The initiative in this project came from the lack of suitable social and interactive learning tools in current learning management systems. While learners have their own needs and preferences of learning based on their learning objectives and careers, they also look into interaction with other peers in their learning path. Moreover, each user learning path may be completely different based on their background and expertise which creates many different learning experiences for a learners in a domain subject.

In the initial phase of this project, the objective was to identify this diversification in types and backgrounds of the learners. Before setting up any Personal Learning Environment and Network (PLE&N) prototype, a series of in-depth interviews were conducted to fine-tune the expected elements and tools that needed to be shape a suitable PLE&N while bringing a better understanding how to create and incorporate interactive content in the form of games into learning management system. Table 1 (appendix 1) shows the detail structure of this survey in identifying the tools. As the initial interviews revealed, different learners with different backgrounds had different learning needs which required different social tools (table 2 in appendix 1).

With gamification in learning as one of the deliverables in this project, the project team looked into two major factors for integrating games as interactive learning tools into social and learning management platforms in use. One was the capability of the authoring tool in creating interactive games from the course materials and the other was the compatibility of the selected software with currently used platform in Learn@PolyU. The selected software (iSpring presenter), not only satisfied the needs for this proposal, but enabled the project team to host their interactive contents in various social platforms (e.g. Dropbox). Such integration provided assessment and evaluation beyond only grading system in Learn@PolyU. This deployment could show how many attempts each student might have in order to do a quiz in a game correctly, or could show if the answers are completely wrong or partially wrong and if partially wrong, what wrong choices have been made. The insight collected provided a diverse logical learning path for a better feedback to the learner while playing the games.

A series of surveys conducted after each semester during one academic year to evaluate how the PLE&N and the games have performed inside and outside of the learning management platform. While the initial proposal has only considered the implementation and integration inside the learn@polyu, due to the flexibility of the chosen platforms and gamification tools, this evaluation could be extended to more subjects with more than 635 students using the Learn@PolyU over 10 subjects in one academic year. Plus, the games were hosted at the same time for the postgraduate students at Chiang Mai University.

Various cloud-based tools were introduced to the learners based on the needs that were collected from the interviews. The feedback from the students after each semester could help the project team to identify which PLE&N tools were used by the learners and which of those tools have been find more useful to them (Appendix 2). A series of reading sources for different subjects domains were also introduced in the form of RSS feeds by the instructor as reliable information streams to be used and shared by the learner over the PLE&N (Appendix 3). More than 80% of the students agreed, to various extents, that such feeds were relevant to their subjects. Over 70% of the learners, to various extent, also found the feeds has improved their knowledge about their subjects.

As a cross-departmental project, the project team also provided the PLE&N prototype to other participating departments. The PolyU library, as the key player in knowledge disseminating center in the university used the platform. The project team had detailed interviews with both participating staffs and student helpers on their viewpoints about using PLE&N. Some of the key points derived from the video recorded interviews from the PolyU library staffs and students helpers are 1) They found hashtags in PLE&N a very efficient way in finding contents that is hugely scattered in different online information resources in a subject domain. 2) They have found that regular face to face meetings could support the use of PLE&N. Indeed, our survey over 650 students showed that, over 60% of the learners, to various extents, discuss the contents of the PLE&N in face to face meetings (appendix 4). The feedback shows that the

extent of the PLE&N has been far beyond the only online sharing objective initially proposed on the project and has contributed to offline interaction among the learners too 3) The library has also found the PLE&N a good channel to provide reliable and trustworthy information to the learners. The feedback, as discussed, showed that majority of the learners found the suggested RSS feeds by instructors relevant and useful. 4) The simple user-interface has been also mentioned as one of the key elements for the learners. Our collected feedback showed that more than 90% of the learners, to various extents, find the PLE&N structure user-friendly.

On the gamification front, the learners showed a very strong support. Almost 90% of the participants on one of the conducted games deployed for over 55 students in a subject found that game-based approach facilitates their learning experience in order to achieve the learning objective. More than 90% also would like to see the gamification approach to learning extended to other subjects in the future (Appendix 5).

A major part of this project, together with other work, formed the central plank in the Project Leader's submission to compete for the 2014 UGC Teaching Award which he finished up as one of the Shortlisted Finalists.

Table 1. The PLE&N Preliminary Survey

| Interview Question	Explanation	Interview Question	Explanation
1. What's your background? (Full Time/Part Time Undergraduate or Postgraduate)	Identifying the student type and background	8. If not, why? What other features you would like to have that can help do your group work?	Designed to let students imagine what features in LMS will be useful to their group work.
2. What are your key goals? (e.g. continue to study at a university, switch job, etc.)	The key goals determine the learner's learning and career needs.	9. What tools do you commonly use to complete a group work?	This question is designed to ask students the tools they are currently using to complete a group work
3. Is the university-provided Learning Management system (LMS) adequate for your learning?	This question is designed in order to collect feedback on the university-provided LMS	10. What other tools or features you like to have in a personal learning environment?	To further stretch student imagination for ideal features and tools in PLE&N environment.
4. If not, why? And what else you also like to receive/know/read?	To know what information and knowledge they would like to get from LMS	11. How your desired personal learning environment can take you to your key goals in a better way?	To make students think on their own feet why their ideal personal learning environment can take them to their key.
5. What other tools you commonly used to support your study?	This question asks the interviewee if they are currently using any tools to support their study.	12. In addition to achieving your key goals, what other benefits will your desired PLE&N?	To ask students about other benefits in addition to those that help them to achieve their key goals.
6. Apart from learning the subject, what else do you also need to know/learn?	To obtain information on students' learning needs beyond the curriculum	13. What are your goals of lifelong learning?	To understand how students aim to stay current and competitive.
7. Based on your experience, is the university-provided LMS helpful to your group work?	To know more about students' using university LMS to assist their group work. Follow-up questions are raised	14. If you are aiming for a lifelong learning tool, what sort of systems and/or features do you need?	Designed to let students think more long-term and imagine the systems and/or features that can be used long-term to cater for their learning needs

Table 2. Suggested collaboration tools in prototype PLE&N

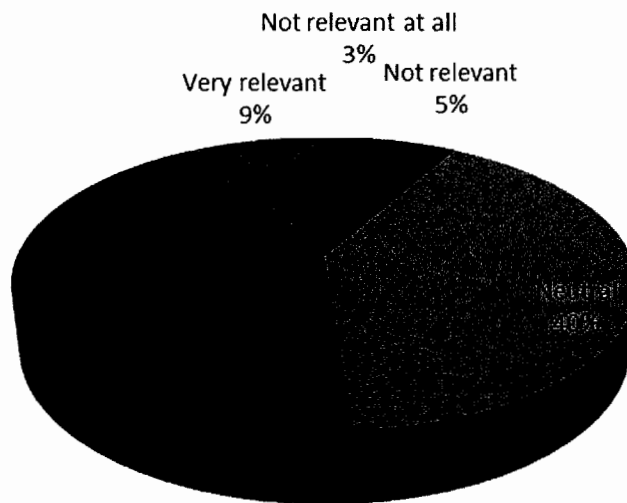| Tool	Corresponding Need(s)	Tool	Corresponding Need(s)
Google+	✓ Cloud-based & Multimedia-oriented ✓ Free and Massive Connectivity	Youtube	✓ Cloud-based & Multimedia-oriented ✓ Sourcing and rating of learning content
Google Docs	✓ Storage Capacity ✓ Creation and use of collaboration tools	Dropbox	✓ Storage Capacity
Whatsapp and other Mobile communication tools	✓ Locate Expertise ✓ Orchestrate easily and flexibly	Linkedin	✓ Locate Expertise ✓ Free and Massive Professional Connectivity
Facebook	✓ Cloud-based & Multimedia-oriented ✓ Free and Massive Connectivity	Ning	✓ Cloud-based & Multimedia-oriented ✓ Creation of learning communities for on-going and ad-hoc discussion and resolution of issues and problems
Skype	✓ Creation of learning communities for on-going and ad-hoc discussion and resolution of issues and problems	Feedly	✓ Sourcing and rating of content relevant to learning and personal interest

PLE&N Tools Usability Assessment

Have you used it

Do you find it useful
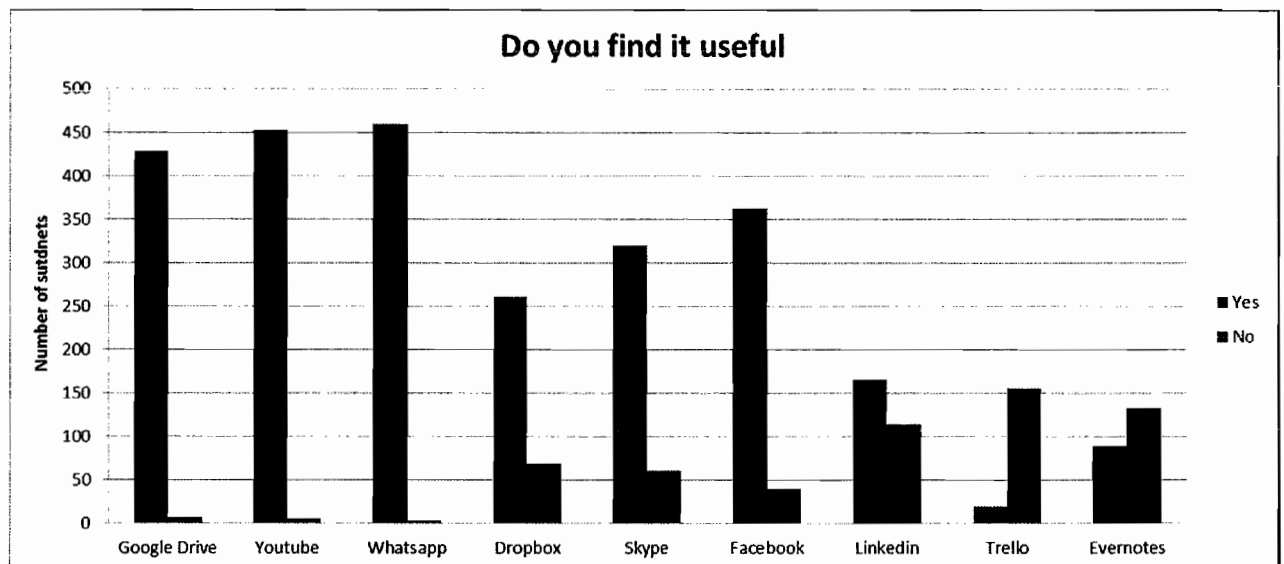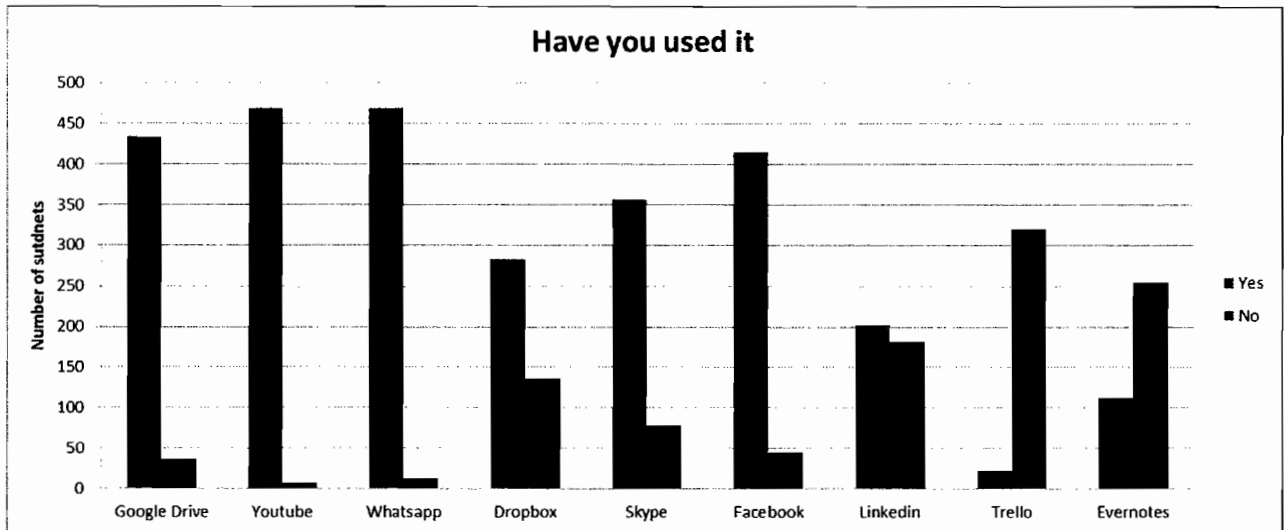
How relevant do you find the content in the Feedly Reader to the subject?

Not relevant at all
3%

Very relevant
9%

Not relevant
5%

Neutral
40%

Has the content in the Feedly Reader improved your understanding of the subject knowledge?

Very little
5%

Somewhat
35%
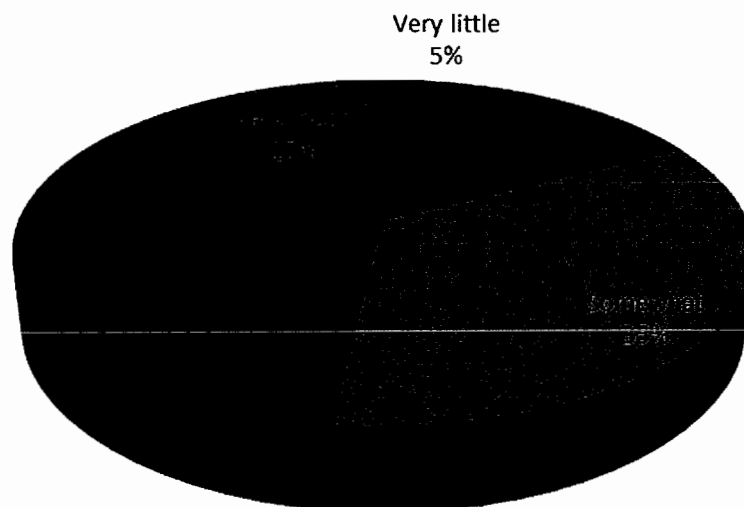
How often do you discuss face-to-face with your classmates the content on PLE&N during your subject study?

Always
3%

Sometimes
40%
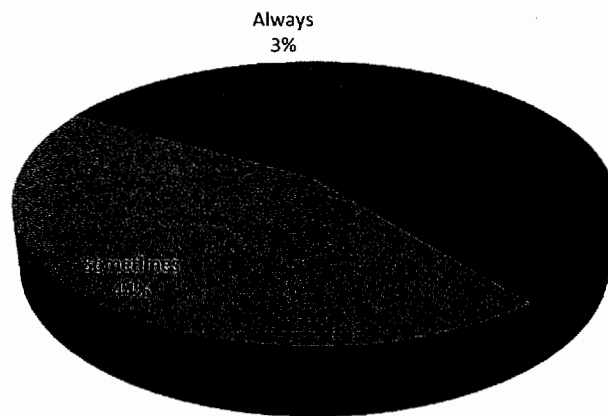
On a scale of 1-5, how user-friendly do you find Feedly Reader?

5(Very user-friendly)
9%

1(Not user-friendly)
5%
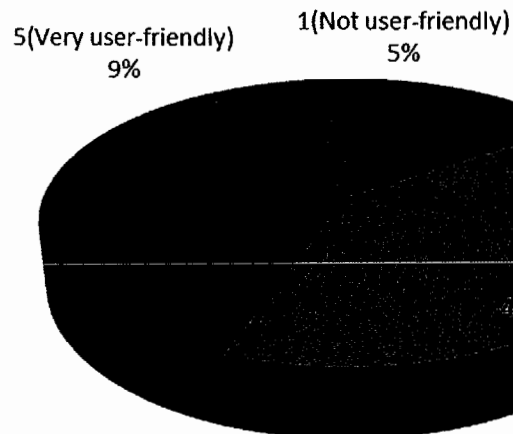
Game-based approach facilitates my learning of the subject

Disagree
4%

Strongly
Disagree
0%

Neutral
4%
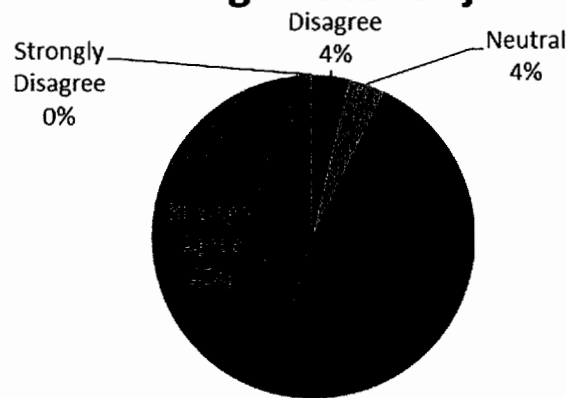
The CoP Trump card is an appropriate game to use for achieving the stated learning objectives

Disagree
0%

Neutral
9%
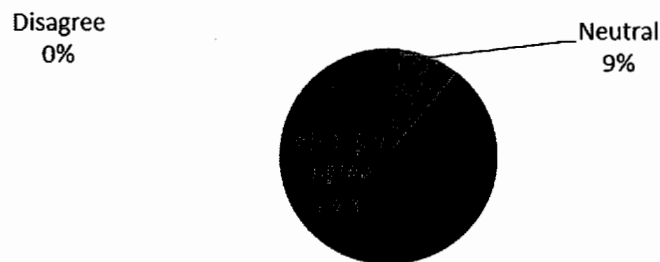
I would like to see more use of the gamification approach in this and other subjects

Strongly
Disagree
0%

Disagree
0%

Neutral
9%