

# **People in Personal Learning Networks: Analysing their Characteristics and Identifying Suitable Tools**

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## **Abstract**

In recent years, the concept of a Personal Learning Network (PLN) as a structure to support personal learning has become more and more widespread. A Personal Learning Network refers to the network of people a self-directed learner connects with for the specific purpose of supporting their learning. An effective use of PLNs as learning resources depends on various networking skills of the learners. These skills include content-related skills such as being able to engage in conversations and being able to communicate ideas, thoughts and opinions to the listener, but also (ii) skills regarding the process of networking itself to continuously build, maintain and activate PLNs, in particular to be able to identify the experience and expertise of the connections in their PLNs. Relationships for learning in a PLN are often supported through various technical instruments and platforms. Although many technologies are being developed to support learners' construction and maintenance of their Personal Learning Network, the design is often based on certain assumptions on what learners consider important for their own social learning. However, there has been little investigation on what a learner considers important in a PLN. This article presents the results of a study on the concepts that determine whether a learner considers a contact to be valuable to their learning, the perceived relevance or importance of these concepts to the learner, and the extent to which these concepts are perceived to be supported by current popular networking platforms. The methodology used consists of a two-stage process: a scaffold activity on name generation and abstraction of concepts by participants in a workshop on networking skills, followed by a survey rating the importance of the elicited concepts and their association with 5 chosen PLN-supporting platforms. The conclusions of the study are (i) 18 concepts are generally accepted as driving a learner's PLN, (ii) that social learning via PLNs still remains very hidden, but reflective activities encourage more control over this type of learning, and (iii) that different social networking platforms fulfil different aspects of the supporting personal learning networks, with the exception of Twitter as a learning platform, that emerges from the study as the most widely applicable tool.

## **Keywords**

Personal learning networks, drivers of PLNs, affordances, Twitter, networking skills

## **Introduction and problem statement**

Networked learners support their informal and non-formal learning needs through their connections with other people and resources, often supported by information and communication technologies. To be successful at networked learning, learners need to have sufficient networking skills. These skills include (i) skills regarding content such as being able to engage in conversations and being able to communicate ideas, thoughts and

opinions to the listener (Dillenbourg, 1999; Kintsch & Van Dijck, 1978), and (ii) skills regarding the process of networking to continuously build, maintain and activate personal learning networks (PLNs) (Nardi, Whittaker & Schwarz, 2000), in particular to be able to identify the experience and expertise of the connections in their PLNs (Rajagopal, Joosten-ten Brinke, Bruggen, van J. & Sloep, 2012). By developing these skills, sophisticated networked learners will be able to build effective and valuable personal learning networks to support their present and future learning needs.

However, many novices to networked learning do not have the skills necessary in order to engage in this type of learning. On the one hand, the threshold to engage in face-to-face social interactions is quite high. Learners' personalities play a big role, as well as contextual aspects such as appearance, language skills, cultural differences etc. These might inhibit the learners engaging in further interactions, thereby diminishing the opportunities for learning conversations. On the other hand, the process-related networking skills are higher order skills that only become relevant or even apparent when they become problematic to learners (Margaryan, Milligan & Littlejohn, 2009).

However, even before those learning conversations take place, there are already certain steps that a learner needs to take to make sure that the environment is suitable for these conversations. The process-related networking skills are a key aspect of learning in this way. It is important learners perceive what the experience and expertise of individual contacts can bring to their learning, and where they can find those people who are an added value to their learning (Cigognini, Pettenati & Edirisingha, 2011).

Increasingly, technological support is being provided to support the creation and maintenance of personal networks. Especially, social networking platforms have become increasingly popular over recent years. Here too, we can see the emergence of technologies that support the content of the interactions and the process of enabling interactions. For example, various tools have emerged aimed at helping people contextualize interactions on these platforms. A case in point is the ecosystem around the social networking platform Twitter that provides various views on the peer-to-peer or group interactions taking place on the platforms. (e.g. Paper.li). Other tools invite users to curate information collected from various social networking sites and resources, by making their categorization and contextualization explicit (social bookmarking, Scoop.IT, Storify). Also, recommendation systems for learning connect a user to relevant or suitable people to individual learners to connect with, based on various common characteristics (organizations on Facebook, mutual connections, common interests, etc.). Another way of creating new contacts is through the bespoke creation of short-term discussion groups, on the basis of a learner's questions (AHTG): the system determines the suitability of others to answer the learner's question and invites them to connect to each other through a closed space. These systems are often based on a few assumptions on what determines whether a person initiates a connection to another.

However, there has been little investigation into which factors actually determine whether a learner considers a contact to be valuable to their learning. It is also not known which of these connection-determining factors are considered by the learner to be the most relevant or most important. Taking into account the increased activity of learners in person-to-person online networks, it is also not known to what extent the connection-determining factors are relevant in learners' online interactions with their contacts.

In this paper, we will present the results of a study conducted exploring these issues. The research questions investigated are the following:

- Which factors determine whether a learner considers a contact to be valuable to their daily learning, and as such part of their Personal Learning Network?
- What is the order of importance and relevance of these factors?
- To what extent do current widely used networking platforms and tools support the identification of these factors in online social interactions between the learner and the contact?

We will first describe the methodology of our study, followed by the results. We will then present the main conclusions of the study, with a discussion. Finally, we will present the further research tracks that we see.

## Methodology

To answer the first research question aimed at better understanding the nature of these personal contacts for learning, we conducted a small qualitative study at the PLE Conference 2011 at Southampton (<http://www.pleconf.com/>). The experiment was held as part of a workshop entitled “Networking to Learn and Learning to Network” (Rajagopal & Costa, 2011), which was open to all conference participants. We had 15 workshop participants, who were seated at three tables of 5 persons each. First, as an individual exercise, each participant was asked to generate names of 10 people who they felt they learnt from in their daily professional life. Secondly, in a group exercise, each participant was asked to introduce the chosen names to the rest of the table, by telling them why these chosen people were vital to their learning. Finally, the collected reasons were grouped at each table, giving a total list of 38 concepts. In a moderated plenary session, these concepts were filtered, by taking out duplicates and collectively selecting the most appropriate terms to cover the concepts. This exercise resulted in a final list of 22 concepts. This scaffold activity forced the workshop participants to think about their social learning on a more abstract level, away from their actual contacts themselves.

Next, an online survey was conducted through with 46 respondents on the identified concepts. The respondents were volunteers in the authors’ extended personal networks, reached primarily through online platforms (email, Twitter, Facebook). The survey consisted of two parts: the first part aimed to confirm the 22 concepts from the qualitative study and to gain some insight into their perceived relative importance. For this part, the 22 concepts were surveyed through 26 statements, to be rated on a 5-point Likert scale. The second part of the survey aimed to understand to what extent the 22 concepts were associated with 5 chosen, currently popular networking platforms, namely Facebook, LinkedIn, Twitter, Scoop.IT and Diigo.

## Results

The 15 participants identified their individual personal learning networks, which included contacts ranging from family members and colleagues, to well-known public figures and scientists.

The 22 concepts identified by the 15 participants in the moderated plenary session at the PLE conference are illustrated in Figure 1.



**Figure 1: Concepts driving Personal Learning Networks**

The participants gave us informal feedback that the activities of the workshop, especially the name generation, were not easy tasks. Most of them had never been asked to reflect upon this networking process before. After an initial slow start, they did feel it was easy to identify who had and continued to contribute to their learning. Many participants also indicated that the whole process had been enlightening for them. On first analysis, these concepts cover various issues. In fact, we can distinguish three broad categories within the concepts, namely:

- relating to personal characteristics of the learner’s contact: expert(ise), values, presence, adaptability, influential, different perspectives, their ability to make you change, do things differently, innovation, change, inspiring, eccentric, role models, passion
- relating to the relationship between learner and contact: mentoring, friendship, trust, familiarity, comfort
- relating to the learner’s own reasons and expectations: validation, reality check, disruption

This initial grouping was taken into account in the formulation of the survey. Each concept, except 4, was mapped to one question in the first part of the survey. The following concepts were divided into multiple statements, as it was deemed that a single formulation did not cover the concept sufficiently:

- expert(ise)
  - people with specific expertise
  - experts on topics that are relevant to me
- validation
  - validate my thoughts, ideas and opinions
  - criticise my thoughts, ideas and opinions
- change
  - people who can change themselves
  - people who can change things
- anti-role models
  - my role models
  - people who show me how not to do things

This resulting list consisted of 26 statements, which was rated by 46 respondents (n=46), on a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. Table 1 shows an overview of the concepts, ranked from highest scoring to lowest scoring, taking together the answers on “Strongly Disagree” and “Disagree”, and “Strongly Agree” and “Agree” respectively.

**Table 1: Ranking Concepts and Survey Statements**

|    | CONCEPTS               | SURVEY STATEMENTS  | (Strongly) agree |
|----|------------------------|--|------------------|
| 1  | different perspectives | People who can give me Different Perspectives                  | 96%              |
| 2  | values                 | People with Values I appreciate                                | 87%              |
| 3  | passionate             | Passionate   | 84%              |
| 4  | inspirational          | Inspirational  | 84%              |
| 5  | trust                  | Are people I trust   | 80%              |
| 6  | innovative             | Innovative   | 74%              |
| 7  | expertise              | People with Specific Expertise                                 | 74%              |
|    |                        | Experts on topics that are relevant to me                      | 72%              |
| 8  | disruption             | to provide me with disruptive thoughts, ideas and opinions     | 72%              |
| 9  | reality check          | to give me a reality check for my thoughts, ideas and opinions | 72%              |
| 10 | do things differently  | People who do Things Differently                               | 72%              |
| 11 | familiarity            | Have a certain familiarity to me                               | 65%              |
| 12 | validation             | to validate my thoughts, ideas and opinions                    | 63%              |
|    |                        | to criticize my thoughts, ideas and opinions                   | 54%              |

|    |                           |   |     |
|----|---------------------------|---|-----|
| 13 | ability to make me change | People who have the ability to make me Change | 61% |
| 14 | adaptability              | People who can Adapt themselves               | 57% |
| 15 | change                    | People who can change themselves              | 54% |
|    |                           | People who can Change things                  | 54% |
| 16 | presence                  | People who have Presence                      | 54% |
| 17 | friendship                | Are my friends                                | 54% |
| 18 | comfort                   | Give me comfort                               | 50% |
| 19 | anti-role models          | My role models                                | 48% |
|    |                           | People who show me how Not to Do Things       | 39% |
| 20 | influence                 | Influential                                   | 46% |
| 21 | eccentric                 | Eccentric                                     | 46% |
| 22 | mentorship                | Are my mentors                                | 43% |

This table shows that 18 of the 22 identified concepts are generally accepted: more than 50% of the respondents agree or strongly agree that the concepts influence their PLNs. The scoring is generally high, with half of the concepts being supported by one third (or even more) of the survey population. The top concept, supported by 96% of the respondents, is “different perspectives”. 4 out of the 22 concepts were not considered by the majority of the respondents as important drivers in their PLN: “anti-role models”, “influence”, “eccentric” and “mentorship”.

The second part of the survey looked into what extent the 22 concepts were associated with 5 chosen, currently popular networking platforms, namely Facebook, LinkedIn, Twitter, Scoop.IT and Diigo. The majority of respondents indicated that they were not using Scoop.IT (80%) and Diigo (65%). For this reason, we discounted these technologies in the further analysis.

There were a number of respondents who did not use Facebook (2%), LinkedIn (26%) or Twitter (28%). The total population was corrected for these technologies, to allow for representative and comparable percentages with the first part of the survey, The results of the second part of the survey are in Table 2.

**Table 2: Ranking Concepts and Survey Statements**

|    | CONCEPTS               | STATEMENTS   | (Strongly) agree | SURVEYED TECHNOLOGIES |            |                 |            |                |            |
|----|------------------------|--|------------------|-----------------------|------------|-----------------|------------|----------------|------------|
|    |                        |  |                  | Facebook (n=45)       |            | LinkedIn (n=34) |            | Twitter (n=33) |            |
| 1  | different perspectives | People who can give me Different Perspectives                  | 96%              | 21                    | 47%        | 8               | 24%        | 28             | <b>85%</b> |
| 2  | values                 | People with values I appreciate                                | 87%              | 10                    | 22%        | 8               | 24%        | 21             | 64%        |
| 3  | passionate             | Passionate   | 84%              | 13                    | 29%        | 2               | 6%         | 21             | 64%        |
| 4  | inspirational          | Inspirational  | 84%              | 11                    | 24%        | 5               | 15%        | 20             | 61%        |
| 5  | trust                  | Are people I trust   | 80%              | 15                    | 33%        | 2               | 6%         | 13             | 39%        |
| 6  | innovative             | Innovative   | 74%              | 10                    | 22%        | 6               | 18%        | 23             | <b>70%</b> |
| 7  | expertise              | People with Specific Expertise                                 | 74%              | 7                     | 16%        | 27              | <b>79%</b> | 25             | <b>76%</b> |
|    |                        | Experts on topics that are relevant to me                      | 72%              |                       |            |                 |            |                |            |
| 8  | disruption             | to provide me with disruptive thoughts, ideas and opinions     | 72%              | 4                     | 9%         | 1               | 3%         | 12             | 36%        |
| 9  | reality check          | to give me a reality check for my thoughts, ideas and opinions | 72%              | 7                     | 16%        | 7               | 21%        | 18             | 55%        |
| 10 | do things differently  | People who do Things Differently                               | 72%              | 6                     | 13%        | 3               | 9%         | 18             | 55%        |
| 11 | familiarity            | Have a certain familiarity to me                               | 65%              | 30                    | <b>67%</b> | 2               | 6%         | 12             | 36%        |

|    |                           |   |     |    |            |    |     |    |            |
|----|---------------------------|---|-----|----|------------|----|-----|----|------------|
| 12 | validation                | to validate my thoughts, ideas and opinions   | 63% | 5  | 11%        | 8  | 24% | 17 | 52%        |
|    |                           | to criticize my thoughts, ideas and opinions  | 54% |    |            |    |     |    |            |
| 13 | ability to make me change | People who have the ability to make me Change | 61% | 2  | 4%         | 0  | 0%  | 8  | 24%        |
| 14 | adaptability              | People who can Adapt themselves               | 57% | 4  | 9%         | 1  | 3%  | 10 | 30%        |
| 15 | change                    | People who can change themselves              | 54% | 7  | 16%        | 2  | 6%  | 15 | 45%        |
|    |                           | People who can Change things                  | 54% |    |            |    |     |    |            |
| 16 | presence                  | People who have Presence                      | 54% | 21 | 47%        | 17 | 50% | 22 | <b>67%</b> |
| 17 | friendship                | Are my friends                                | 54% | 35 | <b>78%</b> | 6  | 18% | 17 | 52%        |
| 18 | comfort                   | Give me comfort                               | 50% | 15 | 33%        | 2  | 6%  | 11 | 33%        |
| 19 | anti-role models          | My role models                                | 48% | 2  | 4%         | 0  | 0%  | 5  | 15%        |
|    |                           | People who show me how Not to Do Things       | 39% |    |            |    |     |    |            |
| 20 | influence                 | Influential                                   | 46% | 4  | 9%         | 7  | 21% | 16 | 48%        |
| 21 | eccentric                 | Eccentric                                     | 46% | 9  | 20%        | 2  | 6%  | 13 | 39%        |
| 22 | mentorship                | Are my mentors                                | 43% | 4  | 9%         | 2  | 6%  | 15 | 45%        |

Table 2 shows how the respondents associate the 22 concepts with their personal networks on three social networking platforms, Facebook, LinkedIn and Twitter. In other words, we specifically asked the respondents to think of the people they connect with through the platform. The answers are again ranked following the importance the respondents give to the concepts in the constitution of their PLNs, as in Table 1. The results here show a different picture. Facebook seems to have a primary focus for networking, scoring the highest across the platforms on friendship (78%) and familiarity (67%). Comparatively, both these concepts do not score very highly on their role in PLNs (respectively 54% and 65%).

LinkedIn scores high on just one concept, namely expertise (79%). It generally scores low (<50%) on all other concepts, except for presence, where it scores 50%.

The final social networking platform, Twitter, scores the highest on the concepts “difference perspectives” (85%), “innovation” (70%), “expertise” (76%) and “presence” (67%). These concepts, apart from “presence”, are also deemed relevant in PLNs, occurring in the top 7 concepts and supported by at least 72% of the survey respondents. The concept “presence” scores lower here (54%). In fact, the concepts scored highly on learning are also generally scored highly in their association with Twitter, with one exception. The concept “trust” scores very highly in learning (80%), but scores only 39% in the Twitter column. The results for Twitter is also remarkable as more than one third of the Twitter users in our survey associate the tool with 21 of the 22 concepts. Only the concept “anti-role model” scores low with 15%.

## Conclusions and Discussion

The first conclusion is a confirmation of the hidden nature of social interactions with contacts for the purpose of learning. It stems primarily from the informal reactions of the workshop participants on the workshop activities. People engage in networks, face-to-face and online, and learn from the interactions with their contacts through these networks. Although content-related issues are discussed, the process of (face-to-face and online) networking for learning itself seems to remain vague and cannot easily be grasped. Learners may not label this process as learning in the first place. However, a reflective moment, such as the activity in the workshop, can allow learners to think about the networking process itself, and bring about more understanding and control. In our opinion, reflection on the networking process is essential to grow into sophisticated networked learners. It can make the learning process more effective, by triggering the learner to make different and more varied connections with other learners, make more considered content-related selections or more in-depth reflections. In short, this will increase the effectiveness of learners’ learning experiences, and provide them with a greater sense of control over their personal learning network.

The second conclusion centres on the 22 concepts from the workshop. In social learning, interactions between learners are at the core of the learning experience. In dialogue with another, learners need to express their own perspectives and understand the other's perspectives. This conversation can bring out assumptions and elicit the mismatch between assumptions, thereby creating "breakdowns" so that learning can occur. Nearly all of the 22 concepts were confirmed in the first part of the survey and supported by more than half of respondents. The highest scoring concepts, supported by more than two thirds of the respondents, are "different perspectives", "values", "passionate", "inspirational", "trust", "innovative", "expertise", "disruption", "reality check", "do things differently" and "familiarity". It is interesting to note that these concepts content-wise all seem to denote the occurrence of a "breakdown". They are characteristics of the contact that have a profound effect on the learner (as in "different perspectives", "values", "passionate", "inspirational", "innovative", "expertise", "do things differently") or learning-related expectations on the part of the learner ("disruption", "reality check"). Finally, the learning experience seems to depend on certain characteristics of the relationship between the learner and the contact ("trust", "familiarity").

The lowest scoring concepts of the 22 are "anti-role models", "influence", "eccentric" and "mentorship", although these are still acknowledged by just under half of the respondents. These concepts seem to indicate more negative aspects of learning relationships, which might explain the relatively lower scores.

Finally, the survey results indicate that different social networking platforms fulfil different aspects of the supporting personal learning networks. Twitter emerges from the study as the most widely applicable tool, covering 21 of the 22 concepts for learning. Moreover, concepts that are important for learning are also highly associated with the networking platform Twitter, in particular the concept "different perspectives" which comes out at the top in both lists.

The results also indicate that our respondents consider Facebook primarily as a platform supporting friendship and familiar relationships. Facebook is not associated as highly as Twitter with the concepts considered important for learning. LinkedIn, on the other hand, is primarily associated with the concept "expertise", which can be explained by the specific profile that LinkedIn has carved out for itself as a social networking platform for professionals. In this regard, it is surprising that all three networks score relatively low on the concept "trust".

The difference between the networking platforms might seem counterintuitive, especially as Twitter, as a platform, has much lower functionalities available than be Facebook or LinkedIn. These latter platforms provide their users with various functionalities to encourage, engage and explore their individual networks with, examples of which are groups, discussion groups, various communication possibilities, etc.

It might be that the reduced functionality (microblogging) of Twitter mirrors the conversational style of simple, short messages as you might have in real face-to-face interactions, much more than the other platforms. The interactions on Twitter have the possibility to develop into short or longer conversations, which can then move to other platforms if need be. Personal user experiences on the use of Twitter as a learning platform also seem to mirror stories of learning in face-to-face social interactions, although further research is needed on this.

(Castañeda, Costa & Torres-Kompen, 2011). This supports the affordances that a tool such as Twitter can bring (Conole & Dyke, 2004).

In conclusion, we can state that there are 22 concepts driving relationships in Personal Learning Networks, 18 of which are generally accepted. Of these, the 11 concepts of "different perspectives", "values", "passionate", "inspirational", "trust", "innovative", "expertise", "disruption", "reality check", "do things differently" and "familiarity" seem to be perceived as very important. Of the investigated networking platforms, LinkedIn and Facebook seem to be less widely applicable than Twitter, which is widely associated with nearly all identified concepts. This study did not allow us to investigate the extent to which curation tools such as Diigo and Scoop.IT support the concepts in networked learning, due to the lack of respondents using these tools.

## Further Research

In this article, we described the results of a study, investigating factors deemed valuable for for a Personal Learning Network. We also looked to what extent current widely used networking platforms and tools support the identification of these factors in online social interactions between the learner and their contacts. The main results uncovered a list of 22 concepts that are deemed valuable for learning and their relative importance.

A first possible route for further research is to explore if these concepts can be reduced to underlying driving factors for the creation and maintenance of Personal Learning Networks, through a study of larger populations. A second possible route for further research will be to investigate how reflection on networking practice can be encouraged and supported through reflection tools. An interesting aspect in this is to see how the emerging curation tools in the ecosystem around Twitter can be used for learning purposes.

Another possible track for further research is to investigate if these concepts can be used for the purpose of training novice networked learners into developing and strengthening their networking skills.

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