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# Fostering participation in learning networks by using reward systems and face-to-face meetings

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## Abstract

*This paper investigates conditions for increasing participation in learning networks, focusing on the influence of incentive mechanisms and face-to-face meetings on participation in the LN4LD (Learning Network for Learning Design). Repeated measurements show that the levels of both passive (accessing and reading information) and active participation (posting, replying and rating) are indeed significantly increased as a result of both interventions.*

## 1. Introduction

Online, distributed facilities can be designed that cater for needs of lifelong learners at various levels of competence development. The factors and mechanisms that motivate people to codify and share knowledge for the benefit of others have been identified as a priority area for individual companies [1].

This paper addresses some conditions for setting up facilities for the development of lifelong learning networks, and describes two experimentations on increasing participation (reward systems and face-to-face meetings).

This paper sets off by describing some preliminary experiences (period: 2001-2004) in section 2. Sections 3 and 4 then describe the two more recent (period: 2004-2005) experimental studies we carried out. Finally, section 5 provides a summary of our findings, together with recommendations for future research.

## 2. Initial experiences

The Open University of the Netherlands (OUNL) launched Educational Modeling Language (EML) [2] for public use in December 2000, as a specification that enables modeling of both content and processes in e-learning. To promote use in contexts outside of OUNL, a website (eml.ou.nl) was created through which the specification could be downloaded and from which newsletters were sent to subscribed participants. In order to open up possibilities for guidance and

exchange, the subscribers were migrated onto another platform (www.learningnetworks.org) offering forums to post and receive messages, implemented in VBulletin [3]. However, the number of contributions made (besides those made by the originators of the facility) by posting or replying to posts (active participation) remained extremely low.

Making communication channels available alone does not guarantee that participants will take a more active role. This led us to take a different approach towards implementing a learning network based on ideas around self-organizing systems and 'seeding'. In the meantime, EML had been adapted to become an internationally standard known as IMS-Learning (LD) [4]. The first pilot implementation of the learning network therefore became known as LN4LD (Learning Network for Learning Design). We used a combination of PHP-Nuke [5], to implement the learning network-layer of the facility, and Moodle [6], to implement the learning activities and forums.

Literature contains some dispute about the amount of structure that is needed to build effective learning environments. We added some content and structure by 'seeding' the information space for others to add and elaborate, based on the concept of 'courses as seeds' [7]. Furthermore, we allowed to rate activities (in PHP-Nuke) and individual postings or replies.

An initial, small group of 104 users who subscribed was monitored during the first three months after launching LN4LD (July-September 2004). For a more elaborate treatment of this study see [8]. We counted 12,011 page views, and people downloaded 427 items. Only 25 articles were posted in both Nuke and Moodle forums. Exchange of information on the level of active participation in LN4LD was still quite disappointing, although it was a substantial improvement when compared to its VBulletin predecessor.

Possible problems underlying the disappointing numbers of participants and low level of active participation were identified: relative invisibility of policy statements; various usability issues in registering and wayfinding (due to the rather complex two-layer Nuke-Moodle infrastructure); lack of suitable content

(content was found to be at a rather complex level and mainly text-oriented); complex structure (too many assignments and forums for too little users).

### 3. Reward systems

We continued monitoring participation in a second, implementation ([www.ln4ld.learningnetworks.org](http://www.ln4ld.learningnetworks.org)) of the LN4LD. During the October 2004 – January 2005 period, we carried out experimentation with an incentive mechanism aimed to increase active participation.

Experimentation was inspired by Social Exchange Theory, which informs us that participants will contribute more when there is some kind of intrinsic or extrinsic motive (or reward) involved. This theory [9] suggests four main mechanisms to motivate and encourage participation: (1) *personal access*, or anticipated reciprocity: learner has a pre-existing expectation that he will receive actionable and useful (extra) information in return; (2) *personal reputation*: learner feels he can improve his visibility and influence to others in the network, e.g. leading to more work or status in the future; (3) *social altruism*: learner perceives the efficacy of the LN in sharing knowledge as a ‘public good’, especially when contributions are seen as important, relevant, and related to outcomes; (4) *tangible rewards*: learners negotiate to get some kind of more tangible asset (financial reward, bond, book, etc) in return. Incentive mechanisms for knowledge sharing should match the spirit of what has to be achieved [10]. If this is finding and exchanging information about LD, incentives to gain extra personal access to more information about LD can be expected to render best results.

To test this assumption, we introduced an incentive mechanism in LN4LD (participants could earn extra access by making contributions). We divided the three-month period in three consecutive periods of one month to monitor our participants, with the incentive mechanism only being introduced and available during the middle period. The sample used for this study consisted of all 125 individuals who had enrolled and accessed the Learning Network during the experimental period. Seventeen countries were represented as the origin of participants. For a more elaborate treatment of this study see [11].

The mechanism allowed participants to earn points for contributions (postings, replies, ratings), with the reward scheme including both quantitative and qualitative components.

A simple interrupted time series with removal design [12] was applied with (active and passive)

participation as the independent variable. The main research aim of this experiment was to measure the hypothesized increase in active participation, but we also monitored data on passive participation.

**Table 1.**  
**Total active participation points for each period (A-C) and parameter, for all participants (n=125)**

Points X Period	Total points	points forpost	points forreply	points forrate	points forreplyrec	points forraterec
A.	117	60	20	3	10	24
B.	566	220	120	42	100	84
C.	141	40	30	12	35	24
A-C.	824	320	170	57	145	132

Table 1 shows that the total amount of active participation points was divided as follows: 117 points in period A, 566 points in period B, and 141 points in period C. The average total points for active participation earned by active participants ( $n = 17$ ) is 48.47 and by all participants ( $n = 125$ ) it is 6.6. The repeated measures ANOVA, using time of measurement for the three periods as a within-subjects factor, reveals that ‘period’ indeed is a very significant factor in explaining the average total amount of points ( $F(2, 122) = 14.17$ ,  $MSE = 24,966.08$ ,  $p < .001$ ,  $\eta_p^2 = .104$ ), even with the majority of participants not actively contributing.

### 4. Face-to-face meetings

The potential of teamwork or other types of face-to-face collaboration for learning has been demonstrated by various studies in a variety of domains [13, 14], and for Computer-Supported Collaborative Learning (CSCL) environments [15].

Since July 2004, LN4LD had been maintained in the context of the 6<sup>th</sup> framework UNFOLD project for the dissemination of IMS-LD. UNFOLD organized a number of face-to-face meetings, especially during the five months from January to June 2005. In this period, three meetings were held by UNFOLD in February (Valkenburg, The Netherlands), in April (Barcelona, Spain) and in June (Braga, Portugal) with an averaged attendance of 70 people.

We logged all activities and collected additional qualitative information through questioning attendants ( $N = 78$ ). During this five month period, the amount of registered users almost quadrupled (from 125 to 495 registered users) with sixfold the amount of actions at

the end. Data analysis shows the increase of participation from January-March 2005 to be 48% of participation between March -June 2005. Participation went from 3,750 actions till January to 17,553 actions in March and to 26,028 actions in June, meaning an increase of 8,475 actions from March and 22,278 actions from January.

Qualitative data on the relation of F2F meetings and virtual collaboration collected by a small questionnaire, filled in by 78 attendants, reveal that F2F meetings are considered to encourage active participation in the network because they foster personal relationships and trust, and raise new discussions and issues to be resolved. F2F are considered most suitable for networking and to reach final consensus. F2F meetings and virtual collaboration supplement each other, since the latter provides an up-scaled, geography-independent platform, with many participants discussing issues in more depth (more time to think) and with less hierarchy (everybody can contribute).

## 5. Conclusions and future research

While setting up initial pilot implementations of a learning network, we concluded that usability, simple structure, and clear policies are necessary requirements. Introducing an incentive mechanism in line with the general purposes of the learning network indeed appeared to increase the level of participation (both active and passive) significantly. Interlacing virtual activities with additional face-to-face meetings on the same topics yielded another substantial increase in both activity level and amount of users registering.

Although these are promising findings about *what* happened, we did not explain what caused these changes in behavior (*why* it happened). Future research will therefore have to find out about actual drivers for people to register and actively participate in learning networks.

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## 7. Author note

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