of factors that can influence the success of such an approach (Shackleton et al., 2002). Such factors include the extent of social involvement, the diversity among the people involved (Van Dam et al., 2008), the shared responsibility (San, 2006) and aspects of consultation between different levels of the community and the (Non-) Governmental Organisation (Malo, Odera & Ochuodho, 2007).

1.2 Responding to current trends

At the moment the Dutch government is advocating for a change in nature policy, in which the government tries to give more responsibility to the society and to the national market of agricultural and nature management (Westerink & Schrijver, 2011). In this line of thought the government is also reducing funding, in particular subsidies for acquiring land (de12landschappen, 2010).

Many nature organisations are responding to these current trends by changing their nature management approach. Natuurmonumenten, one of the largest Non-Governmental nature organisations in the Netherlands, is one of them. Its goal is acquiring, managing and protecting valuable nature areas and cultural-historical landscapes (Natuurmonumenten, 2011[a]). Unfortunately a considerable loss of members and the reduction in available subsidies for acquiring nature areas are jeopardising the realisation of the organisation's goals (Natuurmonumenten, 2011[b]; Natuurmonumenten, 2012[a]). The main reasons for this loss of members are believed to be the worldwide financial crisis (Natuurmonumenten, 2012[a]), the fact that citizens are less eager to be connected to institutions (Van Dam et al., 2008) and the fact that Natuurmonumenten is often found to be too dependent on and is often associated with the government (Natuurmonumenten, 2012[a]). Furthermore, a member satisfaction study initiated by Natuurmonumenten (2010) showed that members are not satisfied with the level of connection and involvement that Natuurmonumenten has with the local people.

The scale of the effects of these developments on Natuurmonumenten are yet uncertain. Nevertheless, Natuurmonumenten has taken action by adopting a new position: Natuurmonumenten intends to be a good nature manager, a good entrepreneur, disseminator of views and a 'movement' (Natuurmonumenten, 2012[a]). In a response to the change in the way nature management is approached, Natuurmonumenten wants to embody being a disseminator of views and a 'movement', by setting up nature communities in the areas that are under their management.

1.3 The 'Delfzijl-Community'

Natuurmonumenten started a pilot-community revolving around two newly acquired areas in the municipality of Delfzijl: the Biessumer bos area and the Voolhok area. They want to set up this 'Delfzijl-Community in cooperation with local residents. For this pilot, Natuurmonumenten has defined communities as a group of people, whether they are a member of the organisation or not, who manage the Biessumer bos and Voolhok area together.

Natuurmonumenten wanted to gain insight in the set-up of this community to be able to benefit optimally from this experience when setting up similar communities in the future (Natuurmonumenten, 2012[a]). Therefore this study aimed to provide insight in the occurring processes during the set-up of the 'Delfzijl-Community' and

whether or not these processes had any effects on the community group.

2. Methods

2.1 Delfzijl

The community was set up in the province of Groningen within the borders of the municipality of Delfzijl, which includes the city of Delfzijl, 13 surrounding villages and the two nature areas, the Biessumer bos and Voolhok (see Fig. 1) (Gemeente Delfzijl, 2012). Delfzijl has always been an important harbour city (Groninger Archiefnet, 2012). The municipality of Delfzijl is currently dealing with a declining population size (Groninger Archiefnet, 2012). In 2011 Delfzijl had 26,567 inhabitants, which indicates a decline of 7% over the past 5 years. In this same period the relative percentage of people of 65 years of age or older increased to 20% of the total number of inhabitants within the municipality of Delfzijl (CBS, 2011).

The Biessumer bos and the Voolhok area were owned by the municipality of Delfzijl and have been acquired by Natuurmonumenten in 2011 (Natuurmonumenten, 2012[b,c]). The maintenance in the areas is still executed by the municipality of Delfzijl until 2016.

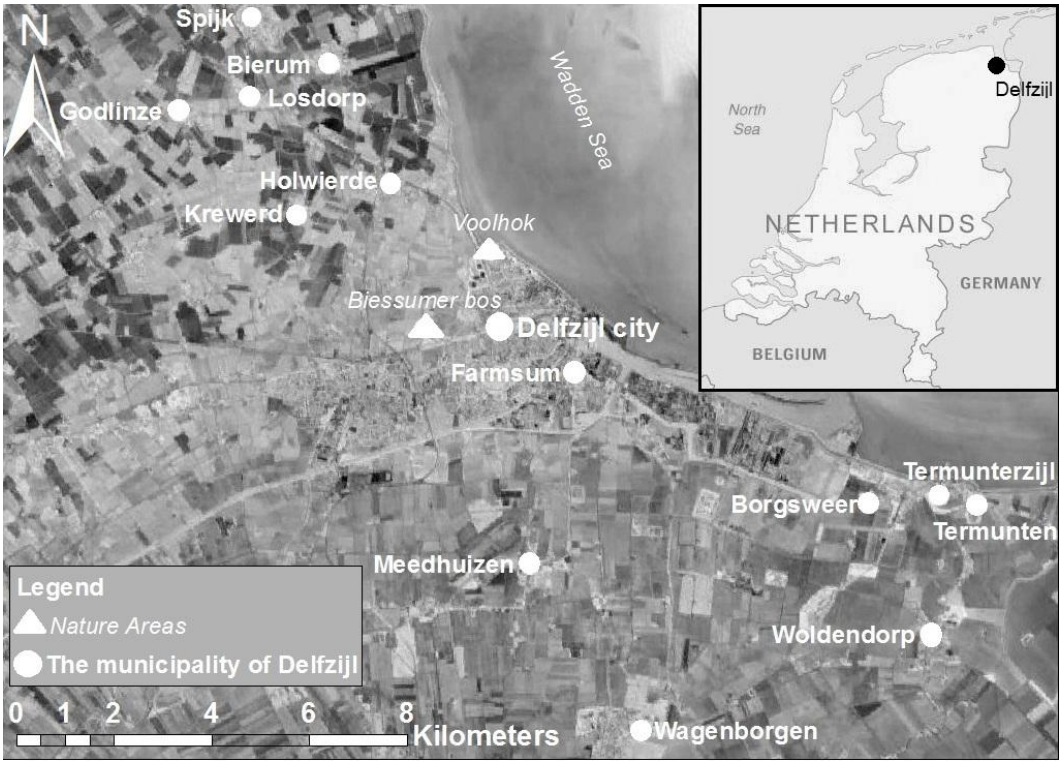

Fig. 1. Municipality of Delfzijl (study area); including the city of Delfzijl, 13 villages and the two nature areas Wageningen UR/Alterra, 2006; Google earth 2012; Daniel Dalet 2005; adopted by Lucia Schat and Desiree Vermeulen; GCS_Amersfoort, RD_New, Greenwich, Degree.

2.2 Study design

The study focuses on describing and measuring the processes and the effects of the set-up of the 'Delfzijl-Community' from the 3rd of November 2011 until the 29th of June 2012 (see Fig. 2). The processes of Natuurmonumenten are described by observing (segment 1[a]) the involved delegates from Natuurmonumenten during their internal meetings, which took place in the preparation phase as well as the set-up phase, and by observing the Natuurmonumenten delegates during the 'Delfzijl-Community' meetings, which took place during the set-up phase of the community. Questionnaires have also been used to measure the processes of the

delegates from Natuurmonumenten (segment 2). The processes of the community group are described through observations (segment 1^b) during the 'Delfzijl-Community' meetings in the set-up phase. The effects of the processes of the set-up of the community have been measured comparatively with a pre- and post-test using a questionnaire amongst the community group and an independent control group during the set-up phase (segment 3) (Kumar, 2005).

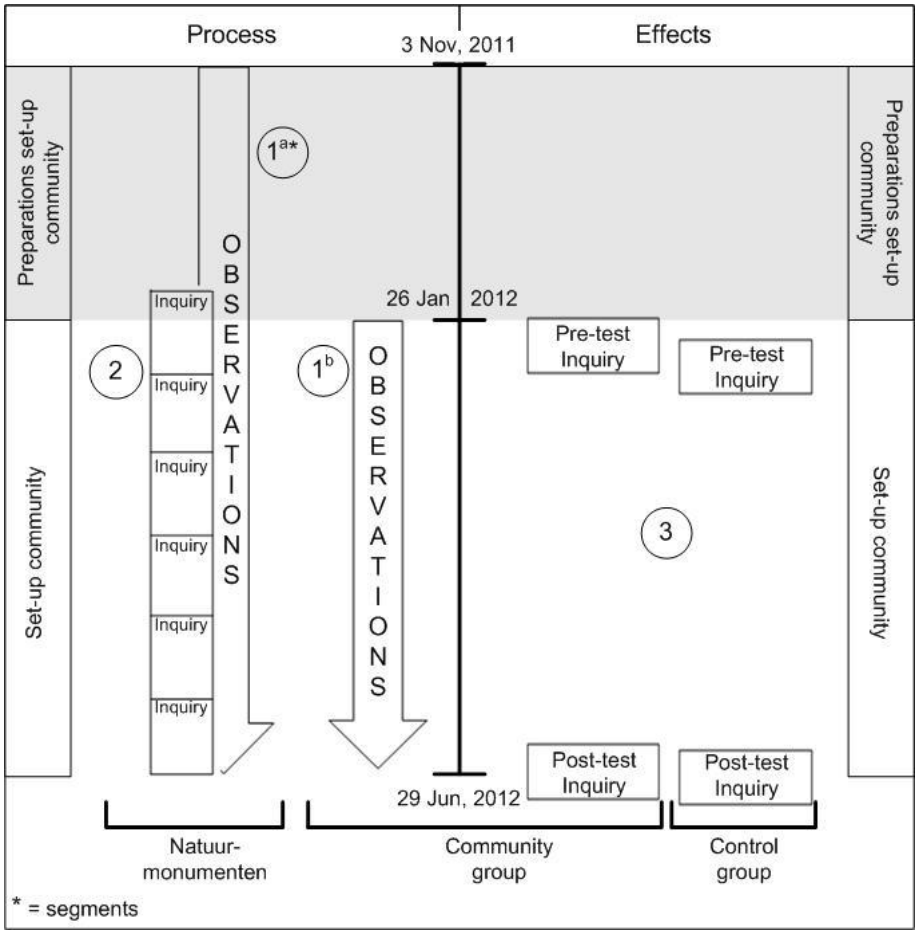

Fig. 2. Schematic overview of the study design in time. Segment 1 and 2 provide insight into the processes of the set-up of the community, involving the Natuurmonumenten delegates and the community group. Segment 3 measures the effects of the processes of the set-up of the community.

2.3 Observing the processes of Natuurmonumenten and the community group

There are seven Natuurmonumenten delegates involved in the set-up of the community, consisting of five employees and two district-commission members (i.e. voluntary representatives of members of Natuurmonumenten). The community group consists of the local people who have attended at least one of the community meetings.

To maintain objective, while observing the processes of the Natuurmonumenten delegates (see Fig. 2, segment 1^a) and the community group (see Fig. 2, segment 1^b), non-participant observations focused on certain pre-determined communication topics, see Table 1. During all observations records were kept on all communication-topics shown. All other forms of communication by the Natuurmonumenten delegates outside of the meetings were recorded as events in time.

Table 1. Pre-determined communication topics to be observed during the processes of the set-up of the 'Delfzijl-Community' focusing on the process between the Natuurmonumenten delegates and the community group, and the internal process of Natuurmonumenten.

	Communication	Communication on content and reference level	Forms of communication
Definition[1]	The transmitted message is interpreted by the receiver in the same way it was meant by the sender.	In this respect the content (actual information send) and reference level (how the intended information is interpreted) are important.	- (non-)participation - initiating activity - giving information - giving opinions - elaborating - coordinating - summarising - leadership

[1] Remmerswaal (2003)

2.4 Inquiring the Natuurmonumenten delegates

Identical questionnaires have been sent, monthly on a fixed day, to the delegates of Natuurmonumenten (N = 7) by e-mail over a period of six months (see Fig. 2, segment 2). The first questionnaire was distributed mid-January, one week before the first community meeting. These questionnaires aimed to measure a change in the way the delegates of Natuurmonumenten think about the set-up of the 'Delfzijl-Community', which was quantified using questions with a Visual Analogue Scale (VAS). VAS-questions have provided to be acceptable means to obtain statistically relevant measurements (Ohnhaus & Adler, 1975). The VAS-questions were positively formulated statements to which the inquired could assign a score of agreement by placing a mark on a horizontal line ranging between zero to ten. The actual VAS-score was calculated as a fraction (0-1) of the total length of the line. The VAS-questions measured the following topics; the attitude of the delegates of Natuurmonumenten about whether or not the set-up of the community will contribute to implementing Natuurmonumenten's new position, their communication with the community group, their communication within their group, their participation in the set-up of the community, the progress of the set-up of the community and their involvement within the community. An increase in these VAS-scores for each topic indicates the Natuurmonumenten delegates think more positively about the set-up of the community. In addition two yes/no-questions were asked, about the contact with the community group being pleasant and doubts regarding the set-up of the 'Delfzijl-Community', to clarify the answers to the attitude and communication VAS-questions. Furthermore information about the amount of time and money spent was obtained with this questionnaire.

The data from the questionnaire were analysed using the statistical program IBM SPSS Statistics 19 (IBM Corporation, Armonk, NY, USA). A significance threshold of 5% was upheld and all tests were two-tailed. An arcsine square-root transformation was applied to reduce the ceiling effect in the VAS-scores (fractions) (Hill, Fasham, Tucker, Shewry & Shaw, 2010). The VAS-scores were reported as a percentage of the fraction rather than in their transformed form. The reasons given for the answer to the yes/no-questions were categorised after which both 'yes' or 'no' answers and categorized reasons were quantified by obtaining frequencies.

The data acquired with the VAS-questions were subjected to a statistical analysis as interval-ratio scale dependent variables in a General Linear Model (GLM) repeated measures approach. These variables were checked for collinearity of VIF $\geq$5 (O'Brien, 2007) and a Greenhouse-Geisser correction was used when the assumption of sphericity (Mauchly's Test of Sphericity) was violated. Further assumptions for the use of a GLM repeated

measures approach were generally satisfied as the data was distributed normally (Shapiro-Wilk test) and the graphical structure of the residuals was normal for each model. All six repeated measurements were used in the analysis to detect a significant difference between measurements within a specific VAS-topic.

2.5 The effects of the processes of the set-up of the 'Delfzijl-Community'

The effects of the process of the set-up of the community were measured with a pre- and post-test among the community group and a control group, using Visual Analogue Scale (VAS) questions about the topics: knowledge (four questions), attitude (three questions) and participation (four questions). In this study knowledge refers to what is known, by familiarity, awareness or understanding gained through experience or study (Servin, 2005), in relation to nature and Natuurmonumenten as an organisation. Participation statements measure the willingness of the inquired to be involved (Collins, 2002) in the 'Delfzijl-Community' and whether or not they want to involve their own personal network. Attitudes are being strengthened by beliefs and often trigger strong feelings which may lead to particular behavioural intents (Oppenheim, 1992). The attitude of the community group is measured with attitude statements in single sentences. These statements express a point of view, a preference, a judgement, an emotional feeling or a position supporting or opposing community management (Oppenheim, 1992). To test the consistency of the questions in the questionnaire and to acquire information on the desired sample size of the control group, a concept of the questionnaire used in the pre- and post-test was used in a pilot-study, conducted in December 2011. This study involved a test-group consisting of people that live outside of the province of Groningen, to ensure that this pilot study did not influence the community group and the control group in the main study. The dimensions, and coherence of questions within dimensions were analysed and confirmed with a Principal Component Analysis (PCA) and subsequent coherence measures (Cronbach's alpha, $r > 0.700$) using IBM SPSS Statistics 19. The results indicated an acceptable variability in the measurements across the study population (Hill et al., 2010) and a similar interpretation of the questions by all the inquired (Baarda & De Goede, 2006). Furthermore, the desired sample size was obtained with use of the power analysis program GPower 3.0.10. With an effect size of 0.54, satisfying the assumption of a significance level $p \leq 0.05$ and desired statistical power (1-β) of 0.8, the desired sample size of the control group consisted of 109 individuals when the community group consisted of 37 individuals.

2.5.1 The pre-test and post-test

The community group received two identical questionnaires, the first one before the first community meeting and the second one after the last community meeting (see Fig. 2, segment 3). On both occasions a control group was approached with the same questionnaire within three days after the community group. The control group consisted of people that live in or near the municipality of Delfzijl who have not been to any of the meetings. The individuals in the control group were approached using the accidental sampling method in the city centre of Delfzijl and on the train between Delfzijl and Groningen (see Fig. 2, segment 3). A significant ($p \leq 0.05$) increase in the participation and attitude scores of the community group, after the set-up of the 'Delfzijl-Community' may be an important indication of an increased chance of a successful set-up, because they are essential in the set-up of a community. Significantly increased knowledge-scores within the community group possibly means that the set-up of the community has contributed to Natuurmonumenten's profiling and might contribute to a more

positive association with the organisation. It was hypothesised that the process of the set-up of the community would have a significant positive effect on the knowledge, participation and attitude within the community group only. However, differences in these VAS-topics in the control group may occur, indicating independent differences, not accounted for in this study, also influenced the results (Kumar, 2005). The variables questionnaire period (pre- vs. post-test), questionnaire group (community vs. control group), sex, age, level of education, whether or not the inquired were a member of Natuurmonumenten and had a job in a nature related sector, the number of visits each year to the Biessumer bos and Voolhok area and the distance from ones home to the nature areas were used as control variables. The distances from the nature areas to the residence of the inquired were obtained by mapping and buffering the postal codes filled out by the people with use of ArcGis 10 and Google Earth 6.0. To be able to detect a significant difference, in knowledge, participation and attitude before and after the 'Delfzijl-Community' was set-up, the obtained data was analysed using IBM SPSS Statistics 19 and two-tailed tests. The VAS-scores were used as interval-ratio scale dependent variables in a General Linear Model (GLM) univariate approach. Besides applying the arcsine square-root transformation, the mean scores of the VAS-questions within a related topic were obtained for further analysis. The VAS-scores are given as a percentage. One of the attitude VAS-questions has been excluded, because it was the only negatively formulated question. In this analysis the independent variables: questionnaire period, questionnaire group, sex, highest obtained level of education, whether or not the inquired were a member of Natuurmonumenten and had a job in a nature related sector, were used as factors. Age, the number of visits each year to the Biessumer bos and Voolhok area and the distance from ones home to the nature areas, were used as covariates. None of the independent or dependent variables had to be excluded because of a significant inter-item correlation (Phi and Cramer's V test, and Pearson test) or a Collinearity of VIF ≥ 5 (O'Brien, 2007). Generally the variances between groups were homogenous (Levene's test of equal variances) and the data was distributed normally (Shapiro-Wilk test). The graphical structure of the residuals was normal for each model.

The correlation between knowledge, participation and attitude and each of the independent control variables were analysed using the appropriate individual test depending on the scale of the variable (independent t-test, one-way ANOVA and linear regression analysis). All correlations of $p \leq 0.250$ were included in the three separate models (Bendel & Afifi, 1977) for knowledge, participation and attitude. The models were build to test for main effects as well as interaction effects. All means were reported ± SE.

2.5.2 Success of the 'Delfzijl-Community' according to Natuurmonumenten

Natuurmonumenten has assigned a rating factor ranging from one to ten in order of importance to each separate VAS-question. The total score per question assigned by the community group were multiplied by the rating factor assigned by Natuurmonumenten. The range of success is given as a percentile difference between the total score in the pre- and the total score in the post-test. Only the differences in VAS-scores between the pre- and post-test of the people that have taken part in both measurements were included in these calculations. Means were reported ± SE.

3. Results

3.1 Process

3.1.1 Observations of the processes of the set-up of the 'Delfzijl-Community'

The preparation phase lasted from the 3rd of November 2011 until the 26th of January

2012 (see Fig. 3). In this phase three meetings took place in which only the delegates from Natuurmonumenten were present.
Furthermore four information signs were placed in both nature areas and a press release was issued by Natuurmonumenten by e-mail, providing information about the set-up of the 'Delfzijl-Community'.
In the set-up phase, which lasted from the 26th of January until the 29th of June (see Fig. 3), the Natuurmonumenten delegates issued nine more press releases by e-mail and updated the posters on the information signs. A week before the second community meeting, the fourth and final internal meeting of the delegates of Natuurmonumenten took place. The first (attendees = 39), second (attendees = 30) and fifth (attendees = 12) community meeting centralized around the conceptualisation of a vision and future plan for the Biessumer bos and Voolhok area. The third meeting (attendees = 19) – the 'Spring Walk' – aimed to give the community group the opportunity to show the Natuurmonumenten delegates the Biessumer bos and Voolhok area. During the fourth community meeting (attendees = 5) the ideas from the first and second meeting were discussed more explicitly by a smaller group of individuals from the community group. This group decided on a framework for the new vision and management strategy for both areas which would be presented to the entire community during the fifth and final community meeting.
Table 2 presents an overview of the approach and goals decided on by the delegates of Natuurmonumenten during the preparation phase with regard to the set-up of the 'Delfzijl-Community'.

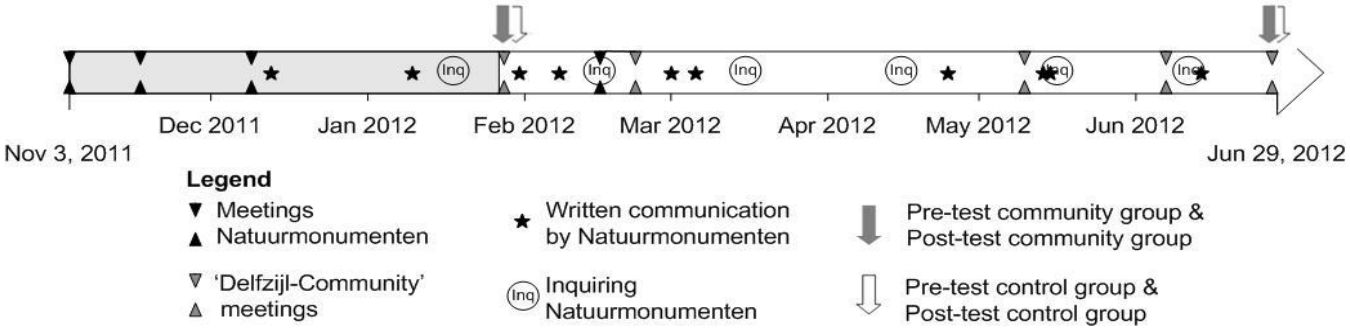

Fig. 3. Timeline of the process of the preparations and the set-up of the 'Delfzijl-Community' displaying all events in time.

The observations that took place within the preparation and set-up phase are also shown in this table. The framework for the community meetings was set up by the delegates of Natuurmonumenten before the first 'Delfzijl-Community' meeting. They intended to focus on stimulating creativity and active involvement. Furthermore they intended to let the community group determine the process and outcome of the meetings, but in practice this did not happen. The main topic in community meetings one to five was the conceptualisation of a vision and future plan for the two nature areas and little time and attention was spent on the formation of the community itself. The Natuurmonumenten delegates showed an active, open and accessible attitude towards the community group and were in a leading position in all meetings. Until the fifth community meeting the community group wanted to be heard about their experience with and their complaints about the areas. In the fifth meeting the community group became more like a committed group with a mutual goal. Eight people from the community group expressed the willingness to participate in (organising) activities, including maintenance in and around the nature areas.

Table 2. Approach and related goals of the Natuurmonumenten delegates linked to observations among the Natuurmonumenten delegates (NM), the community group (CG), the municipality of Delfzijl (MP) and local stakeholders (SH), regarding the preparation and set-up phase of the community. Observations relating to communication topics (see Table 1) are indicated as 'Communication'.

Observed group	Approach NM	Goal NM	Observed topics	Observations
NM and CG	'Open Space' approach has: a clear and compelling theme, an interested and committed group, time and place and a leader[a]	CG determines structure, process, outcome, and connect to needs of people that use both areas	'Open Space'	Framework for meetings prepared in advance by NM – CG was stimulated to be creative and actively involved, and to determine the process and outcome of the set-up – 'Spring Walk' (3rd meeting) in both areas was suggested by NM – CG was stimulated by NM to determine set-up of community, by asking them for their opinion continuously – 8 people from CG expressed willingness to participate in (organising) activities – CG wanted to be heard about their own experience with or their complaints about the areas until the 5th meeting.
			Communication	1st and 2nd meeting NM was more active and leading than CG – at the end of the 3rd meeting CG showed more initiative, NM was more passive – towards the end of the 3rd and during the 4th community meeting, CG was non-active participatory – in the 5th meeting NM was more direct to stimulate the CG to active participation
CG			Communication	CG did not respond to the message sent by NM about setting up this community together – CG expected NM to realize their ideas in the areas – CG gave: information (historical information about both areas) and their opinion (current state and future plans of the areas)
NM	Facilitate set-up of 'Delfzijl-Community'	Provide: support, motivation, knowledge and finance	NM as facilitator	NM has provided: information about meetings and related issues, active participation, a location to host meetings, catering, placing information signs in both areas and knowledge – NM was also available outside of meetings
			Communication	Formation of the new community and framework thereof was given little time and attention – NM provided relevant and important information to CG – CG was interrupted or not being heard on several occasions (except in 5th meeting) – topics were 'parked' or skipped by NM to be discussed later – inquisitive towards CG (during all community meetings) – NM was found to be: summarizing, coordinating, initiating moments of interaction (between NM and CG), leading (during most parts of all meetings), active, open and accessible towards CG (most NM) – within NM group consistent in communicative approach, vision and goals.
MP and NM	Involve MP in set-up and decision-making	Maintain close work-relation with MP	Work-relation MP	Mutual agreements (during and outside meetings) about maintenance and solutions to complaints about both areas
SH and NM	Involve all SH in set-up	Optimal cooperation with all SH	Collaboration SH	SH (that make use of areas) present during multiple meetings: chair of the local organisation that hosts children's summer-camps; delegate of the 'Open Monuments Day'; delegate of the local horse riding school; delegates of the hunting dog association; delegate of the MP – contact has been made by NM with all SH

[a] (Owen, 1998)

3.1.2 Questionnaire among the Natuurmonumenten delegates

A total of €1509,- and 462 hours were spent, on the set-up of the community, of which €1176,- and 286 hours in the first three months.

Only the attitude VAS topic scores showed a significant variation between the six questionnaires in the GLM repeated measures test (Greenhouse-Geisser; F = 4.09, p = 0.040), based on a significant decrease between the VAS-scores in questionnaire one, 84.1% ± 4.2, (see Fig. 4, a) and three, 72.1% ± 2.7, (see Fig. 4, b) (Fisher's LSD test; p = 0.044) and a significant decrease between questionnaire one and six, 73.1% ± 2.0, (see Fig. 4, c) (Fisher's LSD test; p = 0.018). This indicates that there is a significantly less positive attitude, in the course of time, about whether or not setting up a community, such as the one in Delfzijl, may help implement the new position of Natuurmonumenten.

Even though none of the other VAS-topic scores showed a significant difference across the set-up of the 'Delfzijl-Community', the mean VAS-scores of all the other topics showed a similar decreasing tendency (see Fig. 4). Pearson bivariate tests indicated that the attitude VAS-scores were significantly correlated with the VAS-topics communication community group (R = 0.562, p = <0.001), progress (R = 0.347, p = <0.024) and involvement (R = 0.517, p = <0.001). The VAS-scores mainly showed an increase towards the third 'Delfzijl-Community' meeting and then decreased again after that same meeting.

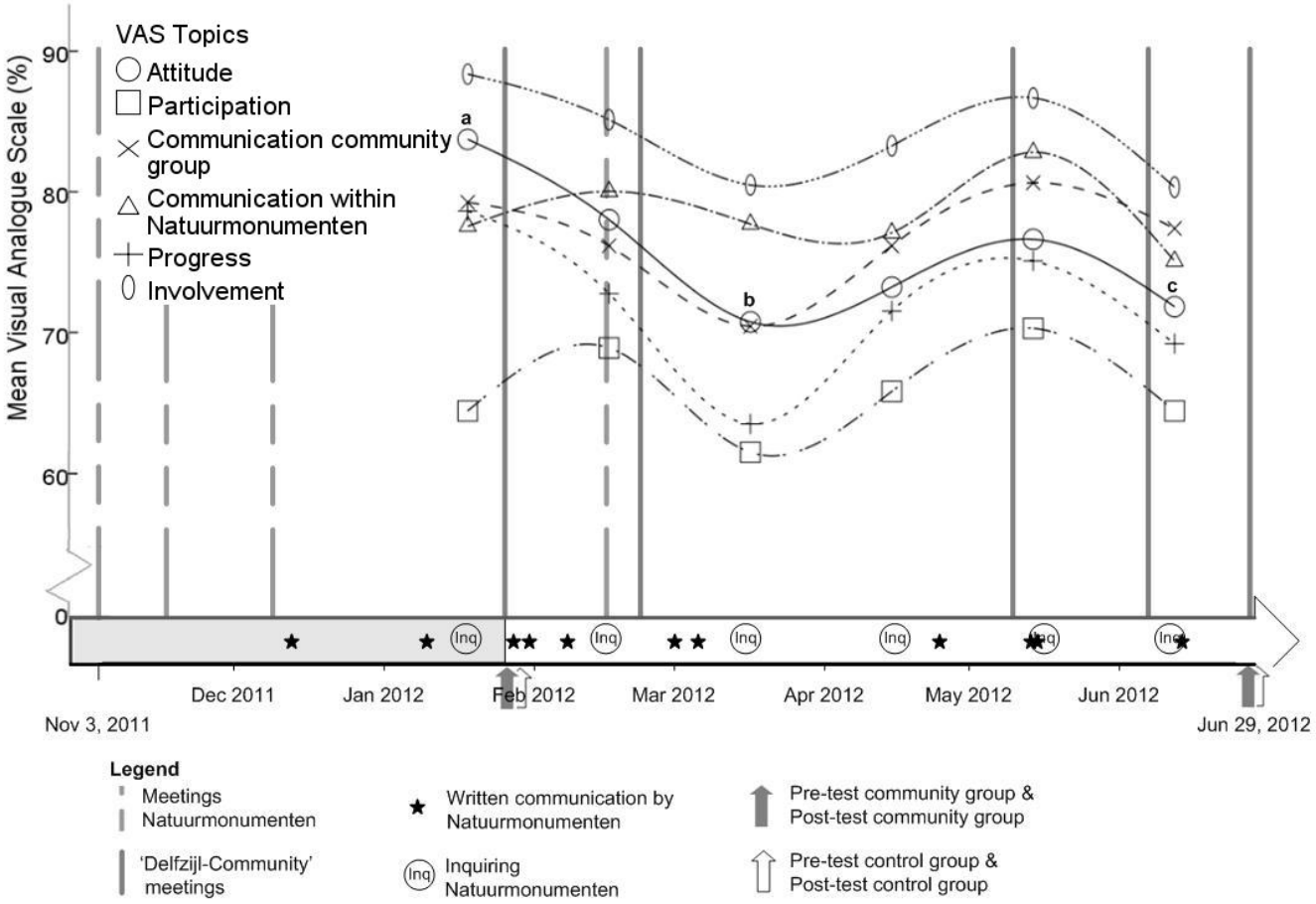

Fig. 4. The mean VAS-scores (in percentages) of the topics measured with the internal questionnaire in relation to events in time. Significantly different attitude VAS-scores (Greenhouse-Geisser; F = 4.09, p = 0.040) are indicated by the letters a, b (Fisher's LSD test; p = 0.044) and c (Fisher's LSD test; p = 0.018).

The frequencies obtained from the yes/no-question related to the contact with the community group being pleasant, revealed that the Natuurmonumenten delegates generally felt the contact with the community group was pleasant (95.2%). The reasons most often given were: good and open communication between the Natuurmonumenten delegates and the community group (21.4% of the answers) and the enthusiasm of the community group (21.4% of the answers). The yes/no-question concerning doubts regarding the set-up of the community, indicated that three of the Natuurmonumenten delegates had doubts (21.4% of the answers). These indications of doubt started to emerge after the second community meeting.
The reason given for this doubt was that they wonder when the community group would start taking responsibility for and initiative in this community. They stated they were unsure when and even if the transition towards becoming an independent community would take place.

3.2 The effects on knowledge, participation and attitude

The GLM univariate test shows there is a significant increase in the transformed knowledge ($F_{1,262}$ = 17.76, p <0.001), participation ($F_{1,229}$ = 15.48, p <0.001) and attitude ($F_{1,261}$ = 17.66, p <0.001) (see Fig. 5) VAS-scores in the community group (N = 51) as well as the control group (N = 225) after the set-up process. In the control group the increase in the mean VAS-score was 8.5% ± 2.5, 12.4% ± 2.1 and 12.8% ± 2.3, respectively.

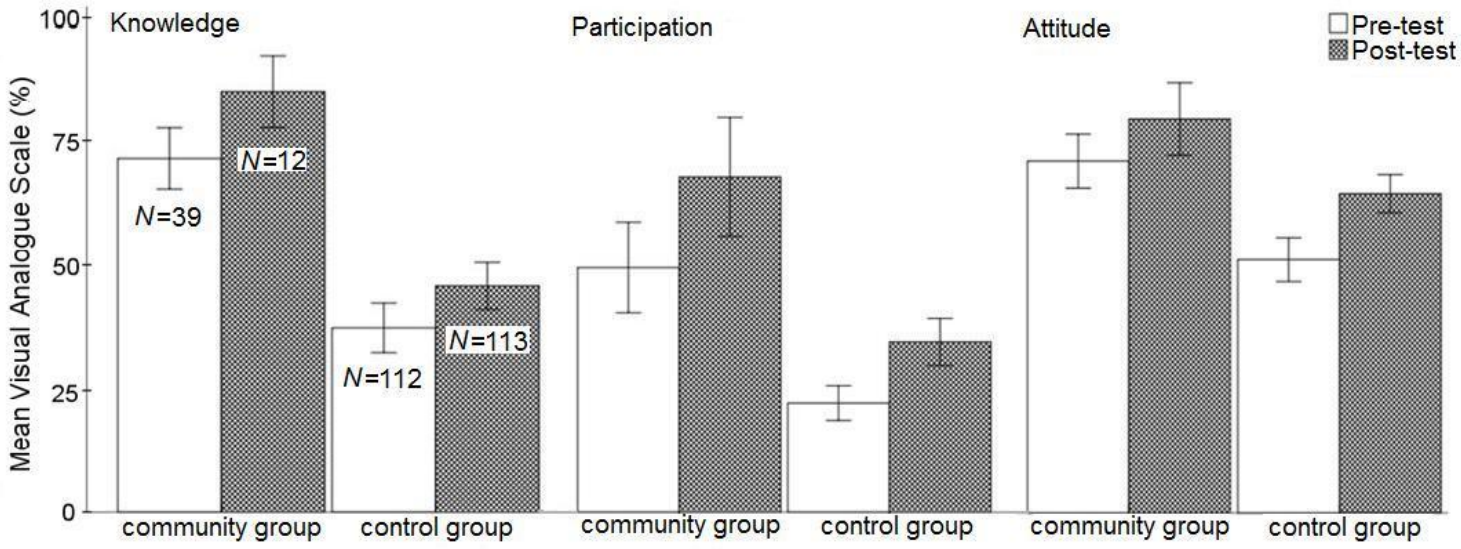

Fig. 5. Mean VAS-scores assigned to the three topics by the community and control group in the pre- and post-test (±2 SE of the mean). Increase of all VAS-scores after the process (GLM; know., $F_{1,262}$ = 17.76; part., $F_{1,229}$ = 15.48; att., $F_{1,261}$ = 17.66, all p <0.001). Higher VAS-scores in community group (GLM; know., $F_{1,262}$ = 17.75; part., $F_{1,229}$ = 28.71; att., $F_{1,261}$ = 14.42, all p <0.001).

The community group assigned significantly higher scores to the transformed knowledge ($F_{1,262}$ = 17.75, p <0.001), participation ($F_{1,229}$ = 28.71, p <0.001) and attitude ($F_{1,261}$ = 14.42, p <0.001) VAS-questions than the control group in the pre- and post-test.
A significantly higher VAS-score related to knowledge was given after the process of the set-up of the 'Delfzijl-Community' when the inquired was a member of Natuurmonumenten ($F_{1,262}$ = 9.34, p = 0.002) and with increasing age ($F_{1,262}$ = 18.82, p <0.001). The GLM related to knowledge explained 33.7% (R^2 = 0.337) of the variation in the acquired data.
The participation VAS-scores significantly increased when people were a member of Natuurmonumenten as well as visited the Voolhok area more often ($F_{1,229}$ = 5.28, p =

0.022). This GLM explained 29.1% (R^2 = 0.291) of the variation in the collected data related to participation.
Finally there was a significant interaction between the questionnaire period and sex ($F_{2,261}$ = 13.53, p <0.001) and being a member of Natuurmonumenten and sex ($F_{2,261}$ = 3.56, p = 0.030), in relation to the attitude VAS-scores. The attitude VAS-scores were significantly lower among males after the process of the set-up (p = 0.006) than the scores of females both prior to and after the process of the set-up (both p <0.001). There is no significant interaction between males and the pre-test (p = 0.577). Females that are not a member of Natuurmonumenten score significantly lower (p = 0.008) than males and females who are a member of Natuurmonumenten (both p < 0.001). There is no significant interaction effect when males are not a member of Natuurmonumenten (p = 0.996). The main effects and interactions explained 19.1% (R^2 = 0.191) of the variation in the acquired data.
The success of the set-up of the 'Delfzijl-Community' according to Natuurmonumenten was indicated by a total increase in the VAS-scores of 16.5% ± 0.8 after the process of the set-up within the repeated measurement in the community group (n = 10) (see Table 3). In this measurement, the community group scored 44% higher on the statement that measures their awareness about Natuurmonumenten's main goals. The willingness of the these individuals to involve people from their own social network in the community has increased by 4%, while the willingness to participate actively themselves has increased with 33%.

Table 3. Success ratings obtained from the differences in VAS-score topics: knowledge, participation and attitude, between the pre- and post-test among the individuals in the community group present in both measurements (n = 10), using rating factors assigned by Natuurmonumenten.

	Knowledge	Participation	Attitude	Totals
Mean rating factor (± SE)	5 (± 1.4)	10 (± 0.0)	9 (± 1.0)	
Totals rated scores pre-test per VAS-topic	40.6	55.9	64.8	460.0
Totals rated scores post-test per VAS-topic	47.3	65.8	75.3	537.4
Difference in totals	6.7	9.9	10.5	77.4
Difference in totals (% ± SE)	+15.3 (± 10.0)	+18.1 (± 8.3)	+16.1 (± 1.6)	+16.5 (± 0.8)

4. Discussion

4.1 Process

4.1.1 Finding the 'right' approach

The Natuurmonumenten delegates intended to enable the community group to determine the structure, process and outcome of the 'Delfzijl-Community' meetings by upholding an 'Open Space' approach. Besides the characteristics stated in Table 3, Owen (2008) states that the attending people self-manage the meeting, to innovatively and effectively deal with complex issues in a short timeframe and preplanning, as far as an agenda is concerned, never happens. Unfortunately the implementation of this approach did not succeed. The Natuurmonumenten delegates were always the ones who provided a clear and compelling theme, time and place, and a leader (see Table 3) during the community meetings. The community group, which was clearly interested, only started to show their commitment to the 'Delfzijl-Community' at the end of the set-up phase. Especially at the beginning the community group appeared to be non-active in their participation, which stimulated the Natuurmonumenten delegates to start preplanning meetings, directing and asking questions more often, to keep the meetings innovative and productive. In turn this has led to, or at least did not invalidate, the misunderstanding between the Natuurmonumenten delegates and the community group about why

Natuurmonumenten initiated the set-up of this community, namely for the community group to self-manage and maintain these two areas together with Natuurmonumenten. The fact that the implementation of the 'Open Space' approach did not go as planned, reflects in the decreasing trend in the VAS-scores assigned by the Natuurmonumenten delegates. However, the final attitude VAS-scores assigned by the delegates of Natuurmonumenten still indicated they agree quite strongly (73.1% ± 2.0) with the statement that setting up a community, such as the one in Delfzijl, may help implement the new position of Natuurmonumenten.

4.1.2 Community building

A study by Brown (2001) about community building, shows three stages need to be passed in order to create a foundation for a community group. The first stage involves the community group reaching a point of comfortable communication (Brown, 2001), which will take place in the orientation phase of a group. In this phase the group is designed and boundaries are given to the goals within which the group will function (Remmerswaal, 2003). The second stage is about the community group engaging in a discussion on an important subject, which is when a feeling of kinship and satisfaction emerges. This results in camaraderie, which is the third stage (Brown, 2001). Van Dam et al. (2010) also indicated the importance of this concept. They specify one needs to create a foundation of sympathisers at the start of the set-up of a community, in order to know what is happening, to execute the activities in a proper manner and to be able to involve the right people.

Observations during the community meetings revealed the community group reached the stage of comfortable communication at the end of the set-up phase (after six months) of the 'Delfzijl-Community'. At that point in time the community group was becoming more like a committed group with a mutual goal, which showed in the fact that the community group started to collaborate with the Natuurmonumenten delegates. The community group started taking initiative during the meetings and indicated they wanted to cooperate actively in the (management) activities in both areas. At that point the community was ready to start discussing the conceptualisation of a vision and future plan, which in practice had already been done. Had Natuurmonumenten used the first meeting solely to clarify the vision behind the set-up of this community, by focusing on the position of every member within the group and by creating a structure that is focused on the fulfilment of the future group activities (Remmerswaal, 2003), the community group would possibly already have been further in the community building process. However, the community building process might also have been slowed down, because the community group is pleased with the way the two areas are currently maintained, except for some minor improvements. They do not seem to feel a need for change and there is no acute need for protection of the areas. Many community-like initiatives in the Netherlands arose because of a need for protection of a nature area or a need for change among the local people (De Stichting Zeijerwiek e.o., 2002; Natuurplatform Drentsche Aa, 2011).

4.2 Effects

4.2.1 Positive effects

The significant increase in VAS-scores in all three topics, in the community as well as in the control group, indicated that the process of the set-up of the 'Delfzijl-Community' is not the only factor that had an effect. Possible factors that were not corrected for, but might have influenced the results, in the community as well as the control group, could be season and weather conditions (pre-test in winter vs. post-test in summer), as pleasant weather conditions

positively influence the attitude of people (Keller et al., 2005). As well as the increasing number of advertisements by Natuurmonumenten on television (Aldrich, 2006).
The fact that the community group assigned higher scores to all VAS-topics than the control group, may be explained by the control variables and the composition of both groups. According to the GLM, people are more knowledgeable when they were a member of Natuurmonumenten and with increasing age. Within the community group 37.3% of the individuals were a member of Natuurmonumenten, as compared to 5.4% in the control group. The mean age of the community group was 56.8 ± 1.9, as compared to 29.5 ± 1.2 in the control group. Furthermore, individuals tend to be more willing to participate when they are a member of Natuurmonumenten and when they visited the Voolhok area more often. More individuals from the community group are a member of Natuurmonumenten and they visited the Voolhok area more often (55.5 ± 16.2 times per year) than the control group (2.8 ± 0.7 times per year). Finally, the control group contained a larger percentage of females who were not a member of Natuurmonumenten (93.9% vs. 54.5% in the community group) and a larger percentage of males in the post-test (57% vs. 21.4% in the community group). These interactions had a negative effect on the VAS-scores related to attitude, indicating another reason why the community group would assign significantly higher scores than the control group. The fact that there was no significant positive interaction between the questionnaire group (community) and the questionnaire period (post-test) as was hypothesised, may partly be caused by the small sample size of the community group (N = 51). It is likely that this small sample size prevented the detection of a significant difference in the knowledge and participation VAS-scores after the process of the set-up, as the increase in these VAS-scores in the community group was (5.1% and 5.8%, respectively) larger than in the control group.

4.2.2 Visual Analogue Scale

The advantage of using the VAS in this study is that it is simple to interpret and the VAS-questions are presented in a standardized format that can be compared under a variety of different experimental manipulations (Stubbs et al., 2000). However, scientifically speaking VAS are more like ordinal-scale variables rather than interval or ratio-scale variables, because they measure an opinion or feeling rather than an actual fact. Which is why it was especially important to conduct within-subject repeated or paired measures on the same individuals only (Stubbs et al., 2000).
This study attempted to conduct such repeated measures by asking the control group to fill out their email address, which unfortunately only 25 individuals did during the pre-test. As the response to questionnaires send by e-mail is generally low, the sample size was expected to be <25 which would be insufficient to obtain significant results (Kumar, 2005). In the community group, it was expected the majority of the 39 individuals who attended the first community meeting (pre-test) would also attend the final meeting (post-test), however, only 10 out of these 39 individuals did.

4.2.3 Success

During the ‘Delfzijl-Community’ meetings a fixed and diverse group of local residents (male and female, different age groups, etc.) were present during the meetings and wanted to be actively involved at the end of the set-up of the community. Furthermore four local stakeholders were present, who wanted to be involved in the set-up of this community. This level of social involvement, which took place among a diverse group of people, are indicators for a successful set-up of the community (Van Dam et al., 2008).

Another factor which is important for a successful set-up of a community is the shared responsibility among the community group (San, 2006). However, especially during the first meetings, the individual responsibility within the community group was much higher than the shared responsibility, as almost all individuals were present out of self-interest, aiming to achieve their personal goals within this community. This did lead to a high level of consultation between individuals of the community group and the Natuurmonumenten delegates (Malo et al., 2007). The lack of, cooperation between members of the community group and shared responsibility, makes one wonder whether the 'Delfzijl-Community' can already be called 'a community' or only 'a group'. This hypothesis is supported by McMillan and Chavis (1986) who state that an important contributor to a person's sense of community is personal investment in the group.

4.3 Looking back and ahead

Natuurmonumenten was successful in getting a steady group of individuals together that has stated they want to actively take part in managing and maintaining the Biessumer bos and Voolhok area. Future initiatives have been discussed, such as maintenance during the 'National Nature Work Day' and organizing guided tours and activities in both areas during the 'Open Monuments Day' this year in the fall. Furthermore the results indicate the set-up of the 'Delfzijl-Community' did influence the increase in the VAS-scores of the community group in all three topics between the pre- and post-test, be it not statistically significant in this study. We would, however, advise Natuurmonumenten to try to enhance the community building process when setting up similar communities in the future. At the start of the set-up Natuurmonumenten could focus more on the question of how the community group would want to be involved, by creating a foundation for the community and pay less attention to the vision and future plan for the areas. This foundation may also contribute to getting the main goal of Natuurmonumenten across, namely setting up a community together with the community group. It might also make it easier to implement and maintain the 'Open Space' approach, as the community group would be stimulated to participate actively.

To be able to analyse the effects of the set-up of a community more accurately in the future, it is advisable to prioritize the repeated measures approach within the community and control group. One should find a way to secure the possibility of conducting a repeated measures test, for example by providing incentives for the inquired and by inquiring new community group members prior to the first meeting they attend, which might in reality be the second or third community meeting. Finally, one could decide to conduct the post-test a year after the pre-test during the same season with a one year interval, to limit the seasonal effects.

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